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CALLAN INSTITUTE

Capital Market Review

First Quarter 2018

The Slow Burn of the Current Expansion

ECONOMY

2 PAGE

GDP rose 2.3% in the first quarter, lower than in much of 2017 but higher than estimates, and in spite of the market volatility that started the year. The unemployment rate remains at historically low levels, and there are early signs this is leading to wage pressure.

Diversification Appears to Pay Off

FUND SPONSOR

4 PAGE

The median fund sponsor in Callan's database fell 0.5% but did better than a 60% equity/40% fixed income portfolio, which dropped 1.0%. Taft-Hartley plans were the best performers by type, while large plans were best by size.

Volatility Returns and Markets Sag

EQUITY

6 PAGE

U.S. equities fell in the quarter amid a resurgence of volatility. Mega-Tech firms were especially hard hit amid a data scandal. Non-U.S. developed markets fell more, while emerging markets rose, helped by oil's rebound and strong economic conditions.

Mixed Results for Bonds Globally

FIXED INCOME

9 PAGE

The 10-year Treasury yield neared 3% before dropping by quarter's end. The Aggregate Index fell, as did investment grade and high yield bonds. Currency movements drove fixed income returns globally. Local currency emerging market debt was a top performer.

NPI Chugs Along; REITs Take a Big Hit

REAL ESTATE

11 PAGE

The NCREIF Property Index (NPI) posted positive results, while the NCREIF Open End Diversified Core Equity Index continued to see increased returns. Non-U.S. REITs outperformed U.S. REITs, but still posted negative returns.

Choppy Conditions Hit Private Markets

PRIVATE EQUITY

13 PAGE

With volatility returning to the public markets, private equity activity slowed somewhat, but remained brisk in absolute terms. Fundraising was down moderately. Company investments and exits trended slightly down, although venture capital funding rose.

Boy, That Escalated Quickly!

HEDGE FUNDS/MACs

14 PAGE

Despite the quarter's rocky ride for stocks and bonds, hedge fund strategies were mostly positive. The Credit Suisse Hedge Fund Index grew 0.5%, while the median manager in the Callan Hedge Fund-of-Funds Database gained 1.2%, net of all fees and expenses.

DC Plans Post Best Returns in Four Years

DEFINED CONTRIBUTION

15 PAGE

The Callan DC Index™ gained 16.5% in 2017, its best year since 2013. But the Index trailed the Age 45 Target Date Fund, which gained 19.3%. DC plan balances rose 16.5% over the year, driven primarily by market returns. Non-U.S. equities saw notable inflows.

Broad Market Quarterly Returns

U.S. Equity
Russell 3000

-0.6%

Non-U.S. Equity
MSCI ACWI ex USA

-1.2%

U.S. Fixed Income
Bloomberg Barclays Agg

-1.5%

Non-U.S. Fixed Income
Bloomberg Barclays Gbl ex US

+3.6%

Sources: Bloomberg Barclays, MSCI, FTSE Russell

Slow Burn

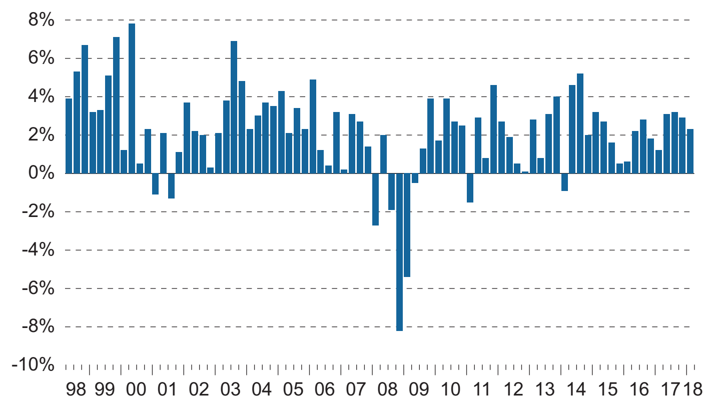
ECONOMY | Jay Kloepfer

After a weak first quarter, the U.S. economy closed out 2017 with decent momentum, as GDP grew at a robust 3% annualized rate for the remaining three quarters. The first quarter of 2018 will likely be remembered for its sudden, brief correction and the return of volatility. True to form, however, the U.S. economy continued to post solid growth, ignoring the uncertainty introduced by the stock market gyrations, just as it ignored the geopolitical uncertainty humming in the background over the last 18 months. The 2.3% gain was a step down from the string of 3% increases but actually higher than most estimates. The unexpected strength in first-quarter GDP growth came from net exports (imports were less than expected, exports were greater), from fixed investment in buildings and capital, and from government expenditures.

Growth expectations had been tempered by the depletion of inventories and signs of slowing consumer spending at the end of 2017. However, consumers remained optimistic during the first quarter, even after the market turmoil in February, with the University of Michigan's Index of Consumer Confidence hitting a 14-year high in March. Strong labor markets are a clear contributor to confidence. In the U.S., the unemployment rate fell to 4.1% in the fourth quarter of 2017, a generational low, and remained at that rate through the first quarter of 2018. Initial claims for unemployment insurance have fallen to the lowest level since 1969.

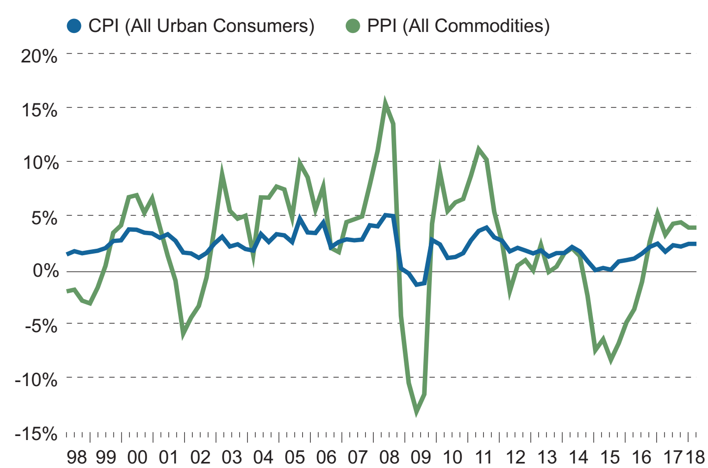
The slow burn in the current expansion may enable it to continue for some time. This recovery is one of the longest on record at 105 months, but also one of the slowest, with average GDP growth in the U.S. of just 2.2%. Expansions do not die of old age; rather they collapse under the weight of imbalances that become untenable. Thus far into this slow burn, signs of severe imbalances are few, although several potential ones come to mind: tight labor markets, inflation, housing shortages in select urban areas, and rich asset prices kept aloft by the continued growth in the economy.

Quarterly Real GDP Growth (20 Years)



Source: Bureau of Economic Analysis

Inflation Year-Over-Year



Source: Bureau of Labor Statistics

Inflation may finally be poised to become the problem we all expected to arise after years of sustained monetary and fiscal stimulus. The CPI-U notched a year-over-year gain of 2.4% in the first quarter, with core inflation reporting a 2.1% increase. While this sounds very modest, the CPI-U has been inching steadily upward since bottoming out in 2015, when oil prices collapsed. One of the most profound conundrums has been the lack of wage pressure while the unemployment rate has steadily fallen to historically low levels. Average hourly earnings were stuck at 2% growth, and only recently has the rate of growth begun to rise. In fact, the report of wage growth coming in close to 3% in January was one of the catalysts cited for the spike in market volatility in early February, spurring fears of inflation among investors. Wage growth did not jump higher than 3% in February and March, but stronger wage growth will feed into core inflation. The Employment Cost Index, which includes benefit costs along with wages and salaries, rose 2.7% year-over-year in the first quarter, the highest rate of growth since 2007. Barring another collapse in energy prices or a sudden downturn in global growth, inflation momentum will keep building.

Continued growth and the potential pickup in inflation give the Fed cover for more interest rate hikes. One development of interest is the potential for an inverted yield curve. The Fed raised interest rates three times in 2017 and again in March 2018, which shifted the short end of the yield curve up, but the long end barely budged. As a result, the curve flattened substantially. The Fed is telegraphing up to three more rate hikes this year, and if the long end of the curve remains anchored, the potential increases for the curve to invert, where yields on longer maturities are lower than those for shorter maturities. An inverted yield curve can suggest the onset of recession: investors bid up the price of longer-dated debt (driving down yields) in anticipation of a slowing economy, leading to an expected cut in interest rates and increased demand for bonds. An inverted yield curve does not cause a recession, but it does reflect the opinions and concerns of market participants. Complicating the story here is that while the Fed has begun to unwind its balance sheet, which suggests it could be selling bonds and putting upward pressure on rates, demand remains strong on the long end of the yield curve, as yields in the U.S. are substantially above those overseas.

The Long-Term View

Index	2018 1st Qtr	Periods ended Dec. 31, 2017 Year	5 Yrs	10 Yrs	25 Yrs
U.S. Equity					
Russell 3000	-0.64	21.13	15.58	8.60	9.72
S&P 500	-0.76	21.83	15.79	8.50	9.69
Russell 2000	-0.08	14.65	14.12	8.71	9.54
Non-U.S. Equity					
MSCI ACWI ex USA	-1.18	27.19	6.80	1.84	–
MSCI Emerging Markets	1.42	37.28	4.35	1.68	–
MSCI ACWI ex USA Small Cap	-0.35	31.65	10.03	4.69	–
Fixed Income					
Bloomberg Barclays Agg	-1.46	3.54	2.10	4.01	5.48
90-Day T-Bill	0.35	0.86	0.27	0.39	2.60
Bloomberg Barclays Long G/C	-3.58	10.71	4.43	7.26	7.67
Bloomberg Barclays Gl Agg ex US	3.62	10.51	-0.20	2.40	5.02
Real Estate					
NCREIF Property	1.70	6.96	10.19	6.08	9.12
FTSE NAREIT Equity	-8.20	5.23	9.46	7.44	10.76
Alternatives					
CS Hedge Fund	0.47	7.12	4.23	3.24	–
Cambridge PE*	5.11	19.38	13.90	9.10	15.62
Bloomberg Commodity	-0.40	1.70	-8.45	-6.83	2.47
Gold Spot Price	1.37	13.68	-4.82	4.56	5.63
Inflation – CPI-U	1.23	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

	1Q18	4Q17	3Q17	2Q17	1Q17	4Q16	3Q16	2Q16
Employment Cost–Total Compensation Growth	2.7%	2.6%	2.5%	2.4%	2.4%	2.2%	2.3%	2.3%
Nonfarm Business–Productivity Growth	-0.4%	0.0%	2.6%	1.7%	0.2%	1.1%	2.4%	0.9%
GDP Growth	2.3%	2.9%	3.2%	3.1%	1.2%	1.8%	2.8%	2.2%
Manufacturing Capacity Utilization	75.6%	75.2%	74.4%	74.9%	74.6%	74.4%	74.3%	74.4%
Consumer Sentiment Index (1966=100)	98.9	98.4	95.1	96.4	97.2	93.2	90.3	92.4

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

Diversification Appears to Pay Off in First Quarter

FUND SPONSOR

In the first quarter, the median fund sponsor in Callan's database fell 0.5%, compared to a 1.0% drop for a quarterly rebalanced portfolio made up of 60% S&P 500 Index/40% Bloomberg Barclays US Aggregate Bond Index. Taft-Hartley funds (-0.3%) were the best performers in the quarter, followed by public plans (-0.4%), endowments and foundations (-0.4%), and corporate plans (-0.7%). Large plans with greater than $1 billion in assets under management did best by plan size, falling by 0.4%, followed by medium ($100 million–$1 billion) and small (under $100 million) plans. Plans in Callan's database invest in a wider array of assets than a 60/40 portfolio, indicating diversification may have been a benefit in the quarter, which saw declines for both bonds and stocks.

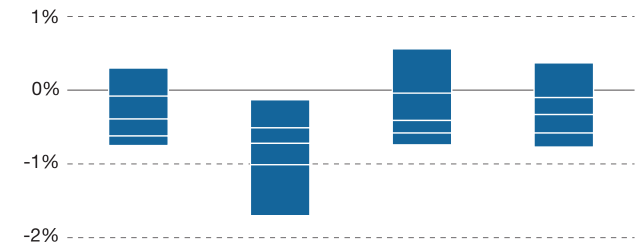
Over the last 10 years, corporate plans (+6.5%) did best, followed by Taft-Hartley plans (+6.4%), and public plans and E&Fs (both +6.3%). The median plan sponsor increased 6.4%, while the 60-40 portfolio rose 7.5%.

Strategic planning by sponsors has recently touched on a number of common themes:

– The impact of tax reform, particularly its effects on pensions and non-profits, and the varied implications for different asset classes.

– Adjusting to lower capital market return expectations. Callan's 2018 10-year projections are unchanged from last year, which means they remain low. Diversification and discipline remain the key points of emphasis, and Callan advises caution when reaching for return/yield.

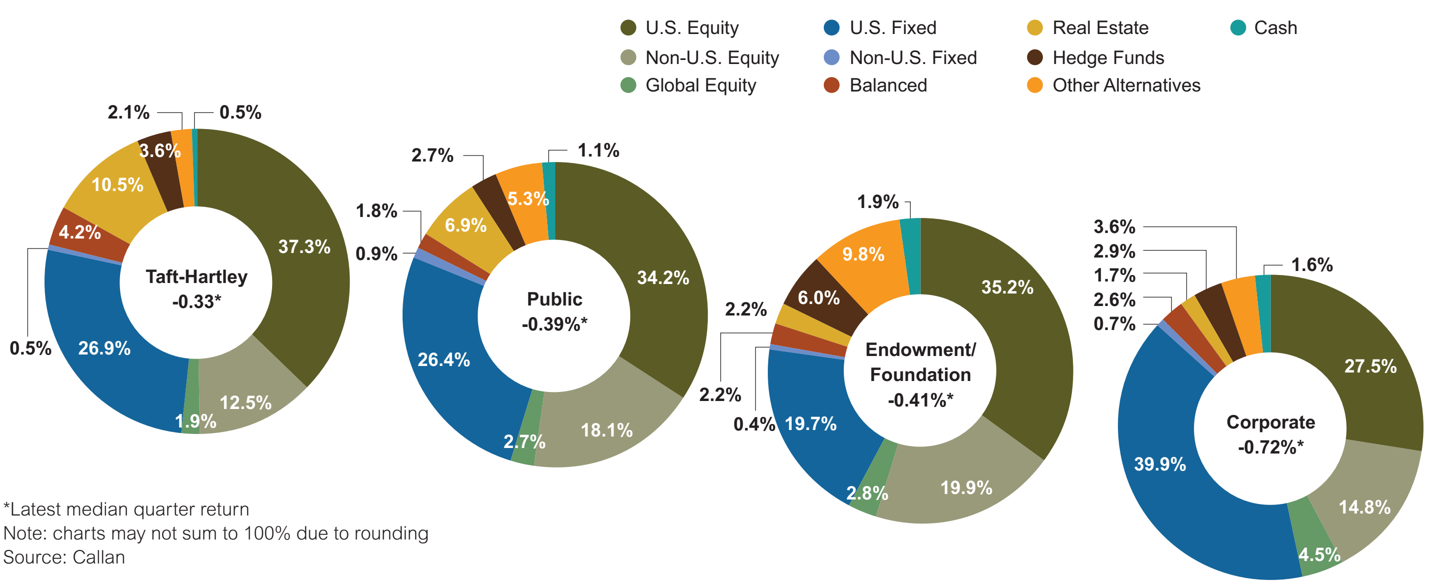
Callan Fund Sponsor Returns for the Quarter



	Public Database	Corporate Database	Endow/Fndn Database	Taft-Hartley Database
10th Percentile	0.30	-0.13	0.56	0.37
25th Percentile	-0.08	-0.51	-0.04	-0.10
Median	-0.39	-0.72	-0.41	-0.33
75th Percentile	-0.62	-1.01	-0.58	-0.58
90th Percentile	-0.75	-1.70	-0.74	-0.77

Source: Callan

Callan Fund Sponsor Average Asset Allocation



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

Both stock and bond valuations remain high, and market volatility is back—but is within normal bounds. Many clients are wondering if there is a need for inflation-hedging strategies despite inflation being benign.

Low interest rates and low return expectations continue to drive strategic allocation planning. Many fund sponsors feel compelled to take on substantial market risk to reach their return goals. Sponsors are evaluating whether there is anything more they can do to tamp down the risk within the growth allocation, short of actually reducing the allocation to growth assets. Actuarial assumptions and spending rates are being reduced by some sponsors.

Callan research on trends in the institutional investment marketplace found that several interesting themes have developed over the past three years, many related to capital market expectations and fees:

- A continuing interest in passive investing, although the level of interest has decreased slightly
- A meaningful percentage of fund sponsors are considering new or additional investments in private assets

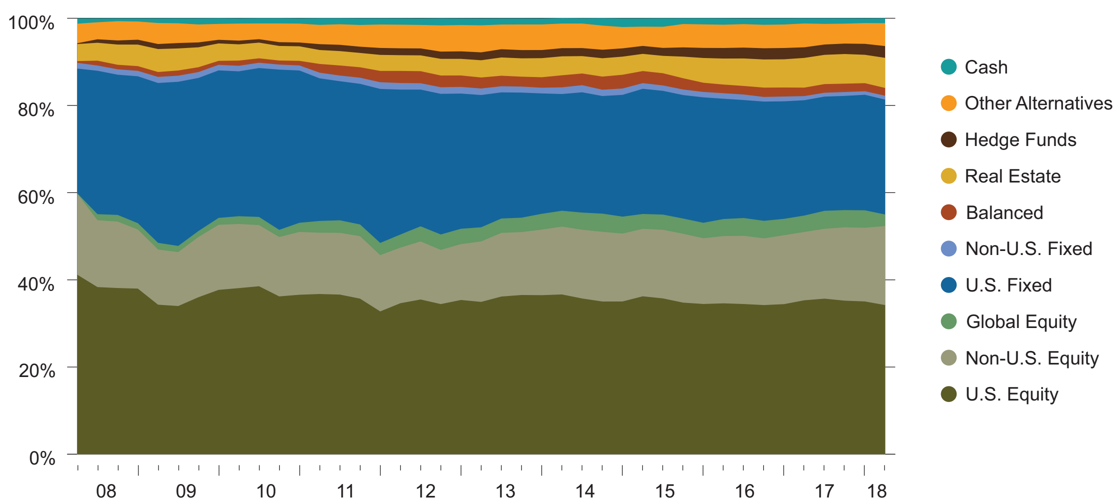
Specific areas of focus by plan types include:

Corporate Funds: Most corporate defined benefit (DB) clients have embraced de-risking (increasing fixed income and extending duration) and are at different stages of this process. The extent to which corporate plan sponsors implement de-risking in the coming year depends largely on the movement of interest rates. As rates rise and DB plans move forward with de-risking plans, allocations to equity and alternative investments are likely to decrease.

Public and E&F Funds: Public plans and endowments and foundations are focused on return enhancement. However, risk—as well as funded status for public plans—were sources of ongoing concerns in the more volatile markets of the first quarter.

Defined Contribution: Driven by regulatory and legislative requirements, DC plans continue to review fees and recordkeepers. Recently, activity has been focused on investment structures that reduce the number of options in a plan.

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: Dow, S&P 500 Fall, First Time Since ‘15

-0.6%

RUSSELL 3000

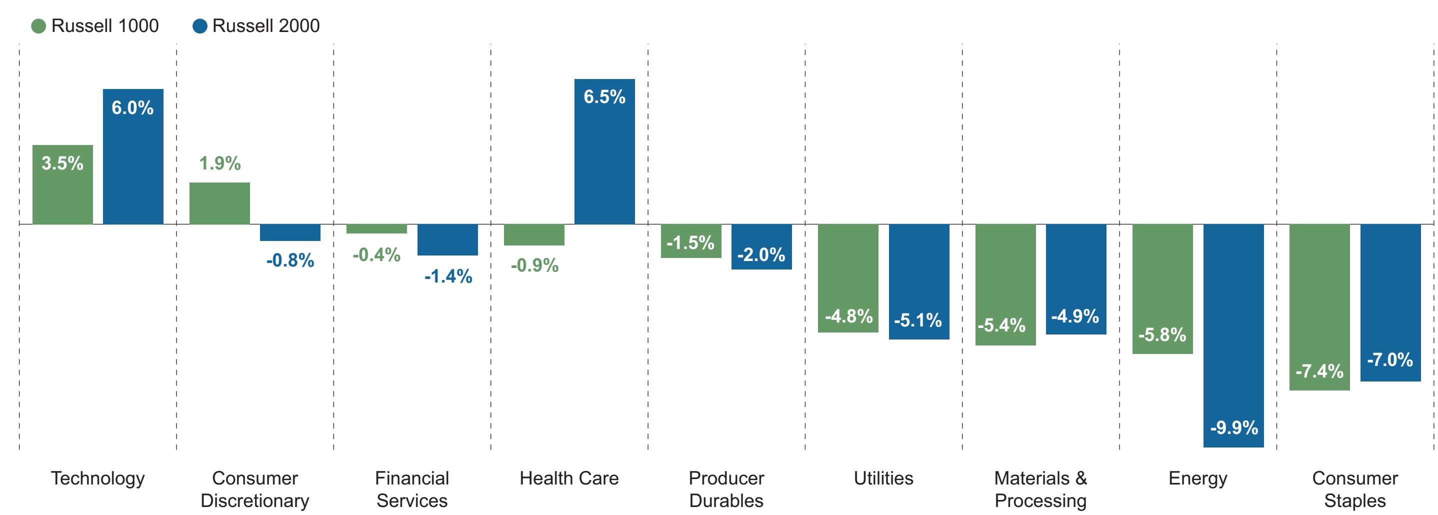
Volatility returned in the first quarter, with the **Dow Jones Industrial Average** and **S&P 500 Index** both finishing lower—a first since the third quarter of 2015. After starting strong on the back of solid earnings and tax law changes, U.S. equities faltered in the second part of the quarter over concerns about a more aggressive global trade policy and uncertainty over the pace of interest rate hikes. The S&P 500’s modest quarterly loss (-0.8%) belied volatile intra-quarter results. The Index experienced six days of movements greater than 2% during the quarter (versus none in 2017). And the Index reached a record high on Jan. 26, then fell about 8% to close the quarter. Volatility as measured by the VIX Index skyrocketed by 116% on Feb. 5 when the market sank 4%.

Small capitalization stocks outperformed large caps (**Russell 1000:** -0.7%; **Russell 2000:** -0.1%), though sector performance was mixed. The prospect of a trade war with China weighed on large caps since many of these companies are exposed to international markets (S&P 500 aggregate exposure is approximately 40%) while small caps were less affected as they tend to derive a higher proportion of their revenue from domestic markets (approximately 80-90%) and benefit from a more protectionist policy.

In mid-March, some mega-cap Tech firms saw their stock prices drop in the wake of Facebook’s Cambridge Analytica scandal, leading to declining trust for the industry and negative investor sentiment. The market began pricing in the potential for more regulatory oversight for these internet companies. Performance for the “FANGs” split during the quarter, with Facebook and Google down while Netflix and Amazon advanced.

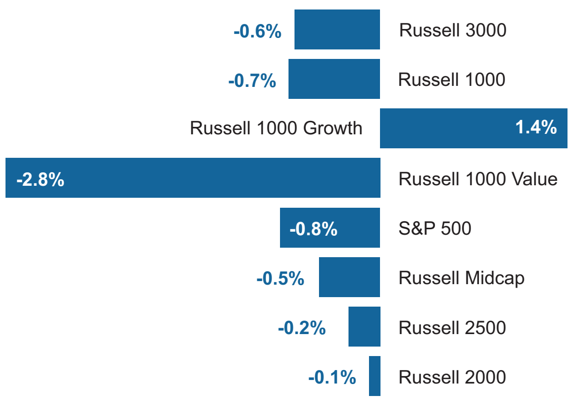
Growth continued to top value (**Russell 1000 Growth:** +1.4%; **Russell 1000 Value:** -2.8%). Value trailed as the prospect of increased inflation and accelerating interest rates weighed on interest rate-sensitive sectors (Financials: -1.0%; Real Estate: -5.0%; Utilities: -3.3%). Energy (-5.9%) also took a hit despite a more promising outlook for the sector as the Saudis agreed to continued oil production cuts into 2019; performance for the first quarter was impacted by Exxon Mobil and Chevron missing fourth quarter earnings expectations.

Quarterly Performance of Select Sectors



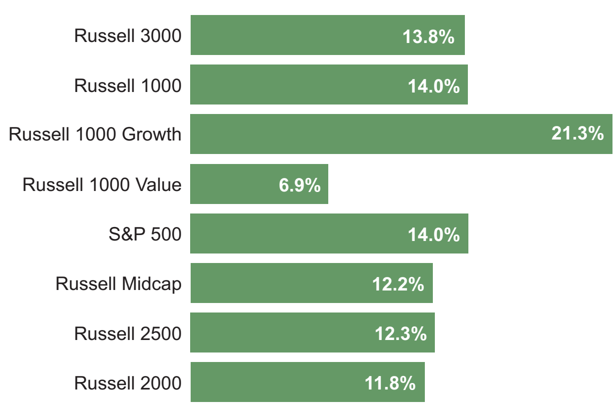
Source: FTSE Russell

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

Despite the increased volatility and price drop in the broader index, defensive sectors underperformed cyclicals due in large part to the rising interest rate environment. Technology (+3.5%) and Consumer Discretionary (+3.1%) were the only two sectors that posted positive returns. Telecommunications (-7.5%) and Staples (-7.1%) were the two worst-performing sectors.

Global Stocks: Spooked Markets Lag

-1.2%
MSCI ACWI ex USA

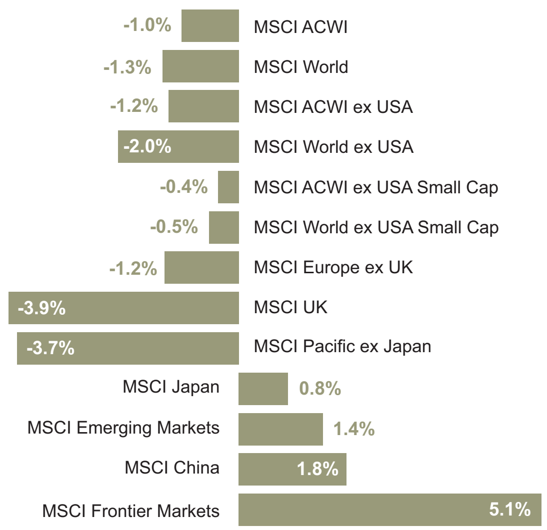
Despite positive economic data, non-U.S. developed equity underperformed U.S. as non-U.S. equity markets were spooked by geopolitical tension and market volatility along with fears of rising U.S. interest rates and inflation (**MSCI World ex USA:** -2.0%; **MSCI Europe:** -2.0%). Emerging markets continued to outpace developed, fueled by a soft dollar and synchronized global growth; however, fears of inflation and its implication on the trajectory of U.S. monetary policy—as well as a potential trade war between the U.S. and China—weighed on the market. Developed non-U.S. small cap outperformed large cap given the risk-on market environment spurred by synchronized global growth.

While developed non-U.S. equity market returns were negative, results were helped by U.S. dollar weakness. Overall, the **MSCI EAFE** fell 4.3% in local terms but only 1.5% in U.S. dollar terms. The U.S. dollar has been hurt by growing worries over a trade war with China as well as signs that rates may be poised to rise in other countries as global economies improve. Likewise, Brexit woes sank the U.K. market (-8%) but the pound's appreciation versus the dollar offset a good portion of the loss for U.S. investors; on that basis the country fell 4%. The euro-zone recovery continued, with GDP growth of 2.7% in the quarter year-over-year driving the euro up 2%—and the pound by nearly 4%—relative to the dollar.

Japan's economy grew by 1.6% fueled by infrastructure development ahead of the 2020 Olympics, enabling the yen to surge by 6% relative to the dollar. It hit a 17-month high as worries over trade policy spurred demand for the safe-haven currency and was the best-performing currency among developed markets. In local terms, Japan equities fell nearly 6%, but the strength of the yen brought returns in U.S. dollar terms to +0.8%.

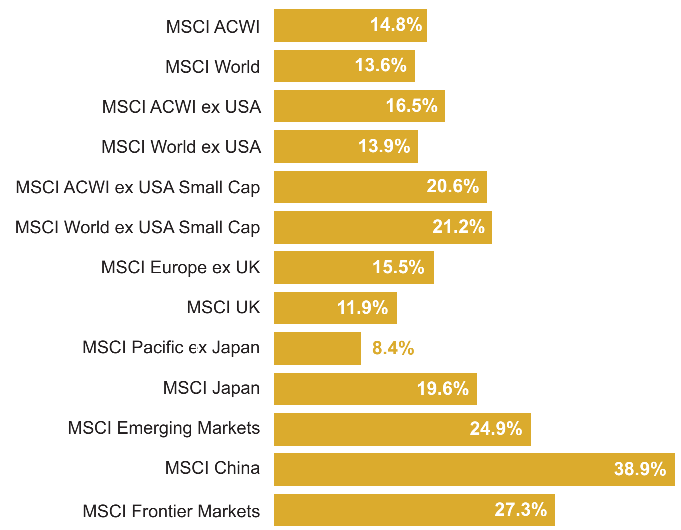
The only sectors that posted positive returns were Consumer Discretionary, Tech, and Utilities. Positive earnings supported the Tech sector (top performer), and Utilities benefited as investors fled to safety amid market volatility and yield curve flattening in March. Telecom struggled as competition for wireless services within the euro-zone eroded profitability, and Staples was notably challenged due to fears of interest rates returning to normal levels and the prospect of beleaguered growth.

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



Source: MSCI

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



Source: MSCI

Growth outpaced value, and earnings growth and quality factors were in favor as markets were jittery in light of the global economy's looming risks. As such, high-beta, cyclical sectors and factors struggled.

Emerging Markets: Oil Propels Shares Higher

+1.4%

MSCI EM

The **MSCI Emerging Markets Index** rose 1.4%. Brazil (+12%) and Russia (+9%) were among the best performers due to climbing oil prices and improving economic conditions. China (+2%) continued to thrive despite trade tension with the United States and a slowdown for Chinese tech companies; China's supply-side reforms are kicking in and economic growth in retail and home sales exceeded expectations, driving up returns for the Financials and Real Estate sectors.

Although India announced better-than-expected GDP growth of 7.2%, the country notably lagged (-7%) due to poor market sentiment surrounding asset-quality issues at large state-owned banks and relative valuations of Indian equities.

Supported by rising oil prices, Energy was the best performing sector; conversely, Consumer Discretionary fared worst, weighed down by India. Value and sentiment factors were in favor as the economic recovery story gained traction and momentum; however, quality factors also added value given that this is the mid-cycle of the recovery.

Non-U.S. Small Cap: Growth in Favor This Quarter

-0.4%

MSCI ACWI ex USA SC

Developed non-U.S. small cap outperformed large cap (**MSCI World ex USA Small Cap:** -0.5%) given the risk-on market environment spurred by synchronized global growth, although within emerging markets, small cap lagged large cap (**MSCI Emerging Markets Small Cap:** +0.2%).

Growth was favored in both developed and emerging market small cap, as growth-oriented sectors such as Health Care and Consumer Staples outperformed cyclical sectors.

Global Fixed Income

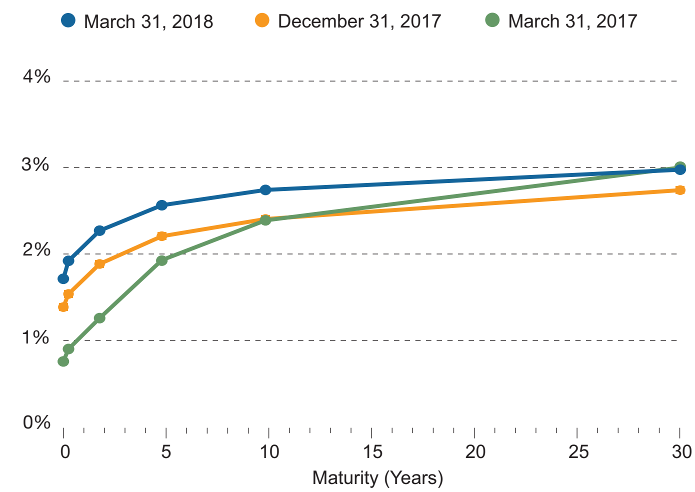
U.S. Bonds: Fear, Uncertainty Roil Markets

-1.5%
BB AGGREGATE

The 10-year U.S. Treasury yield marched steadily higher through most of January and February in response to positive economic data, then equity market weakness and concerns over a looming trade war led to falling yields in March. New Fed Chair Jerome Powell announced his first rate hike (as widely expected) in March, raising the Fed Funds target rate to 1.50%–1.75%. The 10-year U.S. Treasury yield climbed to a peak of nearly 3% during the quarter before closing at 2.74%, 34 basis points higher than at year-end. Two-year U.S. Treasury note yields rose nearly 40 bps to 2.27%, the highest since 2008, and the note fell 0.1% for the quarter, while the 10-year Treasury dropped 2.4% and the 30-year Treasury plunged almost 4%. Interest rates rose approximately 30 bps across the U.S. Treasury yield curve. TIPS outperformed nominal Treasuries, and the 10-year break-even inflation rate rose to 2.05% from 1.96% at year-end.

The **Bloomberg Barclays US Aggregate Bond Index** fell 1.5%, with corporate and securitized sectors underperforming Treasuries. Volatility picked up across risk assets as geopolitical uncertainties took center stage; market expectations reflect the possibility of four rate hikes in 2018, up from a projected three

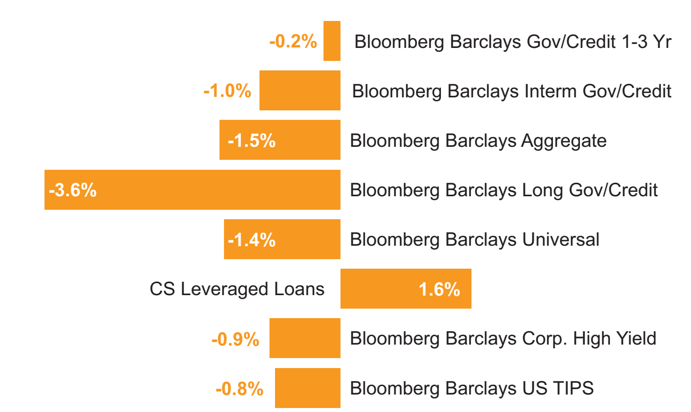
U.S. Treasury Yield Curves



Source: Bloomberg

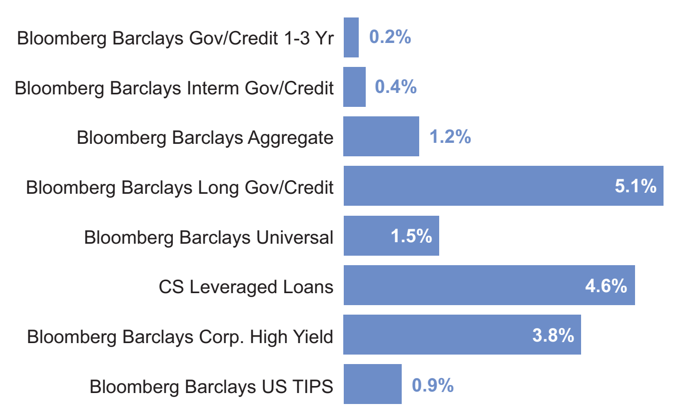
at the end of 2017. In a sharp reversal from 2017's relative performance, investment grade corporates underperformed like-duration Treasuries by 80 bps during the quarter and dropped 2.3%. Investors were fairly sanguine as they reassessed fairly healthy balance sheets juxtaposed with fair-to-rich valuations. New issuance was down 13% when compared to a similar time period a year ago, yet demand remained strong with oversubscriptions by two to three times. Outside of investment grade, the **Bloomberg Barclays High Yield Index** fell 0.9% while the

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

S&P/LSTA Leveraged Loan Index, which includes floating rate loans and thus benefited from rising rates, rose 1.4%.

High yield corporates dropped 0.9% and outperformed the Aggregate. Corporate fundamentals remained healthy as earnings growth supported debt coverage. Default rates remained benign because many companies had already reorganized debt in 2016. About 75% of new issuance proceeds were used for refinancing. Valuations remained near historical highs.

Bank loans rose 1.4% and outperformed the Aggregate. Healthy balance sheets, strong demand for collateralized loan obligation (CLO) formation, and higher short-term interest rates bode well for the sector this quarter.

Global Bonds: Currency Changes Drive Returns

+3.4%
BB GBL AGG ex US

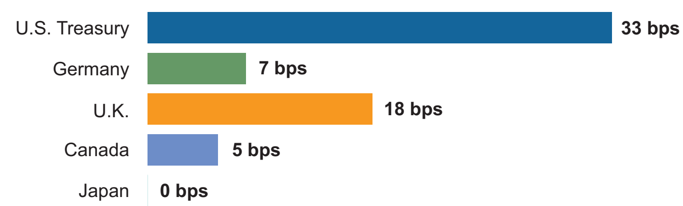
The **Bloomberg Barclays Global Aggregate Index** (hedged) fell 0.1% (versus a gain of 1.4% for the unhedged version) as developed non-U.S. fixed income market returns were helped by U.S. dollar weakness. Generally, currency movements drove fixed income returns across countries more than interest rate changes in the first quarter. The U.S. dollar has been hurt by growing worries over a trade war with China as well as signs that rates may be poised to rise in other countries as global economies improve. As in the U.S., global credit underperformed government bonds.

Local currency emerging market debt was a top-performing asset class in the first quarter; the **JPM GBI-EM Global Diversified** gained 4.4%. Returns were positive for most countries in local terms and further boosted by U.S. dollar weakness. U.S. dollar-denominated emerging market debt did not perform as well, dropping 1.7% as measured by **JPM's EMBI Global Diversified Index**.

Municipal bonds underperformed Treasuries in the first quarter in spite of shrinking supply and continued inflows to the sector. As a result, the ratio of the yield of AAA-rated 10-year municipals relative to the 10-year U.S. Treasury climbed to 89% as of quarter-end, up from 81% at the end of the year. Further, the municipal curve steepened as longer maturities underperformed. Municipal bond fundamentals broadly remained strong, and Moody's reported that ratings upgrades outpaced downgrades for the third consecutive year in 2017. The **Bloomberg Barclays Municipal Bond Index** dropped 1.1% and the shorter duration **1-10 Year Blend Index** fell 0.7%.

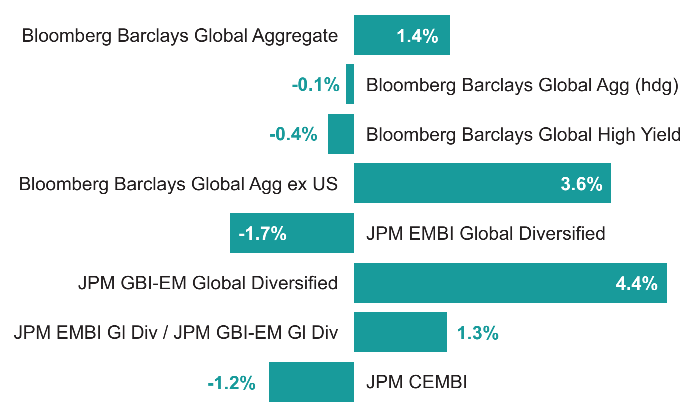
Change in 10-year Global Government Bond Yields

4Q17 to 1Q18



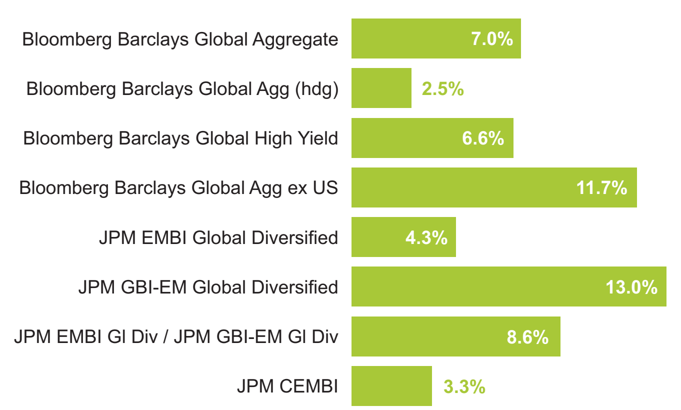
Source: Bloomberg Barclays

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

NPI Chugs Along; REITs Take a Big Hit

REAL ESTATE | Kevin Nagy

The **NCREIF Property Index (NPI)** gained 1.7% during the first quarter (1.1% from income and 0.6% from appreciation). This marked the 33rd consecutive quarter of positive returns for the Index.

Industrial (+3.3%) was the best-performing sector for the eighth consecutive quarter with Office (+1.8%) and Apartments (+1.5%) also posting strong returns; Retail (+0.7%) was the worst performer. Retail and Hotels (+1.0%) were the only property types to experience negative appreciation returns, gaining only because of income returns. The West (+2.2%) region was the strongest performer for the seventh quarter in a row, and the East trailed (+1.2%). The West also was the only region with an appreciation return above 1%. Transaction volume decreased more than 22% to $8.95 billion, down from $11.50 billion in the fourth quarter, but up 28% from the first quarter of 2017. Appraisal capitalization rates fell 20 basis points to 4.35%. Transaction capitalization fell further, dropping 44 bps to 5.41%. The spread between appraisal and transactional rates decreased to 106 bps.

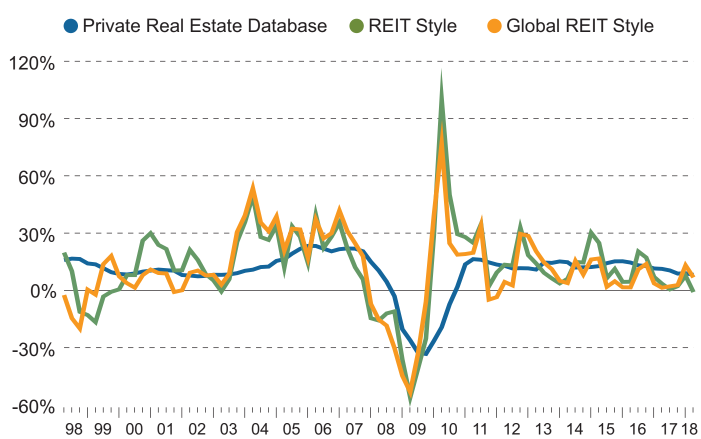
Occupancy rates dropped slightly to 93.5%, down 5 bps from the fourth quarter but up 57 bps from the first quarter of 2017. Apartment, Retail, and Office occupancy rates increased slightly while Industrial ticked down marginally.

The **NCREIF Open End Diversified Core Equity Index** rose 2.2% (1.0% from income and 1.2% from appreciation), a 13 bps increase from the fourth quarter of 2017. The appreciation return increased for the fourth quarter in a row and overtook income for the first time since the fourth quarter of 2015. Leverage dropped 3 bps to 21.1%.

Global Real Estate Investment Trusts (REITs), tracked by the **FTSE EPRA/NAREIT Developed REIT Index** (USD), outperformed U.S. REITs but still lost 4.3% during the first quarter. The median active global REIT manager, as measured by **Callan's Global REIT Peer Group**, fell 3.5%, beating the Index. U.S. REITs, as measured by the **FTSE NAREIT Equity REITs Index,** lost 8.2% for the quarter. The median active U.S. REIT manager, as measured by **Callan's REIT Peer Group**, lost merely 6.6%, also beating the Index.

U.S. REITs had a terrible start to 2018, down 11.6% through the end of February primarily due to an increase in interest rates and concerns over a trade war between the U.S. and China. A stronger March offset some of the damage but was not enough to push performance into positive territory. Timber (+1.8%) and Infrastructure (+1.4%) were the only sectors to experience positive returns. Diversified (-15.8%), Specialty (-11.7%), and Retail (-11.2%) were hit the hardest. Strong earnings and a positive growth outlook for the broader economy helped buoy REITs toward the end of the quarter.

Rolling One-Year Returns

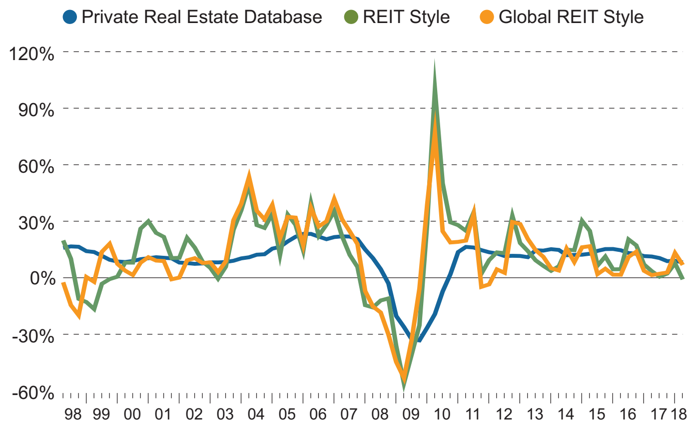


Source: Callan

Europe, as represented by the **FTSE EPRA/NAREIT Europe Index**, outperformed the United States, only losing 0.9% in U.S. dollar terms. U.K. REITs outperformed their continental counterparts in dollar terms but fared worse in local currency terms. The region was held back by geopolitical concerns, and economic growth, while still positive, fell from the frantic pace of late 2017 to more normal levels.

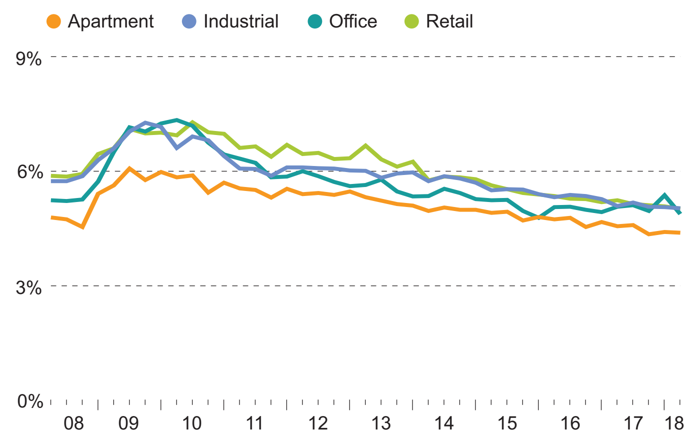
The Asia-Pacific region, represented by the **FTSE EPRA/NAREIT Asia Index,** declined 0.3%, outperforming all other regions. Japan jumped 7.3% in U.S. dollar terms, due mostly to weakness in the American currency, easily outpacing its neighbors to be the best-performing country in the region. Foreign capital flowed into Japanese REITs (J-REITs) and helped boost prices, even as they experienced continued net outflows. Low vacancy and increasing rents also contributed to the large gains.

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.

Choppy Conditions Hit Private Markets

PRIVATE EQUITY | Gary Robertson

Based on preliminary data, first quarter private equity partnership commitments totaled $66.5 billion, with 242 new partnerships formed, according to *Private Equity Analyst.* The number of funds fell 22% from 310 in the first quarter of 2017, and the dollar volume declined 17% from $80.0 billion. The absolute pace of fundraising remains heated, and Callan recommends vigilance in commitment pacing during this frothy market.

According to *Buyouts* newsletter, activity remained brisk as buyout funds closed 587 investments with $29.8 billion in disclosed deal value. The number of investments is larger than in any quarter in 2017, yet the announced dollar volume is lower than in any of last year's quarters. The $5.6 billion purchase of power company Calpine by Energy Capital Partners and others was the quarter's largest buyout. Nine acquisitions with announced values of $1 billion or more closed in the quarter.

According to the National Venture Capital Association, new investments in venture capital companies totaled 1,693 rounds of financing with $28.2 billion of announced value. The number of investments was down 18% from the prior quarter, but the announced value was up 33%. The median pre-money valuation continues to increase; only Series D+ fell, down 20%.

Funds Closed January 1 to March 31, 2018

Strategy	No. of Funds	Amt ($mm)	Percent
Venture Capital	111	6,034	9%
Buyouts	91	52,481	79%
Private Debt	18	4,133	6%
Secondary and Other	10	2,231	3%
Fund-of-funds	12	1,593	2%
Totals	**242**	**66,472**	**100%**

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

There were 164 private M&A exits of buyout-backed companies, *Buyouts* reports, with disclosed values totaling $28.3 billion. The exits count was up from the prior quarter's 159, and the announced value declined from $55.3 billion. There were 11 buyout-backed IPOs in the first quarter raising an aggregate $3.9 billion, up from only four totaling $860 million previously.

Venture-backed M&A exits totaled 188 transactions and disclosed value hit $8.1 billion. Both figures declined from the fourth quarter, which had 200 sales with announced values totaling $12.6 billion. There were 15 VC-backed IPOs in the first quarter with a combined float of $2.1 billion. For comparison, the fourth quarter of 2017 had 22 IPOs and total issuance of $3.1 billion.

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

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

Strategy	3 Months	Year	3 Years	5 Years	10 Years	15 Years	20 Years
All Venture	3.52	8.82	12.30	15.51	9.47	9.00	17.94
Growth Equity	4.90	15.83	10.68	13.21	10.06	12.60	13.13
All Buyouts	4.63	19.33	12.61	14.35	8.78	14.39	12.53
Mezzanine	4.16	13.07	9.43	10.15	9.02	9.47	8.64
Distressed	2.34	12.85	5.72	9.73	9.35	10.98	10.34
All Private Equity	**2.39**	**14.92**	**9.03**	**11.35**	**9.13**	**11.33**	**11.34**
S&P 500	4.21	16.02	11.57	13.84	9.08	12.65	12.86

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.

Boy, That Escalated Quickly!

HEDGE FUNDS/MACs | Jim McKee

Hints that an overheated U.S. economy may be unable to absorb significant fiscal stimulus ahead spooked markets in the first quarter. The resulting spasm of risk-off behavior caused the VIX, a measure of equity volatility, to more than double on one day, Feb. 5, leading to significant losses among volatility sellers. Despite the quarter's rocky ride for stocks and bonds, with major indices down for the quarter, hedge fund strategies were mostly positive.

As a proxy of unmanaged hedge fund interests without implementation costs, the **Credit Suisse Hedge Fund Index (CS HFI)** grew 0.5%. Despite the quarter's negative market beta, *Long/Short Equity* (+1.0%) provided investors with some positive alpha. Representing actual hedge fund portfolios, the median manager in the **Callan Hedge Fund-of-Funds Database** gained 1.2%, net of all fees and expenses. Within that database, the median *Callan Long/Short Equity FOF* matched the *Callan Absolute Return FOF* with 1.2% gains, while the *Core Diversified FOF* returned 0.9%.

As a benchmark for alternative beta, the **Credit Suisse Neuberger Multi-Asset Risk Premia Index** lost 0.7% in the first quarter based upon a 5% volatility target. Within this Index, *Equity Momentum* and *Equity Value* both lost 4.4%. Most of the **Callan Multi-Asset Class (MAC)** style groups experienced weakness in the quarter, which was consistent with the market index and alternative beta returns cited above. Only *Absolute Return* (+0.2%) eked out a gain. *Risk Parity* (-1.3%) fell the most. Though normally less correlated with markets, *Risk Premia* (-0.7%) exhibited higher-than-expected losses during February's sell-off.

Callan Database Median and Index Returns* for Periods ended March 31, 2018

Hedge Fund Universe	Quarter	Year	3 Years	5 Years	10 Years	15 Years
Callan Fund-of-Funds Database	**1.16**	**5.34**	**2.51**	**4.28**	**3.51**	**5.04**
Callan Absolute Return FOF Style	**1.23**	**4.82**	**2.67**	**4.18**	**3.25**	**4.76**
Callan Core Diversified FOF Style	**0.87**	**5.12**	**1.77**	**3.94**	**3.25**	**5.09**
Callan Long/Short Equity FOF Style	**1.16**	**7.76**	**3.54**	**5.54**	**3.78**	**6.03**
Credit Suisse Hedge Fund Index	0.47	5.43	1.82	3.61	3.49	5.89
HFRI Asset Wtd Composite	0.57	5.17	2.21	4.02	3.66	–
HFRI Fund Wtd Comp	-0.16	5.55	3.51	4.65	4.25	6.44
HFRI Equity Hedge (Total)	0.59	9.70	5.29	5.70	3.87	6.18
HFRI Event-Driven (Total)	0.15	5.18	4.11	4.73	4.54	7.10
HFRI Macro (Total) Index	-1.25	1.02	-0.85	0.89	1.42	4.42
HFRI Relative Value (Total)	0.92	4.51	4.06	4.16	5.84	6.61
90-Day T-Bill + 5%	1.57	6.11	5.53	5.34	5.34	6.28
Liquid Alternative Universe	**Quarter**	**Year**	**3 Years**	**5 Years**	**10 Years**	**15 Years**
Callan Absolute Return MAC	**0.21**	**2.65**	**1.92**	**3.12**	**–**	**–**
Callan Risk Premia MAC	**-0.74**	**3.08**	**1.42**	**3.02**	**6.85**	**–**
Callan Long-Biased MAC	**-0.50**	**9.32**	**3.84**	**5.37**	**5.98**	**8.87**
Callan Risk Parity MAC	**-1.33**	**7.81**	**4.27**	**4.61**	**6.93**	**–**
60% S&P 500/40% BB Agg	-0.97	8.81	6.99	8.72	7.42	7.85
CS NB MARP Index (5%v)	-0.70	-1.81	1.27	3.10	6.54	–
SG Trend Index	-3.88	-0.91	-5.01	1.80	1.91	3.59

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

DC Plans Post Best Returns in Four Years

DEFINED CONTRIBUTION | Tom Szkwarla

The Callan DC Index™ gained 16.5% in 2017, its best year since 2013. Despite this, the Index trailed the Age 45 Target Date Fund—the average of target date funds appropriate for participants aged 45 and retiring at age 65—which gained 19.3%. Since inception, the DC Index's annual return of 6.3% has trailed the Age 45 Target Date Fund by 79 basis points.

A new feature of the Index, the DC Fee Analysis chart, measures the average total investment management fee by plan size. Mega plans have driven down their fees to an average of 33 basis points, while smaller plans pay progressively more.

The average DC plan balance grew 16.5% for the year ended Dec. 31, 2017, with market returns accounting for nearly all that.

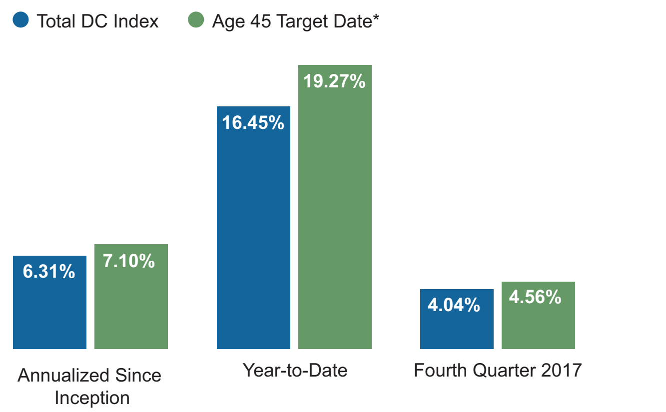
For the third consecutive quarter, non-U.S. equities have experienced notable inflows. Outflows came primarily from stable value (more than a third of the total) and company stock. As usual, target date funds (TDFs) attracted the majority of assets during the quarter, absorbing approximately 62 cents of every dollar that flowed into DC funds. Turnover (i.e., net transfer activity levels within DC plans) for the quarter, at 0.53%, fell below the since-inception average (0.63%).

The Callan DC Index's overall equity allocation ended at 71%, only slightly below its 2007 peak of 73%. TDFs accounted for 30.8% of total assets, an all-time high. U.S. large cap equity continued to hold the second-largest allocation, at 23.6%.

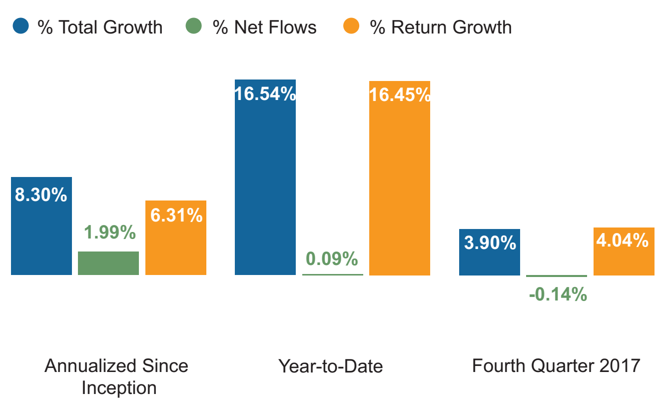
When TDFs are held within a DC plan (92% of the total), they hold 33.6% of assets, more than any other option. U.S. large cap equity funds, offered in all plans, are the second most utilized option (23.6%).

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 (Fourth Quarter 2017)
(Top Two and Bottom Two Asset Gatherers)

Asset Class	Flows as % of Total Net Flows
Target Date Funds	61.81%
Non-U.S. Equity	24.86%
Stable Value	-36.21%
Company Stock	-25.94%
Total Turnover**	**0.53%**

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.

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

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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 five offices throughout the U.S. For more information, please visit www.callan.com.

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