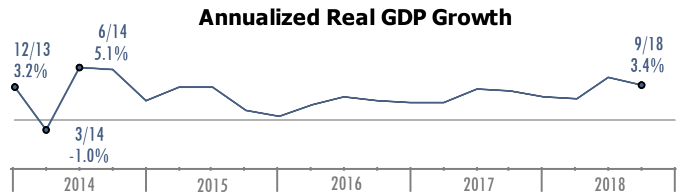
Your Quarterly Update on the Financial Markets
December 31, 2018

MARKET Recap

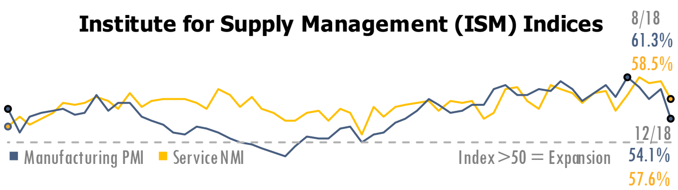
The US Economy: "Sentimental Selloff?"

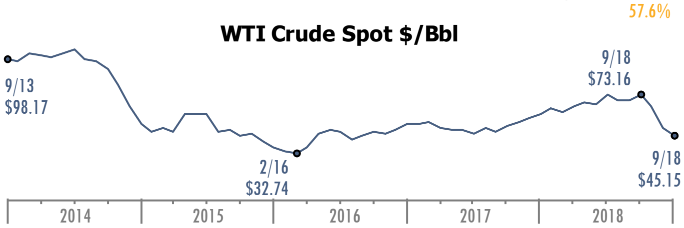


Economic growth continued in the third quarter, resuming its trend level of 3.4% following a trade-related spike in Q2. The underlying data sends a mixed message. Personal consumption expenditures were strong, maintaining a 2-quarter trend.

However, net exports detracted nearly 2% as imports rose and exports declined. Normally that would lead to a weaker growth pace, but increases in private inventories largely offset the trade effect. The impact of inventories on GDP growth tends to be fickle; continued robust consumption is required to clear inventories, or businesses will ultimately curtail production.

The trade conflict has not changed the direction and magnitude of flows at this point, but it has introduced volatility, and led to strongly negative business sentiment in the fourth quarter. The ISM's index of manufacturing indicators (PMI) slowed to 54.1% in December, catching analysts by surprise. That level is still expansionary, and PMI readings above 60% are rare by historical standards. The information content in the recent ISM release is not so much in the hard numbers but in the accompanying commentary.





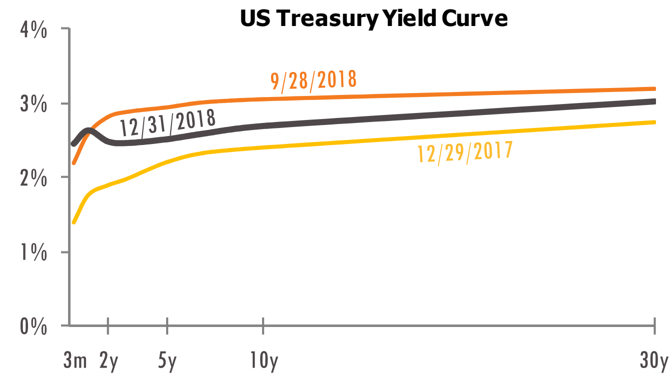
Each month ISM releases their Report on Business for the manufacturing and non-manufacturing sectors. In addition to index values, the report provides selected comments from survey respondents (executives involved in the supply/production chain). If you hurry, you can see the December and November reports on the ISM website; it is astounding how positive the remarks were in November and how negative they were a month later. December's commentary focuses almost exclusively on expectations of reduced demand due to the US/China trade war. Brexit plays into the narrative as well.

In fact, economic data outside of the US is not as robust. The International Monetary Fund published its annual outlook in October, lowering its 2-year growth forecast to 3.7% from 3.9% citing trade tensions. As if on cue, China, Japan, and Germany each cited slower growth for Q3. Slowing growth in China dominates the headlines, but that is hardly news. The long-term trend for slower growth is well-established, driven more by the maturation of the economy than any particular iteration of trade policy. Real GDP growth in China has declined fairly steadily following the Global Financial Crisis.

Note that central banks are not deaf to the concerns (tweets to the contrary notwithstanding). In the first week of 2019, policymakers in China announced bank-required reserve cuts, the 5th cut in 12 months, along with a fiscal stimulus package designed to support growth at the official 6.5% target. The Fed took a more measured step in December, raising short-term rates but reducing the number of expected hikes in 2019 from 3 to 2. The European Central Bank seems poised to keep rates low following the end of their asset purchase program last month.

In our view, gradually slowing growth and gradually rising interest rates would explain gradually declining asset prices. So why would global stocks decline by 13% and crude oil prices by 38%? The dramatic swoon was driven more by very negative sentiment. Free markets don't wait for data, of course. They regularly trade on expectations. But it seems to us that it has traded far ahead of supporting data in December. On January 4th a robust US jobs number with higher workforce participation sent the Dow up over 700 points. For investors, "sentimental" corrections can be very tricky to navigate.

The US Bond Market



While the fourth quarter may have been entirely unpleasant for most investors, US Treasuries experienced two markedly different market environments. In the first half of the quarter, rates moved up slightly as the curve steepened healthily. The 2-year/10-year spread widened from 24 basis points at the end of September out to 31 bps in early November as the 10-year benchmark yield approached 3.25%. The bond market did not seem to take much notice of what was going on in the stock market or in credit spreads. Then, soft economic data, which had caused yields to slip a few times earlier in the quarter, continued to amass in housing and manufacturing. As investors resumed selling risk assets, US Treasuries served as the usual safe haven.

A 25 basis point rate hike in December forced the front end of the curve up again, but instead of radiating out toward longer maturities, everything beyond the 6-month Treasury bill continued to decline in yield. The 10-year yield settled at 2.69% at year end, down from 3.05% last quarter. An odd kink in short rates appeared in the yield curve in the last few days of 2018 – a temporary anomaly or perhaps a signal that rate hikes may give way to rate decreases as 2020 approaches.

US Bond Indices - Total Returns

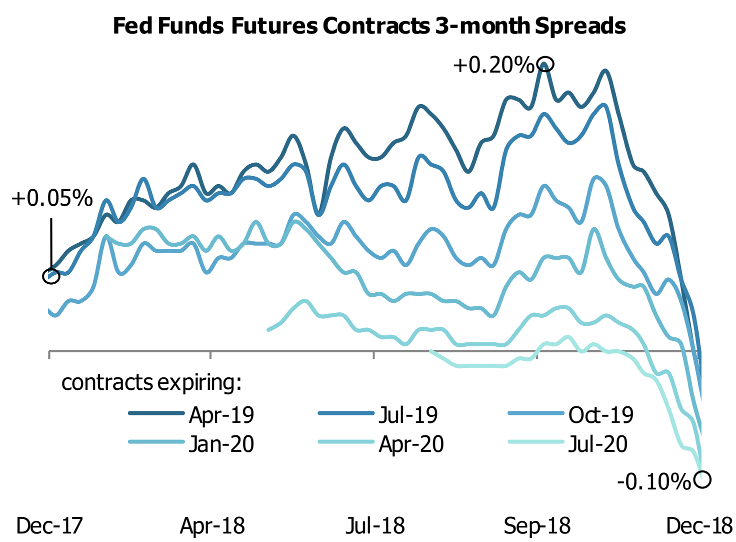
Blmbg Barclays	4Q18	2018
Aggregate	1.64%	0.01%
Short Gov't	0.73%	1.74%
Interm. Gov't	2.22%	1.43%
Long Gov't	4.16%	-1.79%
TIPS	-0.42%	-1.26%
Municipal	1.69%	1.28%
Interm. Credit	0.75%	0.01%
Long Credit	-1.64%	-6.76%
High Yield	-4.53%	-2.08%
MBS	2.08%	0.99%

Throughout 2017 and through the first three quarters of 2018, credit spreads remained neatly range bound with aggregate high yield spreads bouncing between roughly 3.25% and 4.00% [ICE BAML HY Master II OAS]. High yield spreads closed the year at 5.33%, widening more than 200 basis points during this challenging quarter. However, we are still well short of the 9% resistance level that has been tested first in 2011 and then again in 2016. Supply is backing off as demand wavers. For the first time in 10 years, high yield issuance was close to zero in December, at just $594 million. Overall, issuance for corporate investment grade and high yield debt came in well below expectations, at 74% and 20%, respectively, of what came to market during the same period last year.

Investment grade credit spreads widened as well, but generally not enough to offset decreasing treasury rates. The BBB OAS spread increased from 1.43% to 2.02%. The Bloomberg Barclays Intermediate Credit index posted a positive return for the quarter and (just barely) year. TIPS, however, continued to lag every area of the fixed income markets not exposed to long duration or high yield spreads. The 5-year TIPS real yield rose 9 bps and the 10-year by 7 bps.

Another interesting turn in fixed income markets happened in the fourth quarter that may shed light on the anomalous kink appearing around the 1-year key rate in the yield curve. At the beginning of the year, Fed Funds futures contracts started pricing in greater and greater likelihood that the Federal Open Market Committee (FOMC) would vote to increase the target overnight rate multiple times in 2019.

While in 2017 and 2018 the FOMC acclimated investors to the expectation of exactly one rate hike of 25 basis points each quarter, it seemed the end may have been farther off than originally expected. At the beginning of the fourth quarter, the market was pricing in better-than-even odds that the FOMC would continue this trajectory through the middle of 2019. Now the market is pricing in no chance of a hike. The odds have already turned to favor a rate decrease as the next major move in monetary policy.

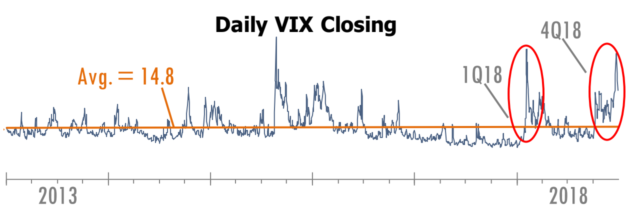


The US Stock Market

US Stock Indices - Total Returns					
Large-cap Stocks	**4Q18**	**YTD**	**Mid-cap Stocks**	**4Q18**	**YTD**
S&P 500	-13.52%	-4.38%	S&P Midcap 400	-17.28%	-11.08%
Russell 1000	-13.82%	-4.78%	Russell Midcap	-15.37%	-9.06%
Growth	-15.89%	-1.51%	Growth	-15.99%	-4.75%
Value	-11.72%	-8.27%	Value	-14.95%	-12.29%
Broad Markets			**Small-cap Stocks**		
S&P 1500	-13.97%	-4.96%	S&P Smallcap 600	-20.10%	-8.48%
Russell 3000	-14.30%	-5.24%	Russell 2000	-20.20%	-11.01%
Growth	-16.33%	-2.12%	Growth	-21.65%	-9.31%
Value	-12.24%	-8.58%	Value	-18.67%	-12.86%

US stocks ended 2018 with a quarter of double-digit negative returns across all major indices. This erased any prior 2018 gains and resulted in solidly negative returns for the full year. As the quarter progressed, investors were no longer able to push aside anxiety from trade wars, slowing growth, stretched valuations, a less accommodative Fed, and a host of geopolitical concerns.

Ultimately, 2018 was one for the record books. Among other notable occurrences, one of the longest bull markets in history ended when the Nasdaq entered bear market territory on December 21, joining several other indices, including the Russell 2000, the Dow Jones US Total Stock Market, and the Dow Jones Transportation Average. Dominating and driving much of the Nasdaq and other bellwether index outperformance in prior quarters, the FAANG stocks had a rocky Q4 with returns ranging from -13% for Google-parent Alphabet to -30% for Apple. Often seen as proxies for investor sentiment given their size, the FAANG's sharply negative 4Q returns may be signaling a momentum shift for these and other former growth-drivers. However, the year was not without records of the positive kind. On the day after Christmas, the Dow Jones Industrial Average posted a 1,000-point single-session gain for the first time, while the S&P 500 and the Nasdaq each had their largest one-day percentage gains since March 23, 2009 [Dow Jones Market Data].



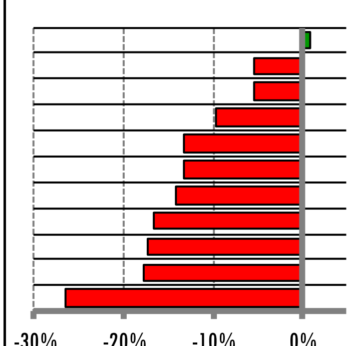
The Q4 entrance of the Russell 2000 into bear market territory was, perhaps, even more remarkable given the strong performance of small cap stocks in the first half of 2018. Seen as better-insulated from potential trade war fallout due to a greater focus on domestically-sourced revenue, small cap stocks enjoyed a lead over their large- and mid-cap counterparts that began in Q1 and expanded through Q2. As the veracity of this perception was questioned and the calendar progressed, investor risk-off sentiment and a heightened focus on balance sheets, where small-cap companies typically carry more leverage than their large-cap peers, resulted in a sizable drawdown.

The case for strong fundamentals in the large-cap space took a hit in December when 2019 earnings forecasts on more than half the companies in the S&P 500 were cut by analysts citing higher labor and materials costs, the roll-off from 2017 tax cuts, and deteriorating economic growth abroad. About 37% of revenues in S&P 500 companies come from outside the US. While profits are still predicted, 2019 earnings growth is now expected to slow to 7.8%, down from a September forecast of 10.1%. This rate marks a fairly large drop from estimated 2018 earnings growth of 22% [FactSet].

Volatility returned with a vengeance in the Q4. The bookending of 2018 with exceptionally volatile quarters led to the steepest 1-year advance of the CBOE Volatility Index (the "VIX") in its history [The Wall Street Journal]. While rising interest rates appeared to be the root of the February rout fueling Q1 volatility, the Q4 list of drivers expanded to include a litany of concerns including a partial US government shutdown.

Energy was the worst-performing sector for a second consecutive quarter and for the year, as a recovery in oil prices stalled. After hitting multi-year highs in October, prices fell, ostensibly over a potential supply glut. With the price of crude oil down about 38% in Q4, companies in the energy sector may impact the magnitude of any 2019 deceleration in corporate earnings. If this materializes, investors will need to determine whether declining oil prices are actually a portent of global economic slowness. While faring better on a full-year basis, the tech sector also posted dismal Q4 returns as investors took into account continuing reports of China's economic headwinds. Traditionally considered a safe haven in volatile markets, the utilities sector was the only one to post a positive return in Q4 with its dividend-paying compatriot health care joining it in the black for the full year.

S&P 1500 Economic Group Components - Total Returns



Sector	4Q18	2018
Utilities	0.98%	4.41%
Consumer Staples	-5.47%	-8.33%
Real Estate	-5.50%	-3.39%
Health Care	-9.60%	6.71%
Comm. Services	-13.20%	-12.10%
Financials	-13.36%	-13.03%
Materials	-14.10%	-15.89%
Consumer Disc.	-16.68%	-0.97%
Information Tech.	-17.33%	-0.75%
Industrials	-17.77%	-13.38%
Energy	-26.41%	-19.31%

Source: Standard & Poor's

International Markets

The fourth quarter capped a tumultuous year for global markets. Geopolitical concerns over a drawn-out trade war along with the prospects for lower global growth and recession fears sent shudders through global markets in December. Regionally, developed and emerging markets finished the quarter, and the year, in negative territory.

Europe

As the year wound to a close, already jittery global markets reacted to a spate of disappointing news on the world economy. Financial conditions continued to tighten with the US continuing its methodical increase of the Fed Funds rate. The ECB reaffirmed its plan to end the asset-buying program from its quantitative-easing strategy in December, provided that data indicated inflation remains on track to eventually meet its target. The ECB left its deposit rate unchanged at -0.4% in October and repeated that they will remain at present levels "at least through the summer of 2019." The central bank also said it intends to continue reinvesting the principal payments from maturing securities purchased under its bond-buying program for an extended period beyond the end of its purchases.

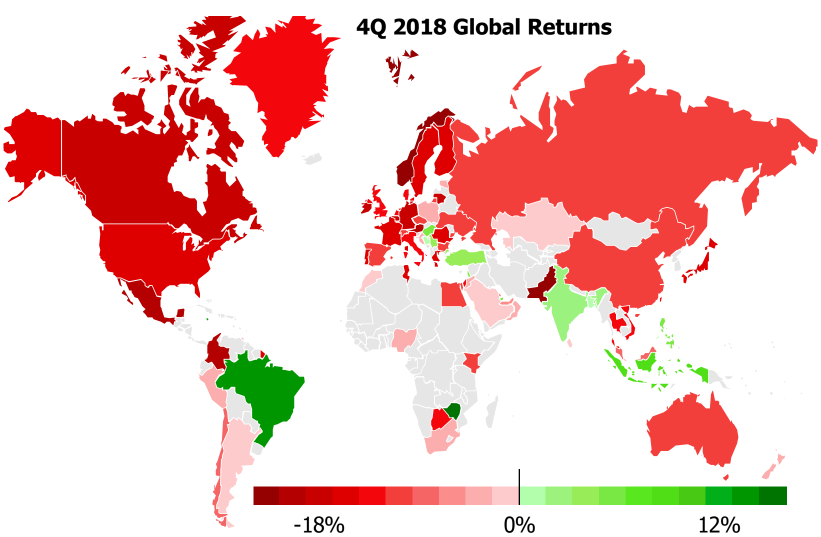
Foreign Stock & Bond Indices - Total Returns

MSCI Broad Indices	4Q18	2018	Barcap Global Indices*	4Q18	2018
MSCI ACWI ex-US	-11.46%	-14.20%	Global Aggregate	1.20%	-1.20%
EAFE (Developed)	-12.54%	-13.79%	Pan-Euro	-0.71%	-4.67%
Emerging Markets	-7.47%	-14.58%	Asian-Pacific	4.27%	2.69%
			Eurodollar	1.17%	0.65%
MSCI Regions			Euro-Yen	2.70%	3.96%
Europe	-12.72%	-14.86%	Other Currencies	-5.88%	-1.67%
Japan	-14.23%	-12.88%	** Unhedged*		
Pacific ex-Japan	-7.94%	-10.30%			
Latin America	0.36%	-6.57%			

The euro area financial environment became more challenging in the second half of the year according to The Financial Stability Review (FSR) of the ECB. On the positive side, euro area financial stability was supported by a strengthening economy and an improved banking sector. In addition, volatility events did not result in a contagion spreading to the broader global financial system. However, downside risks to the global growth outlook exist as a resurgence in protectionism and stress in emerging markets remain. Political and policy uncertainty related to public spending plans increased during the FSR review period.

According to the ECB's December Economic Bulletin, long-term risk-free rates have declined due to heightened geopolitical uncertainty and a perceived deterioration in the macroeconomic outlook since September 2018. Euro area sovereign bond spreads remained largely stable, with the exception of those for Italy, which exhibited considerable volatility. In October, the yield on the 10-year Italian government bond rose 14.7 basis points to 3.57%, a four-year high, after trading as high as 3.63%. The yield premium demanded by investors to hold Italian bonds over the 10-year German bund widened by 18 basis points to nearly 3.03%, the widest spread in the last five years. Also in October, Italy unveiled a target for its 2019 budget deficit of 2.4% of GDP, three times as large as the previous government's target. The spreads between Italian and German bond yields came back in after longer-term projections showed the deficit target falling in 2020 and 2021, though economists argued that accompanying growth projections were overly optimistic.

Further, additional risks to financial stability exist with a non-orderly Brexit. December brought no relief as Parliament would not agree to an exit deal. Britain's government announced contingency plans for a disorderly departure from the EU. Concern exists that a chaotic Brexit could clog ports, hurt factory production, and disrupt food and medical supplies as the March 29 deadline approaches. The government still expects to secure an agreement that would allow a nearly 2-year transition period during which not much would be different than current terms.



Euro area real GDP increased by 0.2% during Q3, following growth of 0.4% in the previous two quarters. Data and survey results were weaker than expected, reflecting shrinking external demand and possibly suggesting slower growth momentum ahead. However, domestic demand, backed by accommodative monetary policy, continues to support some level of economic expansion. The strength of the labor market, as reflected in employment gains and rising wages, continues to support private consumption. Business investment is benefiting from domestic demand, favorable financing conditions and improving balance sheets. Residential investment remains robust. In addition, the expansion in global activity is still expected to continue, supporting euro area exports, although at a slower pace. Projections for the euro area are for real GDP to increase by 1.9% in 2018, 1.7% in 2019, 1.7% in 2020 and 1.5% in 2021. Compared with the September 2018 ECB staff macroeconomic projections, the outlook for real GDP growth has been revised slightly down in 2018 and 2019.

The EU's largest economy, Germany, unexpectedly shrank 0.2% in Q3. It was the first quarterly contraction since 2015, with the drop in growth linked to a number of issues including US protectionism, US monetary policy tightening, and Brexit-related uncertainty. In addition, the 25% increase in oil prices between April and early October hurt consumer spending. Too early to signal a trend, worries still abound with implications for the rest of Europe if the main growth engine starts to sputter given local (Italy) and broader (US-China) geopolitical tensions.

Americas

Brazil's economy grew an estimated 1.3% in 2018, and is forecast to expand 2.6% this year, according to a survey by Brazil's central bank. The economy returned to growth in 2017 following a deep two-year recession. President Jair Bolsonaro's new government, elected in October, plans to impose changes to the economy intended to boost sluggish growth, while signaling plans to cut the deficit in part by scaling back Brazil's pension system which generated a deficit projected to reach $57.2 billion in 2019, up from an estimated 202.4 billion deficit in 2018.

The government also plans to boost economic growth by opening up the country's closed economy to international trade, selling some state-owned assets, simplifying the country's complex tax structure and easing government regulation. US Secretary of State Mike Pompeo met with the new president and discussed security and economic ties, as well as transparency and good governance as necessary to investment in the region.

President Andres Manuel Lopez Obrador took office in Mexico. His government raised the minimum wage, effective January 1, by 16.2%, a third consecutive year after 10% increases in January and December of 2017. The minimum wage rose to 102.68 pesos ($5.10) a day from 88.36 pesos. Along the northern border with the US the minimum daily wage doubled to 176.72 pesos ($8.80). Mexico's low wages were an issue in last year's negotiations to redraw the North American Free Trade Agreement. They were viewed as unfair competition that was luring manufacturers out of the US to Mexico. The Bank of Mexico, when raising interest rates in November, warned that wage increases that are above gains in productivity are a risk for inflation, which is currently above the bank's 3% target at 4.7%.

The pace of economic growth in Canada slowed in Q3 as business investment spending fell and growth in household spending slowed. The Canadian economy grew at an annualized pace of 2% in Q3 compared with 2.9% in Q2, meeting analysts' expectations. However, economists felt the economy showed troubling signs of weakness, noting it ended the quarter on a weak note. The Bank of Canada raised its key interest rate target in October to 1.75%, its highest level in nearly a decade. Investor expectations were met when the central bank kept the key rate unchanged at its final meeting of the year in December, but predictions are that it will likely raise it in January.

Asia

China's growth slipped to 6.5% in the Q3, the lowest since 1Q 2009. A slowdown in China's economy is impacting a previously reliable growth driver – the Chinese consumer. During the fourth quarter, consumers had been under financial pressures. Gasoline prices shot up nearly 14% in the January-to-November period from a year earlier. Healthcare costs rose 4.5% in the same period, more than twice the rate of consumer inflation. Housing prices in 70 cities on average were up more than 10% in November from a year earlier. As a result, consumers have pulled back spending. Retail sales moved downward most of the year, with growth decelerating to 8.1% in November, the lowest level in more than 15 years.

The critical manufacturing sector also appears to be slowing. The government reported that the official manufacturing purchasing managers index fell to 49.4 in December – below 50.0, the threshold between expansion and contraction. The December reading was the lowest in nearly three years. Weakness in factory activity added to a growing number of indicators showing a Chinese economy that is struggling with weak demand at home and the effects of a global slowdown and the protracted trade fight with the US.

In order to prevent further slowdown, Chinese leaders pledged more tax cuts and other support measures at an annual economic policy meeting in December. A turnaround will not likely be quick given the chronic nature of the deceleration.

In Japan, the economy fared worse than initially reported in Q3 as strong typhoons and a powerful earthquake severely disrupted economic activity. Manufacturing PMI averaged slightly higher in Q4 than in Q3, with business confidence among large manufacturing firms steadier. The Tankan survey, an economic survey of Japanese businesses conducted by the BoJ, showed that large firms are planning to increase capital spending in 2019. In December, the government unveiled a tax reform package aimed at alleviating the consequences of a consumption tax hike scheduled for October 2019. The government also presented the budget for FY 2019, which will top ¥100 trillion ($890 billion) for the first time, highlighting the government's difficulties in reining in public spending.

The BOJ remains committed to its monetary easing policy, but is expected to weigh global economic and financial market uncertainty at their next meeting in January. Policymakers are expected to consider downgrading their inflation outlook to reflect lower crude oil prices, cuts in mobile phone fees and an expansion of free schooling. The bank is expected to lower its fiscal 2019 forecast for consumer price growth to 1% from a 1.4% projection in October. The October projection did not include the impact of the anticipated October consumption tax hike.

Worries remain that a lower inflation outlook will dampen consumer expectations of higher prices. When oil prices crashed in fall 2014, the central bank increased its stimulus to counteract similar sentiment. However, Japan's ultraloose monetary policy has lasted for more than five years without achieving its 2% inflation goal. The lengthy fight against deflation has undercut banks' earnings and has impacted the function of the bond market. Given these unanticipated side effects, the central bank appears to be cautious about deploying additional easing.

Focus On: Peering Into Peer Groups

In our 2Q 2018 *Focus On: Benchmarking Your Benchmarks*, we explored the importance and utility of benchmark indices in evaluating and monitoring investment funds. Analogous to a botanical sketch that effectively communicates the salient characteristics and ideal qualities of fruit, benchmark indices provide models for investment managers to follow as well as yardsticks for investors with which to measure them. While benchmark indices are critical to the transparent management of investors' money, much like a botanical sketch, they lack the three-dimensionality of something investible.

To understand why this would be important, imagine a trip to the supermarket. You are more likely to find oranges resembling those pictured here to the right than those in the sketch above. They aren't perfect spheres, nor do they glisten with uniformly pristine coloration in the sweet morning dew. Yet, they taste a lot better than paper. They may have been grown in the same orchard or in groves thousands of miles apart. What matters to the grocer is that they will be sold for the same price and that customers will be able to use and enjoy them interchangeably.

In the world of institutional investment, 401(k) Plan investment lineups are offered with these same considerations. Each investment option is monitored against a category of institutionally-priced funds participants could use and enjoy interchangeably (i.e., a "peer group"). Except for brokerage windows, through which participants do their own shopping and cooking, most plan participants enjoy a full-service-dining experience where the prodding, sniffing, poking, and sampling of produce is left to those behind the scenes.

Defining a Peer Group

Peer groups, much like benchmark indices, are a useful tool for prodding and poking investment managers and one that everyone should apply. All you need to form a peer group is a collection of investment strategies with substantially the same investment universe and similar biases or restrictions. They can be a mix of different vehicles (e.g. mutual funds and collective trusts), that track different indices (e.g. S&P 500 and Russell 1000), and exhibit widely differing characteristics (e.g. high fees and low fees, large number of holdings or a concentrated portfolio).

The key is to avoid mixing two opposite types of funds to make up a larger peer group. For example, a large cap core peer group should have only large cap core funds and not large cap growth combined with large cap value funds.

Establishing a Peer Group

The selection of a peer group is often straightforward. Lipper, Morningstar, and eVestment each maintain sets of more than 40 pre-defined peer groups to cover the broad universe of institutional investments, including mutual funds. Other financial services providers maintain niche peer groups to serve a more specific need, such as Hueler for stable value or ODCE for real estate. Given a peer group provider, the choice of which peer group to use is simply a matter of finding the peer group to which the fund belongs. If a peer group is listed on the fund's prospectus or other public disclosures from the investment manager, this can be a strong indication of the most appropriate choice.

If a narrower or more selective peer group is desired, additional screening can be applied. For example, the group could be limited to institutional share classes or funds above a certain size. In addition, a peer group can be formed simply from funds that use the same index (or indices) as a primary benchmark. This can be useful when focusing on a trait that is captured by a specific index (or set of indices). For example, global bond funds can be divided into those that benchmark to a world government bond index or a global aggregate bond index; or, they can be categorized as benchmarked to a hedged or unhedged foreign currency index.

Complexities

Establishing a peer group is deceptively straightforward and presents a few pitfalls. Investment managers experience a conflict of interest when selecting indices and peer groups for their strategies as they may be tempted to focus on those that may be less appropriate if they will be easy to outperform. Sensoy (2009) shows how this principal-agent problem manifests itself in the US domestic equity mutual fund industry. He finds that among funds self-identifying with a particular S&P or Russell index, 31.2% have a better match with a different Russell or S&P index. This discrepancy demonstrates the importance of independently vetting the manager's chosen peer group or, when establishing a custom peer group, looking beyond the manager's preferred benchmark index.

One alternative is to find the best-fit index for each fund. A best-fit index can be determined from a regression (R-squared) of a fund's returns against those of potential benchmark indices. Maximizing R-squared or correlation can be balanced with targeting a beta of 1 and minimizing tracking error. Holdings-based analysis complements performance-based analysis for more robust results.

Although easy to overlook, all of these methods suffer a common flaw. Peer groups are formed from strategies in operation today to generate trailing returns over a historical period that includes strategies now defunct. Exclusion of those strategies produces a "survivorship bias." Since strategies that perform poorly are more likely to close, survivorship bias tends to inflate peer group returns.

At the same time, strategies with recent inception dates and short track records may be excluded. This creates a "backfill bias" and similarly inflates the peer group returns. While there is no way to correct these biases when using a trailing median return, we can estimate the impact of the biases from the difference in trailing average returns between a peer group with only active funds and a peer group that includes funds that have ceased operation.

Using data from CRSP, we were able to estimate survivorship bias in a number of categories. As expected the bias increases exponentially, not linearly, with time. The scale of survivorship bias also seems to depend on the magnitude or volatility of returns of the category as well.

Survivorship Bias in Mutual Funds

Peer Group	Trailing Period Bias† 3y	5y	10y
US Short-Term Govt	0.01%	0.06%	0.36%
Core-Plus Bond	0.02%	0.08%	0.33%
International Bond	0.02%	0.23%	1.05%
EM Debt	0.17%	0.34%	0.99%
Equity Mkt Neutral	-0.23%	0.17%	0.81%
Global Large Value	0.07%	0.23%	1.13%
International Value	0.03%	0.05%	1.19%
International Growth	0.02%	0.08%	1.07%

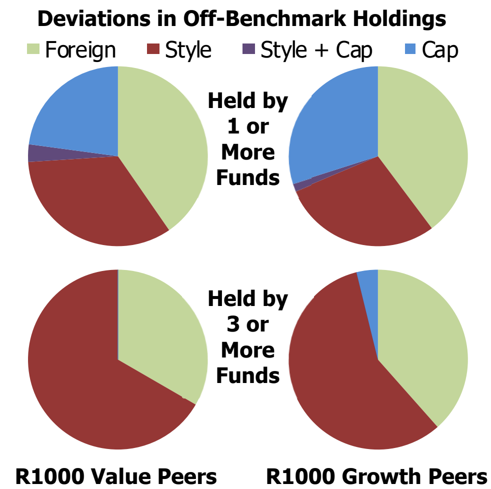
† Difference in average annualized returns between peer groups with and without funds no longer active

Applying Peer Groups

Peer groups are useful for defining normal ranges or expectations within an investment category. A benchmark only provides a single data point for metrics and no data points for benchmark-relative measures or real-world practicalities. Peer groups illustrate how frictional costs, operating costs, cash drag, tax effects, securities lending yields, tracking error, etc. can impact investment strategies.

Peer groups also can be especially helpful in understanding what off-benchmark allocations are normal. For instance, in 2015, eight of the top-twenty (by AUM) US large cap growth funds held positions in Canada-based pharmaceutical company Valeant (now Bausch Health), ranging up to almost 5% of assets. For a time, those holding Valeant stock were rewarded. But then prices fell precipitously in 2015 amid accounting irregularities, with the stock losing three-quarters of its remaining value in the first quarter of 2016. US equity funds exposed to Valeant suffered noticeable off-benchmark losses for four consecutive quarters, but, on a peer group basis, at least they weren't alone.

Finally, there are things we trust the benchmark providers to decide where reliance on the investment managers may make more sense. For example, while large-cap and small-cap stocks lie on a clear scale and a Canadian company is definitely not a US company, what counts as a growth stock or a value stock is much more philosophical. Investment managers seem to agree. In examining the twin peer groups of funds benchmarked to the Russell 1000 Value and Russell 1000 Growth, off-benchmark allocations appear to be split fairly even across region, style and market cap. However, where off-benchmark holdings are shared by multiple funds, they tend to assert style.



Note: Peer Groups include the top 15 funds by AUM

Delving Deeper

Academic research shows peer groups may provide even greater utility in identifying funds that will outperform in the future. In a 2009 article (revised in 2013), an "active peer benchmark" is described that works as an additional variable to supplement a multi-factor model regression like the popular Fama-French or Carhart models. The active peer benchmark represents the common idiosyncratic risk-taking within a peer group and is modeled by simply using the peer group returns. Fundamentally, it makes sense that managers within a peer group will tend to make similar security or sector bets as they rely on common information and training and may have even read the same books and taken the same courses on financial markets. The fact that managers are able to express these consensus peer views more strongly or weakly, as they choose, acutely describes a factor exposure. The authors of the paper were able to demonstrate that factoring out the active peer benchmark beta significantly improves the identification of skilled and unskilled fund managers within several equity and bond fund peer groups.

More recently, a 2016 paper examined peer groups under cluster analysis of returns. Funds with more unique return profiles posted greater future net-of-fee performance than other funds in their respective peer groups, despite charging higher expenses, on average. On the downside, unique funds also tended to show more persistent underperformance, seemingly due to slower outflows as they underperform. Fund uniqueness was further found to be positively correlated with higher turnover, higher tracking error, higher active share, shorter track records, and smaller AUM. Although the authors could not isolate the drivers from the coinciders, they did find uniqueness was a more statistically significant factor.

Finding Answers

Peer group benchmarks provide answers that benchmark indices cannot. They demonstrate a normal range and central median which investors can hold their investment managers to and intelligently decide whether their money is being managed according to the mandate given while adding value commensurate with the level of fees. At times, peer groups are forgiving. They can shed light on pervasive challenges within a specific area of the financial markets. Peer groups can also be condemning. Even if a strategy does well against its benchmark index, if it places within the bottom quartile of its peer group, it begs asking if so many similar funds performed better, why not invest in one of them instead? Well, because peer groups have their limits too. Over shorter time periods, they measure luck more than skill. At longer periods, survivorship bias and backfill bias degrade the data.

The obvious solution is to benchmark your investments against both peer groups and indices due to their complementary strengths. An index is an "idealized" benchmark, like that perfect orange, which has a number of advantages – particularly for defining a mandate (for investors and consultants) or managing a portfolio. Its characteristics are known in advance, which makes it more useful for management purposes. And, it can be used to measure multiple characteristics at once (e.g., return and risk) and to further diagnose performance issues more readily than peer groups. However, there are many things that cannot be benchmarked through indices, either because they are real-world phenomena (e.g., fees, trading costs) or because there is not an investible index available (e.g., stable value, private real estate). More passively-managed funds may derive greater benefit from index comparisons and more actively-managed funds may find applicable comparisons in peer groups. However, both are useful; both are worth having.

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