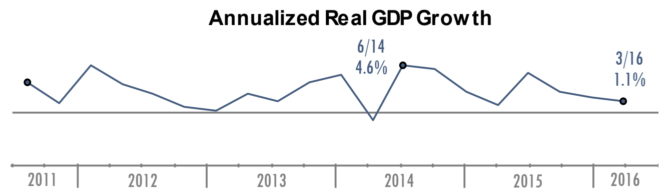
Bellwether
CONSULTING

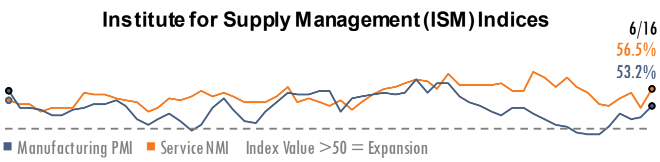
Your Quarterly Update on the Financial Markets
June 30, 2016

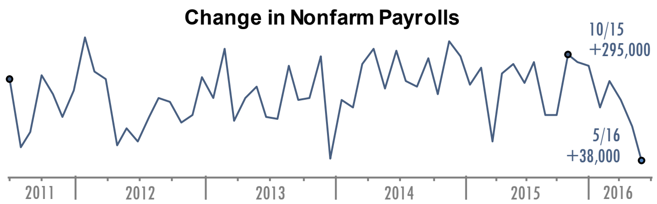
MARKET Recap

The US Economy: "Strong Burden of Proof"



US economic growth leveled off at a tepid 1.1% pace in Q1, driven in part by slowing personal consumption expenditures (particularly for durable goods) and nonresidential business investment. Volatile market conditions early in the year made it fashionable to postpone long-term purchases. A contraction in defense spending also depressed the quarterly number; as we've discussed before, defense spending patterns and related accounting practices can meaningfully distort short-term measures of economic activity. On the other hand exports increased as the US dollar fell, adding to growth.

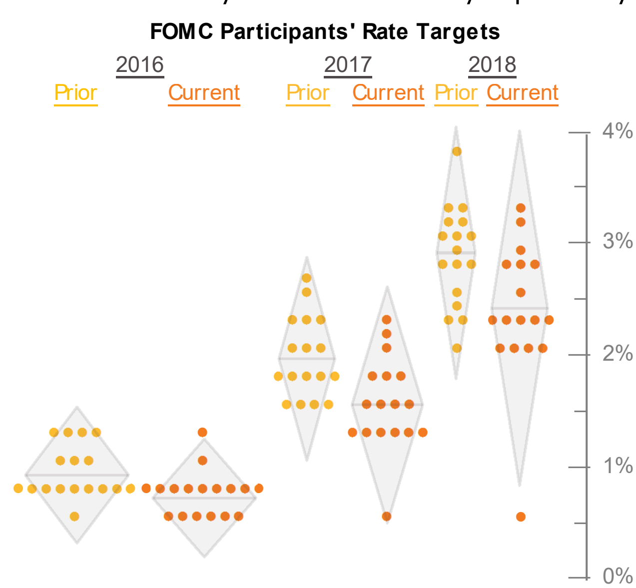




Manufacturing and service-sector measures of economic activity in Q2 were up and mostly trending higher through June. Goods inventories continued to contract, albeit at a slower pace. Commodity prices kept firming up off of their December lows, and consumer price inflation held steady at 1.6% as measured by the personal consumption expenditures index.

Based on this data alone, one might have expected the next installment of Fed tightening to be in the books, doubling the nascent short-term rate of interest. Rather, the quarter ended with no policy action and (quite literally) historic lows across much of the yield curve. Hysteria associated with the "Brexit" event is cited by some as the proximate cause. However, the 30-year treasury yield traded as low as 2.39% a week before the momentous vote, climbing to a lofty 2.55% the day of, before falling to 2.30% at quarter-end (dispatching its previous record low of 2.25% on July 1st). As of press time global equity markets outside of the UK have recovered most of their Brexit losses, yet long yields have moved lower still.

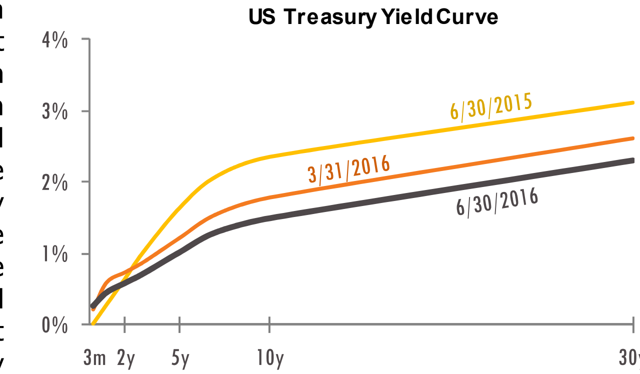
It is principally our central bank, not Her Majesty's subjects, we have to thank for this latest below-the-belt shot to savers and pension sponsors. Their *worry du jour* is employment, in particular the weak May jobs report. Following strong gains in Q1, only 38,000 net new jobs were added to payrolls in May. We would note that monthly payroll numbers are much more volatile than the unemployment rate itself, as the graph shows – and that the May number was heavily impacted by the Verizon strike, causing the telecom sector to contribute a net loss of 37,000 jobs. (The strike ended June 1st.)



Yet concern over the jobs number, as a proxy for the disappointing overall rate of post-recession growth, figured heavily in Ms. Yellen's press conference and the minutes of the June 15th meeting of the Federal Open Market Committee. Between the prior meeting in April and the most recent meeting, the Committee as a whole (and one participant in particular) developed reservations about the speed of rate normalization. It did not take much to make that happen.

That is the key, we believe, to understanding this Fed. It isn't that they view current monetary policy as optimal for the long term. Rather they are very, very sensitive to the possibility that a policy "mistake" might precipitate a short-term economic slowdown or a sell-off in equities and other inflated assets. Normalization of rates seems to bear a strong burden of proof, while only a small amount of bad news or uncertainty justifies continuation of highly abnormal monetary policy by historical standards.

The US Bond Market

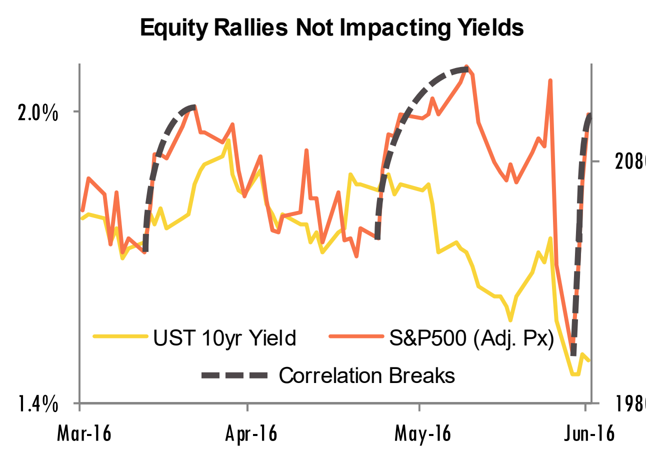


Coming off the volatile first quarter, US Treasuries settled into a comfortable range as credit spreads tightened. Some excitement entered the markets leading up to the UK's European Union referendum, but with prognosticators generally in agreement on an outcome of remain, the shock of leave's pyrrhic victory incited overnight trading that touched the mid-2012 floor of 1.45% on the 10-year. While lower long-term yields have been on-trend for many quarters now, Q2 demonstrated that yields at the front end of the curve still have room to drop as well – a small comfort to those market timers with a short duration bias. To the casual bond observer, the overwhelming strength of bonds against other asset classes this year may appear at odds with a Fed that is supposedly on pace to continue a rate hike from last December. With the normalization of monetary policy waiting for Godot – or Guffman, for those under 40 – fed-funds futures are pricing in less than even odds on a rate hike until well into 2018. Fed-funds futures for the month of October hit a high of 99.710 immediately following the EU referendum, implying an expected average overnight rate of just 29 basis points. This works out to a roughly 34% chance of the Fed *reversing* its first hike by the September FOMC meeting. By quarter-end, fed-funds futures were priced close to 99.625 firmly into 2017.

US Bond Indices - Total Returns		
Barcap Indices	**2Q16**	**YTD**
Aggregate	2.21%	5.31%
Interm. Gov't	1.24%	3.55%
Long Gov't	6.37%	14.94%
TIPS	1.71%	6.24%
Municipal	2.61%	4.33%
Interm. Credit	2.12%	4.88%
Long Credit	6.65%	13.92%
High Yield	5.52%	9.06%
MBS	1.11%	3.10%

Brexit shook up the high yield market as well, pushing spreads out 74 bps to 6.57% in the span of two days. A subsequent rally through the end of June clawed back half of this amount to end the quarter at 6.21%, or 84 bps lower than where Q2 began (BAML US HY OAS). Investment-grade spreads narrowed by 8 bps to 1.62% (BAML US Corporate Master OAS). Investment-grade corporate bond issuance was markedly busy at $177 billion in May, in between softer issuance of $87 billion each for April and June. Although slightly behind the prior quarter's volume, 2016 is on a firm track to post a record high for the fourth consecutive year. High yield issuance returned to solid footing this quarter after experiencing three straight quarters of tepid activity. Despite tailing off in the second half of June, new issuance rose to $85 billion from $36 billion last quarter.

With both credit and duration producing strong gains, there were few areas of weakness in US fixed income markets. Fixed-rate MBS underperformed due to an expected rise in prepayments. For the week ending June 30th, both 30-year and 15-year fixed mortgages posted rates just over one-eighth of one-percent above historic 2012 lows (FMCC). TIPS also fell short of the broader US bond market under the context of a mild May CPI report released in mid-June.



Correlations between US Treasury yields and US equity prices were strong in stretches over the quarter, but broke down during most equity rallies – a boon for investors. Yields stood their ground in the face of Q2's largest stock market rallies. This also occurred in late-January when a 4% S&P 500 bounce coincided with a 7 bps decline in the US 10-year treasury yield. In 2015, such assymmetric correlation was a relatively rare occurrence. This recent phenomenon points to especially strong, and strengthening, demand for US fixed income securities. Overseas foreign benchmark rates, such as German Bunds and Japanese Government Bonds, are firmly entrenched in negative territory. Until this abates, expect high-quality liquid US debt with substantially positive yields to continue to attract global assets.

The US Stock Market

US stocks posted a strong Q2, despite a large uptick in volatility in the last weeks due to concerns around Brexit. Accommodative inaction from the Fed, earnings exceeding expectations, and higher commodity prices were the main drivers of equity returns this quarter. While corporate earnings beat analyst expectations for 73% (long-term average of 63%) of the S&P 500 constituents, they declined 5% YoY. Most of the decline was from the energy sector which has suffered from sustained low prices. On a more positive note, revenues for the index constituents only fell by 1.7% YoY.

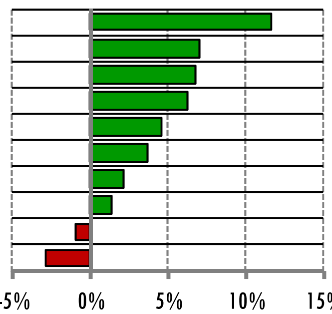
Across market capitalization segments there was little disparity in performance. Largecaps modestly underperformed their mid-cap and smallcap peers. The same could not be said for style categorization however. Value stocks significantly outperformed their growth counterparts, but to a lesser extent among small-caps. This effect continued to be driven by investor demand for more stable, dividend-focused sectors which typically have lower growth characteristics.

US Stock Indices - Total Returns

Large-cap Stocks	2Q16	YTD	Mid-cap Stocks	2Q16	YTD
S&P 500	2.46%	3.84%	S&P Midcap 400	3.99%	7.93%
Russell 1000	2.54%	3.74%	Russell Midcap	3.18%	5.50%
Growth	0.61%	1.36%	Growth	1.56%	2.15%
Value	4.58%	6.30%	Value	4.77%	8.87%
Broad Markets			**Small-cap Stocks**		
Russell 3000	2.63%	3.62%	S&P Smallcap 600	3.48%	6.23%
Growth	0.80%	1.14%	Russell 2000	3.79%	2.22%
Value	4.57%	6.29%	Growth	3.24%	-1.59%
			Value	4.31%	6.08%

At the sector level, outperformers included energy, telecom, and utilities. Energy stocks moved to the top of the pack as companies continued to cut capital expenditures and the price of crude oil climbed (+30.67%). Recent price increases have been the result of a normalizing supply/demand imbalance as production slowed amid declining rig counts and other idiosyncratic events in conjunction with a weakening US dollar. The energy sector story should be an interesting one in the near term, as the US dollar may gain strength due to Brexit turmoil and capital expenditure cuts should slow.

S&P 500 Economic Group Components - Total Returns



Sector	2Q16	YTD
Energy	11.62%	16.10%
Telecom	7.06%	24.85%
Utilities	6.79%	23.41%
Health Care	6.27%	0.42%
Consumer Staples	4.63%	10.46%
Materials	3.71%	7.46%
Financials	2.12%	-3.05%
Industrials	1.40%	6.46%
Consumer Discret.	-0.91%	0.68%
Info. Technology	-2.84%	-0.32%

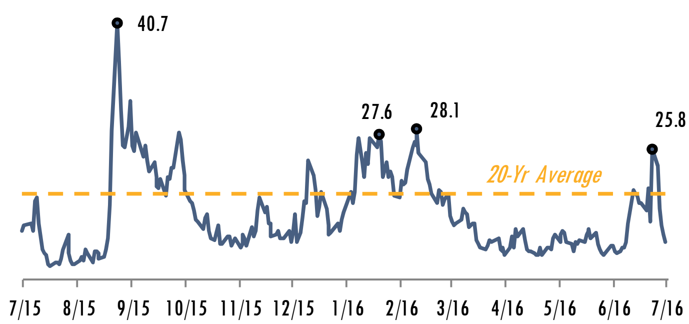
Source: Standard & Poor's

Among utility and telecom companies, the story remains the same from last quarter. Their stable, high-dividend stock characteristics have been favored by investors looking for lower-risk equity exposure and/or competitive sources of income. As long as this perfect storm of excessive market uncertainty and declining bond yields holds, we should continue to see outperformance from these two sectors. Conversely, a reversal of both could lead to significant underperformance.

The consumer discretionary and technology sectors were the worst performers, both of which ended in negative territory. Rotation out of growth and into value stocks has affected these two sectors which typically include companies with less stable, but potentially higher, earnings growth. Within consumer discretionary, restaurant stocks were the largest driver of underperformance. A confluence of factors has led to poor results including slowing foot traffic from weak economic growth in Europe and Asia, increased US competition, higher food and healthcare costs, currency headwinds, and food safety issues. In the technology sector, hardware, internet software & services, and systems software were the largest industry detractors, however underperformance within each industry was mainly due to only one constituent. Apple (hardware), Google (internet software & services), and Microsoft (systems software) all fell on declining revenue or missed earnings estimates.

It is no surprise that equity markets experienced greater-than-usual volatility over the last 12-months. What is surprising is that the level of volatility (as measured by the VIX) around the recent Brexit vote is below levels seen in January and February when no major event was taking place. While the VIX is not intended to serve as a predictor of future market behavior, it is worth noting that equities may have not fully appreciated or disseminated the historic geopolitical event quite yet.

12-Month CBOE Volatility Index (VIX)



Overseas Markets

Volatility peaked a week before quarter-end as global markets were abuzz with the Brexit vote and its outcome. Global investors felt the impact of the vote, overshadowing existing issues in the eurozone and other developed and emerging markets.

Europe

In Europe there was a clear demarcation: pre-Brexit and post-Brexit. Pre-Brexit, all was well relatively-speaking, and the issues confronting the eurozone were unchanged: anemic growth, unemployment, debt overhang, Greece and the periphery. Lurking behind the usual problems were issues centered around debt in some of the core economies.

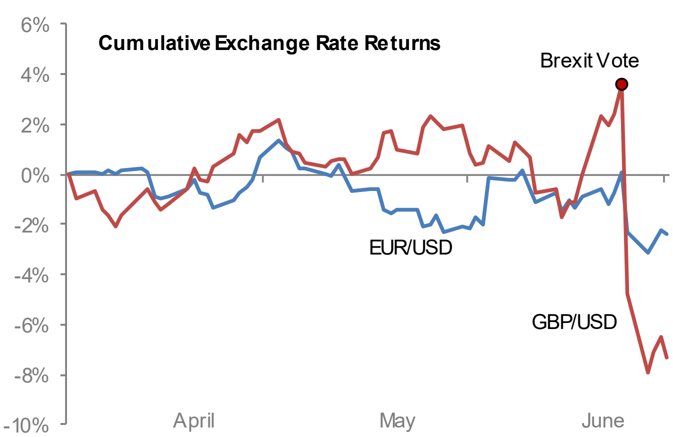
Foreign Stock & Bond Indices - Total Returns			
MSCI Broad Indices	**2Q16**	**Barcap Global Indices***	**2Q16**
World Index	1.01%	Global Aggregate	2.89%
EAFE (Developed)	-1.46%	Pan-Euro	-0.85%
Emerging Markets	0.66%	Asian-Pacific	10.38%
		Eurodollar	1.59%
MSCI Regions		Euro-Yen	9.64%
Europe	-2.69%	Other Currencies	-0.84%
Japan	1.01%	*Unhedged*	
Pacific ex-Japan	0.65%		
Latin America	5.31%		

France and Italy share slow growth, unemployment, and poor public finances, along with structural issues. Italian total debt (government, household and business) is around 259% of GDP, up 55% since 2007, while France's equivalent debt is around 280% of GDP, up 66% over the same period. These numbers exclude unfunded pension and healthcare obligations, as well as commitments to eurozone bailouts. Pre-Brexit Germany saw its 10-year bond yield drop into negative territory leading up to the vote. A sluggish global economy and fear regarding the outcome of the vote contributed to investors seeking the safety of German bonds, pushing yields down. The ECB has also been printing money to buy bonds as a means of combatting weak growth in the eurozone. Excess liquidity that has been sloshing around Europe looking for a home has not helped push rates up either.

Greece was also a pre-Brexit concern as the country tried to secure a fresh tranche of bailout money to keep it afloat. The Greek parliament approved a package of pension reforms and tax hikes ahead of a long-delayed review of its €86 billion bailout program agreed to last summer. Concluding the review is key to unlocking bailout funds, which are necessary to repay €2.3 billion to the ECB in July. In early June, Greek bond prices fell after the ECB said it hadn't decided about reintroducing a waiver that would allow the central bank to accept Greek bonds as collateral for refinancing operations. As a result, the yield on 10-year Greek debt rose to 7.35% and the 2-year yield rose to 7.37%. A waiver would be helpful to Greek banks in reducing their dependence on the costlier emergency liquidity assistance program.

The ECB met in early June and outlined a number of interventions. The Bank announced that it would start buying corporate bonds on June 8. A modest upward revision to the forecasted average inflation rate in 2016 (from +0.1% to +0.2%) was announced while the forecasted levels for 2017 and 2018 were left unchanged at 1.3% and 1.6%, respectively. Quantitative easing (QE) will continue until its scheduled end date of March 2017, longer if necessary. Inflation forecasts remain below their target of close to, but below 2%, which leaves the door open for an extension of the QE. ECB President Draghi noted that Q1 growth was strong, but he expected some slowdown in Q2. He further commented that the risks to growth remained to the downside, but that the balance of risks are starting to improve.

Post-Brexit was another story entirely. Everyone went to sleep on June 23rd thinking that when they awoke on the 24th the issues confronting Europe would be the same. But, the UK, Europe and the global markets awoke to a surprise with voters having stunningly voted to exit the EU. Global markets dropped between 3% and 9% on the Friday after the vote. Selling continued on the following Monday with global markets shedding another 2-5%. The British pound suffered its biggest sell-off in recent history, declining from $1.50 to $1.33 versus the US dollar, about a 9% fall. Later in the week the pound again fell sharply after Bank of England Governor Mark Carney said the central bank would likely need to further ease monetary policy this summer. A rate cut is expected in late July or August. Carney also hinted that other stimulus measures would be considered aside from cutting rates. With current overnight rates at around 0.50%, there's not much room for rate cuts. Carney has ruled out negative rates. Given that, the bank may need to resort to QE.

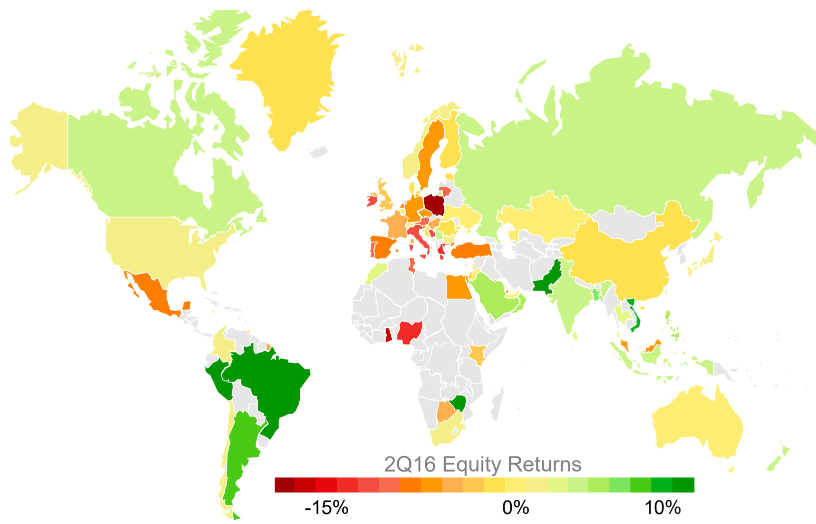


While the medium- and long-term implications are unclear, there will be an impact while Britain negotiates with individual EU members to strike trade agreements. There may be several years of uncertainty regarding the rules that will govern the UK's trade with the continent, about the fates of foreign workers in Britain and British workers abroad, and the country's political direction. This uncertainty may depress business formation, capital investment, and hiring. An economic slowdown in the UK could be accompanied by falling asset values (houses, commercial real estate, stocks) and an erosion of confidence of households and businesses. However, the sharp decline in the value of the pound may serve as a buffer by making British exports more competitive. In the longer run there should be more clarity, but the economic costs to the UK may ultimately exceed the benefits. Financial services and other global industries, which depend on full access to European markets and exchanges, will come under pressure. Simultaneously, the supposed gains from removing the Brussels regulators will be limited because Britain will likely have to accept most of those rules, without direct influence, as part of restructured trade agreements. Immigration, a hot button issue for "leave" voters, may slow labor force growth, potentially reducing overall economic growth.

Asia

Japan managed to sidestep recession with annualized growth of 1.7% in Q1, however, the reading underscored how difficult it has been for recovery to gain traction. Improvement in the country's GDP between January and March, rising at a quarterly rate of 0.4%, came after a contraction in 4Q15. Consumer spending helped drive the better-than-expected growth. Japan was also impacted by the Brexit vote as investors simultaneously bought the yen and dumped Japanese stocks. The yen, a currency that is often seen as a relatively safe haven, jumped 13% against the British pound and 5% against the US dollar. This pushed it below the psychological threshold of 100 ¥/$ for the first time since 2013.

China's economy rebounded during the second quarter following a difficult Q1. A survey of over 3,000 Chinese firms prepared by China Beige Book International (CBB) showed most major indicators improved during the period, though they remain flat for the year. Because official statistics out of China can be questionable, many economists have turned to private sources such as the CBB survey to measure growth. According to the survey, much of the turnaround was brought about by fiscal stimulus as private investment shrunk to a record low. The transportation sector, which is largely controlled by the government directly or by State Owned Enterprises, experienced its worst performance ever in Q1, but saw a significant reversal in Q2. This sudden improvement is difficult to explain without citing effective government intervention. Transportation was up at 57% of the firms surveyed, and most of the companies are forecasting higher revenues in the next six months. Real estate, another target for fiscal spending, also improved with half of the surveyed firms reporting increases in revenues, up 23% from the previous quarter. Additionally, the survey showed slight improvements in hiring and some noteworthy gains in the services sector.



While the data reported by the CBB is more optimistic than the last few quarters, China still faces some substantial headwinds. The nation's unskilled labor supply continues to wane with only 29% of companies seeing improvement in that supply. Borrowing has also slowed. According to the bankers that responded to the survey, almost a fifth of all loan applications were rejected during the period. Interest rates declined amidst slowing loan growth, putting increased pressure on the yuan. The currency was down about 3% in Q2, its worst performance on record. Brexit made some waves initially in the Asian markets as well. As the dollar jumped after the vote, China weakened its currency by the most since last August's market turmoil. The PBOC set the reference rate at 6.6375 yuan to the US dollar, its weakest level since December 2010. It is difficult to tell how Brexit will impact China's economy over the long term, but global turmoil could put unwanted pressure on the country.

Latin America

Brazil's economic and political situation remains in flux. In May, the Senate suspended President Dilma Rousseff on charges of manipulating the budget. While she awaits impeachment proceedings, her vice president, Michel Temer has taken the reins as interim president. Meanwhile, Brazil is in its longest recession since the 1930s. The Petrobras corruption scandal continues to engulf business owners and politicians alike. Inflation is up, consumer confidence down, and unemployment rose 11.2% just between February and April. Also, the Central Bank recently announced that the consolidated public sector's primary deficit surged from R$6.9 billion in May of 2015 to over R$18 billion in May of 2016. However, the Brazilian economy has shown some positive signs. In 1Q16, GDP experienced a fall of 5.8% year-on-year, but compared to 4Q15 this was the lowest drop in two years. Furthermore, the balance of payments account was in the black for the first time in April since 2009. The capital account also improved, helping to strengthen the real. The real hit its strongest level against the dollar in more than 11 months, closing the quarter at R$3.21 to USD$1.00. Investors tend to pull money out of emerging markets if they feel that there will be higher interest rates in the US, but the uncertainty surrounding Brexit has pushed back expectations of a US Fed rate hike. Other emerging market currencies such as the Mexican peso, Turkish lira, and South African rand have strengthened, albeit less than the surging real, suggesting that many investors feel these markets are sufficiently far from Europe and less affected by Brexit spillover.

Nearby Argentina released its first 2016 data under President Macri towards the end of the second quarter. The economy unexpectedly grew 0.5% during the first quarter compared with the year-earlier period, surpassing analyst expectations.

This slight growth in GDP was aided by a 7.5% expansion in Argentina's fishing sector and 4.2% growth in transportation. However, construction and agriculture both fell by over 5% in Q1. Macri's pro-business reforms have moved Argentina in the right direction, but investment in the country is still struggling in part due to the ongoing recession in Brazil.

Focus On: *The Art and Science of Investment Decisions*

At the foundation of economics, there is the assumption of the "rational consumer." This concept underlies the theories of supply and demand. However, if we start to unpack the baggage that comes with this notion, we may find that often reality directly conflicts with it. Contrary to the popular belief that decisions of great consequence naturally evoke more thoughtful and rational human behavior, investment decisions are often heavily influenced by cognitive and emotional biases. These behavioral biases, left unchecked, have been shown to elicit counterproductive and unsound practices.

> *"The theory of probabilities is at bottom nothing but common sense reduced to calculus; it enables us to appreciate with exactness that which accurate minds feel with a sort of instinct for which oft times they are unable to account."* - **Laplace**

The list of behavioral biases explored in financial literature is enormous; psyfitec.com lists nearly 150 recognized effects. One particularly confounding bias is the "less-is-more effect," which claims that in some contexts common sense tends to beat out a moderately-educated guess. How can anyone expect to make a purely rational investment decision when they must preoccupy themselves with such a gaping chasm of potential pitfalls? Fortunately, not all behavioral biases are created equal. Many are likely variations or symptoms of a common, greater, underlying bias. Others may lack any statistically significant effect in practice or may fail to incorporate all vectors of meaningful value to the real-life investor. Some biases work counter to one another. Most critically, what are the consequences?

When a behavioral bias produces an apparent positive effect, it is instead categorized by some as a "factor," such as momentum, value, quality, or low-volatility. When the effect is neutral, it may be more appropriately categorized as a "preference." Only when it has a negative effect should it be deemed a behavioral "bias," as this connotes an element of irrationality. Factors are the flip-side of behavior biases, and generate excess returns through non-diversifiable risk premia or the statistical arbitrage (a programmatic, quantitative trading system) of market inefficiencies, such as those due to the behavioral biases of the masses.

If an investor loses nothing from a bias (read preference), on average, then why does it deserve any attention? Either the argument behind the proposed behavioral bias is too weak or the practical effect has been arbitraged out by the efficiency of markets. Still, there do exist some behavioral biases which are strongly evidenced to work to the detriment of investors, and they appear in two flavors. Cognitive biases stem from lack of experience or expertise and may be addressed through due diligence, less-is-more effect aside. Emotional biases can be extremely resistant to logical appeals and may require more sophisticated preemptive measures. Yet, even controlling for all possible behavioral biases, humans do not process information in the same way as computers. Where computers optimize, humans satisfy sufficiently – or satisfice.

Irrational Investing

Despite the best intentions, certain decision-making biases disrupt investors' ability to act purely rationally. For instance, the endowment bias, as detailed in Dan Ariely's "Predictably Irrational," can create an emotional attachment whereby the mere holding of a particular investment imparts value. Despite perhaps substantial changes to an investor's needs, perspective or the value of the investment, he may be reluctant to trim, eliminate, or rebalance a position he has taken. Cognitive dissonance creates a barrier to accepting evidence against owning securities that are already in a portfolio. And while there are logical reasons to maintain a slight bias towards existing investments, such as the time and cost it takes to select a suitable replacement and execute changes, several studies indicate the effect can be present even when ownership is merely expected in the future. In this way, the endowment bias can influence manager selection when no logical benefit is attached. If the investor begins a strategy search with a preset idea of which manager(s) should appear at the top of the candidate list prior to undertaking quantitative analysis, the endowment bias becomes conflated with a confirmation bias and gives the manager(s) a sort of "golden halo" throughout the process.

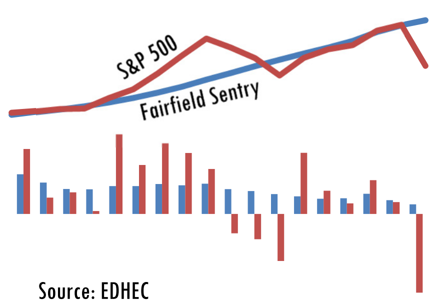
Not surprisingly, irrational behavior extends to sourcing investment advice. Research on the strong peer effect shows that participants' investment decisions are more highly correlated with coworkers' investment decisions than with demographics. Richard Thaler and Shlomo Benartzi write about a Texas supermarket chain where employees turned to the butcher for investment guidance. While this particular butcher may have been especially investment savvy, employees were likely no better off taking the butcher's advice than doing their best to make an informed decision on their own. Trust in those we know or identify with can override healthy skepticism.

Checks and Balances

We are all blessed with an inability to truly comprehend random events. When asked to recite a random number or a random anything, we cannot. We are generally quite predictable ourselves, but live in an unpredictable world. Still, when something significant and unexplainable happens to us, we try to explain it anyway. This is why it is so important to use quantitative and qualitative analyses of investments in tandem: each serves as a reality check for the other.

For example, when the investment funds managed by Bernie Madoff were at the peak of their profitability, investors were happy to ascribe the success to his skillful asset management. After all, Mr. Madoff was a long-tenured and well-respected member of the investment community. Many investors felt privileged to be permitted to invest in his funds. It was the epitome of the halo and strong peer effects previously described. On the surface, Madoff's scheme seemed plausible. In the chart, the blue line represents $10,000 "invested" in one of Bernie Madoff's funds from 1993 to 2008. The red line represents $10,000 invested in the S&P 500 index through the same period. Over short periods of time Madoff's results may not have seemed remarkable; yet, when examined over 10 or more years, we see that Madoff produced startlingly consistent returns. This turned out to be one of the clues that his process was totally fraudulent. Not until someone tried to replicate his results using financial reverse-engineering was the strategy revealed for what it was. In this case, the role of quantitative analysis was to validate – or rather invalidate the qualitative data that led investors astray. Yet, even in the face of evidence, investors and regulators were slow to react.

Madoff's Positive Returns



Source: EDHEC

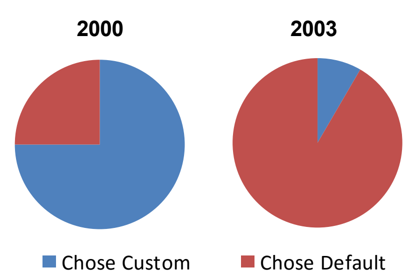
On the other hand, a purely quantitative approach can also prove just as harmful to investors. Long Term Capital Management (LTMC) is the classic example of a quantitative strategy gone wrong. The Russian debt default in 1998 triggered a massive downward spiral that bankrupted the overleveraged hedge fund. An overconfidence bias had infected LTCM and, just as the Titanic had shortchanged its passengers of lifeboats, LTCM shortchanged investors of risk management. Investors (wisely) have yet to regain such complete trust in purely quantitative trading strategies.

The combination of quantitative and qualitative analysis gives us a framework to better judge whether fund managers are generating true risk-adjusted value while operating within their stated mandate. By following a formal framework, we are less prone to behavioral biases that easily corrupt our snap-judgements and intuition. Fundamental and technical analyses together can allow us to better anticipate non-obvious risks and mitigate biases that negatively impact our portfolios.

The "Nudge"

With a bit of thoughtful observation and careful response, inherent human biases and irrational behavior can be harnessed to drive beneficial practices as well. For over a decade 401(k) plan design has leveraged participant inertia to promote participation, asset allocation, and even increased contributions through the installation of automatic enrollment, default investments and auto escalation features. However, investor behavior can be nudged in other ways. An example comes from Thaler and Benartzi's paper on the subject of behavioral economics and retirement plans. In 2000, the Swedish pension system recommended that participants select their own choice of funds to invest their contributions. 75% of participants took this option over the low fee standard fund. The results were disastrous. Participants who chose their own funds performed 9.7% worse over 3 years than the default fund. This caused the government to reverse their recommendation in 2003, and sure enough, only 8.4% of new participants selected their own basket of funds. It was also noted that the array of funds chosen by participants in 2000-2003 was more risky, more expensive, and had a significant bias toward Swedish stocks.

Swedish Pension Plan

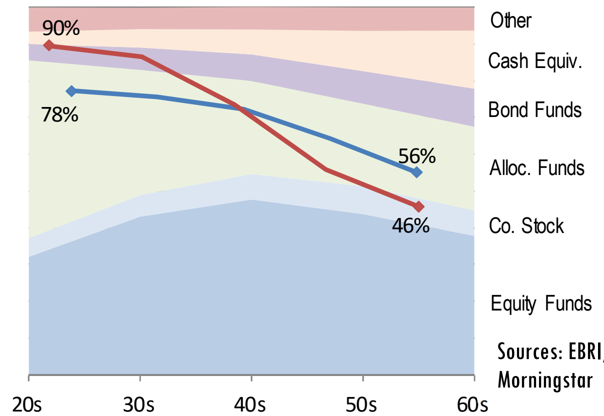


Source: Thaler and Benartzi

Along with Harvard Law professor Cass Sunstein, Thaler has expanded his exploration of behavioral economics to the realm of the architecture of choice. In their 2008 book "Nudge: Improving Decisions About Health, Wealth, and Happiness," Thaler and Sunstein highlight an important distinction in the study of rational (or irrational) decision making. Their observation is that people make mistakes systematically and, because of that, can be especially influenced by how choices are presented. Ergo, applying structure can help overcome detrimental human behavior from this framing effect.

In the healthcare world, twenty-somethings are often referred to as the "young invincibles" since their risk of chronic illness is the lowest of any age group. In the retirement world this term can be applied to twenty-somethings as well as they have time to recover from nearly any loss an aggressive investment position may generate. However, young invincibles often disregard their own invulnerability and, with it, the advantage of a higher expected return over the long term. Young participants consistently under-allocate to risk. In the chart on right, actual average balances for each asset class are shown, along with a blue line representing the overall equity portion. This glide path differs from expert consensus not only on the short end, but also on the long end, as participants fail to rebalance or adjust their allocations over time.

401(k) Asset Allocation



Sources: EBRI, Morningstar

Process as Protection

For many investors, the decision of which fund to buy (or sell) mostly comes down to a single number. The 1-, 3- and 5-year trailing returns are the most prominent and relied upon statistics for ranking investments against one another, despite a failure to capture a complete market cycle, volatility, or other key information. A survey by The Economic Times in India found 60% of respondents performed their own research to choose mutual funds and, within this group, 27% relied on 3-to-5-year performance and 6% relied on past 1-year performance alone. Another study found that while over half of mutual fund purchases are funds with top quintile 1-year trailing returns, so are 40% of sales. Only 15% of sales are bottom quintile performers. One explanation of this contradictory behavior is that two different biases are at work - representation bias and endowment bias (Barber 2000). Whatever the explanation, investors cannot be causing their portfolios to underperform in both cases.

Institutional investors, including plan sponsors, are just as prone to pitfalls in decision making as individual investors. However, fiduciaries to a retirement plan are held to a higher standard. When an individual investor takes action ultimately resulting in a drag on investment performance, only they suffer those direct consequences. Decisions made by plan sponsors, however, impact every participant. Fiduciaries are compelled to exercise due diligence and care on the level of someone who is "familiar" with the subject or face a costly lawsuit; in extreme cases of improper care individuals may even be held accountable, at great personal expense.

The first step in mitigating fiduciary risk is to set up a regular (e.g., quarterly) investment monitoring process, specified clearly and definitively through an Investment Policy Statement (IPS). This helps safeguard the plan against biases or imprudent decisions that may, on the surface, seem like good ideas. When a plan is monitored irregularly with either too great or too little frequency, it can place too much emphasis on short term or cyclical volatility. Ongoing maintenance should revolve around periodic refinement of the investment lineup and plan design informed by participant behavior, participant feedback, demographics, financial thought leadership, modern analytics and investment tools.

Counter to intuition, participants and plan sponsors must keep in mind, throughout investment selection and monitoring, that a prudent process is neither necessary nor sufficient to provide superior results. Yet, over time it is more likely to outperform a flawed or negligent process, especially at the margins where it makes the most difference (e.g., Madoff and LTCM). In making decisions under risk, it is critical to address cognitive biases and minimize the effect of emotional biases; the most consistent and effective remediation lies in prudent structure and process.

> *"The investors who inhabit the real world and those who populate academic models are distant cousins. In theory, investors hold well diversified portfolios and trade infrequently so as to minimize taxes and other investment costs. In practice, investors behave differently. They trade frequently and have perverse stock selection ability, incurring unnecessary investment costs and return losses."*
>
> ***– Barber and Odean (2011)***

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