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Acropolis was born
from a simple idea:

In an industry where high quality, objective advice is hard to come by, we make a difference by putting the client's interests above our own.

Stocks March Higher Amid Tumult

The S&P 500 gained 4.5 percent in the third quarter and is now up 14.2 percent for the year despite the Federal Reserve's announcement that they will start to unwind their balance sheet, escalating tensions with North Korea, and a series of deadly hurricanes.

Instead, investors focused on the first back-to-back double-digit improvement in corporate earnings in six years and the potential for major tax reform.

One of the distinguishing features of the current stock market rally is the absence of volatility. A popular measure among institutional investors known as the Sharpe Ratio compares the excess return of an investment divided by its volatility. The excess return sounds complicated but just determines the return over and above a risk-free asset like one-month Treasury bills.

Since 1926, stocks have earned 6.7 percent more than one-month Treasury bills and the volatility was 18.7 percent. So, if we divide the excess return of 6.7 percent by the volatility of 18.7 percent, we get a Sharpe ratio of 0.36.

For the 12-months ending on Sept. 30th, the excess return for the S&P 500 was 18.1 percent, and the realized volatility was 5.5 percent, resulting in a Sharpe ratio of 3.3. You may not be particularly familiar with the Sharpe ratio, but you don't have to be an expert to realize that when it's above nine times more than the average, it's unusual. In fact, looking at all of the 12-month periods since 1926, the most recent ranks in the 95th percentile.

While we know that nothing stays at the 95th percentile forever, we can't say much else. We were at the 97th percentile at the end of 2013 using the same methodology, and the market is almost 50 percent higher even after two 10-percent corrections.



"Does my transfer include my cubicle? I have all my passwords written on its walls."

The income tax has made more liars out of the American people than golf has.
- Will Rogers, Actor

Stock Market Summary

By Tim Side

Stocks marched higher in the third quarter and several indices hit record highs. Natural disasters and global tensions caused some market volatility; but overall, it was another quiet quarter with few major events.

All major asset classes were higher with international stocks once again leading equities. Emerging and Developed International markets rose 9.2 and 6.2 percent respectively, although some of those gains were attributed to a weaker dollar as the total return in local currency for Emerging and Developed International was only 7.6 and 4.4 percent respectively.

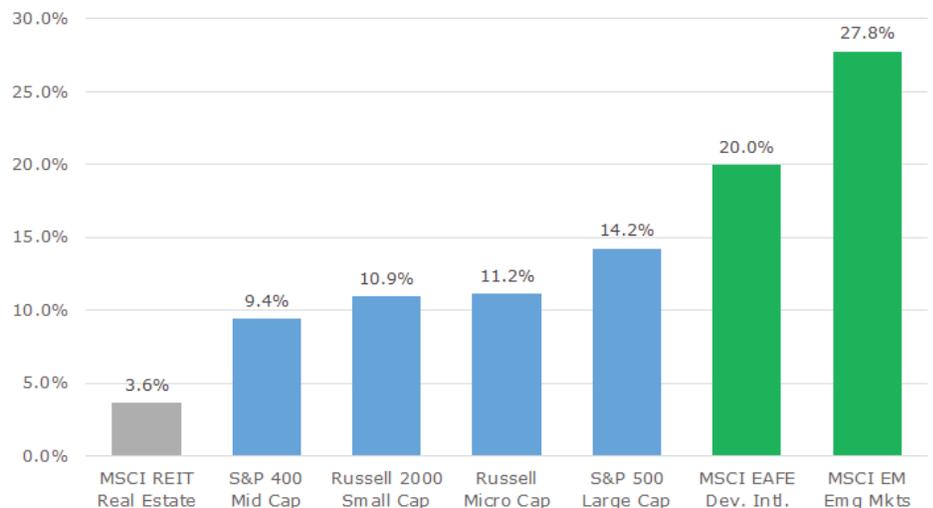
Large Cap stocks were up 4.9 percent, Mid Cap up 5.2 percent, Small Cap up 5.9 percent and Micro Cap up 5.2 percent. The majority of the gains in the Small Cap sector came in the final weeks of the quarter, as hopes for tax reform were re-ignited following a release of the tax-reform framework from President Trump and the GOP.

The Energy sector was one of the best performing sectors for the quarter, gaining 6.84 percent. The rally was in large part due to Hurricane Harvey, which knocked several refineries offline causing a spike in gasoline prices. While oil fell due to the lack of demand from the refiners, it later rose as reports indicated a falling global supply. Ultimately, WTI crude rose 12.2 percent in the quarter to \$51.7 dollars per barrel.

Markets had a muted reaction in September when the Federal Reserve officially announced that they would begin unwinding the balance sheet in October.

The Fed also indicated that there would potentially be another rate hike in December as inflation has been slowly rising and as of August, was at 1.9 percent. Markets currently place the odds of a rate hike around 65 percent.

Selected Stock Index YTD Returns



Data Source: Bloomberg



Bond Market Review

By Ryan Craft, CFA

While interest rates experienced some volatility throughout the third quarter, the yield curve ended the quarter nearly the same as it began. Long-term rates continue to trade as the market speculates on future inflation and how potential tax reform may affect the economy. Short-term rates await clear direction from the Federal Reserve on their intentions for the overnight Fed Funds rate.

The Fed did not increase Fed Funds this past quarter, but members of the FOMC began to take a very hawkish tone in public speeches in September. At their September meeting, the Fed held rates steady but did announce a plan to begin unwinding its balance sheet starting in October. After the financial crisis, the Fed began buying Treasury bonds and Mortgage Backed Securities to drive down long-term borrowing costs. While they ceased increasing the portfolio in 2013, they have continued to purchase bonds

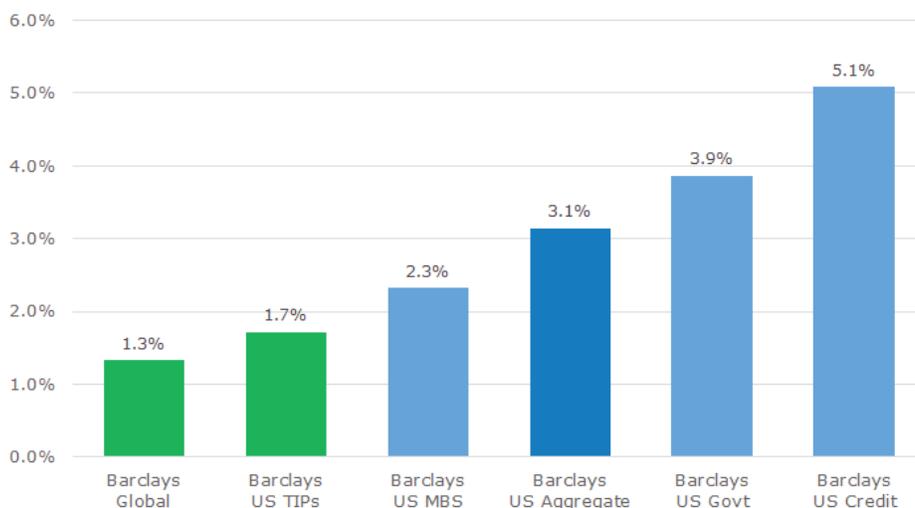
in the open market to reinvest cash flows. Now the Fed will reduce the amount it reinvests, resulting in a very slow drawdown of its balance sheet. This announcement had been widely expected by the market. Even with the Fed purchasing \$10-15 billion less each month in securities, long-term interest rates have moved little since the announcement.

Looking towards the end of 2017, yields will likely remain more policy dependent than data-driven. The Fed is likely to raise the Fed Funds rate 25bps in December to 1.50 percent. Fiscal policy will remain a hotly debated topic and will influence the markets' expectations for future inflation.

The market is also likely to discount poor economic data, or higher headline inflation, as transitory effects from Irma and Harvey.

Knowledge is the only instrument of production that is not subject to diminishing returns.
- John Clarke, Economist

Selected Bond Index YTD Returns



Data Source: Bloomberg

Forecasting Expected Returns

By Ryan Craft, CFA

How can investors know the value of an investment? Bond yields remain very low, and stocks continue to climb higher across the globe. Everywhere you look, using typical valuation measures, markets are very expensive. However, investors continue to pour money into them, so they must see value. The value of an investment is subject to an uncertain future, so how can one quantify future value with information available today?

There are many valuation metrics available, but they all fall short in one way or another. One of the problems with using standard equity valuation ratios, such as Price-to-Earnings, is that there is a lot of noise in any given quarter. Companies can manipulate earnings over short periods of time through accounting rules which can distort the E in the P/E ratio and give false signals. One way to look through the noise is

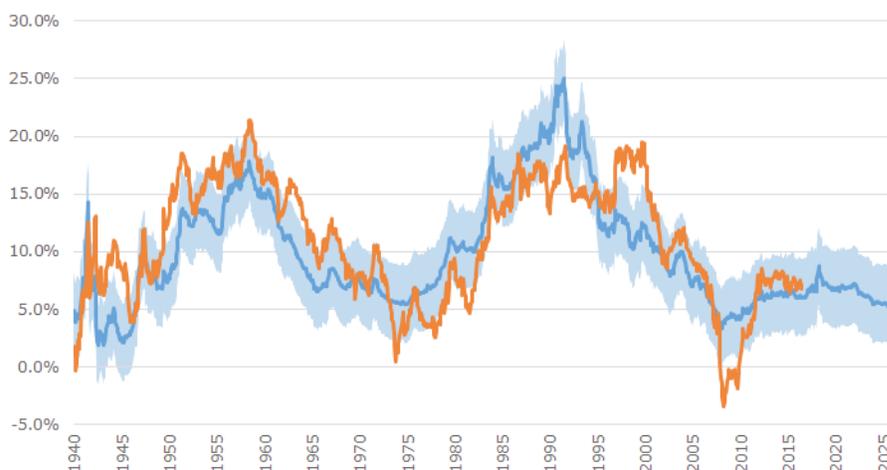
to take a longer time horizon and consider average earnings rather than a single point in time. Famed value investors Benjamin Graham and David Dodd first suggested using ten years worth of earnings in the 1930s and economists Robert Shiller and John Campbell popularized the idea in the last 15 years.

This method has become known as the Cyclically Adjusted PE Ratio (or CAPE). In short, the CAPE is a valuation measure of a market that is equal to its current price divided by the average of 10 years of earnings adjusted for inflation.

If a P/E ratio tells investors how much they are paying for a given stream of profits, the reciprocal will tell investors what they should expect to earn, a concept known as Earnings Yield. We can test if an Earnings Yield, more specifically a CAPE Earnings Yield, could predict future returns with accuracy.

Take calculated risks. That is quite different from being rash.
General George S. Patton

S&P 500 Forecasted vs Actual Returns
10-Year Horizon, 1940-2017



Continued on next page.



World exUS Forecasted vs Actual Returns
10-Year Horizon, 1989-2017



By running a simple regression between Earnings Yield and realized returns, it looks like there is almost no relationship or predictive power without including an estimate for inflation.

Shiller's CAPE uses real earnings, which means that the effects of inflation were removed, with all profits across the time horizon adjusted to be the equivalent of the current value of money. This allows for CAPE to be studied across time horizons free from the distortion of inflation. However, real-world market returns are subject to inflation, so we must add back inflation when comparing a CAPE-based expected return with a realized return.

The accompanying charts compare the model's forecasted return (in blue) with actual subsequent returns (in orange). The shaded blue area represents the likely range of outcomes since forecasts of the future are inherently imprecise.

In both the S&P 500 and the MSCI World exUS, which tracks developed markets outside of the US, the forecast model works reasonably well. Actual returns do fall outside of the forecast bands about 40 percent of the time, but the model does seem to capture the 'big picture' for returns.

Right now, the model is forecasting below average returns for the S&P 500 and average returns for developed market stocks. Today's costliness for US stocks does not signal an imminent collapse but does mean that investors should have reasonable expectations about the future.

We are investigating how to incorporate the information into our asset allocation process, but the big take away in our view is that investors need to consider lower than average returns for planning purposes. As famed investor Howard Marks always says, 'you can't predict, but you can prepare.'

If you would be wealthy,
think of savings as well as
getting.

- Benjamin Franklin,
Founding Father

Retirement Rules of Thumb

By David Ott

I suspect that at some point everyone has heard the old rule of thumb that retirees need to replace 80 percent of their income in retirement to continue to maintain their lifestyle.

Although I think that the rule is conceptually reasonable, it's imperfect and can be improved upon. At the very least, spending in retirement isn't fixed – it tends to decline over time as people age.

Today, though, I want to look at the rule of thumb, despite its imperfections. JP Morgan did an interesting analysis of the rule that shows how the old rule of thumb is derived and how the overall household income impacts the replacement rate.

The chart below shows the income replacement rate on the y-axis by household income on the x-axis.

The chart broadly depicts the JP Morgan data, but with a twist of my own. The left hand column shows that 80 percent of \$50,000 will likely be comprised of Social Security (in orange) and personal savings (in dark blue).

They argue, correctly, that taxes and some expenses incurred during the working years, in grey and yellow, don't exist in retirement, which is what accounts for the difference between employment and retiree income.

In the far right column, where the employment income is \$300,000, you can see that the percentage of replacement income declines further because there is a new category (in light blue). This 'savings' refers to the fact that you don't need to save money for your retirement once you've retired.

The sign of a weak mind is to be unable to bear wealth.
- Seneca, Philosopher

Income Replacement by Household Income



Income Replacement by Household Income



The main takeaway from comparing the far left and the far right columns is the proportion that Social Security will cover and how much you will be responsible for from your personal savings.

Since their chart doesn't fully express this in my opinion, I took the same data and converted it into dollars in the chart above.

Looking at the data this way, you can see how much your savings would need to cover. In the far right column, Social Security would cover \$39,000, but your savings would have to generate \$171,000.

If we take another rule of thumb, the 'four percent rule,' we can see how much savings you would need to cover the spending. The rule says that your portfolio can spin off four percent of its value without too much risk of running out of money.

If we use this rule despite its issues, it would suggest that to generate \$171,000 in income, your portfolio would need to be \$4.275 million. The person on the left, who is mostly relying on Social Security, 'only' needs a portfolio of \$287,500.

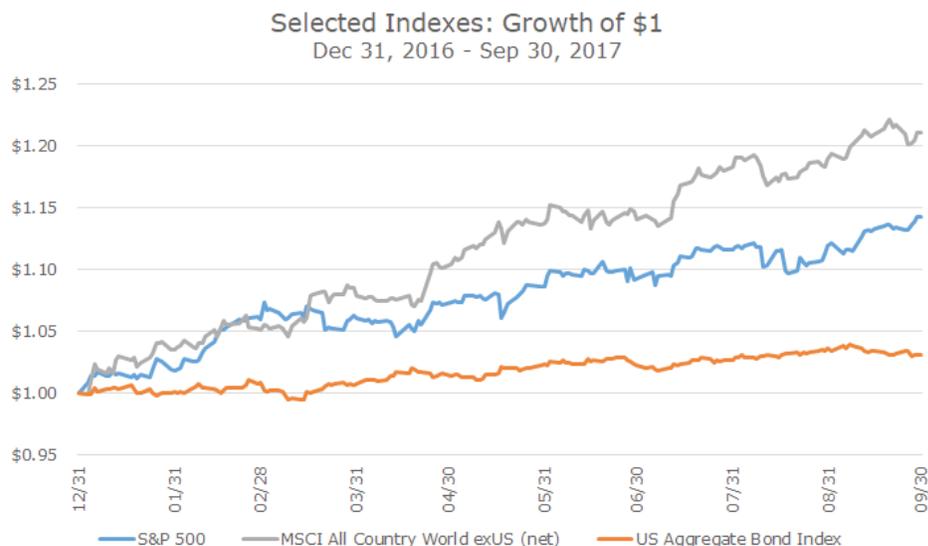
These rules of thumb are reasonable mental models for quick and dirty analysis. I use them all the time to set baselines, but, ultimately, I rely on our more detailed models that incorporate much more data and analysis in the process.

In the 15 years that we've been doing this, I've found that while most people have the same broad goals, everyone's circumstances are different and the rules of thumb don't really apply when you get down to the nitty gritty. Naturally, I'd encourage you to come in for a more thorough analysis anytime.

If you don't risk anything,
you risk even more.
- Erica Jong, Author

Data Center	2017 YTD
Dow Jones	15.45%
S&P 500	14.24%
S&P Midcap	9.40%
Russell 2000	10.93%
MSCI EAFE (Intl)	19.96%
MSCI Emerging Mkt	21.58%
S&P Sectors	2017 YTD
Basic Materials	15.82%
Consumer Discretion.	11.93%
Consumer Staples	6.57%
Energy	-6.63%
Financials	12.48%
Healthcare	20.31%
Industrials	14.13%
REITs	7.39%
Technology	27.36%
Telecom	-4.69%
Utilities	11.87%
Interest Rates	2017 Q3
Fed Funds	1.25%
Prime Rate	4.25%
3-mo. Treasuries	1.04%
2-yr. Treasuries	1.48%
5-yr. Treasuries	1.93%
10-yr. Treasuries	2.33%
Currencies	2017 Q3
Euro	1.1814
Japanese Yen	112.51
British Pound	1.3398
All Data as of 9/29/2017	

The Big Picture



Fast Facts: Tax Edition

400 The number of pages in the original 1913 tax code. In 2010, the code was 70,000 pages and contained 3.7 million words (compared to 561,304 for Tolstoy's War and Peace).

\$247.5 million The amount owed by a telecom entrepreneur in the largest ever tax evasion case in 2011. The payment consisted of \$141.5 million in back taxes and \$106.0 million in penalties.

1943 The year that the Federal Income Tax Withholding Act went into law that allowed the government to withhold taxes from paychecks. Congress said that it would be more convenient for taxpayers, but was also needed to smooth WWII funding.

\$0.35 The cost to taxpayers for the IRS to collect \$100 in taxes. Unfortunately, they collected \$3.3 trillion in 2016, which means that they spent \$11.7 billion to do it.

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