Diversification is always having to say you're sorry

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We are often asked why we continue to own an asset class that seems to be consistently losing money. The irony of this question is that the offending asset class is constantly changing. Sometimes its stocks (remember 2000 – 2002 and 2008) and sometimes its bonds (1977 – 1981, 2009, and 2013). Lately, the offending asset class has been commodities. And it's been a little more than lately; The Bloomberg Commodity Total Return Index has fallen 9.25% annually for the five years ending June. That's a cumulative loss of over 38%. It's 10-year cumulative loss is nearly 50%. Ouch!

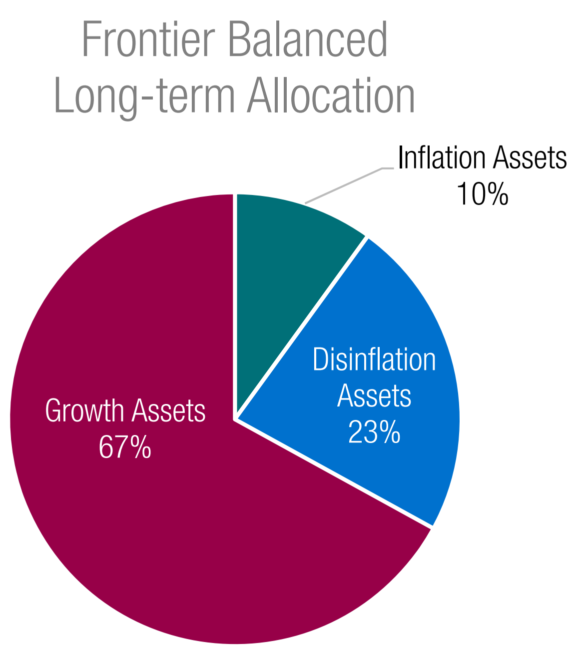
When allocating one of Frontier Asset Management's strategies into various asset classes our downside-first optimization process needs to know three things about each of the asset classes: its expected long-term return, its expected short-term downside deviation from that expected return, and how the asset class deviations around its expectation correlate with the other asset classes; in other words, how much does it move up and down at the same times as the other asset classes. We have talked at great length in the past about how U.S. long-term Treasuries by themselves are poor investments because the return you might receive is not enough compensation for the short-term volatility you endure to get that return. The main value of long-term Treasuries is their negative correlation with stocks. When stocks go down, particularly when they go down a lot, long-term Treasuries usually go up, thereby cushioning the impact on the portfolio of the stock decline. To get the downside risk where we want it, we might even be able to own more stocks if we have that cushion, and therefore realize a better return for the overall portfolio. Commodities are much the same. Usually they offer poor return for the risk. It is at the total portfolio level that an allocation can be useful. It is commodities negative correlation to high quality fixed income, where commodities are most useful. We often talk about how stocks like a good economy and high quality bonds like a bad economy. Commodities and high quality bonds have an even clearer love-hate relationship with inflation. Commodities love rising inflation and high quality bonds hate rising inflation. And of course, commodities hate falling inflation and bonds love falling inflation. The table below shows the performance of the Bloomberg Commodity Index and the Bloomberg Long-Term Treasury Index over the last 10 years for periods of rising inflation and periods of falling inflation.

Returns from Commodities and long-term Treasuries when Inflation is Rising or Falling			
10 Years Ending June 30, 2017	Bloomberg Commodity Index	Bloomberg Long-term U.S. Treasuries Index	Consumer Price Index
	Annualized Return		
*Inflation Rising	9.49%	2.67%	2.51%
Inflation Falling	-19.33%	11.89%	0.87%
Entire 10- Year Period.	-6.49%	7.34%	1.63%

*Rising inflation in the table is defined by periods when a low annual CPI is followed by at least a 2% rise in inflation to a high. Falling inflation periods start from a high annual CPI that is followed by at least a 2% decline in inflation to a low. The starting and ending periods are moved forward 3 months since the monthly CPI will already start to reflect a change in the trend before the annual CPI actually does.

Quite a difference! Commodities did much better than Treasuries when inflation was rising; Treasuries did much better than commodities when inflation was falling. The most recent 10-year inflation rate was the lowest since the mid-1960s. That may help to explain the very poor performance of commodities during the entire 10-year period (and also help explain the high returns from long-term Treasuries, too – they actually outperformed the S&P 500® the last 10 years).

We do not know what inflation will do the next 10 years. It may stay low, or it may perk up again. We want to be ready for either case. The pie chart below shows how Frontier's Balanced strategy's long-term allocation is divided among growth assets (stocks), inflation assets (commodities) and disinflation assets (long-term Treasuries).



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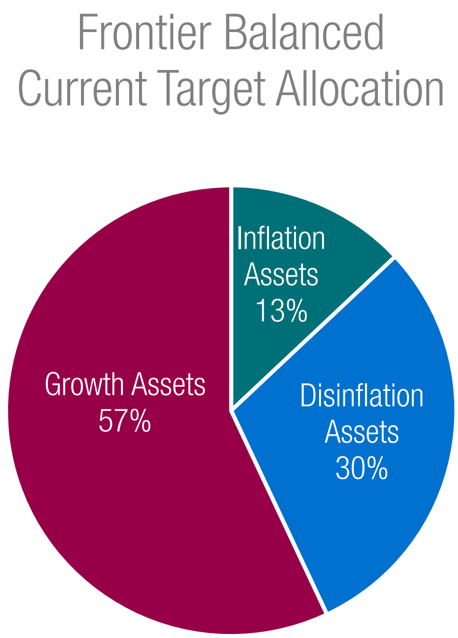
We are currently a little less aggressively invested than the long-term allocation because the expected returns of most of the asset classes are somewhat lower than we would like, and so the chance of losing more than our downside risk target is higher than we would like. The current target allocation using the same framework as above is shown below:



Note that disinflation assets are about 70% of the total inflation/disinflation assets and inflation assets are about 30% in both cases. That ratio will vary over time as expected returns and risks of the asset classes vary (for instance, Frontier's Balanced strategy held very few commodities in 2013 and 2014 because the return expectations were very low – it's not all about risk!) but we expect the average to be around 70% over long periods of time. The reason we will normally hold more disinflation assets than inflation assets is that stocks have a pronounced negative correlation to high quality bonds, but a small positive correlation to commodities. Stocks scariest environment is not high inflation, but rather depression and deflation. High quality bonds perform best in that economic scenario. U.S. Treasuries also serve as the premier "safe" asset when stocks are tumbling for whatever reason.

We noted above that the 10-year annualized return through June 30, 2017 of the Bloomberg Commodity Index was a lousy -6.49%. Yikes, that's bad! The July 2007 long-term return expectation for the Index was +0.13% real, so we weren't expecting a lot of return from commodities, but our expected return was still a lot higher than what actually happened. During this same period, though, long-term Treasuries did a lot *better* than expected, and the 30%/70% combination performed right in line with expectations, as you can see in the table below:

	Expected Real Return July 1, 2007	Expected Nominal Return With actual CPI = 1.63%	Actual 10-Year Return Ending June 30, 2017
Bloomberg Commodity Index	+0.13%	+1.76%	-6.49%
Bloomberg/Barclays LT Treasury Index	+2.44%	+4.07%	+7.34%
30%Commodity/ 70% Treasury Mix	+1.75%	+3.38% (wtd asset classes) +0.64% (rebalancing) =+4.02%	+3.68%

The combination of Treasuries and Commodities returned 3.68% annually, while the expected return (converting "real" to nominal returns with the actual inflation rate) was 4.02%. Pretty darn close for the pair. Note that the additional return from rebalancing between asset classes was expected to add 0.64% to the expected return; it actually added 0.49%. This is called the "rebalancing premium", and is another reason to diversify among low correlated asset classes.

At the beginning of the period our expected inflation was 2.82% annually, so the lower actual inflation led to higher Treasury returns and lower commodity returns. But the mix of the two performed about as expected. Now, think back to mid-2007. What was your inflation expectation? Was it the 1.63% that actually happened (It has been over 50 years since the ten-year inflation rate was as low as 1.63%)? Or was it closer to our expectation, which was based on a time-weighted average of inflation rates up to mid-2007? We invest for any scenario that might unfold, not just one. Inflation the last 10 years could have been higher than our expectation; in that scenario, commodities would probably have performed better; Treasuries probably would have done worse.

This is how the 10-year table looks today:

	Expected Real Return July 1, 2017	Expected Nominal Return with CPI estimate = 1.71%	Actual 10-Year Return Ending June 30, 2027
Bloomberg Commodity Index	+2.52%	+4.23%	?
Bloomberg/Barclays LT Treasury Index	+1.25%	+2.96%	?
30%Commodity/ 70% Treasury Mix	+1.75%	+3.34% (wtd asset classes) +1.06% (rebalancing) =+4.40%	?

Our expected long-term returns for the next 10 years, unlike 10 years ago, favor commodities over long-term Treasuries. But if inflation moves even lower, Treasuries may once again shine. We don't know what inflation will do in the future. We will invest to prosper regardless.

Our investment strategy is process driven; not based on economic or market forecasts. We take advantage of inconsistencies in how other market players view assets and how they should view them. Most investors focus on risk vs return of individual asset classes without regard to how assets fit within an entire portfolio and how some asset classes, such as long-term Treasuries and commodities do not have very good return for risk characteristics on their own. When added to portfolios of stocks or simply paired together, though, they can enhance the return for risk characteristics of an entire portfolio. Proper diversification means there will usually be assets in Frontier strategies that have not

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been doing very well lately. That is diversification. But don't be sorry. Be happy diversification is working. Process is Frontier's asset allocation edge. Process over forecast. Downside first focus. That's Frontier Asset Management.

NOTES:

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Index	Index Description
Barclays Capital Long U.S. Treasury	Includes all publicly issued, U.S. Treasury securities that have a remaining maturity of 10 or more years, are rated investment grade, and have $250 million or more of outstanding face value
Bloomberg Commodity Index	This is a broadly diversified index that allows investors to track commodity futures through a single, simple measure. The DJ-UBSCISM is composed of futures contracts on physical commodities.
S&P 500®	Represents US large company stocks. It is a market-value-weighted index of 500 stocks that are traded on the NYSE, AMEX, and NASDAQ

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