RONIT WALNY
Portfolio Manager,
Investment Grade Fixed Income

OLUMIDE OWOLABI
Portfolio Manager,
Global Interest Rates & Global Inflation

The Benefits of Active TIPS Management

After years of elusive inflation, evidence of higher inflation has begun to take shape. Against a backdrop of synchronized global economic growth, indicators ranging from tight labor markets to elevated commodity prices suggest that developed economies are transitioning from an environment in which inflation was consistently below central bank targets to one in which it is increasingly more likely to meet and potentially exceed them.

With inflation more normalized and seemingly biased higher, investors have turned their attention to fixed income vehicles that seek to reduce portfolio risk to the deleterious effects of rising inflation. Inflation-linked bonds, which in the U.S. are known as treasury inflation-protected securities (TIPS), are one prime example. As the principal value and coupon payments of these instruments rise and fall with inflation, TIPS hold obvious appeal for investors looking to reduce inflation risk, like those saving for retirement or global investors storing purchasing power in U.S. dollars. In addition, given the differentiated response to inflation vs. other asset classes, they also offer potential diversification benefits to portfolios.

The TIPS market stands at approximately $1.2 trillion with just over 40 TIPS currently outstanding, leading some to wonder about the role active management can have in a market with seemingly little selection. However, we believe TIPS are well suited for active management.

TIPS offer unique potential sources of alpha

Within our TIPS strategy we seek to capture alpha from a number of active investment decisions that are based on our expectations for economic growth, projected inflation and relative value amongst TIPS. These decisions concern real duration positioning, market implied breakeven inflation (difference in yield between TIPS and nominal treasuries), curve positioning along the real yield curve and security selection, as well as country rotation where mandates allow. These strategies differ from multi-sector fixed income strategies. As shown in Figure 1, over the last 10 years this approach has enabled us to consistently capture alpha with low and unique sources of tracking error.

FIGURE 1. SEEKING TO GENERATE ALPHA WITH LOW AND UNIQUE SOURCES OF TRACKING ERROR

Neuberger Berman U.S. TIPS Strategy Return Summary

Period[1]	U.S. TIPS Composite (Gross of Fees)[2] (%)	Bloomberg Barclays U.S. TIPS Index (%)	Value Added (%)	Annualized Tracking Error (%)	Information Ratio
1 Year	1.36	0.92	+0.44	-	-
3 Years	1.58	1.30	+0.28	0.373	0.747
5 Years	0.21	0.05	+0.16	0.444	0.364
7 Years	2.72	2.50	+0.22	0.397	0.562
10 Years	3.13	2.93	+0.20	0.438	0.478
Since Inception (09/01/04 - 3/31/18)	4.03	3.81	+0.22	0.389	0.565

Source: Neuberger Berman, Preliminary returns, based on unreconciled data. Gross returns do not reflect the deduction of advisory fees and other expenses, which will reduce returns. **Past performance is not necessarily indicative of future results.** As with any investment, there is the possibility of profit as well as the risk of loss. Data as of March 31, 2018.

1. Periods less than one year are not annualized.
2. Please see attached additional notes and disclosures at the end of this paper.

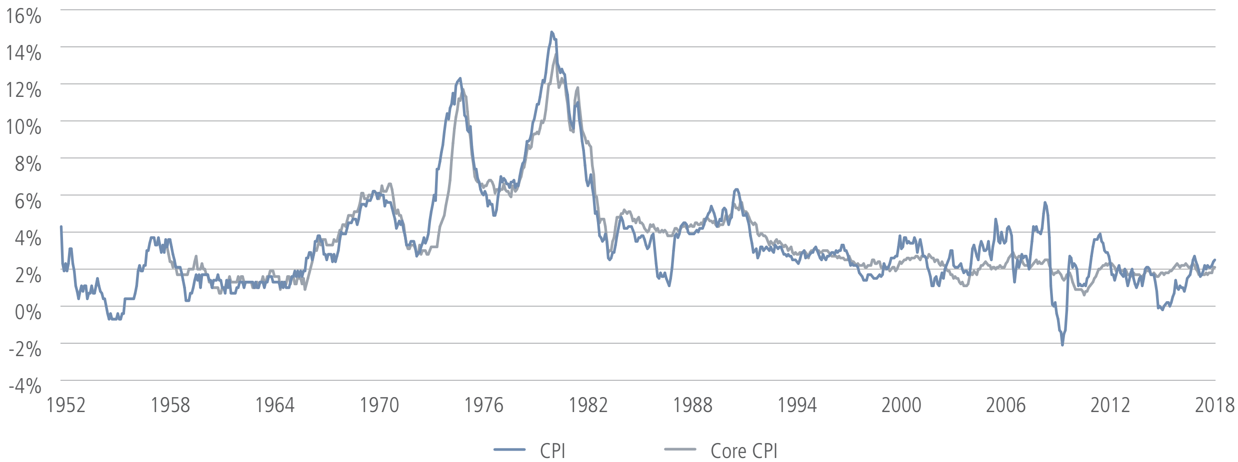
Inflation modeling

Similar to nominal treasuries, TIPS are issued with a fixed coupon rate and maturity date. Unlike nominal treasuries, the principal value of TIPS adjust based on inflation, as does the semiannual coupon payment, which is calculated by applying the fixed coupon rate to the inflation-adjusted principal. Generally speaking, TIPS are preferable to traditional treasury bonds when inflation over the life of the bond is expected to be higher than the current breakeven rate (i.e., the difference in yield between same maturity nominal treasury bonds and TIPS). Thus, an informed view on future inflation is important.

The principal value of TIPS adjusts with a lag to changes in the non-seasonally adjusted Consumer Price Index for All Urban Consumers (CPI-U). This index's methodology is well documented by the Bureau of Labor and Statistics, and its inputs can be modeled to generate an anticipated path for inflation. CPI-U includes food and energy prices, volatile components that can dominate short-term swings in inflation and consequently impact TIPS inflation accruals. This can have a material effect on performance of securities, especially those TIPS that have less time to maturity where short-term changes in inflation accruals have more impact. Let's take gasoline prices as an example: incorporating changes in gas prices into your inflation model can provide insight into the potential path of inflation before these changes are reflected in the lagged official statistics. If global inflation-linked bonds are part of the opportunity set, the model also can reflect the rate at which changes in gas prices pass through to headline inflation, which may vary from country to country due to subsidies or other forms of price controls. Fluctuations in relative currency values can be another useful input in inflation modeling; large swings in the dollar's value, can act as a delayed dampener or accelerant of inflation. And there are many other market-based variables that can shed light on the market's psyche, which can impact changes in inflation expectations priced into the TIPS market.

Inflation rates, as shown in Figure 2, can change quickly. The market's estimate of inflation, however, tends to be heavily influenced by past readings. In other words, the market can miss capturing swift changes in inflation before they happen.

FIGURE 2. INFLATION CAN CHANGE QUICKLY AND DRAMATICALLY



Source: Bloomberg.
Note: Data from February 29, 1952, to March 31, 2018, for CPI; data from January 31, 1958, to March 31, 2018, for Core CPI.

Security selection offers real benefits

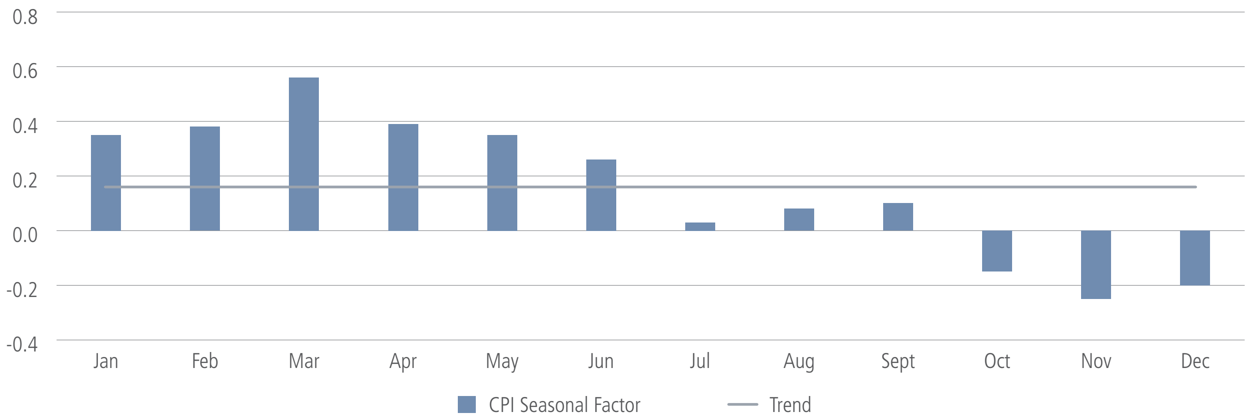
Over time the TIPS market has presented investors with ample opportunities to capture dislocations—and thus incremental potential alpha—via security selection due to inherent structural and technical factors unique to these bonds.

Seasonality.

As mentioned earlier, the inflation metric upon which TIPS principal adjustments are based is not adjusted for seasonal trends, meaning that seasonal factors may be a source of market dislocation. Figure 3a shows inflation for each month from January 2006 to November 2017. As you can see, inflation on average has been higher early in the year before declining and ultimately turning negative as December approaches; in fact, the large majority of any year's inflation typically is realized in the first half of that year. While this phenomenon is well known by seasoned investors in TIPS, active managers must ensure these seasonal factors are reflected in the market price of each bond should distortions arise. Also, a series of negative inflation prints can cause the asset class to fall out of favor. Something that is more likely to happen in the second half of the year. In fact, as shown in figure 3b, changes in 10-year inflation expectations have increased on average 12bps more in the first half of the year vs. 12bps lower in the second half of the year.

FIGURE 3. INFLATION TENDS TO FOLLOW A SEASONAL PATTERN

3a. Average Monthly CPI Changes



Source: Bureau of Labor and Statistics January 2006 to November 2017.

3b. Average changes in long-term inflation expectations

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average	12	2	5	5	-5	-7	1	-10	-4	5	-2	-1
1H Change						12						
2H Change												-12

Source: Bloomberg.

Note: Second half of the year adds up to -12 when considering the addition of decimals not shown. Data from January 31, 2000 to March 31, 2018 for changes in 10-year U.S. breakeven inflation.

The deflation floor.

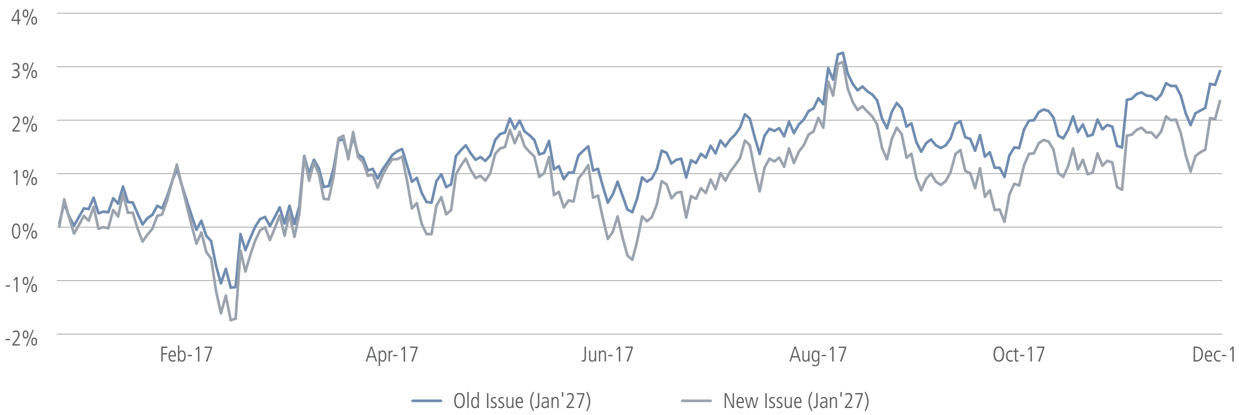
A unique feature of many inflation-linked bonds including TIPS is that the U.S. government guarantees the bond holder a minimum of par at maturity, even if deflation over the term of the bond reduces the principal value below par. With inflation expectations trending higher, this currently is not much of a consideration. In the past however, the probability of deflation has been greater and at that time TIPS that had already accrued inflation tended to trade at a discount to new issues, as the inflation accruals were not protected. Modeling the value of this floor is useful as the market can sometimes overvalue or neglect this feature.

Market technicals.

Factors such as index rebalancing, central bank activity, new TIPS auctions and other factors can cause temporary relative-value distortions that can be exploited to capture incremental alpha. And just like nominal treasuries, the valuation of individual TIPS can be impacted by such considerations as liquidity, index eligibility, bond availability and the composition of holders. Figure 4 shows one example of dislocations in the TIPS market with just the underperformance of a new issue TIPS that index investors would purchase automatically versus the flexibility to remain in a more seasoned bond with the same maturity that outperformed over time.

FIGURE 4. BOND SELECTION CAN BE A SOURCE OF OPPORTUNITY

Historical performance of a seasoned versus new issue TIPS with the same maturity



Source: Bloomberg, Barclays and Neuberger Berman (Jan 2017 – Dec 2017).

Conclusion

With all signs pointing to more normal levels of inflation going forward, investors are increasingly considering the benefits of adding new or to existing TIPS allocations. TIPS can reduce the negative effects of higher inflation on portfolios, as well as improve diversification. Though the limited number of TIPS available for investment has some investors questioning the benefit of active management, we feel that the unique attributes of the TIPS market present unique and risk-efficient alpha-generating opportunities for experienced TIPS managers.

NEUBERGER | BERMAN

Neuberger Berman
1290 Avenue of the Americas
New York, NY 10104-0001

www.nb.com