

The Role of TIPS in Fixed Income Portfolios



David Rogal, Managing Director, is a member of the Multi-Sector Mutual Fund team within BlackRock's Global Fixed Income Group



Bob Miller, Managing Director, is head of Americas Fundamental Fixed Income within BlackRock's Global Fixed Income



Jonathan Pingle, PhD, Managing Director, is Head of Economics for BlackRock's Global Fixed Income group

In early May 2020, we published a paper ([Current Opportunities in the TIPS Market](#)) arguing that market dislocations that were created by the COVID pandemic had led to compelling investment opportunities in Treasury Inflation Protected Securities (TIPS). One of our conclusions at the time was that real yields were likely to go lower, which played out subsequently. In fact, the 10-Year real yield is nearly 1.5% (percentage points) lower than peak levels seen in March and is 0.6% lower than the levels seen in early May. Indeed, current levels of real yields in the TIPS market are essentially near the lowest on record; as of this writing, 5-Year and 10-Year real yields are trading at -1.3% and -0.9%, respectively.

This paper aims to reassess where things stand currently, and answer the question: “do TIPS still deserve a place in fixed-income portfolios today?” In preview, we conclude that TIPS do still hold benefits, despite record low levels of real yields, and more normalized levels of TIPS inflation breakevens. Importantly, low real yields are not unique to TIPS, as many high-quality fixed-income sectors are trading near their lowest yields on record today.

We see five key reasons why a strategic allocation to TIPS makes sense. These factors include: (1) *diversification*: reallocating a portion of a nominal Treasury portfolio into TIPS can reduce portfolio volatility without sacrificing return; (2) *monetary policy*: the Federal Reserve's recent framework review now explicitly targets higher inflation outcomes, reducing the likelihood of restrictive policy holding back inflation in the future. Further, we think it's important to consider (3) *asymmetry*: with Treasury yields constrained by the nominal zero lower bound (ZLB), and

TIPS yields free to trade below zero, TIPS have more upside potential; and (4) *valuations*: years of low and stable inflation have reduced the “inflation risk premium” investors used to pay in the TIPS market. Lastly, it's also crucial to consider (5) *hedge effectiveness*: traditional inflation hedges, like holding cash or floating rate securities, may have reduced efficacy going forward. Thus, while there are substantial merits to holding other real assets in a portfolio (such as commodities and real estate, for instance), TIPS provide targeted exposure to actual CPI outcomes.

Diversification Benefits

Allocating a portion of a Treasury portfolio to TIPS has historically afforded some diversification benefits, much like what we see when incorporating spread sectors. We will examine these diversification benefits through the lens of historical returns and volatility, but in order to properly do so, we first need to do a bit of data work.

The TIPS index has a longer duration than the Treasury index. This has to do with the historical issuance preferences of the U.S. Treasury, as well as with the tendency for TIPS real coupons to be smaller than those of nominal Treasuries. So, in order to properly compare TIPS and Treasuries, we need to create “duration-matched” returns for the TIPS index. To do so, we use combinations of TIPS and cash, rebalanced monthly, to match the duration of the Treasury index. In Figure 1, we show the differences in the duration of the two indices, as well as the required blend of TIPS and cash over time, to generate a comparable match.

The opinions expressed throughout this paper are as of January 4, 2021 and are subject to change at any time due to changes in market or economic conditions.

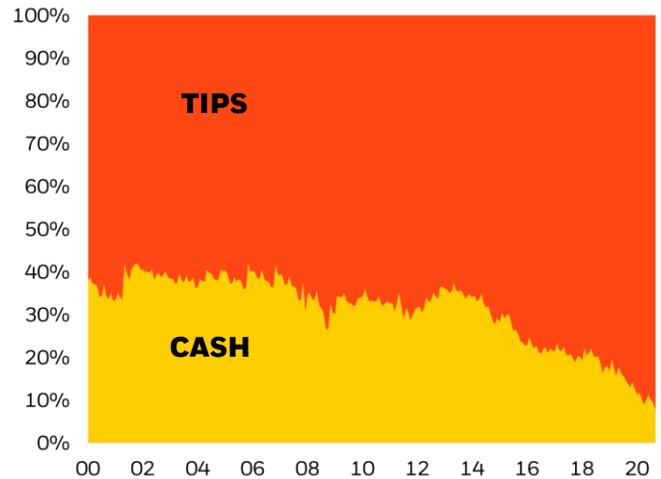
Figure 1: TIPS and Nominal UST Index Duration in a Matched Context

Historical Index Durations



Sources: Bloomberg and BlackRock; data as of November 2020

"Duration-Matched" TIPS Allocations

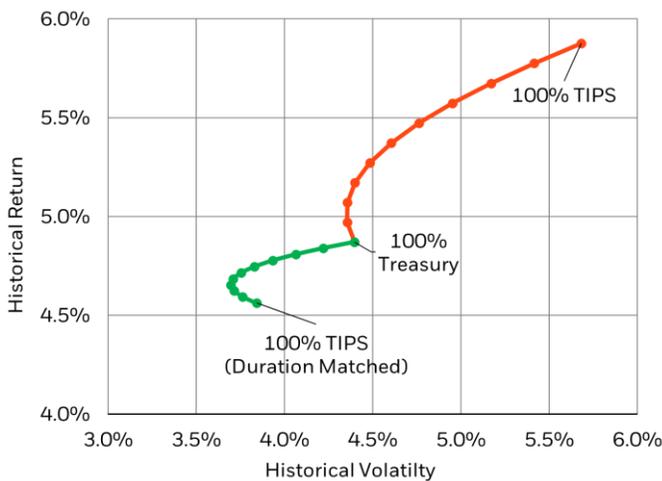


In Figure 2, we show the risk-return frontier for different blends of Treasuries and TIPS. The orange frontier uses the TIPS index, while the green frontier uses the duration-matched TIPS index. For purposes of our analysis, we will be working with the green frontier. As the orange line illustrates, if we simply use the TIPS index itself, we introduce considerably more volatility into the Treasury allocation, because we are extending duration and therefore increasing the portfolio's sensitivity to interest rate movements. However, as the green line illustrates, allocating to the duration-matched TIPS index reduces portfolio volatility, and the largest reductions are achieved with a roughly 20% to 30% allocation.

Why do we see a reduction in portfolio volatility when incorporating TIPS into the allocation? This effect arises from the fact that under typical (non-crisis) market conditions, TIPS yields themselves tend to have lower volatility than compared to nominal Treasury yields. We can see why by looking at the formula for TIPS yields, where the $TIPS\ Yield = Treasury\ Yield - Breakeven\ Inflation$. Breakeven inflation tends to exhibit a positive correlation to Treasury yields, therefore reducing the volatility of the TIPS yield relative to the nominal Treasury yield. Looking at the green frontier in Figure 2, we see that while introducing TIPS reduces portfolio volatility, it also has reduced return, historically. Recall, on a duration-matched basis, TIPS are expected to outperform Treasuries when either (1) inflation expectations rise, or (2) realized inflation exceeds breakeven inflation. We'll discuss in more detail later, but the lower returns we see in this graph are largely a function of both factors; (1) a structural decline in inflation breakevens and inflation risk premium over the sample period, and (2) CPI running lower than breakevens have forecasted on average.

Figure 2: Allocating to Duration-Matched TIPS Index Reduces Portfolio Volatility

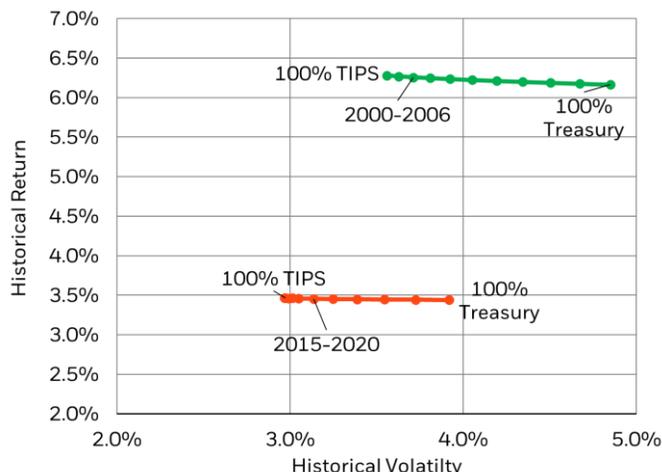
Risk-Return Frontiers (2000-Current)



Sources: Bloomberg and BlackRock; data as of November 2020

In Figure 3 we plot risk/return frontiers for the 2000-2006 and 2015-2020 periods. These periods were chosen because inflation breakevens were largely unchanged at the beginning and end of the sample. What we see here is that TIPS reduced portfolio volatility without any return penalty, during these periods. In the most recent five-year period, from 2015-2020, the 100% duration-matched TIPS portfolio had a volatility of 3.0%, while the Treasury portfolio had a volatility of roughly 4.0%. Based on these results, we believe that thoughtful integration of TIPS into a fixed-income allocation can reduce volatility while protecting investors from erosion of real income in higher realized inflation scenarios.

Figure 3: Risk/Return Frontiers For Two Sample Periods



Bloomberg and BlackRock; data as of November 2020

The Federal Reserve’s Framework Review

In August 2020 the Fed completed a comprehensive review of its monetary policy framework – “the strategy, tools, and communication practices—it employs to achieve its congressionally mandated goals of maximum employment and price stability” (see endnote 1). The review was motivated by the increasing challenges policy makers face with persistently low interest rates. There were two critical conclusions from the review: (1) that inflation risks have shifted to the downside in recent years and (2) that maximum employment should be “broad based and inclusive.” As a result, the Fed modified its inflation target to attempt to achieve inflation that “averages” 2.0% “over time,” a soft form of what’s referred to as averaging inflation targeting (AIT). With this change, the Fed will allow inflation to move above target after periods of low inflation. Further, Fed leadership also shifted the focus on employment to “shortfalls” relative to full employment. With this change, the Fed acknowledged that the Phillips Curve has been flat in recent years, and that employment “overshoots” are therefore less likely to be inflationary in nature, thus reducing the need to preemptively tighten policy.

Asymmetry in Real Rates Under Average Inflation Targeting (AIT) and at the Zero Lower Bound (ZLB)

One of the primary consequences of the Fed’s policy review is that interest rates are likely to stay lower, for longer, particularly after large economic shocks, than has historically been the case. Importantly, policy rates may remain low even if inflation is increasing, or unemployment is at very low levels, meaning real interest rates have the potential to go substantially lower than we’ve witnessed in recent history. That is not to say that they will go lower, but rather that the Fed’s new framework opens-up the distribution, should inflation increase from current levels.

Meanwhile, near the ZLB nominal Treasuries have less price appreciation potential. So far, the Federal Reserve has clearly indicated that it would prefer not to use negative interest rates. Rather, policy makers prefer to use forward guidance, asset purchases and extraordinary lending programs during times of extreme economic stress. Unless this preference changes, there are limits to the gains we can expect from a nominal Treasury portfolio today. We show simple illustrations of these return limitations in Figure 4. The right-hand graph displays price return scenarios for different yield shifts. The Treasury index currently yields 0.63%, as of January 4, 2021, and if we returned to the low yields of 2020 (0.40%), prices would increase 1.5%. Even if the Treasury index yield went to zero, which we view as unlikely, prices would increase by 4.7%, maximally. TIPS, on the other hand, are not constrained by the nominal zero lower bound.

“ We are not going to preemptively raise rates until we see actual inflation now as a consequence of low unemployment. I think that is a lesson we learned during the last expansion when we saw very low, 50 year lows in unemployment and high participation, really as strong a labor market as we have seen in my lifetime without inflation acting in a way that was concerning.”

— Chair Powell, in Testimony before the Senate Banking Committee. December 1, 2020.

Figure 4: Return Potential is Limited with Nominal Treasuries Versus TIPS

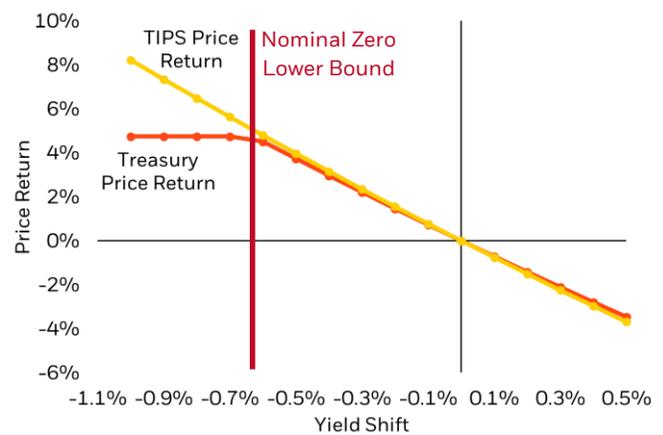
US Treasury Index Yield



Sources: Bloomberg and BlackRock; data as of December 2020

In Figure 5, we show three potential paths for inflation, and the resulting policy implications. In order to model this, we have assumed a framework similar to what was laid out by Federal Reserve Vice Chair Richard Clarida on November 16th (see endnote 2). Specifically, we assume a lift-off criterion of 2.0% Personal Consumption Expenditures year-over-year (the Fed’s favored measure of inflation), and then apply an inertial Taylor Rule with zero weighting on the output gap. What we see here, is that real rates are deeply negative for the next five years, even under higher inflation scenarios - the 2.5% PCE path assumes close to a 3.0% CPI inflation rate on a sustained basis. Comparing these paths to the TIPS forward curve, in the right-hand graph, we see that short maturity TIPS look reasonably attractive at current levels.

Price Return Scenarios

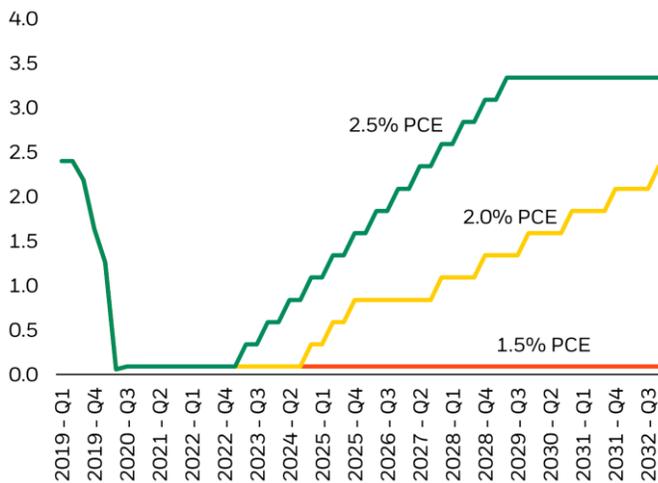


(Dis)inflation Risk Premium & Long-Term Relative Valuations

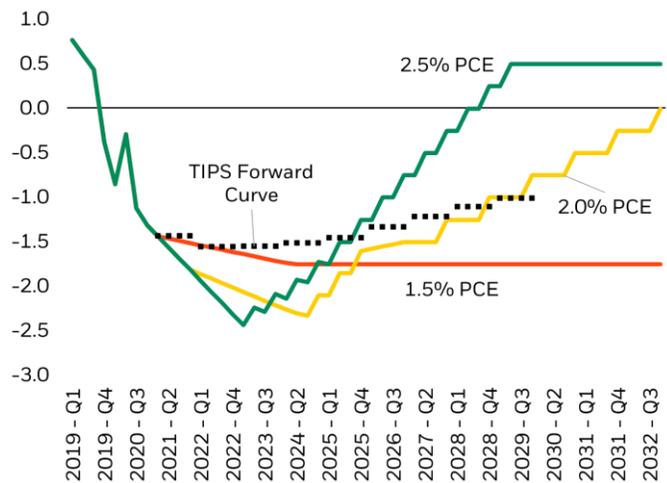
TIPS valuations have declined over the past decade, particularly for longer maturities. Core CPI inflation, however, has remained relatively stable. For many years, TIPS breakevens traded with a positive “inflation risk premium.” In other words, there was a cost associated with locking in a real rate of return and insuring against higher inflation outcomes. We can see how valuations have declined in Figure 6, which plots 30-Year TIPS breakevens against one-year forward Core CPI. In the 15-year period from 2000 to 2015, breakevens were nearly always trading above realized inflation. However, in recent years, inflation risk premium has turned into “dis-inflation” risk premium, with breakevens trading below realized inflation.

Figure 5: Three Potential Paths for Inflation and What it Means for Monetary Policy

Fed Funds Rate Simulation With Different Inflation Rates



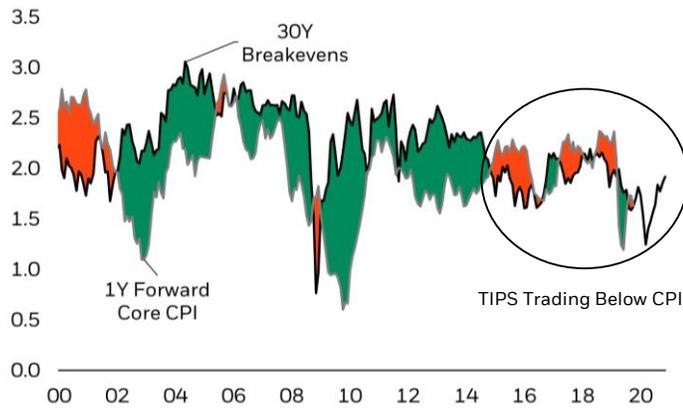
Real Fed Funds Rate Simulations



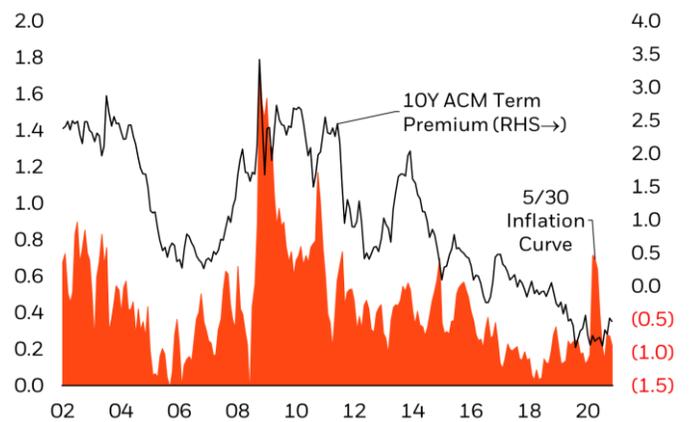
Sources: Bloomberg and BlackRock; data as of December 2020

Figure 6: Long-Run TIPS Valuations and the Inflation Term Structure

30y Breakevens vs. Core CPI (%)



Inflation Risk Premium vs. 10y Term Premium (%)



Sources: Bloomberg, Bureau of Labor Statistics, Federal Reserve Bank of New York and BlackRock; data as of November 2020

Another way to show this effect is to look at the inflation term structure. On the right-hand side of Figure 6, we show the spread between 5-Year and 30-Year breakevens, plotted against the 10-Year nominal term premium. We can see that the collapse in inflation risk premium is closely related to decline in term premium in the Treasury curve. One interpretation here, is that after years of low and stable inflation, investors no longer fear inflation risk. However, we acknowledge that there are other factors at work, like the large increase in the Fed’s balance sheet, which has had the effect of suppressing term premium in longer dated Treasuries.

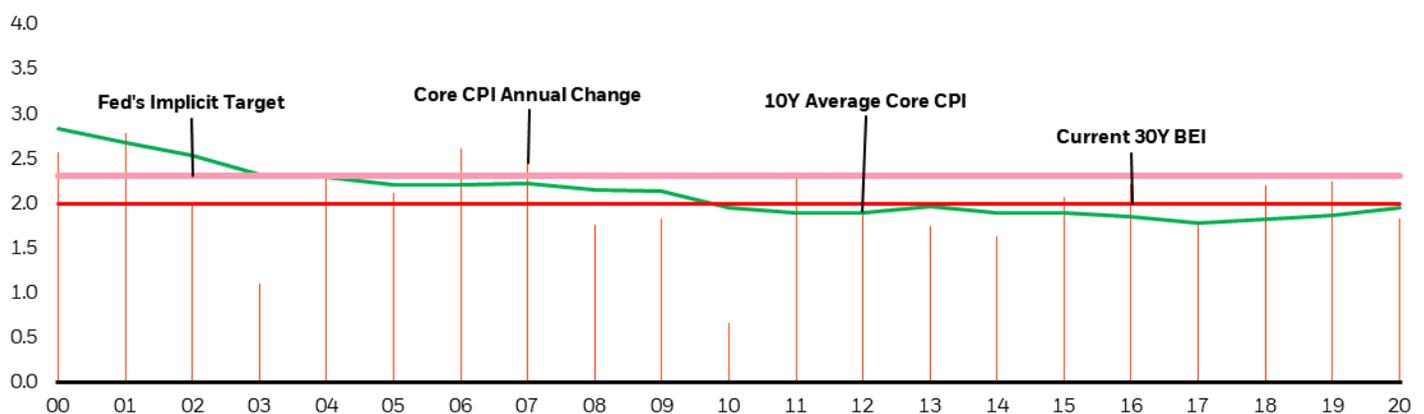
To complete the picture, in Figure 7, we show annual core CPI, a rolling 10-year average, and the current level of 30-year breakevens. With the Fed’s expressed desire to average 2.0% PCE inflation over time, this historically would imply a CPI inflation rate of 2.3% to 2.4%. By that measure, the market is still priced for the Fed to miss its inflation target going forward.

Recall the risk-return frontier we displayed in the previous section, which showed that duration-matched TIPS have underperformed the nominal Treasury index over the past 20 years. We show a historical time series of this performance below. Much of this underperformance can be attributed to TIPS overpricing realized inflation, and the subsequent decline in the inflation risk premium. On the right-hand side of Figure 8, we show the performance gap over time, which correlates quite closely to the level of 30-year breakevens.

This analysis looks into the past, however. Looking forward, TIPS valuations today are much closer to fair when compared to realized CPI. Because of the decline in inflation risk premium, buying inflation protection is substantially less expensive than it has been historically. That is a strong argument for incorporating TIPS into a fixed-income portfolio allocation today, in our view.

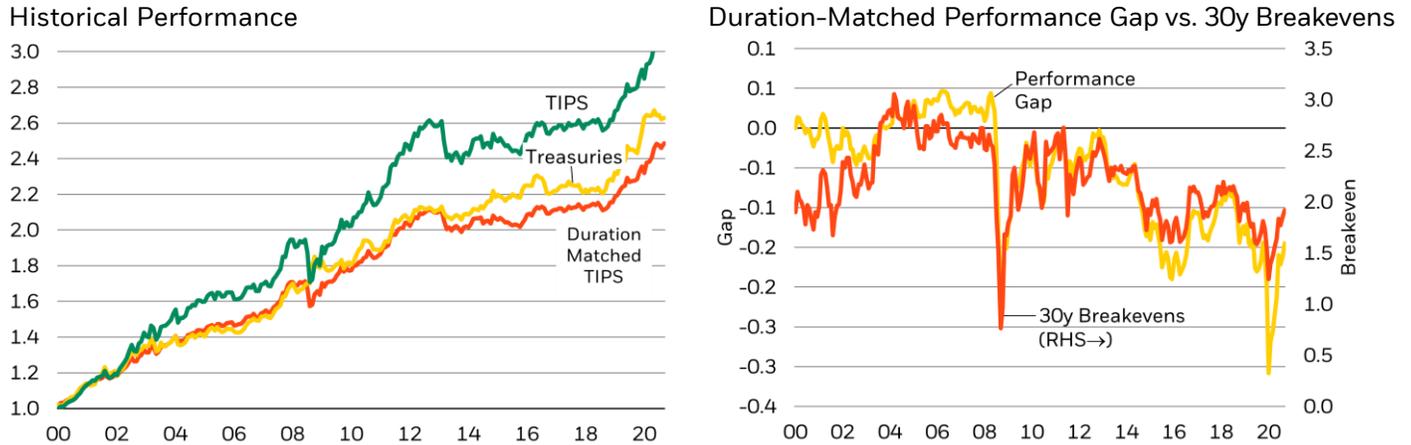
Figure 7: The Market is Priced For the Fed to Miss Its Inflation Target Going Forward

Annual Core CPI, 10Y Average, and 30Y Breakevens (%)



Sources: Bloomberg, Bureau of Labor Statistics and BlackRock; data as of December 2020
 Note: Also draw on <https://www.aeaweb.org/articles?id=10.1257/jel.37.4.1661>, and authors’ calculations.

Figure 8: TIPS/Nominal Treasury Historical Performance and Performance Gaps Versus Breakevens (%)



Sources: Bloomberg and BlackRock; data as of November 2020

Another lens to approach the valuation question is to compare TIPS to other spread sectors. TIPS share a common risk factor with spread products: liquidity risk. Inflation also tends to benefit risky issuers of debt (reducing the real value of their liability). For these reasons, breakevens have tended to move in tandem with spread sector valuations over time. Taking stock of long-term relative valuations, we can see that TIPS do not look particularly rich. Shown in Figure 9, breakevens are still below median valuation levels, relative to the past 20 years, which compares to the 95th percentile valuation for investment-grade credit, and the 73rd percentile of valuation for the high-yield debt market.

Hedge Effectiveness & Real Cash Returns

Investors, of course, have a variety of different options when hedging inflation risk. Moving outside the fixed-income universe, allocating to real assets like commodities, real

estate, utilities, and even equities, should provide some inflation-hedging benefit over longer time horizons. Within a fixed-income allocation, however, there are fewer options to consider. Spread sectors have some benefit in that they provide investors with an income cushion. But the primary alternative to hedging inflation risk, historically, has been to simply shorten the maturity of the fixed-income allocation, either through buying shorter duration assets or floating rate securities. Shortening maturity, however, has a critical assumption embedded in it – that the central bank will adjust interest rates in response to a rise in inflation.

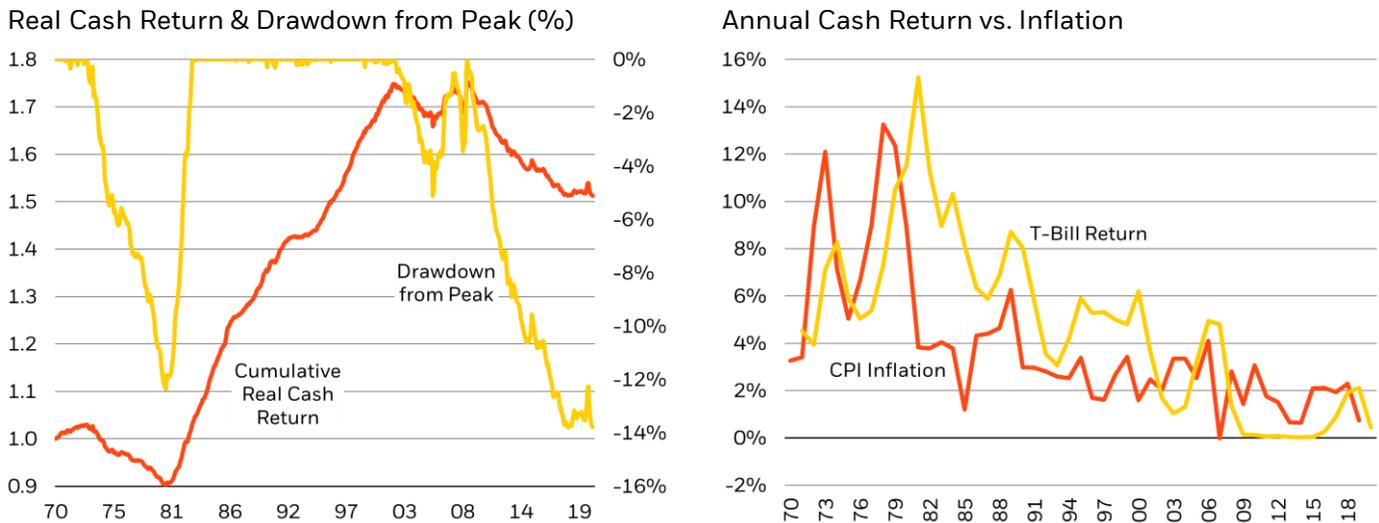
As we have laid out, the Fed’s new forward guidance implicitly de-links the inflation process from monetary policy, if only for a temporary period. As we discussed before, this implies potentially extended periods of negative real returns on short duration assets (cash). In Figure 10, we show the cumulative real cash return since 1970, and the drawdown from peak. We also plot the return of Treasury Bills alongside CPI inflation.

Figure 9: TIPS Valuations Appear Reasonable Relative to Spread Sector Valuations

	10Y Breakeven	US HY OAS	US IG OAS	US MBS OAS	USD EM OAS	Local EM Yield	EUR HY OAS	EUR IG OAS	SPX Earnings Yield
Current Value	1.92	3.82	1.04	0.47	3.37	3.27	3.62	0.96	3.47
Historical Percentile	45%	74%	89%	30%	57%	95%	71%	95%	100%
Median	1.97	4.62	1.35	0.34	3.49	5.13	4.21	1.30	5.46
Upper 10%	2.34	3.46	1.03	0.19	2.87	3.82	3.02	0.99	4.64

Sources: Bloomberg, Standard and Poor’s, JP Morgan and BlackRock; data as of December 2020

Figure 10: Lately, Cash Has Produced a Portfolio Drag



Sources: Bloomberg, Bureau of Labor Statistics and BlackRock; data as of December 2020

Since the global financial crisis in 2008, cash has generated a negative real rate of return of about 1.2% per year. Compare that to current levels of 5-year and 10-year real rates, of -1.3% and -0.9% respectively. Central banks have actively pursued this “financial repression” in response to perceived elevated developed market debt levels, and policy constraints created by low interest rates.

With the Fed’s new policy framework, we expect cash and other short maturity instruments to generate ever more negative real rates of return, potentially for an extended period. In other words - cash will continue to be an ineffective hedge against higher inflation scenarios. While TIPS currently trade with a negative real yield, investors

have the ability to lock in current real yields and protect from higher inflation scenarios eroding real returns.

To conclude, we believe that a strategic allocation to TIPS in fixed-income portfolios still makes sense today. We have outlined five reasons that support this view. Specifically, TIPS offer diversification benefits and positive asymmetry, relative to nominal Treasuries, when rates approach zero. TIPS valuations remain structurally cheaper today, relative to history, driven by structurally lower inflation risk premium. Recent innovations in the Fed’s monetary policy framework should support inflation going forward. Lastly, when sized appropriately, TIPS can act as an effective inflation hedge, guaranteeing a certain real return in a fixed-income allocation.

David Rogal, Managing Director, is a member of the BlackRock Multi-Sector Mutual Fund team within Global Fixed Income (GFI), he is a portfolio manager on the Inflation Protected Bond fund, in addition to several other mandates. Bob Miller, Managing Director, is head of Americas Fundamental Fixed Income within BlackRock’s Global Fixed Income group and is a member of the GFI Executive Committee. Jonathan Pingle, PhD, Managing Director, is Head of Economics for BlackRock’s Global Fixed Income group.

Endnote References:

1. <https://www.federalreserve.gov/monetarypolicy/review-of-monetary-policy-strategy-tools-and-communications.htm>
2. <https://www.federalreserve.gov/newsevents/speech/clarida20201116a.htm>

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