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Treasury Inflation Protected Securities: A Miracle Solution?

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Index

Introduction

This report provides insights on Treasury Inflation Protected Securities, also called TIPS, which are a special type of bond issued by the U.S. Treasury that aim to protect investors from inflation. First, an introduction to the technical specificities of TIPS will be provided, and after an assessment of inflation forecasts, the main question of whether TIPS represent an interesting investment opportunity in the current macroeconomic environment will be answered.

What are Treasury Inflation Protected Securities?

Treasury Inflation Protected Securities, commonly abbreviated as TIPS, are a form of indexed bonds issued by the U.S. Treasury since January 1997. As any bonds, they offer regular interest payments in addition to the par (or face) value repaid entirely with interest when the bond reaches maturity. The particularity of a TIPS bonds is that the principal amount of the bond is adjusted throughout its lifespan in proportion to increases to inflation, or more specifically, to variation in the Consumer Price Index (CPI). Henceforth, TIPS bonds offer a stream of income in real dollars, as opposed to traditional Treasury securities which offer nominal returns (Bodie et al., 2021). This means that through TIPS, an investor is sure to protect the erosion of purchasing power caused by inflation. Yields on such index bonds can be interpreted as a real interest rate, or an inflation-adjusted rate. The interest rate can be considered a risk-free real rate.

Let's consider the example of a bond with a 3-years maturity, and a par value of $1,000, and a coupon rate of 3%. Inflation for the following years are forecasted to be 4%, 3% and 3%. The situation can be visualized in the table below. In year 1, the par value of the bond adjusts to the inflation rate and becomes $1,040 (1,000*1.04). The coupon rate this year will thus be $31.2 (1,040*0.03). This logic is then repeated until maturity. At maturity, the investors received the par value adjusted for the three consecutive years of inflation.

Table 1: Treasury Inflation Protected Security Principal and Interest Payments.

Time	Inflation at Year End	Par Value	Coupon Payment	Principal Payment	Total payment
0		$1,000			
1	4%	$1,040	$31.2	-	$31.2
2	3%	$1,071.2	$32.14	-	$32.14
3	2%	$1,092.62	$32.78	$1,092.62	$1,125.40

An Easily Accessible Insurance

The main advantage of TIPS bonds is that they offer a convenient strategy for passive investors to protect themselves against inflation, and on the contrary of other investments, investors are backed up by the credit capacity of the U.S. market, which means they are ensured to keep such protection over the time span of the bond. Furthermore, they are highly interesting in periods of high-inflation (as discussed later), as they offer returns far superior to other government bonds. Such bonds are particularly idea for conservative investors who value regular income payments (O'Connell & Schmidt, 2021). An interesting side effect is also the low correlation of TIPS with other type of asset classes, which make them interesting investments to diversify portfolios (Mamun & Visaltanachoti, 2006).

TIPS' Specific Risks

While a zero-coupon inflation protected bond with a maturity identical to the investor's investment horizon would provide a riskless investment in terms of purchasing power, TIPS bonds available on the market are not risk-free. First, the value of the bonds varies according to fluctuations in the real interest rates (Bodie et al., 2021). Furthermore, as these bonds pay coupons, the accumulated value of the bond portfolio is subject to reinvestment-rate risks. While such situations are common for bonds, the specificity of bonds is that as the investor needs to balance price risk with reinvestment rate by managing the duration of the bond portfolio horizon, the duration should be calculated using real interest rates and on real payoffs from investments.

In addition to these specific risks, TIPS suffer from crucial disadvantages. First, they perform poorly in periods of low inflation, as such inflation rates decrease par value and interest payments. In such conditions, TIPS usually underperform market interest rates (O'Connell & Schmidt, 2021). Second, TIPS do not offer predictable incomes, as the interest payments are dependent on inflation rates, which are notably hard to estimates and highly sensible to macro economic factors. Third, while CPI is commonly accepted as the most trustworthy indicator of inflation, it may not match a particular investor's inflation risk. Finally, while TIPS become increasingly popular, there is a higher liquidity risk than for T-bills or T- bonds as they are less common, and you might have to sell at a discount in periods of uncertain inflation as their value are directly determined by such metric. Therefore, TIPS offer an interesting protection about inflation, but is also subject to key uncertainties, and might offer lower returns if inflation forecasts do not match the worries of the investor. Henceforth, to assess the attractiveness of TIPS in today's context, we will need discuss the uncertainties around inflation forecasts for the following risks. Before that, we will explore the historical attention given to TIPS on financial markets.

Performance of TIPS

As mentioned above, TIPS perform better in rising interest rates environments, when such increases are caused by increasing inflation. In periods characterized by low or no inflation, TIPS prices decline and underperform other bonds. The most relevant way to assess TIPS bonds performance is to compare them with Treasury Bond performances, as these are the closest (and most traditional) asset classes for risk-free (or close to risk-free) fixed-income securities. For convenience, indexes tracking the performance of both investments will be used. In figure 1 (next page), by comparing broad indexes measuring the performance of the U.S. TIPS markets (blue) and the U.S. Bond Index (white), it appears that TIPS have outperformed traditional bonds by almost one percent per year over the last 10 years. Most importantly, we notice that such performance of TIPS over the Treasury Bonds has been achieved since August 2020, which corresponds to the period where inflation concerns where soaring as forecasters failed to see a near end to the pandemic and as supply chains problems were increasingly impactful. Such general picture is confirmed when looking at indexes corresponding to medium-term maturity bonds (Figure 2) and short-term maturity bonds (Figure 3).

Interestingly, during most of the last decade which was characterized by relatively low inflation, TIPS have, for medium- and short-term outlooks (but also for general outlook, though to a lesser extent), underperformed compared to Treasury Bonds, which confirms the low justification of the former when inflation is not at particularly high levels.

While outside the scope of this paper which aims to consider the role of TIPS in their protection against inflation, it should be noted that they have been found to provide substantial diversification benefits, and that integrated to portfolios, they substantially reduce volatility and hence portfolio performance (Kothari & Shanken, 2019).

Figure 1: S&P U.S. Treasury Bond Index vs. S&P U.S. TIPS Index (S&P Global, 2021).

Figure 2: S&P U.S. Treasury Bond 5-10 Year Index vs. S&P U.S. TIPS 5-10 Year Index (S&P Global, 2021).

Figure 2: S&P U.S. Treasury Bond 1-5 Year Index vs. S&P U.S. TIPS 0-5 Year Index (S&P Global, 2021).

A Growing Popularity

The demand inflation-linked bonds ETFs has been sharply increasing in the last months, as concerns of growing and ongoing inflation rise over the world (Boyde, 2021). ETFs tracking inflation-linked bonds indexes have witnessed net inflows from investors of $31.7 billion from January to September 2021, which is more than double the total $15.7 billion investments made on the whole year of 2020. Total assets linked to such ETFs now account for $114 billion at the end of September, up $39.5 billion from the $81.7 billion at the end of 2020. TIPS are other inflation-linked bonds are not niche investments anymore, but a popular category of fixed- income securities. An important distinction mustbe made though (as the aforementioned numbers concern the index bonds market as a whole) between investments in backward looking securities such as TIPS (that adjust to CPI data), and forward-looking securities (that adjust to inflation forecasts). While our analysis concerns solely the former, it is nonetheless fruitful to analyze the general interest for inflation-linked bonds, as TIPS are surely an important part of this general outlook. For instance, the iShares TIPS Bond ETF (TIP) attracted $8.4 billion of capital in the year to October 21 (Boyde, 2021). Many investor advisors prefer to moderate such interest and consider TIPS as an interesting asset for a slide of fixed income exposure but are still reluctant to give it a large or majority share in bond portfolios. Furthermore, while such numbers are surely historically high for TIPS, it should be noted that despite recent inflows, inflation-linked bond ETFs still account for less than 7% of total bond ETFs.

Such growing interest for TIPS and others is representative of the current systemic issue around inflation. Now, the general situation and the forecasts of inflation evolution will be explored.

Inflation: Transitory or Long-Term Issue?

If there is one known, commonly accepted fact about inflation in the U.S. and in the global economy, it the uncertainty around it. Will it be permanent, or transitory, extremely high or reasonable? This part aims to depict the current picture of U.S. inflation. As of October 2021, the U.S. witnessed a sharp 6.2% inflation rate, high than other Western countries (Romei & Smith, 2021).

Figure 4: Consumer Price Inflation (Greene, 2021)

There are currently two opposite views within the inflation debate. Some partisans of a "team transitory" believe that this year's high inflation is merely a one-time surge caused by sudden consumer demand and one-off supply chain disruption (Romei & Smith 2021). At the opposite, "team permanent" believes that the pattern of price increases is broadening, especially with many countries facing shortages of workers. Fed Chair Jay Powell warns against a "persistently higher inflation" (Smith & Platt, 2021), and that inflation levels are both unprecedented in their scale and scope. His view is shared by many economists who forecast persistent inflation caused by a sharp rebound in spending, uncertainty around the pandemic, and large fiscal stimulus to counter pandemic effects on the economy, coupled with inadequate levels of supply of goods and labor, and, according to them, unsuitable monetary policy (Giles, 2021). On the other hand, Jen Psaki, White House press secretary, strong defends that no matter the pessimistic views of the Federal Reserve, forecasters or financial markets, inflation will decrease over time and remain a rather transitory effect (Smith & Platt, 2021). Nonetheless, there is a consensus that inflation will remain at high levels for a longer period than first estimated (Greene, 2021). With the current uncertainty caused notably by the Omicron variants leading to questions around vaccines effectiveness or to a surge of new restrictions to counter the pandemic,economists' worries have decupled.

The $1.7 billion spending bill proposed by the Biden Administration could also propel prices even higher, although republicans are pushing-back what they believe is an unreasonable measure. Finally, high shipping costs caused by supply chain crunches represent another crucial inflation driver according to the United Nations (Dempsey, 2021). Two conclusions appear thus clear from this analysis. The first is that the decision around investing in TIPS must be done embracing the current uncertainty, and the main question to answer is not if TIPS are good protective measure against high inflation, but rather if TIPS a good investment strategies when facing potential high inflation in the future. The second is that it is safe to assume (in both the meaning of certainty and meaning of protectionof the word) that inflation will remain relatively high in the next year and near future.

The Perfect Solution or Just an Interesting Alternative?

Taking a position on TIPS implies to take a position on real (or inflation-adjusted) yields. As any bonds, if real yields go up, the price of current TIPS would go down, and vice versa. Henceforth, it is smarter to buy TIPS when once believe that real yields are at their highest levels. The problem is that currently, those real yields remain at very low levels. With central banks removing steadily their monetary support as the economy starts to recover, invest increasingly adjust for interest rate rises, but this process is still far from complete, and yields are expected to grow further (Helsen, 2021). In fact,the real yield on 10-year U.S. TIPS hit its lowestpoint at -1.196% since 2003 on November 9th, and as only started to rise modestly during December, remaining at low levels compared to April levels.

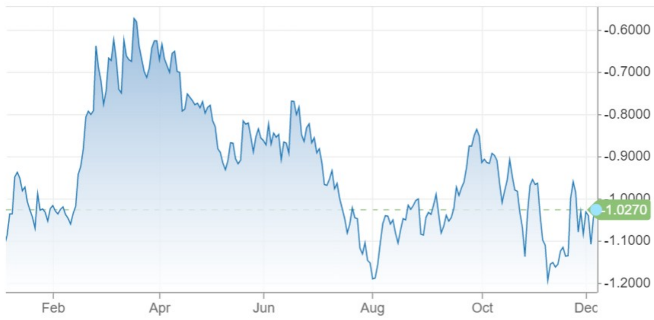

Figure 5: Yields on 10-Years TIPS, January-December 2021 (CNBC, 2021).

Yields on TIPS and nominal yields have diverged in the last months, and the difference between the two, also called "breakeven rate", has risen. As mentioned earlier in the report, demand for TIPS has risen sharply while their supply has been tightened by the U.S. Treasury, which constrains the returns of these securities. So, while some economists believe that real yields will rise in the near future, there remains key uncertainties around such phenomenon (McGeever, 2021; Watts, 2021).

A point made must made be clear though. Whatever the evolution of real yields, TIPS will compensate for escalating inflation and play their role if analyzed independently of any other investment opportunity. Nonetheless, if yields rise and TIPS will provide suboptimal returns, they might not represent the best strategy to counter inflation and other securities might provide better returns. TIPS are an easy insurance for inflation, that is for sure, but that should not blind investors on what their goal is. Countering inflation just needs returns higherthan inflation rates. While this is easier to say than to do, especially as inflation hits over 5-6%, and that TIPS offer securities, opportunity costs of such a capital allocation must be considered carefully before any decision is made.

Furthermore, TIPS returns are not correlated with breakeven inflation, which implies that rising returns on TIPS might not necessarily be better than nominal yields (Helsen, 2021).

TIPS must be considered within a portfolio context. Not only do TIPS provide great diversification benefits, as underlined in (Mamun & Visaltanachoti, 2006), but they also enable interest strategies as a part of a general bond exposure. If portfolios benchmarks only contain nominal bonds, such bonds could be changed for TIPS to make benchmark more robust against high inflation levels. So, while TIPS, in a context of rising inflation and negative, but rising real yields do not represent an optimal strategy, they might still be interesting as part of an investor's bond portfolio, although such exposure would need to be relatively modest (Helsen, 2021).

Conclusion

TIPS are not only an interesting financial instrument for the insurance they represent, but also for their importance in macroeconomic analysis, as their yields serve to calculate expected inflation. With American and global economies currently characterized by high uncertainty, but still clear short-term rising expectations, TIPS might have a role in investors' portfolios. Nevertheless, with current negative levels on real yields, but expectations for upward tendencies of these rates, investing in TIPS bonds appears to represent a suboptimal investment at the moment, and purchase of TIPS bonds as part of portfolio management should remain relatively low to benefit from diversification advantages and a still interesting protection against inflation. Further reports would need to assess other asset classes' roles against inflation, such commodities, floating rate notes, or listed real estate investment trusts.

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