



Protecting Against Inflation: Which Bonds to Consider?

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RBC Global
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Introduction

For the past 15 years inflation has not been a significant concern for investors, with inflation averaging around 2.4% per year. In fact, in light of the most recent economic news and market events, inflation worries are likely the last thing on people's minds. Most central banks in the developed economies have been able to manage and target inflation. However, as the world's economies recover from the recent economic crisis, massive amounts of excess liquidity remain in the world financial system and central bank policies may be unable to manage inflation within target bands. Add to this the strong demand for higher wages and commodities from the emerging markets and inflationary pressures may very likely build. Given these uncertainties, inflation may re-emerge as a significant short or long-term concern for investors.

Treasury Inflation Protected Securities (TIPS) may provide the most predictable insurance against unexpected inflation, although they may not provide the highest total return (even if inflation moves significantly higher) since

real yield movements influence total return. With U.S. real yields at historically low levels – currently 0.27% (weighted average TIPS real yield as of 6.30.11) – there is a significant likelihood that rising real yields over the next several years may reduce the total return of TIPS.

This paper considers a fairly narrow framework by asking the question; which part of the bond market is likely to provide the best protection against future unexpected inflation? We have also included long-term nominal bonds in the analysis to provide some perspective on the returns. Clearly, there are other asset classes that could protect against inflation, but we have not included these in this analysis.

Analysis

We looked at three types of bonds and how they could perform over two time horizons – five years and ten years – depending on different outcomes for inflation and real yields.

It is important to recognize that this analysis is not intended to provide a recommendation to investors, but rather to show how different bonds may perform in different real yield and inflationary environments. How these bonds perform in our analysis is dependent on:

- The ending level of inflation
- The ending level of real yields
- The time horizon for viewing returns
- The path for changes in real yields and inflation

Assumptions

The bonds analyzed and their key characteristics are shown in Exhibit 1.

Exhibit 1: Real Yield & Inflation Assumptions

	U.S. Government Bonds		
	Long Term TIPS	Short Term Nominal	Long Term Nominal
Duration (Years)	17.5	2.5	17.5
Starting Real Yield	1.45%	-1.25%	1.45%
Starting Inflation Expectations	2.35%	1.85%	2.35%
Total Nominal Yield	3.80%	0.60%	3.80%

- The different real yields and starting inflation expectations reflect the positive slope of the yield curve.
- We have assumed a linear path in real yield and inflation rate change (the linear path depends on the time horizon).
- All bonds have the same yield levels at the end of the time horizon. The implicit assumption is that we move to a flat yield curve.
- Duration changes as yields change (the returns take into account the impact of convexity).

These assumptions provide a simple and transparent view on how changing inflation and real yields impact returns. Clearly, assuming different ending levels for these variables and non-linear moves would change the resulting total return values, although we suspect these would not dramatically change our general conclusions.

Results

The following exhibits show the total return for the three bond types over five- and ten-year time periods. Each exhibit shows the total return for these bonds under different real yield and inflation environments. A brief comment on these scenarios: Scenario 1 assumes North America remains in a low growth environment, similar to the “lost decade” in Japan. Scenario 2 is perhaps the most likely outcome and certainly the one closest to some form of equilibrium or normality. Scenarios 3 and 4 are more extreme situations with Scenario 3 (high real yields and high inflation) the most likely “extreme” situation to be concerned about in the medium term. Scenario 4 is difficult to envisage, but certainly possible given the current environment, since high inflation rates are likely to be associated with high (and not low) real yields. Exhibit 2 puts numbers on these simplistic descriptions.

Exhibit 2: Economic Scenarios - End of Time Horizon

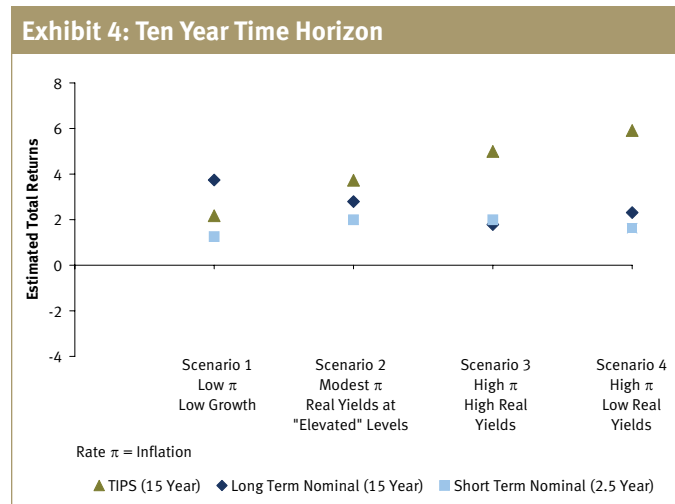
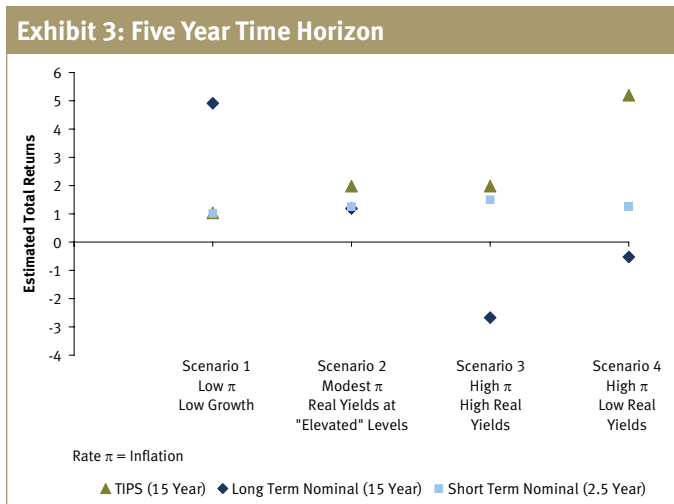
Scenario	Real Yield	Inflation	Comment
1	1.25%	1%	Low inflation/low growth world
2	2%	3%	“Elevated levels” for yields
3	3%	5%	High real yields/high inflation
4	1.25%	5%	Low real yields/high inflation

Exhibit 2 outlines the assumed real yields and inflation rates prevailing at the end of the time horizon. Unexpected inflation (this is what an investor is trying to protect against), in our analysis is the difference between the starting inflation expectations (see Exhibit 3 on page 3) and the inflation rates in Exhibit 2 (simply put, we have assumed that future inflation expectations are the same as the future inflation rate).

These levels appear to be a reasonable range of possible outcomes for real yields and inflation over the next several years, although we recognize that they are by no means a comprehensive review of possible outcomes. The impact of these different scenarios on total returns for different parts of the bond market is shown in the following exhibits. These results are also shown in tabular form at the back of this report.

All Returns Are Annualized

The vertical axis of the exhibits shows the annualized total return for the holding period and the horizontal axis depicts different combinations of real yields and inflation.



Five Year Time Horizon

- All three bonds provide positive returns in an environment of low real yields and low inflation, although absolute returns are modest.
- Short-term bonds provide very consistent returns (albeit low returns) under all the environments considered. This is clearly the low volatile bond asset, as we would expect.
- Nominal bonds provide the best return in a low inflation, low growth scenario.
- In a higher inflation environment, TIPS provide modestly superior returns (versus short term nominals) if real yields are high (Scenario 3) and significant outperformance to both real and long-term nominal bonds if real yields remain low (Scenario 4).
- In the high real yield/high inflation rate world (Scenario 3) long-term nominal bonds decline over 2.67% per year. In other words, \$100 at time 0 would erode to \$87.66 after 5 years.

Ten Year Time Horizon

- If investors can survive the short-term volatility and look to the long term (10 years), all bonds assets considered may deliver positive returns.
- In most environments, the TIPS and short-term bonds provide reasonably consistent returns. Due to their shorter nature of short-term bonds, book yield is realized and changes in yield over time are incorporated in as reinvestment occurs.
- Under most conditions, TIPS have a higher return than short bonds and long-term nominal bonds. Although the annualized differences do not look large, small variations in returns over long time periods are meaningful due to the impact of compounding. For example, in the low real yield/high inflation scenario (Scenario 4), the annualized returns are 1.63% and 5.91% for short bonds and TIPS, respectively. As such, a \$100 investment results in \$117 if invested in short-term bonds and \$177 if invested in TIPS.
- If inflation stays below 2.3%, long nominal bonds may provide the best returns. TIPS may be a better investment to consider if investors expect inflation to exceed 2.3%.

Overall Comments On Results

Not surprisingly, long-term nominal bonds tend to provide the best return when inflation remains low relative to expectations, even if real yields rise significantly. While this is probably not the most likely scenario, it is an environment when most other assets in an investor's portfolio would struggle. Long-term nominal bonds can play an important role as an uncorrelated asset/diversifier in certain market environments.

An argument can also be made that TIPS play the same diversification role at the other end of the spectrum, when inflation rates are high.

Short-term nominal bonds tend to provide consistently good performance in all environments – this is the low volatility asset class. These bonds rarely finish in last place in the return pecking order, but also rarely finish in first place – they provide the investor with less to worry about. Whether that is optimal depends on the purpose of bonds in a portfolio. If they are to deliver low risk absolute returns and be the steady part of the portfolio, perhaps short-term bonds play this role well, even in higher inflation environments. On the other hand, if bonds are also in position to be a diversifier within a portfolio, the correlation with other assets needs to be considered.

The benefits of diversification are primarily felt when markets move to extreme levels – for example high inflation/low real yields or low inflation/low real yields. In these extreme situations nominal long bonds and TIPS provide interesting additions to an overall portfolio.

Conclusions

This report is not intended to provide recommendations on the “right” bonds to invest in to protect against higher inflation, but rather to give some guidance about potential performance for three distinct bond assets – short-term nominal bonds, long-term nominal bonds and TIPS – under different selected market environments. Needless to say, there are numerous simplifying assumptions that may or may not be valid.

One of these assumptions is that all the bonds are US Government bonds. This is realistic for TIPS, but any investment in nominal bonds (particularly short-term bonds), could benefit from investing in corporate bonds and other credit investments. This exposure to credit would help the yield for the nominal bonds and improve the total return profile reported in this analysis.

Nonetheless, the report sheds some perspective on the absolute and relative returns in different market environments. How investors interpret these returns will be subject to many variables including:

- The level of volatility/risk an investor wishes to take
- The liabilities that are being funded with the assets
- The time horizon for the investor
- Whether the investor is looking at the bond investment in isolation or as a diversifier within a wider investment portfolio
- The degree of conviction an investor has about each of these different environments.

Appendix

5-Year Time Horizon/Holding Period

	Scenarios		Annualized		
	Real Yields	Inflation	Nominal Long Bonds	Nominal Short Bonds	TIPS
1	1.25%	1%	4.91	1.01	1.04
2	2%	3%	1.19	1.26	1.98
3	3%	5%	-2.67	1.50	1.98
4	1.25%	5%	-0.53	1.26	5.20

10-Year Time Horizon/Holding Period

	Scenarios		Annualized		
	Real Yields	Inflation	Nominal Long Bonds	Nominal Short Bonds	TIPS
1	1.25%	1%	3.74	1.26	2.17
2	2%	3%	2.79	1.63	3.73
3	3%	5%	1.78	2.00	5.00
4	1.25%	5%	2.31	1.63	5.91

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