

BONDS

An Investor's Guide to Inflation-Protected Securities

By Annette Thau

In 1997, the U.S. Treasury introduced a new type of bond, whose return includes a component that tracks inflation. The purpose was to provide protection against inflation, which has always been the number one enemy of fixed-income investments, and therefore to protect investors against erosion of purchasing power. This bond was named TIPS:



Treasury Inflation-Protected Securities.

In 1998, this concept was extended to the savings bonds program, through the creation of I Savings Bonds.

In due time, mutual funds offered inflation-protected securities; and most recently, Barclays created an exchange-traded fund (ETF), which also invests in TIPS. (Note that the two terms: “inflation indexed” and “inflation protected” are used interchangeably to designate this type of instrument.)

Inflation-protected securities were described at length in an article that appeared in the February 2004 issue of the *AAIL Journal* (see “TIPS for Inflation-Proofing Your Portfolio: A Guide to Inflation-Indexed Securities” by Annette Thau; available at AAIL.com). This article is an update. It will focus on the significant differences between these securities, and their performance over the past three years. In turn, this information should enable you to choose those that would be most appropriate for you if you want to add some inflation protection to your fixed-income investments.

TIPS and I Bonds: The Basics

TIPS and I Bonds, the basic underlying securities, share a number of features.

Both are issued by the U.S. Treasury, and default risk is zero for either type of bond. In addition, interest income from both types of bonds is taxable at the federal level, but exempt from state and other local taxes.

TIPS and I Savings Bonds also share a similar structure. The first component of return is a dividend payment. The interest rate for the dividend is set at issue, and it remains the same until the bond is redeemed at maturity.

The second component of return for these instruments, however, is what distinguishes inflation-indexed bonds from conventional bonds: namely, the face value of the bond is adjusted periodically at the rate of inflation, based on the CPI-U (the consumer price index for all urban consumers, published by the Bureau of Labor Statistics). This creates still a third component of return: As the face value of the bond is adjusted for inflation, every six months, the dollar amount of the dividend payment is adjusted as well, to track the inflation adjustment.

The accompanying sidebar on page 6 illustrates how this works.

In the event of deflation, the inflation adjustment would result in a decline in the face value of the TIPS, rather than an increase. This would also result in a corresponding decline in the dividend payment. (At the present time, deflation remains theoretical—there has been no period of sustained deflation

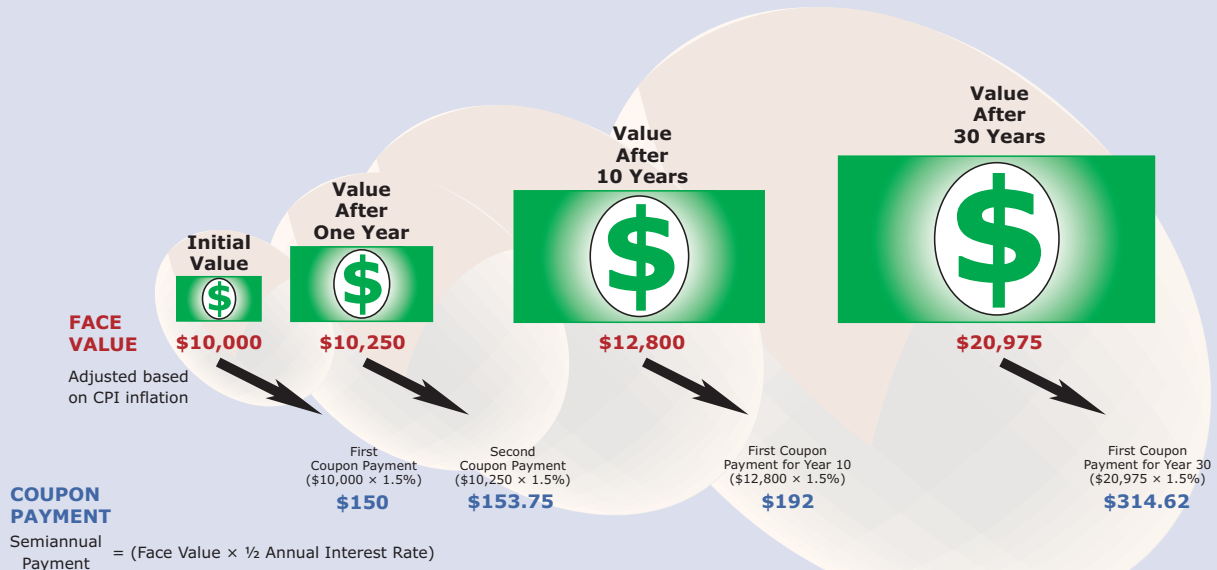
How TIPS Work: An Illustration

Assume you purchase a TIPS with a face value of \$10,000, and a dividend rate set at 3%, maturing in 30 years. Further assume an inflation rate averaging 2.5% a year. Finally, assume that, as is normally the case, the 3% annual interest is distributed in two annual coupons, averaging 1.5% each.

- The first coupon payment will be $\frac{1}{2}$ of 3% multiplied by \$10,000, or \$150.
- At the end of year one, the value of the bond will rise by 2.5% [$(\$10,000 \times 2.5\%) + \$10,000$], or \$10,250.
- The second coupon payment will be based on the increased value of the bond, so it will be $\frac{1}{2}$ of 3% multiplied by \$10,250, or \$153.75.
- At the end of year 10, the value of the bond will have risen to \$12,800 (future value of a bond adjusted for an assumed 2.5% annual inflation). The first coupon payment in year 10 will be based on the increased value of the bond, so it will be $\frac{1}{2}$ of 3% multiplied by \$12,800, or \$192.
- At the end of year 30, the value of the bond will have risen to \$20,975 (future value of a bond adjusted for an assumed 2.5% annual inflation). The first coupon payment in year 30 will be based on the increased value of the bond, so it will be $\frac{1}{2}$ of 3% multiplied by \$20,975, or \$314.62.

All of these numbers are approximate, of course, since inflation is not likely to remain constant for the entire life of the bond.

Example: 3% TIPS with \$10,000 initial face value, assuming CPI averages 2.5% per year over 30 years



in the U.S. for the past few decades.) As an added inducement, however, at maturity the TIPS would be redeemed at the adjusted value of principal or its initial face value, whichever is higher.

TIPS Volatility

The TIPS illustration suggests a bond that is very predictable, and whose price, due to low but constant inflation, will gently march upward. In the real

world, however, TIPS have proven to be much more complex and, in fact, highly unpredictable. The reason for this is that, unlike I Savings Bonds, TIPS are market-based bonds. They are auctioned by the Treasury at its regularly scheduled auctions. Subsequently, they trade in the secondary market. Like all bonds, once they trade in the secondary market, the price of TIPS changes daily.

Changes in the price of TIPS result from two different factors. First, there

is a daily change in the inflation factor, which translates to a minute change in price.

But equally important, the price of TIPS is also affected by daily changes in the level and direction of interest rates. Over periods of weeks, months, or even a year, changes in price due to fluctuations in interest rates have been the dominant factor affecting the price of TIPS—in fact, they have swamped the inflation adjustment.

Contrary to initial expectations, moreover, TIPS have proved to be extremely volatile, more volatile in fact than conventionally structured bonds of the same maturity.

A number of explanations have been offered for the higher volatility: One is that the lower coupon of TIPS bonds, relative to conventional bonds of the same maturity, results in a longer duration, and therefore, higher volatility. Other explanations revolve around inflation expectations.

But whatever the cause of the volatility, the fact remains that when interest rates have risen, TIPS have declined in price more than conventionally structured bonds; and when interest rates have declined, TIPS have risen in price more than conventional bonds with the same maturity.

To complicate matters further, interest rates of TIPS and those of conventional bonds with the same maturity do not always move in sync. For example, between December 2002 and December 2003, the yield of the 10-year TIPS bond declined by 37 basis points; whereas the yield of the conventional 10-year bond went up by 29 basis points. (In both cases, the coupon rate did not change; the yield changed as a result of the change in price of the underlying bond.)

Phantom Income and Taxes

In addition to their volatility, TIPS have a second major drawback—the way they are taxed. For that, we need to look more closely at the inflation adjustment.

The inflation adjustment of TIPS is reflected in the daily market value of these bonds. But the U.S. Treasury does not actually pay out the inflation adjustment on the face value of the TIPS until they are redeemed, at maturity. For that reason, the inflation adjustment is sometimes referred to as “phantom income.” Nevertheless, the inflation adjustment is taxed annually, even though that income may not be received for many years. On a 20-year TIPS, for example, you will be taxed

Table 1. TIPS Mutual Fund Performance Over Last 5 Years

Average Total Returns (Annualized) (%)					
2002	2003	2004	2005	2006	2002-2006
16.01	7.47	7.67	1.93	0.01	6.68

Source: Lipper, a Reuters company.

every year on the inflation adjustment, even though you will not receive that cash until the bond is redeemed, 20 years after its issue date.

To illustrate, suppose you have invested \$100,000 in the hypothetical TIPS illustrated in the sidebar, with a 3.0% coupon. Suppose further that for the past year, the CPI has gone up at a rate of 2.5%. You will owe income tax on the interest income that has been paid out: two coupons that together add up to approximately \$3,037.50. But you will also owe taxes on the 2.5% inflation adjustment, which adds another \$2,500 to your ordinary income. To add insult to injury, you would be taxed on that inflation adjustment even if the TIPS declined in price during the year.

Other TIPS Features

Note, finally, that unless you have very large amounts invested in TIPS that are throwing off interest income measured in the thousands of dollars, reinvesting interest income in small amounts becomes difficult.

The bottom line on TIPS cash flows is: If you buy a TIPS at auction, and hold it until it matures, it will mature at a value that will reflect the inflation adjustments throughout the life of the bond. But if you buy a TIPS in the secondary market or sell it before it matures, the price may be lower than your initial purchase price, or higher, based on changes in interest rate levels of the TIPS.

Because of their high volatility, TIPS are poor investments for the short term (anything less than a few years). In other words, if you want inflation protection, you should buy them and then put them away—don’t trade them. Moreover, the tax features of TIPS

virtually dictate that TIPS should be purchased only in tax-sheltered accounts, such as IRAs destined for retirement. That eliminates having to pay a tax annually on phantom income.

Buying TIPS

TIPS are issued at the regular quarterly auctions held by the Treasury, like any other Treasury bond. They are currently issued in five-year, 10-year, and 20-year maturities.

The simplest and cheapest way for individuals to buy TIPS is to purchase them directly at the Treasury’s regular quarterly auctions, through the Treasury Direct program, via what is called a “non-competitive tender,” whereby you agree to accept the yield of the auction. The minimum purchase is \$1,000; the maximum that can be purchased by an individual at one auction is \$5 million. For full details, go to the Treasury Direct Web site at www.treasurydirect.gov.

As of January 2007, individuals can purchase TIPS in either of two ways—through a broker, or by submitting a non-competitive tender online. [Note that if you have purchased TIPS any time since their inception up to January 2007, these are now called Legacy TIPS.]

TIPS Mutual Funds

Total returns of mutual funds that are invested in TIPS have been as volatile from year to year as those of the individual TIPS.

Before proceeding further, let’s look at average annual total returns of TIPS funds for the past five years (see Table 1).

What is most striking about these returns is their variability from year to

year, ranging from stellar returns of 16% in 2002, to flat in 2006. During the first half of 2006, returns were actually negative. The year finished flat because returns went up during the second half.

At the time I wrote the first article on TIPS, early in 2004, there were only a handful of bond funds investing primarily in TIPS. The 16% returns of 2002 generated a lot of excitement and the number of funds mushroomed to well over 100 at present. But due to the disappointing recent performance of these funds, investors have been pulling money out of TIPS funds.

These fund flows point to a fundamental misunderstanding of TIPS. Clearly, in 2003, investors flocked to TIPS funds hoping returns would match those of 2004. The 2002 total returns, however, were due to interest rate movements during that year, as well as concurrent high demand for TIPS, which generated significant price appreciation for the underlying bonds. They were clearly not the result of the dividend income (around 2.5% to 3%); or of the inflation adjustment, which tracked the rate of inflation (approximately 2.5%).

The variability of total returns of TIPS funds over the past five years underlines the fact that these funds should not be regarded as short-term investments.

If you look at longer time periods, however, the perspective is quite different. Assuming even modest rates of inflation, say 2% to 3% per year, the inflation adjustment plus rising dividend income should smooth out and boost total return. Indeed, over the past five years, the average annual total return of TIPS funds, at 6.68%, was higher than the returns of two categories of funds with similar credit quality and duration: GNMA funds (average annual total return, 3.9%) and intermediate government funds (average annual total return, 3.83%), according to data supplied to the author by Reuters' Lipper. Needless to say, there is no guarantee that this will continue to be the case.

Is there any advantage to buying

TIPS through funds rather than by buying the individual bonds?

For reasons that escape me, individual bonds and bond funds are treated in the financial press as interchangeable instruments. *But they are not.*

For starters, if you hold individual TIPS and redeem them when they mature, you will receive, at minimum, no less than the initial face value of the bond; or more likely, the adjusted value of principal. On the other hand, a TIPS fund, like any other bond fund, has no "maturity" date. That is to say there is no date at which the entire portfolio matures. Given the volatility of the underlying bonds in the portfolio, there is no way to know what its price will be when you want to sell. Finally, the cheapest way to buy TIPS is at auction, through Treasury Direct, as mentioned above. Any fund, even those with low expense ratios, charges those expenses against total return and this obviously reduces total return.

One advantage of TIPS mutual funds is that they do solve the reinvestment problem. However, they do not solve the taxation problem. Distributions from TIPS bond funds—primarily interest income with an occasional tiny component of capital gains—are taxed as ordinary income, like individual TIPS bonds. Moreover, you will be taxed on the inflation adjustment annually, even though you don't receive the adjustment until maturity, just as you are for individual TIPS. Mutual funds will supply a form analogous to a 1099 that tells both you and the IRS how much you owe. WARNING: One article I read specified that funds make distributions that cover the inflation adjustment and that provide cash to pay the taxes. That is totally incorrect. "Advisors" at a leading mutual fund group were also quite vague on this topic.

One final note is in order. Unless you invest in a fund that tracks an index of TIPS, in all likelihood your fund will probably hold securities other than TIPS in addition to the TIPS. TIPS funds go under a variety of names: The phrase "inflation indexed" or "inflation protected" may appear in the fund name;

others use the phrase "real return" or "real rate" somewhere in the name. But as is often the case with bond funds, the name of the fund does not mean that all of the assets in the fund are TIPS. In order to generate higher returns, many TIPS funds have added a variety of other investments to TIPS issued by the U.S. Treasury. These include TIPS bonds issued by foreign governments, as well as commodities, high-yield (junk) bonds, or indeed, any asset that the manager thinks will track inflation or add some return. So before purchasing any fund, the first step would be to examine its investment mix.

As usual, also, given the variability of returns from year to year, discussions of TIPS funds in the financial press, or on financial Web sites, usually revolve around timing: Is this a good time to invest in TIPS? How likely are they to generate better returns than other sectors of the bond market over the next six months? Unfortunately, few of these articles ever evaluate the accuracy of their crystal ball in the past. In any case, any of these judgments are beside the point: The main reason to invest in a TIPS fund is inflation protection, and not whether the TIPS fund will provide better returns than alternative bond investments over short periods of time.

If you decide to invest in TIPS through a fund as a first cut, only invest in a no-load fund with low annual expenses (at the current time, the Vanguard TIPS fund has the lowest annual expense at 20 basis points).

A TIPS Exchange-Traded Fund

Another option for investing in TIPS is through an ETF. Barclays now offers a TIPS ETF, designed to track the Lehman TIPS index.

Inception for the Barclays ETF was 2003 (just after the stellar returns of 2002!). The ETF promptly became one of the largest funds investing in TIPS. Total returns for the ETF, however, have pretty much matched those of the sector as a whole. But because the ETF tracks an index of TIPS and is unmanaged, the

Table 2. I Bonds Earnings Report for Bonds Held Over 5 Years (Nov. 2006–Oct. 2007)

The table shows semiannual values for \$100 Series I bonds.* Values for other denominations are proportional to the values shown. For example, the value of a \$50 bond is one-half the amount shown and the value of a \$500 bond is five times the amount shown. The Current Earnings column shows the annual yield that a bond will earn during the period indicated. The Earnings From Issue is the bond's yield from its issue date to the date shown or date adjusted as described in the footnotes.

Series I Bond Issue Dates	Earning Period		Start Value (\$)	End Value (\$)	Current Earnings (%)	Earnings From Issue (%)
	Start Date**	End Date**				
5/2002 – 10/2002	11/1/2006	5/1/2007	121.64	125.68	6.64	4.62
11/2001 – 4/2002	11/1/2006	5/1/2007	125.24	128.44	5.11	4.60
5/2001 – 10/2001	11/1/2006	5/1/2007	135.52	139.68	6.14	5.65
11/2000 – 4/2001	11/1/2006	5/1/2007	142.96	147.64	6.55	6.08
5/2000 – 10/2000	11/1/2006	5/1/2007	150.08	155.16	6.77	6.38
11/1999 – 4/2000	11/1/2006	5/1/2007	153.32	158.36	6.57	6.22
5/1999 – 10/1999	11/1/2006	5/1/2007	156.16	161.20	6.45	6.06
11/1998 – 4/1999	11/1/2006	5/1/2007	160.20	165.36	6.44	6.01
9/1998 – 10/1998	3/1/2007	9/1/2007	164.96	170.36	6.55	6.01

*Monthly increases in value, applicable to Series I bonds, are not shown in the table.

**Each Start Date and End Date is for the first date of the range listed in the Issue Dates column. Add one month for each later issue month. For example, a Series I bond issued in 7/2002 would be worth \$121.64 on 1/1/2007 and \$125.68 on 7/1/2007.

Note: A Series I bond is assessed a three-month interest penalty if redeemed less than five years after its issue date.

Source: U.S. Savings Bonds Earnings Report, www.treasurydirect.gov.

expense ratio is low; and it will continue to track the inflation adjustments.

Like other bond ETFs, the TIPS ETF is a closed-end fund. If you look up returns for that fund, total returns are broken down into returns based on market price and returns based on net asset value (NAV, the actual market value of the bonds in the fund). Since its inception, the market price of the fund has been very close to NAV (it has not been trading at either a large discount or a large premium). That could change if TIPS funds become more (or less) popular.

I Savings Bonds

Total returns of I Savings Bonds have been much more stable and predictable than those of TIPS. For most individual investors seeking inflation protection for a portion of their fixed-income portfolio, this is by far the superior product.

As with TIPS, total return is based on two components. The first is a guaranteed minimum rate, set at the time of issue. The second is an infla-

tion component, which tracks the CPI, and which is reset every May and every November. These two components comprise what is called the combined rate. (The combined rate does not simply add the two components: They are combined according to a formula, explained on the Treasury's Web site.) To date, the combined rate has varied from a low of around 4% to a high of about 7%.

One significant difference between TIPS and I Savings Bonds is that the I Bonds are not market-based. They are savings bonds, issued by the Treasury. They are issued only to individuals, and they do not trade in the secondary market. You buy I Bonds from the Treasury through the Treasury Direct program (www.treasurydirect.gov). If you want to sell them, you simply redeem them to the Treasury. As a result, the price at which you redeem I Bonds can never decline below your purchase price. (As an added inducement, the Treasury promises that in the event of deflation, the price of an I Bond will never decline below its issue price.)

You can redeem I Bonds any time

after one year. (The only penalty is that if you redeem before five years, you forfeit three months' worth of interest.)

Here are some additional notable features of I Savings Bonds:

- First, I Bonds are accrual securities. The value of the principal is adjusted every six months, as is the combined rate. But significantly, no monies are paid out—neither interest nor “inflation adjustment”—until the bonds are redeemed. The entire amount, moreover, continues to earn interest at the combined rate, which is reset every six months until the bonds are redeemed. That solves the reinvestment problem.
- Taxes are not payable until the bonds are redeemed. There is no annual tax on phantom income or on interest income. Earnings continue to accrue tax deferred on the interest earned, as well as on the inflation adjustment, until the bonds are redeemed.
- You can buy I Bonds at no cost—no commissions of any kind. Furthermore, the organization that sells you these bonds (i.e.,

the Treasury) will maintain your account free of charge to you.

- I Savings Bonds qualify for the education tax exclusion. If the proceeds are used to pay qualified college expenses, no federal taxes are due. Qualified expenses include college fees and tuition but they do not include room and board, books, etc. Note also that to qualify for the education tax exclusion, a number of provisions must be met: Income caps apply (indexed to inflation) and the bonds must be bought in the name of the parent (not the child). For full details, consult the Treasury Direct Web site (www.treasurydirect.gov). However, the program is attractive enough to be of interest to most families in middle-income brackets.
- You can buy I Bonds in the privacy of your home, via the Internet, through Treasury Direct. You can also set up an automatic withdrawal plan through your employer, or you can buy these bonds through your local bank.

How have I Savings Bonds performed since their inception?

Buried in the Treasury Direct Web site are two tables that show semiannual earnings on I Savings Bonds. (To find the most recent tables that show current values, click on Tools and then “Savings Bond Earnings Reports” at the Treasury Direct Web site.) Table 2 shows earnings for bonds that have been held for more than five years, since the inception of the program, in 1998.

The table is a bit confusing. Reading from left to right, it shows:

- The issue dates for the I Bonds, which are listed in six-month ranges.
- The “start date” and the “end date” for the most recent six-month period for the first date in the range listed.

For later issue dates within the range listed, the start and end date for the most recent six-month period must be adjusted—for instance, if the issue date is two months after the first date listed in the range, you should add two months to the “start date” and “end date.”

- The “start value” is what the bond could have been redeemed for at the beginning of the most recent six-month reset period; and the “end value” is its value at the end of the six-month period.
- The rest is self-explanatory.

If you compare earnings on I Bonds to those of TIPS bond funds, the difference is striking: While the combined rate changes every six months, the bond’s value just goes up. There are no declines. Moreover, the returns have been modest, but real: I bonds purchased in 1998 and 1999 went up in price by about 60% to 70%. In absolute terms, these are attractive returns. As for TIPS, total returns were higher at the inception of the program than they are now: Interest rates were higher. Of course, future returns are uncertain. If inflation is low, and interest rates remain at current levels or decline, total returns may continue to be lower than at the inception of the program. But note that in the event inflation rises and interest rates rise, a scenario that devastates most bonds (including, as noted above, the short-term return of TIPS), the returns of I Savings Bonds would actually go up, since the combined rate would go up; and the inflation adjustment would apply to all monies previously invested in your I Bond account.

I Savings Bonds are sold at face amounts ranging from \$50 to \$10,000. They are sold in electronic form as well as in paper form. An individual can buy up to \$30,000 worth of I bonds in electronic form and \$30,000 in paper

form. To dot i’s and cross t’s, that means that a married couple can invest up to \$120,000 per year in I Bonds.

If you are looking for fixed-income investments with the highest credit quality and inflation protection, as well as deferred taxes, before investing in annuities with high commissions and all kinds of surrender penalties, consider I Bonds.

Conclusion

I have discussed the performance of TIPS bonds, bond funds and I Savings Bonds.

All three provide a measure of inflation protection. But the volatility and tax features of TIPS make them suitable investments primarily for tax-sheltered accounts, which will be held over long periods of time.

I Bonds, on the other hand, provide inflation protection as well as maximum price safety—they cannot go down in price—and taxes can be deferred for as long as 30 years. The education exclusion is another extremely attractive feature of these bonds.

One final comment is in order. The question is often asked: Which will have a higher total return over a given period of time (say 10 years)—conventional bonds or inflation-indexed bonds?

That will depend entirely on the rate of inflation. If inflation turns out to be low, or if there is actual deflation, conventional bonds may indeed turn out to have higher returns. That, however, cannot be known at the time of purchase. Indeed, very often, the time to buy securities often turns out to be the time “nobody” loves them. I do not want to suggest that you should put all your fixed-income investments in inflation-indexed bonds, but they deserve consideration for a portion of your bond portfolio. ▲

Annette Thau, Ph.D., is author of “The Bond Book: Everything Investors Need to Know About Treasuries, Municipals, GNMA’s, Corporates, Zeros, Bond Funds, Money Market Funds, and More” (copyright 2001, published by McGraw-Hill; \$29.95). She has spoken to AAIL chapters in different parts of the country about bonds and bond funds.

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