



Flipping TIPS – Redux

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Author's Note

The authors would like to thank Robin Lumsdaine from Deutsche Bank for providing the idea on the path dependency of TIPS. Her point was first raised in the *Deutsche Bank Fixed Income Weekly* on November 14th, 2003. She also provided a great deal of information regarding this topic to us and we could not have written this without her help.

Abstract

There is a quasi-passive strategy utilized by early adopters of TIPS known as “flipping TIPS” where the newest issue is always purchased to maximize the deflation hedge. In our first paper on this subject, “Flipping TIPS,” we argued that this strategy is not guaranteed to work. We further elaborate in this paper, addressing the possible costs involved in selling a bond whose inflation path is partially known into a new bond with an uncertain path. Due to the dependency of the inflation path for TIPS holder’s total return, flipping TIPS may be too expensive for the possible deflation pickup. We will not attempt to show why the “flipping TIPS” strategy may not provide the deflation protection investor’s think; for a review of those topics please see our earlier piece.

The Path Dependency of TIPS

At first glance the idea that TIPS' return should be dependant on the path of inflation and not just the amount of inflation is counterintuitive. These securities should return a real rate, known *a priori*, and then inflation on top of that. It turns out because of the TIPS principal adjustment mechanism¹, the timing of inflation matters greatly to the total return of a TIPS holder.

To illustrate this, let's imagine four hypothetical cases over a 10 year period: Extreme Spike, Spike, Level, and Extreme End Spike. All of the scenarios have total inflation during the period of 27.3% (2.4% annualized), a starting CPI of 185.2 and an ending CPI of 235.7. All that varies is the path that the CPI growth takes to get there. In Extreme Spike the entire growth happens in month one, in Spike the first three months have inflation of 2% and then the CPI growth levels off. Level is just that, constant 0.2% monthly inflation and Extreme End Spike has the entire inflation occurring in the last month².

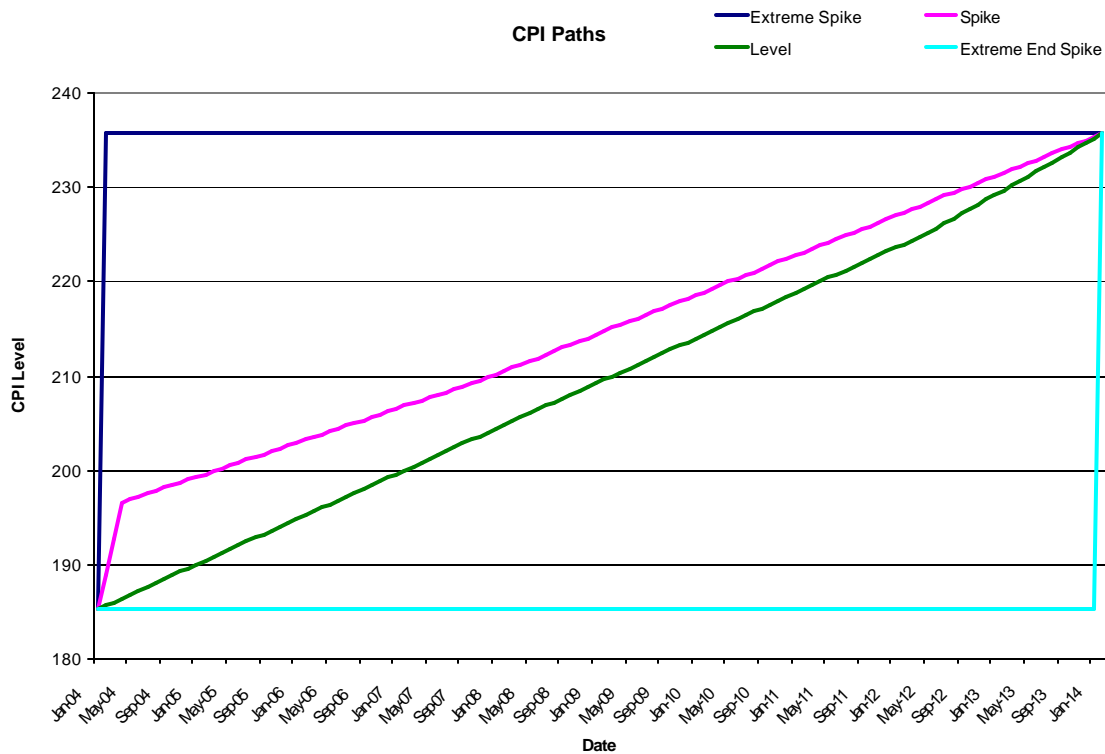


Figure 1: CPI Paths

¹ This is a feature of the principal adjustment being the basis for the coupon payment. If a true CPI floater or a zero coupon instrument was issued this path dependency would not matter. Furthermore the deflation option would have to be valued differently with these structures.

² New Century Advisors does not believe any of these is likely, but merely are illustrative of the effect of path dependency.

Since TIPS pay their coupon based on an inflation-adjusted principal amount, the two are tied together. The basic point of the path dependant approach is that you would rather have your inflation early in your holding to maximize your coupon income over the lifetime of the bond. The following chart shows the cumulative coupon income earned for the aforementioned scenarios. We assume a 3% annual coupon for the bond.

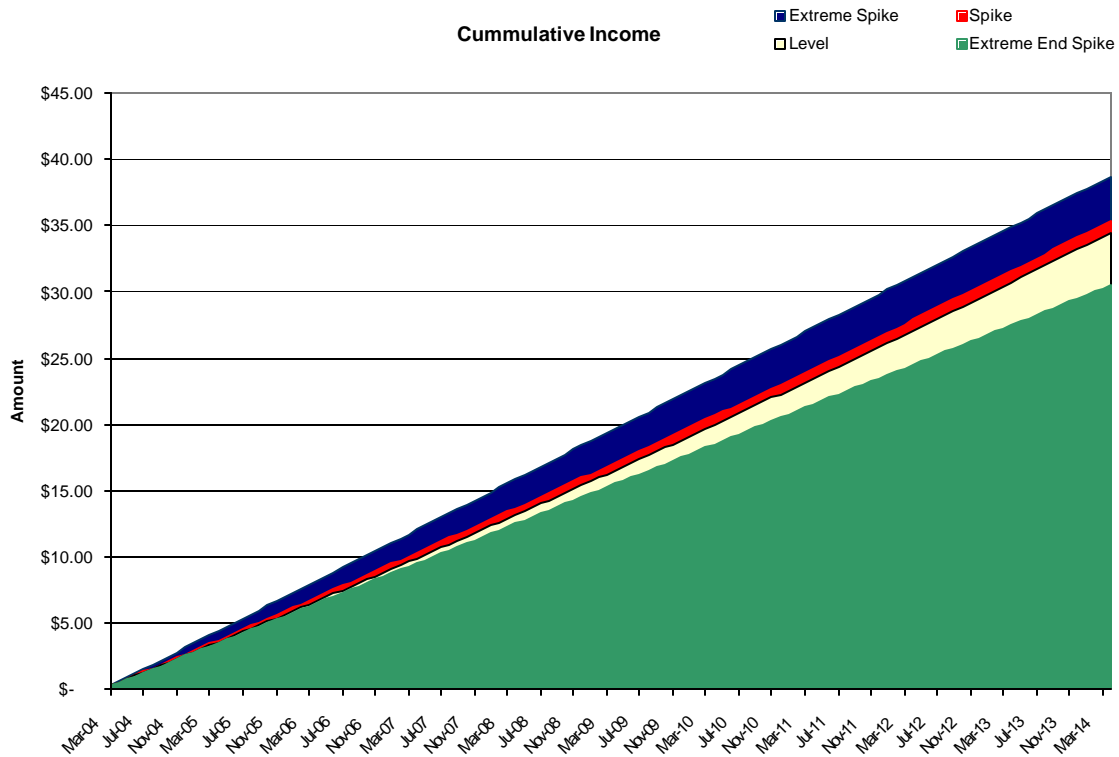


Figure 2: Income Summary

We can see that the Extreme Spike earns over \$8 more in coupon income than the Extreme End Spike scenario. This is despite both scenarios having the same cumulative inflation and the same coupon. Furthermore this \$8 is approximately 25% more income. I think this is a small amount.

While both the extreme scenarios are fairly improbable, looking at the two inner paths is equally illustrative. The Spike scenario earns its holder an extra \$0.86 or 2.5% in coupon income over the Level scenario. This is despite a relatively minor spike in early inflation followed by a similar constant rate for the remainder of the bond's life.

The total returns for the various scenarios are equally interesting. Remember since the beginning and ending CPI value are the same for all the bonds, they all have the same principal value at maturity.

| | Extreme Spike | Spike | Level | Extreme End Spike |
|-------------------|---------------|-----------|-----------|-------------------|
| Total Income | \$ 38.75 | \$ 35.38 | \$ 34.52 | \$ 30.57 |
| Ending Par | 127.27 | 127.27 | 127.27 | 127.27 |
| Total Ending Cash | \$ 166.02 | \$ 162.65 | \$ 161.78 | \$ 157.84 |
| Total Return | 66.02% | 62.65% | 61.78% | 57.84% |
| Annualized | 5.15% | 4.94% | 4.88% | 4.63% |

Figure 3: Total Return Analysis

Looking at the differences, an investor comparing the two spike scenarios has a total return difference of over 8% (53 bps annualized). Comparing the two inner scenarios the investor experiencing a spike in CPI will earn an extra 0.86% (6 bps annualized). All of these return differences are due solely to the path that inflation takes over the lifetime of the bond³.

Flipping TIPS

To bring this back to our main point, that the quasi-passive flipping TIPS strategy does not always maximize your deflation hedge, think about what this means to the end investor. If you are currently holding a bond with an inflation spike somewhere in its past, and are considering buying a new bond with an unknown inflation path, you are giving up a certain amount of return since both bonds will have the same future path⁴. In the case above giving up a bond with a spike in its past would cost 6 bps a year in total return. An investor could improve her utility by purchasing an inflation floor if its cost was less the 6bps per year. This is especially true since, as we have shown in the past, the flipping strategy does not guarantee a deflation hedge while an inflation floor contract does.

In other words, flipping TIPS gets rid of all the positive path attributes imbedded in the security in exchange for a lower index ratio. The decision to do this is not a simple passive strategy but one that must be evaluated and considered carefully to maximize an investor’s utility.

New Century Advisors is pleased to discuss these, and other issues, regarding TIPS investing and strategies. Please feel free to contact us with any question you may have or with help regarding your current TIPS holdings.

³ In fact the differences are worth even more then this as the scenarios with inflation spikes return more of their income early on when the present value of the dollars is highest. This effect only increases the preference of early spikes of inflation and thus is left out of the analysis. It should be kept in mind since we are talking about inflation adjusted securities; constant purchasing power is obviously a concern.

⁴ If you flip into a new bond with the same maturity (i.e. if the Treasury issues five year TIPS again) this is explicitly true. If the new bond has a different maturity this need not be the case, but if you assume flipping as a permanent strategy and the Treasury will continue to issue TIPS, as long as the next flip point is before the maturity of the old bond, the paths will explicitly be identical.