

Must Bond Investors Fear Rising Interest Rates?

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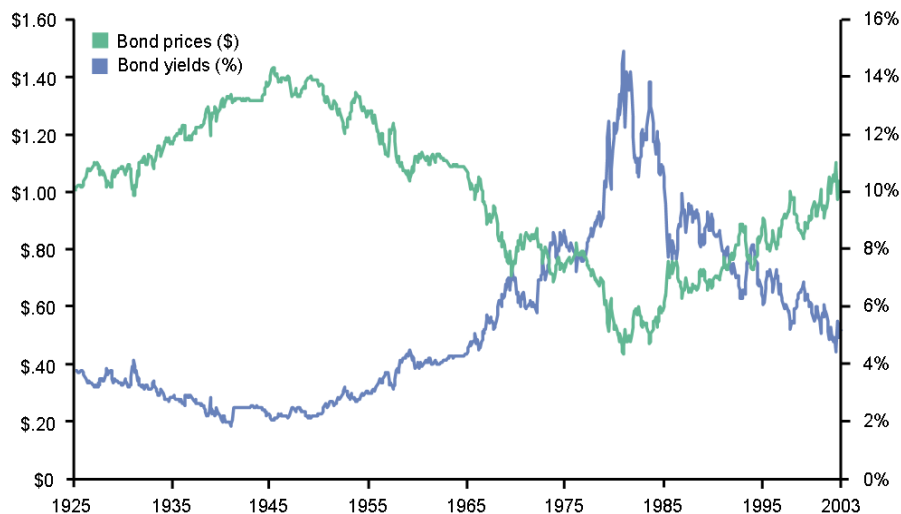
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30 years ago in 1981 the One-Year Treasury reached its all time high of 14%. Today the One-Year Constant Maturity index, published by the Federal Reserve Board hovers around .10%. There has never been a time in history when interest rates have fallen so far. Because of this, most economists and investment advisors expect interest rates to climb from these historic lows.

Would an interest rate increase hurt bond investors? The conventional opinion is *yes*. Interest rates go up, bond prices go down, bond investors lose. From most investment industry professionals, the talk is not *if* but *when*. A recent webinar sponsored by three major fund managers entitled *Preparing for the Burst of the Bond Bubble* warns: *Higher rates and inflation are academic. Rates will rise, bond prices will fall. It may not happen tomorrow or next week, but it's coming.*⁽¹⁾

In contrast to this entrenched belief, my research tells a different story: If history is any guide, a rise in interest rates may *not* be as detrimental to bond investors as is commonly thought.

The interest rate/bond price connection is one of the first investment lessons advisors learn. Most advisors have stretched out their arms and made a scale with interest rates in one hand and bond prices in the other to demonstrate this relationship to clients. Or, advisors draw pictures similar to this overlay of bond prices to bond yields for the 20-Year U.S. Government Bond Index. The message becomes simply, “Interest rates go up--bonds go down.”



(Source: Merrill Lynch)

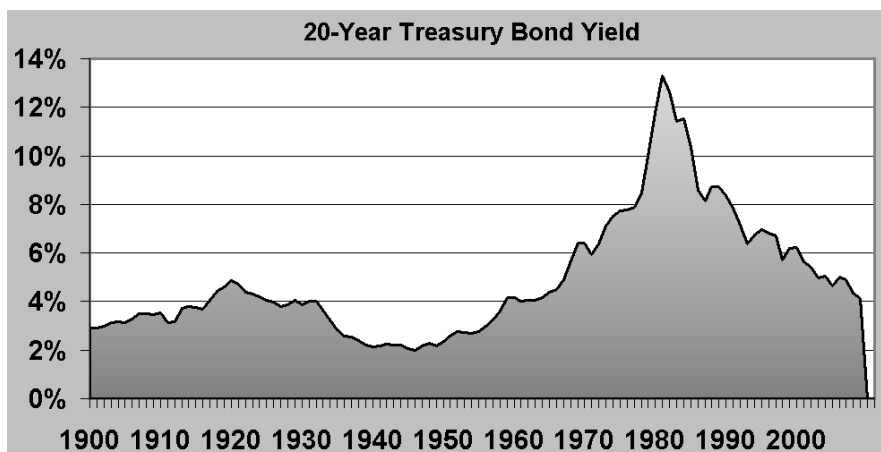
The fundamental link between bond prices and interest rate movements for coupon bonds is: $\text{Coupon Rate} \div \text{Market Interest Rate} = \text{Bond Price}$. Duration and convexity formulas are more precise renderings of this relationship. There are many variations of these formulas, but they all include the premise that as interest rates move in one direction, bond prices pivot conversely. Burton Malkiel refined this relationship in 1962 with five theorems that propose: 1) Bond prices move inversely with interest rates. 2) Longer term bonds have more interest rate risk. 3) Higher coupon bonds have less interest rate risk. 4) The longer the bond maturity, the more its price will fluctuate. 5) Gains from interest rate declines exceed losses from interest rate increases. ⁽²⁾

Bond price formulas are not necessarily inaccurate, but they are problematic. Investors do not buy equations, they buy bonds. And often they do not even buy bonds; they buy bond funds, index funds, or balanced funds.

Our research indicates that bond funds and indexes may be resistant to these theories and formulas. By stepping back from these formulas and simple pictures into the real world, in stark contrast to the automatic beliefs about interest rates and bond price movements, diversified bond fund investors may actually profit long term, even in a *rising* interest rate period.

To test this claim we measured what bond mutual funds and indexes actually did when interest rates rose. This is not easy to do because few of us have experienced prolonged rising interest rates.

A brief history of interest rates from 1900: Nothing dramatic happened for 50 years. Then from 1950 to 1980 interest rates rose by 1,000 basis points. From 1980 to 2010 interest rates fell by a staggering 1,200 basis points. The 60 year period is a mountain peak at the end of a curvilinear plain, a century long EKG-like interval.



(Source: www.Crestmontresearch.com)

How did investors do during rising interest rates? There is little data. Of the 26,325 mutual funds (all share classes) identified by Morningstar, Inc. only 4,227 were taxable bond funds. Bond funds hold only half of the assets of stock funds, according to the Investment Company Institute. Of the 4,227 taxable bond funds, only *five* exist today with an inception date before 1963. How did these five do? The five funds' aggregate cumulative return from 1963-1981, a nineteen-year period when interest rates rose over three fold, was +116%, a 4.15% annual return. That is, a *positive* 116%.⁽³⁾ An equal-weighting of the only five taxable bond funds available then and now, during the worst run-up in interest rate history would have doubled.

Is our sample of five bond funds a reliable representation? Though it would have been virtually impossible to reach back and pick just the right funds, these are not just the *right* funds. One of the five funds lost money for the 19 year period; another made less than a 1% annual return.

What about survivorship bias? Since our investment assumption period reaches back almost 50 years, can we assume that there were other bond funds in which one could have invested that might have skewed these results? According to Blake, Elton, and Gruber there were up to 46 taxable bond funds in 1979.⁽⁴⁾ (There were likely fewer than 46 for the entire 1963-1981 period we tested.) The number of bond funds "grew dramatically" in the 1980s.⁽⁵⁾ "At the end of 1978, there were...only 84...bond and U.S. government security funds...By the end of 1990 there were...914...bond funds."⁽⁶⁾ This should not be a surprise. Interest rates peaked in 1980. By then bonds became a very attractive investment option and fund managers seized the opportunity with the launch of more upon more bond funds.

Further, according to Elton and Gruber, "Survivorship bias is less important for bond funds than it is for stock funds since bond fund performance is less variable..."⁽⁷⁾ A major bond fund study conducted by Elton, Gruber, and Blake in 1995 indicated that a reasonable survivorship factor for bond fund returns was only 27 basis points (bps) yearly.⁽⁸⁾ Even if returns are discounted by the normative equity fund maximum from 50 to 200 bps survivorship bias factor, the results do not change: *long term aggregate bond fund returns were positive during steeply rising rates, even after adjusting for potential survivorship bias.*

These are actively managed bond funds. What about indexes? Can we build a generic case and filter out the benefits of active management from this analysis? After all, active management tends to outperform in bad

markets. Besides the relative availability of bond fund and index data when compared to individual securities, there is another reason why using index data may be relevant. “One of the advantages of using indices is that their durations remain fairly constant over time, unlike durations for individual bonds.”⁽⁹⁾

There are very few fixed-income indexes with a long-term track record. Elton and Gruber observed that they knew of only four fixed income indexes that existed as late as the period from 1980-1992.⁽¹⁰⁾ MSCI does not publish bond indexes. Russell publishes one. Dow Jones has one, established 1996. Standard & Poor’s publishes about 40 bond indexes, but the oldest goes back only to 1989.

Barclay’s Capital owns the bond index space. They publish over 10,000 bond indexes. (Since most are custom indexes it is difficult to generalize about their returns.) Their oldest is the *Barclays Capital US Aggregate Bonds Index*. From its inception January 1, 1976, and for the following 10 years, when interest rates *climbed* by 300 basis points, the *Barclays Capital US Aggregate Bonds Index* did not have a single down year and produced a compounded cumulative return of 171%. This statistic alone should bring comfort to bond investors.

Further, specific to the above 1963-1981 period, when interest rates increased three fold, 20-Year Treasury Bonds returned a compounded 27.4%,⁽¹¹⁾ and 10-Year Treasury Bonds returned a compounded 87.7%.⁽¹²⁾ The higher return for the shorter duration 10-Year Treasury Bond is what we might expect in a rising interest rate environment. This may be the most instructive lesson from the duration formula (and Malkiel’s 2nd Theorem): Shorten maturities during a rising interest rate period.

What about inflation? Is it the menace that the media and the investment industry depict? How did bonds perform against inflation during this rising rate period? From 1963 through 1981 T-Bills earned an average rate of return of 6.29% vs. an a-historical 6.12% average inflation rate.⁽¹³⁾ Even lowly Treasury bills beat near hyper-inflation.

What can we glean from this? Just as stocks tend to resist following *capital asset pricing models*, bonds tend to return what they will instead of what we predict. Bond pricing formulas seem to work better on the chalk board than outside of the classroom. Our predictions based on models are often wrong. What we end up saying when they are wrong are the four most often heard words in the investment business: *The results surprised us.*

The truth is that investment markets are more random and organic than we would have it. Supply and demand pricing law is as relevant for bonds as it is for stocks. Like stocks, bonds are worth whatever buyers agree they should be priced at in the market. Even in a rising rate environment, if the alternative investment choices are deemed less appealing, investors can bid up prices. Is it unexpected that investors could grow *more* interested in bonds as interest rates go up?

Chris Phillips, CFA, Senior Investment Analyst at the Vanguard Investment Strategy Group, recently wrote about rising interest rates and resulting fixed income total return, “Over the long term, interest income—and reinvesting of that income—accounts for the largest portion of total returns for many bond funds. The impact of price fluctuations can be more than offset by staying invested and reinvesting income.”⁽¹⁴⁾

The following chart demonstrates the dramatic year over year percentage increase in income during the rising interest rate environment from 1963 to 1981. This income growth proved to be substantial enough to counterbalance price compression and result in a net total return gain for the funds studied.

Rising Rates Means Rising Income

Year	Nominal Rate	% change from year before
1963	4	
1964	4.19	4.75%
1965	4.28	2.15%
1966	4.93	15.19%
1967	5.07	2.84%
1968	5.64	11.24%
1969	6.67	18.26%
1970	7.35	10.19%
1971	6.16	-16.19%
1972	6.21	0.81%
1973	6.85	10.31%
1974	7.56	10.36%
1975	7.99	5.69%
1976	7.61	-4.76%
1977	7.42	-2.50%
1978	8.41	13.34%
1979	9.43	12.13%
1980	11.43	21.21%
1981	13.92	21.78%

(Source: Nominal Rates, Federal Reserve. Market yield on U.S. Treasury securities at 10-year constant maturity, quoted on investment basis)

Caveat: Despite my findings that bond returns go up during rising rate periods, the assertion is counterintuitive. Most will say that the opposite is true. I have been accused (fairly) of not believing too strongly in my own data. This may surprise you, but I would rather be uncertain about this than retain a false certainty and overstate my case. We are money managers. I would rather be unsure and careful, than sure and make a big mistake. A *big mistake* would be to go *all in* with non-diversified long-term bonds. The worst thing that a money manager can do is to insist that the markets can not disprove his argument; there is never a greater risk than when money managers have no doubts. Further to that, as a researcher, there is no greater failing than for your theories to devolve into dogma.

I believe that there is a better chance that my research suffers from *style* bias rather than survivorship bias. Each of the five mutual funds observed were corporate bond funds. There are three major types of bond funds represented by the three market participants or borrowers: Government, Corporate, and Mortgage. Rising interest rates (such as the period from 1950-1980) are often reflective of greater economic activity and marginally higher GNP rates. Corporate bonds may enjoy a greater performance bonus in rising interest rate/GNP periods as Elton and Gruber have postulated, ⁽¹⁵⁾ and I have observed. As a money manager, then, I might focus more assets on corporate rather than on government or mortgage bonds if I felt we were in a sustained period of rising economic activity. In contrast, the only positive result from rising GNP for government bonds is a possible ratings upgrade—and we have seen with Japanese and US government bonds that the difference between a AA+ and AAA can be very little when it comes to pricing. However, the difference in increased profitability for companies in a rising GNP period can be significant in their ability to avoid default, pay higher interest rates, and increase asset values.

Additionally, my research may suffer from *term* bias. My conclusions are based on a long-term diversified portfolio of bond funds with dividends reinvested. As you extend time frames with any investment, the short-term peaks and valleys tend to smooth. A recent *peak*, for example, was the Barclays US Government/Credit Long Index, which was up 19.4% YTD through 10/21/11. ⁽¹⁶⁾ That is a big jump for an index that earned an 8.05% annual return for 10 years through 09/30/11. Short-term returns are much more reflective of the interest rate/bond price fulcrum described above, than long-term returns. Short-term volatility is a potential even with an asset like

fixed income where variability of returns is long-term narrow. This volatility is unfortunately hidden from view because of my long-term horizon.

A final word on investment models. Some analysts suggest colorfully that *stocks are an art, bonds are a science*. Neither is quite true. Investment analysis is more the province of historians and archivists, not artists or scientists. We are most reliable when we identify recurring or reversing trends. This is what I have attempted here.

I do not conclude that rising interest rates are preferable for bond investors. During the 29 year declining rate environment from 1982-2010, the five bond funds produced predictably better annual performance than in the rising rate environment. (It is interesting, however, that there is no difference between a bull market in T-Bills and a bear market in T-Bills. The geometric return on T-Bills was 3.60% for the 1950-1980 bear market and 3.65% for the 1981-2010 bull market.) Nor can I conclude that duration formulas are not accurate, perhaps only retrospectively, for coupon bonds. We tested rising interest rates against bond funds, not coupon bonds. I have also assumed a widely diversified, equally weighted, portfolio of bond funds. One fund is not enough.

Our research suggests that rising interest rates for the long-term diversified bond fund, bond index or balanced fund investor does not appear to be the threat that our models (or webinars) imagine.

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Notes:

1) Webcast, April 26, 2011, Tom Lydon, Editor of ETF Trends; Joe Leary, US Treasury Rates Strategist at CitiGroup Global Markets, Inc.; and Dan O'Neill, president of Direxion Shares

2) *Portfolio Construction, Management, & Protection*, 5th Edition, Robert Strong, pages 349-352, Southwestern, 2009.

3)

Fund	Symbol	Incept	Morningstar Category	Type
DWS Core Plus Income S	SCSBX	4/24/1928	Int Term Bd	Corporate
Nicholas High Income I	NCINX	5/1/1930	High Yld Bd	Corporate
Northeast Investors	NTHSX	8/1/1950	High Yld Bd	Corporate
Putnam Income A	PINCX	11/1/1954	Int Term Bd	Corporate
Wells Fargo Advantage High Yld Bond B	EKHBX	9/11/1935	High Yld Bd	Corporate

Predecessor funds may have had a different name.

Fund source: *Morningstar Advisor Workstation*. Performance data source: *Yahoo! Finance* and *Morningstar, Inc.*

4) *The Performance of Bond Mutual Funds*, Christopher R. Blake, Edwin J. Elton and Martin J. Gruber, *The Journal of Business*, Vol. 66, No. 3, The University of Chicago Press, Jul., 1993 (<http://www.jstor.org/stable/2353206>), p. 373

5) *Fundamental Economic Variables, Expected Returns, and Bond Fund Performance*, Edwin J. Elton; Martin J. Gruber; Christopher R. Blake, *The Journal of Finance*, Vol. 50, No.4. (Sep., 1995), p. 1237

6) This sample includes municipal bond funds, whereas the smaller number of 46 from citation (4) above does not. *The Performance of Bond Mutual Funds*, Christopher R. Blake, Edwin J. Elton and Martin J. Gruber, *The Journal of Business*, Vol. 66, No. 3, The University of Chicago Press, Jul., 1993 (<http://www.jstor.org/stable/2353206>), p. 372

7) *Investments: Portfolio theory and asset pricing*, Edwin J. Elton, Martin Jay Gruber, P. 265, MIT Press, 1999 (http://books.google.com/books?id=ntOzm5x3MasC&pg=PA265&dq=Survivorship+bias+is+less+important+for+bond+funds+than+it+is+for+stock+funds+since+bond+fund+performance+is+less+variable+and,+consequently,+fewer+funds+merge+or+dissolve.&hl=en&ei=JyGqTYCmHvSO0QHkgtD5CA&sa=X&oi=book_result&ct=result&resnum=1&ved=0CCwQ6AEwAA#v=onepage&q&f=false), p. 265

8) *Fundamental Economic Variables, Expected Returns, and Bond Fund Performance*, Edwin J. Elton; Martin J. Gruber; Christopher R. Blake, *The Journal of Finance*, Vol. 50, No.4. (Sep., 1995), pp. 1247-48.

9) *ibid.* p. 1236

10) *ibid.* p. 1236

11) Source returns data: James Keys, Ibbotson

12) Source returns data: Federal Reserve Bank, Aswath Damodaran, PhD

13) *American Funds* Hypothetical Illustration, T-bills vs. CPI, 12/31/1962-12/31/1981

14) *Investments & Wealth Monitor*, March/April 2011, p. 48

15) *Fundamental Economic Variables, Expected Returns, and Bond Fund Performance*, Edwin J. Elton; Martin J. Gruber; Christopher R. Blake, *The Journal of Finance*, Vol. 50, No.4. (Sep., 1995), pp. 1248

16) *Smart Money*, source data: Morningstar, Inc., 11/3/11

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Andy Martin is president of 7Twelve Advisors, LLC, an SEC registered investment adviser, and a registered principal for Girard Securities, Inc., a San Diego based broker/dealer. He holds the series 7, 24, 53, 63 and 66 licenses.

Martin has enjoyed a successful career in the securities industry in sales, management, compliance, and operations, for over 25 years, after beginning his career with Merrill Lynch in New York City. He is a member of the *Investment Management Consultants Association*.

He was the former president of the *Cockcroft Forum for Free Enterprise*, an educational foundation that sponsored Fortune 500 CEOs on college campuses. Martin has published many articles on investment and public policy and is completing a book for publication called *The 1 Thing You Need to Know about Investing*.

Martin graduated from *Belmont University*, BBA economics, and *Vanderbilt University*, MLAS.