Premium bonds

Why is there such a difference between retail investors' preference for lower coupon bonds and institutional investors' preference for higher coupons, as observed in the accompanying quotation from the MSRB's study?

If the yields and maturity dates are the same, bonds that pay higher coupon rates will trade with higher dollar prices than bonds with lower coupons. If the coupon rate is greater than the yield, then the price will be greater than the par value of $100 that will be paid at maturity. Many retail investors prefer to purchase par bonds because they like knowing that, when their bonds mature, they will receive the full amount of their initial investment and will not have inadvertently spent more than they earned. Lower coupon bonds also tend to have higher yields.

Institutional investors, on the other hand, like the lower price volatility of premium bonds, especially when those bonds can be redeemed by the issuer prior to maturity; and they favor bonds that are less likely to suffer negative tax treatment should their price fall significantly below par. To better understand these considerations, it helps to review how par and premium bonds work.

"Retail investors tend to purchase municipal bonds with lower coupons than institutional investors," according to a 2020 report by the Municipal Securities Rulemaking Board. "Customers buying 100 bonds or less were significantly more likely to buy bonds with a coupon rate of 3.0% to 3.5%, while customers purchasing $1 million or more were more likely to buy bonds with a 5% coupon."

Premium vs. par bonds – what's the difference?

Consider two hypothetical 5-year bonds, both purchased at a 2.5% yield. One is a par bond with a 2.5% coupon and the other is a premium bond with a 3.5% coupon. We invest $1 million in each bond and assume a 2.5% reinvestment rate. The point to keep in mind is that if two bonds have the same maturity and the same yield, their total return will be the same as long as all cash flows are reinvested at the original yield.

THE PAR BOND

Coupon: 2.5% | Yield: 2.5% | Price: $100

At maturity, the investor receives the $1 million par value. In addition, the investor has received $125,000 in coupon payments ($12,500 in each of 10 semiannual periods). If those payments were reinvested at 2.5% (1.25% per period), their compounded value after 5 years would be $132,271 (see Appendix). Here is how the total return would be calculated.

Invest:		$1,000,000	
Receive:		$1,000,000	par paid at maturity
	+	$132,271	compounded value of 10 coupon payments
		$1,132,271	
Total return:		(1,132,271 / $1,000,000) ^ 0.1 -1	
	=	0.0125 or 1.25% per semiannual period or 2.5% per year	

THE PREMIUM BOND

Coupon: 3.5% | Yield: 2.5% | Price: $104.673

At a 2.5% yield, a 5-year premium bond with a 3.5% coupon will be priced at $104.673. The drop from $1,046,728 to $1,000,000 at maturity makes it seem that the investor is losing principal. However, the investor also receives $175,000 in coupon payments ($17,500 every six months). The compounded value of those payments would be $185,179 (see Appendix).

Invest:		$1,046,728	
Receive:		$1,000,000	par paid at maturity
	+	$185,179	compounded value of 10 coupon payments
		$1,185,179	
Total return:		($1,185,179 / $1,046,728)^0.1 -1	
	=	0.0125 or 1.25% per semiannual period or 2.5% per year	

Why purchase premium bonds?

Most bonds are premium bonds

As a result of the decline in interest rates since the financial crisis of 2008/09, and the preference of institutional investors for premium bonds, only a small segment of the municipal market consists of bonds priced at par or less. In February 2024, only 11.5% of the bonds in the Standard & Poor's Municipal Bonds Index had coupon rates of less than 4% but more than 0%. Furthermore, 63.7% of the bonds had coupon rates of 5% or more.

Given that 30-year general obligation bonds rated triple-A were yielding 3.59% on 27 Feb 2024, and all shorter maturities were yielding less (according to the MMD scale by Refinitiv), the municipal market is clearly dominated by premium bonds. In recognition of the prevalence of premium bonds, the MMD scale assumes that bonds have a 5% coupon.

Premium bonds are less volatile

The longer it takes for an investor to receive the cash flows due on a fixed income investment, the more the value of that security will change in response to changing interest rates. Higher coupons deliver more of the return sooner. One measure of the price volatility of a bond is its modified duration. The 2.5% par bond in our example would have a modified duration of 4.67 years, while the duration of the 3.5% premium bond would be 4.58 years.

A factor that can greatly reduce the price volatility of bonds is the presence of optional redemption provisions, which are found in most municipal bond deals. In the municipal market, it is common for bonds to be redeemable at par at the option of the issuer starting 10 years after the bond was issued. A premium bond that can be redeemed early at a price of par will be priced to the redemption date rather than to maturity.

For example, a noncallable bond with a 4% coupon, yielding 3.00%, due in 20 years would have a price of 114.958 and a duration of 14.20 years. If the bond were callable and priced to a call date in 10 years, its price would be 108.584, and its duration would be just 8.30 years. Pricing to the call date limits the upside potential of the bond if interest rates fall, but it also means less of a drop in price if rates rise.

A bond that is priced to a call date today would be priced to maturity in the future if interest rates rise to the point where they exceed the coupon rate. For this reason, bond valuation takes into consideration the potential that a callable bond may someday be priced to maturity, which is known as extension risk. A bond with a low coupon naturally has a greater likelihood that its coupon rate will be below future interest rates, and hence it has greater extension risk.

We saw that a 4.00% bond due in 20 years, but priced to yield 3.00% to a 10-year call date, would have a price of 108.584 and a duration of 8.30 years. A 5.00% bond likewise due in 20 years, and priced to yield 3.00% to a 10-year call date, would have a price of 117.169, and a duration of 8.05 years. If interest rates were to rise to 4.50% the 4.00% bond would be priced to its maturity date in 20 years, while the 5.00% bond would still be priced to the 10-year call date. Here is how the prices would change:

Price change when yields rise from 3.00% to 4.50%

Coupon	Beginning price	Ending price	Percent change
4.00%	108.584	93.452	-13.9%
5.00%	117.169	103.991	-11.2%

By continuing to be priced to a 10-year call date, and with a starting duration to the call date that was already shorter than that of the 4.00% bond, the 5.00% bond would lose less value than the 4.00% bond in this scenario of rising interest rates.

Premium bonds may avoid negative tax consequences

If you buy an outstanding bond in the secondary market at a price of less than par and hold it until you receive the principal value of $100 at maturity, the increase in the value of the bond while you were holding it would generate a tax liability. The amount of the tax varies depending on how much of a discount was inherent in the price you paid for the bond. If the amount of the discount was less than 0.25% for every full year until maturity, the appreciation (or accretion) would be treated as capital gain, but if the discount was deeper than 0.25% per year, the appreciation would be taxed as ordinary income.

For two bonds with the same yield and maturity, and both priced at a discount, the one with the higher coupon rate will have the smaller discount. For example, if interest rates were to rise to 3.75%, a 3.5% bond due in 5 years would have a price of 98.870 if there were no adjustment for future tax liability. A price of 98.870 means that its accretion would be taxed as capital gain (since the discount of 1.130% is only 0.23% per year). However, a 2.5% bond priced to yield 3.75% would have a price of 94.349, which would result in its accretion being taxed as ordinary income. Not only would the bond with the lower coupon have a larger discount, but that discount would be taxed at a higher rate.

A prospective buyer would demand a higher yield for either of these bonds to compensate for the tax liability and produce the desired after-tax yield, which means a lower price for the seller. The lower price would result in a larger discount and a greater tax liability, which would drive the price down even further. Assuming a 20% capital gains tax rate and a 35% tax on ordinary income, the tax liability would lower the value of the 3.5% bond from 98.87 to around 98.62, to produce a pretax yield of 3.80% (and an after-tax yield of 3.75%), while the value of the 2.5% bond would drop from 94.35 to around 92.23 to produce a pretax yield of 4.24%.

How does coupon rate affect pricing?

Bonds with lower coupons typically provide somewhat higher yields than bonds with higher coupons. This is because of their greater extension risk, longer duration and the greater likelihood that they may someday become discount bonds whose accreted market discount would be taxed as ordinary income.For example, on 08 Jan 2024, a 3.00% New York State Personal Income Tax bond due on 15 Mar 2050, and callable on 15 Mar 2032, traded with a yield of 4.50%. On the same day, a 4.00% New York State Personal Income Tax bond due on 15 Mar 2050, and callable on 15 Sep 2032, traded with a yield of 4.16%. Higher yields are one reason why lower coupon bonds often look appealing to individual investors, while the risks are less apparent.

Preserving principal while the premium shrinks

Many investors are discouraged from purchasing premium bonds because of the idea that the value of their investment will decrease as the price of the bond drops from its premium purchase price to par. They realize that they need to reinvest part of the coupon payment that they receive if they want to maintain the principal value of their portfolio.

The amount that they need to reinvest every six months will be equal to the amount of premium that would be amortized during the first semiannual payment period. This amount is determined by multiplying the semiannual yield at which the bond was purchased by the purchase price and subtracting that product from semiannual coupon payment.

In our example of a 3.5% bond yielding 2.5% and due in 5 years, the semiannual coupon per $100 par value would be $1.75, and the yield in dollars would be $1.31 ($104.67 x 0.0125 = $1.31). The amount amortized would thus be $0.44, which would be subtracted from the purchase price to produce the ending book value of $104.23. In the next payment period, the new book value would be multiplied by the purchase yield to determine the amortization.

Figure 1 shows how the amortization schedule would be calculated. And it shows that an investor can preserve the original principal amount of the investment by reinvesting a portion of the coupon income equal to the amount by which the premium is amortized during the first semiannual payment period. If the reinvested coupon income earns the yield of the bond, the compounded value of the reinvested coupons at the maturity date will equal the original premium. In our example, the investor would reinvest $0.44 of the $1.75 coupon payment received every six months, as illustrated in the column labeled “Compounded reinvested coupon.”

Figure 1: Amortization schedule

Period ending	Starting book value($)	Coupon ($)	Yield (%)	Amortization ($)	Ending book value ($)	Compounded reinvested coupon (%)
31 Jul 2024	104.67	1.75	1.31	0.44	104.23	0.49
31 Jan 2025	104.23	1.75	1.30	0.45	103.78	0.49
31 Jul 2025	103.78	1.75	1.30	0.45	103.33	0.48
31 Jan 2026	103.33	1.75	1.29	0.46	102.87	0.48
31 Jul 2026	102.87	1.75	1.29	0.46	102.41	0.47
31 Jan 2027	102.41	1.75	1.28	0.47	101.94	0.46
31 Jul 2027	101.94	1.75	1.27	0.48	101.46	0.46
31 Jan 2028	101.46	1.75	1.27	0.48	100.98	0.45
31 Jul 2028	100.98	1.75	1.26	0.49	100.49	0.45
31 Jan 2029	100.49	1.75	1.26	0.49	100.00	0.44
			Sum	**4.67**		**4.67**

Compounded reinvested amortization =0.44 x 1.0125 ^ Number of remaining periods

Federal tax rules require that holders of tax-exempt municipal bonds amortize the premium of their bonds that so that they do not recognize as a capital loss the amount by which the premium declines in value as a function of time. Thus, the gain or loss would be based on the difference between the sale price and the book value at the time of sale (or "adjusted purchase price"). For more information on the tax treatment of tax-exempt bonds, investors may want to obtain Publication 550 from the Internal Revenue Service.

Appendix: Compounded value of coupon payments

Par amount: **$1,000,000**

Semiannual rate: **1.25%**

	2.5% coupon bond		3.5% coupon bond	
Period ending	Coupon ($)	Compounded value ($)	Coupon ($)	Compounded value ($)
31 Jul 2024	$12,500	$13,979	$17,500	$19,570
31 Jan 2025	$12,500	$13,806	$17,500	$19,329
31 Jul 2025	$12,500	$13,636	$17,500	$19,090
31 Jan 2026	$12,500	$13,467	$17,500	$18,854
31 Jul 2026	$12,500	$13,301	$17,500	$18,621
31 Jan 2027	$12,500	$13,137	$17,500	$18,392
31 Jul 2027	$12,500	$12,975	$17,500	$18,164
31 Jan 2028	$12,500	$12,814	$17,500	$17,940
31 Jul 2028	$12,500	$12,656	$17,500	$17,719
31 Jan 2029	$12,500	$12,500	$17,500	$17,500
	$125,000	**$132,271**	**$175,000**	**$185,179**

Compounded value = Dollar amount * (1 + rate) ^ Number of remaining periods

For more information, please visit nuveen.com.

Endnotes

Sources:

Different Buying Patterns of Retail and Institutional Investors in Municipal Bonds

Municipal Securities Rulemaking Board

https://www.msrb.org/sites/default/files/MSRB-Different-Buying-Patterns-of-Retail-and-Institutional-Investors.pdf

Publication 550, Investment Income and Expenses

Internal Revenue Service

https://www.irs.gov/pub/irs-pdf/p550.pdf

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GWP-3421482PR-Y0224P 1266778