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Municipal Market Focus

New Issue Premium Coupon Bonds

The nuances of bond pricing—the relationship between yield, coupon, premiums, and discounts—can be confusing to many investors, but understanding some basic principles of bond pricing can help investors make more informed investment decisions.

For example, some individual investors believe that premium bonds (see page 2 for some working definitions) merit less investment consideration. Our experience suggests that when given the choice between a premium bond and a par bond at the same yield, more retail investors will choose par bonds, yet in a rising-rate environment, institutional investors prefer premium bonds. Why is that? Is there a strategic advantage to buying premium bonds (as opposed to buying a bond at par or at a discount) in certain market environments? Is this aversion to premium bonds logical or just a consequence of their confusing nature?

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This primer seeks to explain bond pricing and the behavior of premium, discount, and par bonds under various interest rate scenarios. Please note, however, that investment decisions should be based on an individual's risk profile, cash flow needs, tax status, and overall portfolio. With that in mind, let's explore how a better understanding of dollar pricing can help you build a bond portfolio.

Here are some basic bond terms to frame our discussion:

Coupon vs. Yield: The coupon refers to the rate used to calculate the annual interest payment to the bondholder:

Par x coupon rate = annual payment[1]
$10,000 x 3% = $300

As you may have noticed, however, quite often the coupon rate and the yield are different. This is because "coupon" simply refers to the periodic interest payments to be expected from the bond over its life, while yield refers to the return on investment.

Price: A bond's dollar price is what the investor pays for the bond. It is the net present value of its cash flows (initial investment plus all coupon payments and par value returned at maturity).

The yield is the rate of return earned on a bond when taking all the cash flows into account, including the initial investment and return of principal. For par bonds, reinvestment of coupon, the stated yield, and coupon are the same. For premium bonds, the stated yield is lower than the coupon, and for discount bonds, the stated yield is higher than the coupon (for example, zero-coupon bonds).[2]

Dollar Pricing: The dollar price is the amount an investor pays for a bond. The convention is to express the price as a basis of $100.

Face Amount: The face amount (or face value) of the bond is the par value. Most bonds have a face amount of $1,000.

Par Bonds: In a par bond, the yield and coupon are the same, and the investor pays the face amount for the bonds and receives the face amount upon maturity or call.

Premium and Discount Bonds: In premium and discount bonds, the yield is different from the coupon, and the dollar amount paid for the bond is different than the amount returned at maturity.

How are bonds priced?

The bond price is the dollar amount an investor pays for a bond. The convention is to express price as per $100 of face value. Bonds can be priced at par (100), premium (above 100), or discount (below 100).

[1]For the sake of simplicity, this is shown as an annual payment, although interest on most municipal bonds is paid semiannually, so the payment would be paid in two installments.

[2]**Please note:** The realized yield could be different from the stated yield because it incorporates an assumption that 100% of the coupon payments are reinvested at the stated yield level. If the amount or rate of reinvestment of the coupons is lower, the realized yield will be reduced. Conversely, reinvestment of the coupons at a higher rate will increase the realized yield. For the sake of simplicity, in this article we will assume that all coupon payments are reinvested at the stated yield.

The chart below shows examples of three bond pricing structures (examples are for illustrative purposes only).

EXAMPLES OF BOND PRICING FOR A $10,000 BOND PURCHASE (BONDS WITH THE SAME MATURITY AND CALL FEATURES)*								
TYPE OF BOND	MATURITY DATE	COUPON (%)	YIELD TO WORST (%)	TAX-EQUIVALENT YIELD† (%)	PRICE ($)	PRICE PAID (INITIAL INVESTMENT) ($)	ANNUAL INTEREST ($)	EFFECTIVE DURATION
Discount	JUNE 2028	2.000%	2.650%	4.206%	94.32	9,432.27	200.00	9.080
Par	JUNE 2028	2.650%	2.650%	4.206%	100.00	10,000.00	265.00	8.850
Premium	JUNE 2028	5.000%	2.650%	4.206%	120.53	12,052.55	500.00	8.200

*Illustrative calculation. The above assumes settlement in June 2018 and a maturity date of June 2028.
†Tax-Adjusted Yield calculation utilizes a generic tax rate of 37% and provides a comparison of yield to taxable securities.

Bonds that can be redeemed before the stated maturity at the issuer's option (callable bonds) will have different yields depending on whether you calculate the yield by assuming the bonds are held to maturity or called away on the first call date. Yields on callable bonds are expressed in terms of "yield to worst," i.e., the yield that would give the investor the lowest yield depending on whether the bond is called or remains outstanding until the final maturity.

Why would an investor pay a premium for a bond?

It's all about cash flows and duration. Looking at the bond pricing examples in the chart above, even though the yield is the same, the premium bond, with its 5% coupon, will generate larger periodic interest payments, or **cash flows,** than the par bond's 2.65%. Part of the higher cash flows represent the return of the premium portion of the initial investment paid during the life of the bond, rather than all at the end as with a par bond.

The higher cash flows accelerate the return on investment. This concept, the time it takes to recoup one's investment, is known as **duration** (see sidebar definition on page 4). Premium bonds have a shorter duration — i.e., it takes less time to recoup one's initial investment; discount bonds have a longer duration (expressed in years).

Yield to worst on a discount bond

As already discussed, on the day of issuance, the coupon (i.e., future cash flows) is below the market yield on a discount bond. In a discount bond callable at par, the yield to worst will always be the yield to maturity, based on the premise that the longer the bonds stay outstanding at the lower cash flows, the worse it is for the investors.[3, 4]

Yield to worst on a premium bond

Conversely, the cash flows on a premium coupon bond are higher than the market yield; hence, the investor would naturally want the bonds to stay outstanding as long as possible. However, there is a high probability that the bonds will be called on the first call date, in which case the high cash flows will end. **Thus, on a premium bond callable at par, the yield to worst will always be the yield to call.[4]**

[3]Zero-coupon bonds are rarely callable.
[4]This section applies to coupon bonds.

Strategic Bond Investing:

Defensive Structures:

- The shorter the duration, the less sensitive the bond price is to interest rate fluctuations. Price volatility can affect portfolio valuation, which would matter to an investor who may need to sell a bond prior to maturity.
- In a rising-interest-rate environment, the higher cash flow received on the premium bond provides an opportunity to reinvest as rates rise. For this reason, premium bonds are considered defensive investments in rising-interest-rate environments.
- All else being equal, in a declining-rate environment, discount bonds, with their longer duration, will outperform premium bonds, as the yield is locked in at a higher rate for longer. However, the market price on discount bonds is typically more volatile, i.e., it changes to a larger degree when rates rise or fall.

DURATION ESTIMATES HOW MUCH A BOND'S PRICE FLUCTUATES WITH CHANGES IN COMPARABLE INTEREST RATES. IF RATES RISE 1%, FOR EXAMPLE, A BOND WITH A FIVE-YEAR AVERAGE DURATION WILL THEORETICALLY LOSE 5% OF ITS VALUE.

Cash Flow Structures:

Not all investors are focused on defensive structures, however; some have a longer-term cash flow perspective. The following two examples are of investors who may choose a bond based on longer-term needs rather than reinvestment ability.

- Investors such as family trusts may be willing to forgo the quicker return of initial price paid in order to meet a more fundamental objective of keeping their portfolio's principal, or corpus, whole and constant, which could be easier to achieve when buying par bonds.
- Others might be more focused on bond ladders that are structured to coincide with cash flow needs, such as college tuition payments.

Volatility: Some portfolio strategists point out that because par bonds are the neutral position between a premium and discount, they may underperform in either a falling or rising interest-rate environment, missing the upside of one or the other rate trends (i.e., discount bonds generally outperform when rates fall, whereas premium bonds generally outperform when rates rise). This phenomenon may be inconsequential to buy-and-hold investors, but it may be of considerable concern to total return–oriented institutional portfolios, which may engage in more frequent buying and selling of holdings, and therefore must consider market liquidity to satisfy investment flows in and out of their funds. When institutions think rates are rising, premium bonds tend to be more liquid.

Duration: The weighted average term-to-maturity of the security's cash flows. The weights are the present values of each cash flow as a percent of the bond's full price.

The Handbook of Fixed Income Securities,
Frank J. Fabozzi, CFA® with Steven V. Mann

Who gets the bond's premium?

Again, think of it in terms of cash flows. The investor lends the bond issuer the amount of the investment, so the issuer, i.e., the municipality or public agency, gets the premium initially and uses it to build its capital project just as it does with the normal bond proceeds. The issuer then repays the premium to the investor over time through regularly scheduled coupon payments, so that ultimately the premium is returned to the investor. Importantly, premium bonds essentially pay the investor back sooner than a comparable par bond would.

Why are so many premium bonds being issued in this market environment?

For a more in-depth understanding of coupon structures on new issues, it helps to look at the preferences of the principal investors, which, in the current environment are **institutional investors** (bond funds, insurance companies, etc.). Naturally, municipal bond issuers will seek to accommodate the needs of the most active investors at any given time, to maximize demand for their bonds, and in low-interest-rate environments, institutional investors are the most active.

Why do institutions prefer premium bonds, and how might retail investors apply this knowledge?

1. Institutional Investors' Returns: Institutional portfolios (generally speaking, bond funds), are judged on their performance relative to peers and the market. Their portfolios are invested in a manner intended to maximize total return (interest payments plus capital gains). Rising interest rates are a risk in a low-rate environment and can have a dramatic, negative impact on bond prices, which would translate into a decline in the share price of the bond fund, and possibly lead to investor withdrawals. In this environment, institutional investors seek to defend against the possibility of a future rise in interest rates. This is best achieved through the low-volatility, lower-duration, price-cushioning feature of premium bonds. Bond issuers are accommodating this investor preference in order to help ensure that new bond issues can "clear the market" (be at or near 100% subscribed on issuance).
2. Retail Investors: Issuers will also seek to engage other investor segments, notably individuals, and often structure par bonds in a new issue to attract individual or retail investors. Municipal bond issuers understand that their bonds are attractive to individual investors, given their relative safety (as evidenced by low historical default rates, although, notably, defaults do occur). In addition, individual investors who buy individual bonds are typically buy-and-hold investors, which helps provide more market stability for the issuer's bonds in the secondary market.

Conclusion

In low-rate environments, individual investor decisions may be influenced by the belief that interest rates will ultimately rise, so that they remain in cash rather than invested in low-yielding bonds. Understanding the different properties and benefits of par, premium, and discount bonds may help investors understand how to best put their money to work in different rate environments, based on their unique needs.

Notes

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In general, the bond market is volatile, and fixed income securities carry interest rate risk. (As interest rates rise, bond prices usually fall, and vice versa. This effect is usually more pronounced for longer-term securities.) Fixed income securities also carry inflation risk, liquidity risk, call risk, and credit and default risks for both issuers and counterparties. Lower-quality fixed income securities involve greater risk of default or price changes due to potential changes in the credit quality of the issuer. Any fixed income security sold or redeemed prior to maturity may be subject to loss.

Diversification does not ensure a profit or guarantee against a loss. Interest income earned from tax-exempt municipal securities generally is exempt from federal income tax, and may also be exempt from state and local income taxes if you are a resident in the state of issuance. A portion of the income you receive may be subject to federal and state income taxes, including the federal alternative minimum tax. In addition, you may be subject to tax on amounts recognized in connection with the sale of municipal bonds, including capital gains and "market discount" taxed at ordinary income rates. "Market discount" arises when a bond is purchased on the secondary market for a price that is less than its stated redemption price by more than a statutory amount. Before making any investment, you should review the official statement for the relevant offering for additional tax and other considerations.

The municipal market can be adversely affected by tax, legislative, or political changes and the financial condition of the issuers of municipal securities. Investing in municipal bonds for the purpose of generating tax-exempt income may not be appropriate for investors in all tax brackets or for all account types. Tax laws are subject to change and the preferential tax treatment of municipal bond interest income may be revoked or phased out for investors at certain income levels. You should consult your tax advisor regarding your specific situation.

Investing in municipal bonds for the purpose of generating tax-exempt income is generally more beneficial the higher an investor's tax bracket. Tax-advantaged accounts such as IRAs and 401(k)s are generally not appropriate for holding tax-exempt municipal securities.

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