

Number 1212) You Purchase A Bond With A Coupon Rate Of 4.6 Percent And A Clean Price Of \$1,140. If The

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Investing in bonds can be a strategic way to generate steady income and diversify your portfolio. Understanding the key features of a bond purchase, such as coupon rates, pricing, and yields, is essential for making informed decisions. In this article, we will explore what it means to buy a bond with a coupon rate of 4.6% and a clean price of \$1,140, and how to analyze the potential returns and risks associated with such an investment.

Understanding Bond Basics

What Is a Bond?

A bond is a fixed-income security representing a loan made by an investor to a borrower—typically corporations or governments. When you purchase a bond, you are essentially lending money to the issuer in exchange for periodic interest payments and the return of the bond's face value at maturity.

Key Bond Features

When evaluating a bond, several features are crucial:

- **Coupon Rate:** The annual interest rate paid by the issuer based on the bond's face value.
- **Face (Par) Value:** The amount paid back to the bondholder at maturity.
- **Price:** The current market price of the bond, which can be above (premium) or below (discount) the face value.

- **Yield:** The effective return on the bond, considering its price and coupon payments.

Deciphering the Bond in Question

Coupon Rate of 4.6%

This indicates that the bond pays 4.6% of its face value annually as interest. For example, if the bond's face value is \$1,000, the annual coupon payment would be:

$$\text{Coupon Payment} = \text{Face Value} \times \text{Coupon Rate} = \$1,000 \times 4.6\% = \$46$$

Clean Price of \$1,140

The clean price refers to the bond's quoted price, excluding accrued interest. Since bonds typically pay interest semiannually, the clean price is the price you see in the market before accounting for interest accrued since the last payment date.

Calculating Yield Measures

Understanding the bond's yield helps determine its profitability relative to its price. The two primary yields are:

- **Current Yield**
- **Yield to Maturity (YTM)**

Current Yield

The current yield provides a quick estimate of annual income relative to the bond's market price:

$$\text{Current Yield} = \text{Annual Coupon Payment} / \text{Clean Price}$$

Using our figures:

$$\text{Current Yield} = \$46 / \$1,140 \approx 4.04\%$$

This indicates that, based on the current price, the investor earns approximately 4.04% annually from coupon payments.

Yield to Maturity (YTM)

YTM considers the total return an investor can expect if the bond is held until maturity, including capital gains or losses if the bond was purchased at a premium or discount. Calculating YTM involves solving for the discount rate that equates the present value of all future cash flows (coupons and face value) to the bond's current price.

While precise calculation requires a financial calculator or software, the approximate YTM can be estimated using formulas or online tools.

Premium Bonds: Why Is the Price Above Par?

Since the bond's clean price is \$1,140, which exceeds the typical face value of \$1,000, this bond is trading at a premium. Several factors contribute to this:

- The bond's coupon rate (4.6%) might be higher than prevailing market interest rates, making it more attractive.
- Credit quality of the issuer may be high, encouraging investors to pay a premium for perceived safety.
- Market demand and supply dynamics can influence bond prices.

Investors should recognize that purchasing a premium bond means accepting a lower yield compared to its coupon rate unless held to maturity.

Implications of Purchasing a Premium Bond

Impact on Yield

When buying a bond at a premium, the yield to maturity will be lower than the coupon rate because the investor pays more upfront for the same stream of interest payments. This is crucial for investors seeking income; they should consider whether the yield aligns with their income goals.

Tax Considerations

In some jurisdictions, the premium paid over face value can be amortized for tax purposes, which may reduce taxable interest income over the bond's life. Always consult with a tax advisor to understand implications.

Holding to Maturity

If an investor plans to hold the bond until maturity, they will receive the face value of \$1,000 at maturity, regardless of the purchase price, but the effective yield will be influenced by the premium paid initially.

Factors to Consider Before Purchasing

Interest Rate Environment

Assess current and projected interest rates. If rates are expected to rise, bond prices are likely to fall, and vice versa. Buying at a premium might not be advantageous if rates increase significantly.

Issuer's Credit Quality

Evaluate the financial stability of the issuer. A high credit rating reduces default risk, making the bond a safer investment.

Investment Goals

Determine whether your goal is income, capital preservation, or capital appreciation. Premium bonds might suit income-focused investors who value higher coupon payments.

Market Liquidity

Consider how easily you can sell the bond before maturity if needed. Higher liquidity can mitigate risks associated with price fluctuations.

Example Scenario Analysis

Let's analyze an example scenario assuming the bond's face value is \$1,000, coupon rate is 4.6%, and the current clean price is \$1,140.

- Annual Coupon Payment: \$46

- Current Yield: $\approx 4.04\%$

- Estimated YTM: Since the bond is purchased at a premium, the YTM will be less than 4.6%, perhaps around 3.8-4.0%, depending on the exact time to maturity.

If the bond matures in 10 years, the total return will be influenced by the annual coupon payments, the premium paid, and the face value received at maturity.

Conclusion: Is This Bond a Good Investment?

Purchasing a bond with a coupon rate of 4.6% and a clean price of \$1,140 can be a sound investment depending on your financial goals and market conditions. The key takeaways include:

- The bond offers a higher coupon payment than many comparable bonds in a low-interest environment.
- Buying at a premium means the yield to maturity will be lower than the coupon rate, impacting overall returns.
- Understanding the implications of premium pricing, tax considerations, and interest rate trends is essential.
- Always evaluate the issuer's creditworthiness and market liquidity before investing.

By carefully analyzing these factors, investors can determine whether this bond aligns with their portfolio objectives and risk tolerance. As with all investments, consider consulting with a financial advisor to tailor strategies to your specific circumstances.

In summary, purchasing a bond with a coupon rate of 4.6% and a clean price of \$1,140 involves understanding the relationship between coupon payments, market price, and yield. Recognizing that the bond is trading at a premium is crucial for estimating true returns and making informed investment decisions.

Frequently Asked Questions

What does the clean price of \$1,140 indicate when purchasing a bond with a 4.6% coupon rate?

The clean price of \$1,140 represents the bond's price excluding any accrued interest, reflecting its market value based on current conditions.

How do you calculate the annual interest payment for a bond with a 4.6% coupon rate?

Multiply the bond's face value by 4.6%. For example, if the face value is \$1,000, the annual interest payment is $\$1,000 \times 0.046 = \46 .

What additional costs or considerations should investors be aware of when purchasing a bond at a clean price of \$1,140?

Investors should consider accrued interest, transaction fees, and whether the bond is trading at a premium or discount relative to its face value.

If the bond's clean price is \$1,140, how does this compare to its face value, and what does that imply about its market valuation?

If the face value is \$1,000, a clean price of \$1,140 indicates the bond is trading at a premium, possibly due to favorable interest rates or creditworthiness.

What factors influence the market price of a bond with a 4.6% coupon rate and a clean price of \$1,140?

Factors include prevailing interest rates, the bond's credit rating, time to maturity, inflation expectations, and overall market demand for fixed-income securities.

Additional Resources

Number 1212) You Purchase A Bond With A Coupon Rate Of 4.6 Percent And A Clean Price Of \$1,140 — this scenario encapsulates many core concepts of bond investing, from understanding coupon payments to calculating yield and assessing the true cost of your investment. Whether you're a seasoned investor or just starting to explore fixed-income securities, this example offers a valuable opportunity to deepen your grasp of bond valuation and analysis. In this detailed guide, we'll walk through every aspect of this bond purchase, breaking down the key components, calculations, and considerations to help you make informed investment decisions.

Understanding the Bond Purchase Scenario

Before diving into calculations, let's clarify what the scenario entails:

- Coupon Rate: 4.6%
- Clean Price: \$1,140
- Type of bond: Not explicitly specified, but we'll assume it's a typical corporate or municipal bond with a standard face value (par value) of \$1,000 unless otherwise noted.
- Interest Payments: Usually semiannual (common for many bonds)
- Market Price: The clean price reflects the price excluding accrued interest.

This setup provides a foundation to explore the financial implications of buying this bond, including its yield, accrued interest, and effective return.

Key Concepts and Definitions

1. Face Value (Par Value)

- The amount paid back to the bondholder at maturity.
- Standard face value is typically \$1,000 unless specified otherwise.
- The coupon payments are calculated as a percentage of face value.

2. Coupon Rate

- The percentage of face value paid annually as interest.
- Here, 4.6% means the bond pays 4.6% of \$1,000 annually, or \$46 per year.

3. Clean Price

- The price of the bond excluding accrued interest.
- Quoted market price, often expressed as a percentage of face value or in dollar terms.
- Here, \$1,140 is the clean price, which is above par, indicating the bond is trading at a premium.

4. Dirty Price

- The total price paid by the buyer, including accrued interest.
- Calculated as clean price + accrued interest.

5. Accrued Interest

- The interest earned but not yet paid since the last coupon date.
- Important for determining the actual amount paid when purchasing between coupon dates.

6. Yield Metrics

- Current Yield: Annual coupon payment divided by market price.
- Yield to Maturity (YTM): The total return if held until maturity, considering all coupon payments and the difference between purchase price and face value.

Step 1: Calculating the Coupon Payment

Assuming a typical face value of \$1,000:

- Annual Coupon Payment = Coupon Rate $\times$ Face Value
- \$46 = 4.6% $\times$ \$1,000

If the bond pays semiannual coupons:

- Semiannual Coupon = \$46 / 2 = \$23

Step 2: Determining Accrued Interest

Accrued interest depends on how many days have passed since the last coupon date. Since the scenario doesn't specify the purchase date, let's consider a common case:

Example: Purchase occurs halfway between coupon dates

- Time elapsed: 6 months (180 days)
- Coupon period: 12 months (360 days for simplicity, assuming a 30/360 calendar basis)

Calculating accrued interest:

- Accrued Interest = (Coupon Payment / Number of days in coupon period) $\times$ Days since last coupon

Using a 360-day year:

- Accrued Interest = (\$23) $\times$ (180 / 360) = \$11.50

(Note: Since it's exactly halfway, accrued interest equals half the semiannual payment, \$23.)

Step 3: Calculating the Dirty Price

- Dirty Price = Clean Price + Accrued Interest
- \$1,140 + \$23 = \$1,163

The actual amount paid by the buyer at settlement is \$1,163.

Step 4: Calculating Current Yield

The current yield provides a quick snapshot of income relative to the purchase price:

- Current Yield = Annual Coupon / Clean Price

- \$46 / \$1,140 $\approx$ 4.04%

This indicates that, based on the current market price, the bond's annual income is approximately 4.04%.

Step 5: Estimating Yield to Maturity (YTM)

YTM considers the total return if the bond is held until maturity, incorporating the purchase price, coupon payments, and face value repayment.

Assumptions:

- Face Value: \$1,000
- Purchase Price (Dirty Price): \$1,163
- Coupon Payments: \$46 annually (or \$23 semiannually)
- Remaining Maturity: For illustration, assume 10 years

Simplified YTM Calculation:

The formula involves solving for Y in the present value equation:

$$PV = C \times [1 - (1 + Y)^{-n}] / Y + F / (1 + Y)^n$$

Where:

- PV = Price paid (here, \$1,163)
- C = Semiannual coupon payment (\$23)
- F = Face value (\$1,000)
- n = Number of periods (20 semiannual periods for 10 years)
- Y = Semiannual yield (to be solved)

Given the complexity, financial calculators or Excel's RATE function are typically used. For illustrative purposes, approximate YTM:

- Since the bond is at a premium, YTM will be less than the coupon rate (4.6%).

Using a financial calculator or Excel:

- Approximate YTM $\approx$ 3.9% semiannual, or roughly 7.8% annualized.

This indicates a higher yield than current yield due to the premium price paid.

Additional Considerations

1. Price Premium and Its Implications

- Paying \$1,140 (clean price) or \$1,163 (dirty price) means you're purchasing the bond at a premium.
- Premium bonds typically have YTM's lower than their coupon rates because you're paying more upfront for the same stream of interest.

2. Impact of Market Conditions

- Bond prices fluctuate with interest rates, credit risk, and economic outlook.
- A rising interest rate environment tends to depress bond prices, and vice versa.

3. Reinvestment Risk

- The risk that coupon payments are reinvested at lower rates.
- Important for bondholders seeking predictable income.

4. Call and Maturity Features

- The scenario doesn't specify whether the bond is callable.
- Callable bonds may be redeemed before maturity, affecting yield calculations.

Summary of Key Takeaways

| Aspect | Details |

|-----|-----|

| Coupon Payment | \$46 annually, \$23 semiannually |

| Purchase Price | \$1,140 (clean), \$1,163 (dirty) with accrued interest |

| Current Yield | Approximately 4.04% based on clean price |

| Estimated YTM | Around 7.8% annualized (assuming 10-year maturity) |

| Premium Bond | Yes, purchased above face value, implying lower YTM than coupon rate |

Practical Tips for Bond Investors

- Always consider accrued interest when purchasing bonds between coupon dates.
- Use yield calculations to compare bonds effectively, especially when prices fluctuate.
- Be aware of premium bonds — they offer higher initial income but lower yields to maturity.
- Understand the bond's maturity and call features for a comprehensive risk assessment.
- Keep in mind the impact of interest rate movements on bond prices and yields.

Final Thoughts

Purchasing a bond with a coupon rate of 4.6% and a clean price of \$1,140 involves more than just looking at the coupon payments. It requires careful analysis of accrued interest, yield calculations, and market conditions. By breaking down each component—from coupon payments and accrued interest to yield estimates—you can better gauge the true return on your investment and make more informed decisions in the fixed-income space. Remember, bonds are a vital part of a diversified portfolio, offering stability, income, and diversification when approached with thorough analysis.

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