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Business Financing: Bonds

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Thesis Work

14.16 Potential Writings

Very simply put, there are two main ways of investing one's money into the market. As previously discussed, you have stocks and then there is bonds. Over the years of investing, it has been proven that the most rewarding, yet balanced, form of investing is by having a certain ratio of stocks to bonds ratio in a portfolio. With stocks come high fluctuations in price with no guarantee of any price either, yet in the long run have historically provided higher returns than bonds. Meanwhile bonds as mentioned are outperformed in the long-run and also suffer when interest rates go up, however bonds have less fluctuations in price and can be seen to provide much more liquidity and stability than other forms of investing.

Well, what exactly is a bond? A bond is essentially like an "IOU" where an investor is lending money to a corporation or entity in exchange for a return on their money. A **bond** is simply a loan taken out by a company. Instead of going to a bank, the company gets the money from investors who buy its bonds. In exchange for the capital, the company pays an interest coupon, which is the annual interest rate paid on a bond expressed as a percentage of the face value.

The bond market is made up of a variety of bond components. The largest components of the bond market include corporate bonds, U.S. Treasury bonds, other U.S. government bonds, and municipal bonds. Regardless of the origin of the bond, all bonds serve the same purpose and that is to raise capital for whoever is instituting the bond. Corporate bonds might be raising capital to

fund new research, equipment, expansions, buying back their own stock, distributing dividends, balancing their books or a number of other different uses a company may have for raising capital. Whereas government bonds are similar in the sense of raising capital, they raise that capital for completely different reasons than corporate bonds do. Government bonds are used to raise capital for infrastructure, pay public employees, pay off debt, and even some bonds are used by the Federal Reserve Bank to control the money supply within the United States.

There are five main types of bonds starting with U.S. Treasury Securities, U.S. Savings, Agency, Municipal, and Corporate bonds. There are several specific benefits to each type of bond and others are more or less applicable depending on the goals of the investor.

U.S. Treasury Securities are issued by the federal government and are considered to be among the safest investments you can make, because all U.S. Treasury Securities are backed by the "full faith and credit" of the U.S. government. Regardless of Inflation, recession, or war, U.S. Government will pay back. Treasury bonds tend to be long-term, fixed, and principal issued with a 30-year maturity.

U.S. Savings bonds are government bonds offered to its citizens to help fund federal spending, and which provides savers with a guaranteed, although modest, return. These bonds are issued with zero coupon at a discount with an implied fixed rate of interest over a fixed period of time. Which means, the interest rate over the time of the bond will not vary and the returns that will be established at the beginning of the bond will be the returns the investor receives. Savings bonds are non-marketable, meaning the bond is between the investor and the government and it cannot be traded from investor to investor. A nice benefit to U.S. Savings bonds is that the interest

earned from savings bonds is exempt from local and state income tax and federal taxes only apply in the year in which the bond ultimately matures.

Agency bonds are two types of bonds: (1) bonds issued or guaranteed by U.S. federal government agencies; and (2) bonds issued by government-sponsored enterprises (GSEs)—corporations created by Congress to foster a public purpose, such as affordable housing. These bonds are also backed by “Full Faith and Credit” similar to that of U.S. Treasury bonds.

Municipal bonds or “munis” as they are often called, are bonds issued by states, cities, counties and other governmental entities to raise money to build roads, schools and a host of other projects for the public good. Primary benefit is on a vast majority of municipal bonds, the interest earned is free of federal income tax. With this being said, someone would not want to invest into municipal bonds in a 401k because municipal bonds are tax exempt on the interest earned, while what is earned in a 401k is taxed, therefore that person would be taxing money that doesn't need to be taxed. Furthermore, if you live in the state or city issuing the bond, you may also be exempt from state or city taxes on your interest income. Municipal bonds are the only type of security that is potentially free of income tax.

Corporate bonds are companies issued corporate bonds (or corporates) to raise money for capital expenditures, operations and acquisitions. Corporates are issued by all types of businesses and are segmented into major industry groups.

There are two main ways a bond gets paid out. Either via a fixed interest rate or a variable interest rate. It should be noted that most bonds pay interest on a semi-annual basis. For example, say there are two people, Brian and Ashley. Both buy a \$1,000 bond at the same time for the same maturity date of two years. Only difference is Brian chooses to buy a fixed interest rate bond and Ashley buys a variable interest rate bond. Both start at a coupon rate (interest rate) of 5%. After year one, both Brian and Ashley will each receive an interest payment of \$50 (likely from two semi-annual \$25 payments) from their bonds. However, at the beginning of year two, federal interest rates hike, causing bond interest rates to fall. So now, Ashley's coupon rate for her bond is just 2%, but Brian's remains unchanged because his is fixed. So now for year two, Brian would again receive an interest payment of \$50, but Ashley would only receive an interest payment of \$20. Each of their bonds matures due to them being two years each and so at the end of maturity, Brian and Ashley would receive their par value back (original investment) of \$1,000 and then would add the interest payments they received over the years to find out their total returns. For Brian, he made a fixed 5% return year over year and ended up with \$1,100 including his initial investment and thus yielding a 10% return over the time of the bond. Ashley made 5% return her first year, but then only 2% her second year and ended up with just \$1,070 including her initial investment. So, over the course of her bond's maturity, she yielded just 7%. One might wonder, well if something like that can happen with a variable interest rate bond, then why not just stick to fixed rate bonds? Well with risk comes reward, had the federal interest rates actually fallen instead of rise, Ashley's coupon rate could have jumped to 8% her second year and would

have netted her \$1,130 at the end of her bond's maturity as opposed to Brian's fixed \$1,100. Just like with any investing tool, there are riskier options and safer ones as well. It is up to the investor themselves how risky they want their investments to be. In the case above, what Brian was investing in was fixed and he knew exactly how much he would be returning at the end. As for Ashley, she had the opportunity to seek higher returns at the risk that she could also receive lower ones than a fixed rate bond.

Thesis Notes

What is a bond?

A bond is simply a loan taken out by a company. Instead of going to a bank, the company gets the money from investors who buy its bonds. In exchange for the capital, the company pays an interest coupon, which is the annual interest rate paid on a bond expressed as a percentage of the face value.

PROs of Investing in Bonds

1. Fixed Returns
2. Less Risky compared to other investments
3. Better investments than the bank
4. Rates based on risk level

CONS of Investing in Bonds

1. Yield lower returns than Stocks
2. Larger sum of investment needed for bonds
3. Bond Defaults can happen
4. Difficult to liquify in comparison to other investments
5. Interest Rate Risk
6. Prepayment Risk

Interest Rate Risk - When interest rates fall, bond prices rise, and when interest rates rise, bond prices fall. Interest rate risk is the risk that changes in interest rates (in the U.S. or other world markets) may reduce (or increase) the market value of a bond you hold. Interest rate risk—also referred to as **market risk**—increases the longer you hold a bond.

Prepayment Risk - Prepayment risk is the risk involved with the premature return of principal on a fixed-income security.

- When prepayment occurs, investors must reinvest at current market interest rates, which are usually substantially lower.
- Prepayment risk mostly affects corporate bonds and mortgage-backed securities (MBS).
- Prepayment risk can stack the deck against investors by making interest rate risk one-sided.

5 main Different Types of Bonds

U.S. Treasury Securities.

- are issued by the federal government and are considered to be among the safest investments you can make, because all Treasury securities are backed by the "full faith and credit" of the U.S. government. Regardless of Inflation, recession, war, U.S. Government will pay back.

Treasury Bonds – Long-term, fixed, principal issued with a 30-year maturity.

Treasuries Snapshot

Issuer	U.S. Treasury
Minimum Investment	\$100
Interest Payment	Treasury bills are non-interest bearing: Sold at discount from face value and pay interest upon maturity. Treasury notes and bonds pay semiannual interest.
How to Buy/Sell	At original issue through TreasuryDirect or broker. On the secondary market through a broker.
Bond Interest Rate	Determined at auction. Look up at Bureau of the Public Debt or through a broker.
Price Information	TreasuryDirect for original issues. Broker, newspapers and data vendors for secondary trade data.
Risk Profile	<p>No call risk and virtually no liquidity, event or credit and default risk.</p> <p>Interest rate risk: If interest rates rise, the value of your bond on the secondary market will likely fall.</p> <p>Inflation risk: Treasury security yields may not keep up with inflation. Also, the longer the term of your U.S. Treasury security, the greater the chance you will not be able to act upon a more attractive investment opportunity should one become available.</p>

U.S. Savings Bonds.

- a government bond offered to its citizens to help fund federal spending, and which provides savers with a guaranteed, although modest, return. These bonds are issued with [zero coupon](#) at a discount with an implied fixed rate of interest over a fixed period of time.

Created by FDR in 1935, created legislation to allow the U.S. Treasury to issue a new type of security. Purchase price of \$18.75, with a face value of \$25. Nicknamed the baby bond.

In 1941 the development/creation of War bonds. To help fund the war.

1942 started payroll savings plan which is still something today.

Nations began promoting bonds... go and see a movie with the purchase of a bond, even schools contributed to bonds.

1946 More people bought savings bonds then cashed, people wanted their wealth to develop.

H Bonds offered current income bond that paid interest every 6 months, interest earned for 30 years.

1963 Kennedy pushed for savings bonds

1976 President Ford was a larger supporter of Savings Bonds

1990 – Education Savings Bond, so people could save to go to college. Tax-free if used to pay tuition

2002 Series I Savings Bond available for purchase online.

2012 bonds are entirely electronic and can be purchased 24/7. Can be bought as a gift too.

Example Series EE savings bond are sold at 50% their face value, and mature to their full value after 20 years.

Savings Bonds are non-marketable... meaning the bond is between that investor and the government and cannot be traded to another investor.

Can at most buy \$10,000 savings bond per calendar year.

Interest earned from savings bonds is exempt from local and state income tax. Federal taxes only apply in the year in which the bond matures.

Savings Bonds are zero coupon, meaning they do not pay interest until redeemed or until maturity date.

- **Zero coupon Bonds** are bonds issued at deep discount of their face value but pays no interest.

Bonds deliver coupon payments, either semiannually or annually.

- **Coupon Payment** – also called coupon, is the annual interest rate paid on a bond.

Coupon Bonds/bearer bonds – to collect interest, one must present physical bond.

Not as common due to everything being online and the risks associated with having a physical bond.

Bonds used to be a physical piece of paper with small “coupons” at the bottom that would be cut out and brought to the financial institution they bought it from. This is how they would collect their interest, whether it was collected semiannually or yearly. However now, bonds are nearly all computerized now for ease of access as well as many security advantages and even the ability to avoid loss or damage of a physical bond.

Fraudulent activity/tax evasion with unregistered coupon bonds/bearer bonds

- Bearer bonds are ones not registered to any owner. They are coupon bonds and collect their interest payments via coupons.
- Used to be able to hide income easily, no record of purchase, it was easy to move or hide wealth.
- Tax evasion was also relatively easy, as individuals could store money in bonds instead of mainstream financial accounts—and earn interest.

Money Laundering

Money laundering has been a problem with bearer bonds. To reduce crime, regulators rely on paper trails (or electronic records). But bearer bonds make it possible to hand over billions of dollars in a relatively small package. The money can later be re-inserted into the financial system from a legitimate-looking source.

Theft

Theft and forgery are tempting because bearer bonds are essentially one step away from cash. Thieves who stole bearer bonds could redeem the bonds and spend the proceeds with little risk of getting caught.

Government cracked down in 1982 with The Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA).

They eliminated tax benefits, introduced penalties for using them. Today, IRS and the government may require to disclose holdings of a bearer bond, losing the significance of the one anonymous perk. Also today, they tend to lack worthy gains and are still considering incredibly risky due to lack of security.

Tax-Free Bonds

Bonds that are used to fund local and state government projects are tax-exempt. Also, bonds bought from states or local towns may be exempt from state and local tax on the interest payments.

However, these bonds tend to have much lower interest yields making them less favorable.

More favorable for higher-income investors(higher tax bracket)

I Bonds and EE Bonds Snapshot

Issuer	U.S. Treasury
Minimum Investment	\$25 if purchased electronically; \$50 for paper I bond.
Interest Payment	Interest accrues monthly—paid when bond is redeemed
How to Buy/Sell	TreasuryDirect , Broker
Bond Interest Rate	<p>I Bond interest rate is a combination of two separate rates—a fixed rate of return and a variable semiannual inflation rate. See TreasuryDirect I Bonds.</p> <p>EE Bonds issued after May 2005 offer fixed rates determined when the bonds are issued. See TreasuryDirect EE Bonds.</p>
Price Information	TreasuryDirect or through a broker
Risk Profile	<p>No call or liquidity risk and virtually no credit and default risk.</p> <p>Interest rate risk: Except for Series EE bonds issued before May 2005, all savings bonds are exposed to interest rate risk.</p> <p>Inflation risk: I bonds are protected from inflation, but EE bonds are not.</p> <p>Opportunity risk exists, particularly for I bonds, which are particularly susceptible during periods of low inflation and the rare instances of deflation.</p>

Agency Securities.

"Agencies" is a term used to describe two types of bonds: (1) bonds issued or guaranteed by U.S. federal government agencies; and (2) bonds issued by government-sponsored enterprises (GSEs)—corporations created by Congress to foster a public purpose, such as affordable housing.

-Also backed by Full Faith and Credit of the U.S government like Treasuries

Agency Bonds Snapshot

Issuer	Government-sponsored enterprises (GSEs)
Minimum Investment	Varies—generally \$10,000
Interest Payment	Fixed coupon or floating/variable coupon rates. Interest is paid semiannually for fixed-coupon security.
How to Buy/Sell	Through a broker
Bond Interest Rate	Determined at origination and varies by bond
Price Information	Issue price and secondary trade data available through a broker and data vendors
Risk Profile	<p>Credit and default risk are real for GSE-issued agencies: The federal government is under no legal obligation to save a GSE from default.</p> <p>Call risk: Many agency securities—step-ups in particular—carry call provisions that allow the issuer to pay you prior to the bond's maturity date, typically when interest rates drop, leaving you to reinvest at lower prevailing rates.</p> <p>Interest rate risk: If interest rates rise, the value of an agency bond on the secondary market will likely fall.</p>

Municipal Bonds

Municipal securities, or "munis," are bonds issued by states, cities, counties and other governmental entities to raise money to build roads, schools and a host of other projects for the public good.

Primary benefit is on a vast majority of municipal bonds, the interest earned is free of federal income tax.

Only type of securities that are potentially free of income tax

Furthermore, if you live in the state or city issuing the bond, you may also be exempt from state or city taxes on your interest income. Bonds issued by Puerto Rico, Guam and other U.S. territories are tax-exempt for residents of all states.

You would not want to invest into municipal bonds in a 401k because municipal bonds are tax exempt on the interest earned, while what is earned in a 401k is taxed, therefore you would be taxing money that doesn't need to be taxed.

Pros

Tax-exempt from state and local tax

Low volatility

Low default risk

Cons

When interest rates go up, market prices of existing bonds goes down

Does not hold up well to inflation as well as stocks do

Can still default, Ex) Detroit

Municipal Securities Snapshot

Issuer	States, cities, counties and other governmental entities
Minimum Investment	Generally \$5,000
Interest Payment	Fixed, floating/variable and zero-coupon; interest is paid semiannually for fixed-coupon security.
How to Buy/Sell	Through a broker
Bond Interest Rate	Determined at origination, varies by bond
Price Information	Municipal Bonds: FINRA Market Data—Bonds
Risk Profile	<p>Credit and default risk can vary greatly from bond to bond. Insured bonds help offset this risk.</p> <p>Call risk exists, not just for investors who buy bonds at issue, but also for those who may have paid a premium for the bond in the secondary market, where it was priced as if it would not be called. Should such a premium-priced bond in fact be called, its value would drop.</p> <p>Interest rate risk: If interest rates rise, the value of a municipal on the secondary market will likely fall. Liquidity risk: Some munis are more liquid than others.</p>

Corporate Bonds

Companies issue corporate bonds (or corporates) to raise money for capital expenditures, operations and acquisitions. Corporates are issued by all types of businesses, and are segmented into major industry groups.

Pros

Tend to be less risky and volatile than stocks

Wide array of issuers and different companies issuing bonds

Very liquid marketplace, highly active

Cons

Typically lower returns

Many have to be purchased OTC (Over the Counter) so not something all brokerages do

Exposed to both credit (default) risk and interest rate risk as well

Corporate Securities Snapshot

Issuer	Corporate entity
Minimum Investment	Generally \$1,000
Interest Payment	Fixed, floating/variable and zero-coupon. Interest is paid semiannually for fixed-coupon security.
How to Buy/Sell	Through a broker
Bond Interest Rate	Determined at origination, varies by bond
Price Information	FINRA Market Data—Bonds
Risk Profile	<p>Credit and default risk: Varies significantly from bond to bond and is sometimes hard to determine.</p> <p>Liquidity risk: Many corporate bonds are illiquid, making it hard to find a buyer if you need to sell your bond.</p> <p>Interest rate risk: If interest rates rise, the value of a corporate bond on the secondary market will likely fall.</p> <p>Event risk: Mergers, acquisitions and other tumultuous events can have a negative impact on a bond issuer's ability to pay its creditors.</p>

Calculating Bonds

- Assume that you buy a \$10,000 face amount. You hold the bond until maturity and receive the \$10,000 principal amount. There is no gain or loss on the bond. The bond pays 6% interest, and you hold the bond for 5 year and 11 ½ months.
- The 11 ½ of 12 months in the final year can be converted into .958. Your total interest earned over the life of the bond is $[(\$10,000) \times (6\%) \times (5.958 \text{ years}) = \$3,575]$. Your total return on the bond is the interest earned (\$3,575).

- Say that you buy the same bond and own the security for the same length of time. Assume, however, that you buy the bond for \$10,000 and sell the bond for \$9,800. You generate a \$200 loss. The total return on your bond is (\$3,575 interest) - (\$200 capital loss) = \$3,375.
- Assume that you buy the same bond and own the security for the same length of time. In this instance, you buy the bond for \$10,000 and sell it for \$10,100. You generate a \$100 gain. The total return on your bond is (\$3,575 interest) + (\$100 capital gain) = \$3,675.
- Assume that your interest income and a gain on a bond sale total \$3,675. You pay a 20% tax on the interest income and the gain.
- Your total return after taxes is $\$3,675 \times 80\% = \$2,940$.

Calculating Yield and Interest Rate

- Calculate the yield with the formula coupon amount / price.
- Using the example above, a company issues \$500,000, 5-year, 10 percent bonds, and the market interest rate is 12 percent. The company sells the bond at a discount, and the price is \$463,202.
- The annual coupon payments are \$50,000.
- The annual yield is $\$50,000 / \$463,202 = 10.79$ percent.
- In the example where the market interest rate was 8 percent, the bond was sold at a premium, and the price was \$540,573.
- The annual yield is $\$50,000 / \$540,573 = 9.25$ percent.

Resources

Thau, Annette. *The Bond Book Everything Investors Need to Know about Treasuries, Municipals, Gnmbs, Corporates, Zeros, Bond Funds, Money Market Funds, and More.* McGraw-Hill, 2001.

<https://www.finra.org/investors/learn-to-invest/types-investments/bonds/types-of-bonds>

<https://www.treasurydirect.gov/timeline.htm>