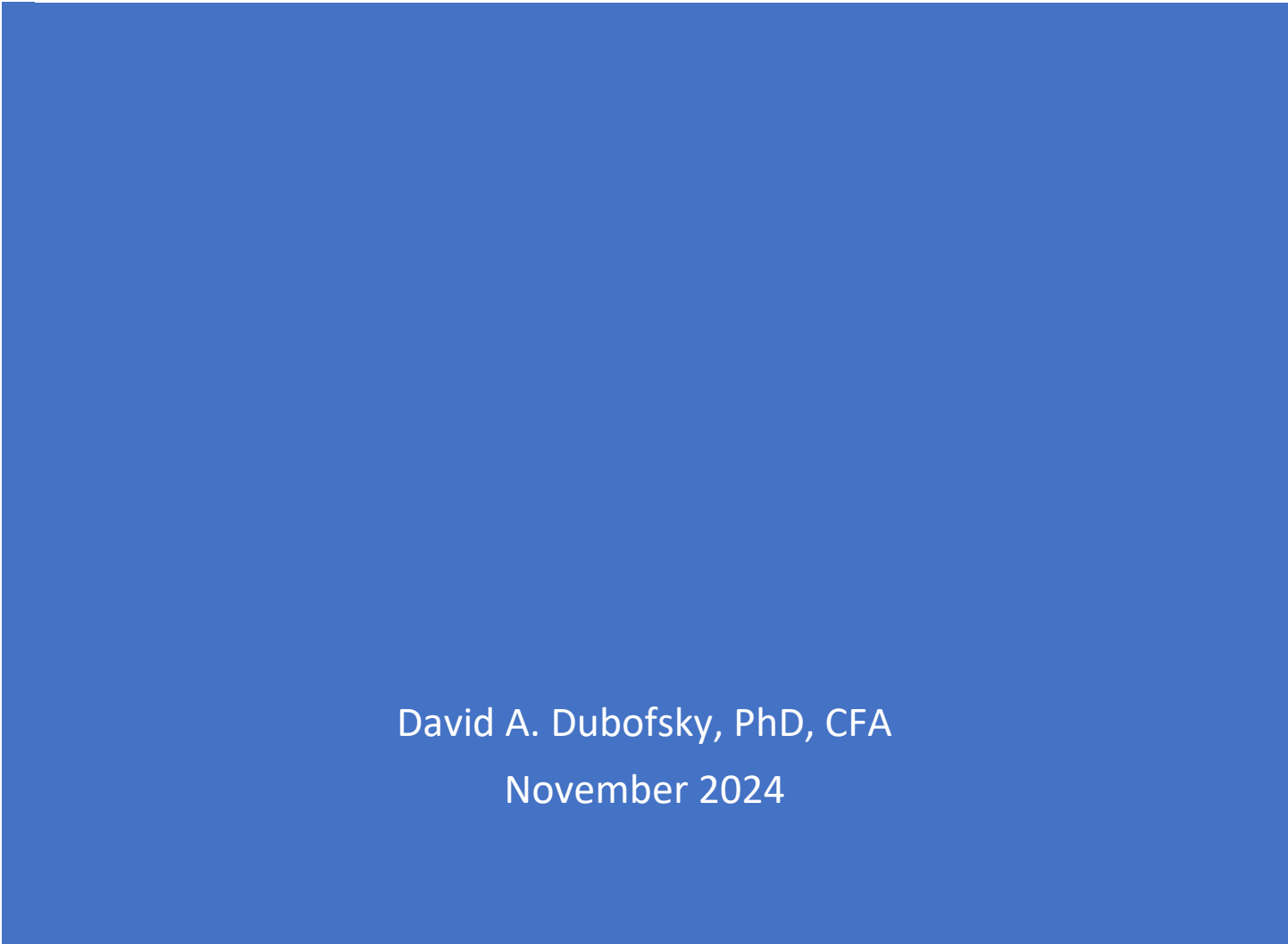




FIXED-INCOME INVESTING PRIMER



David A. Dubofsky, PhD, CFA
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FIXED-INCOME INVESTING PRIMER

ABSTRACT

Fixed-income investing can be a complex strategy for many individual investors. The process is easier if they stick to buying fixed-income mutual funds and ETFs. But even here, the investor must decide which types of funds/ETFs to buy (Treasuries, corporates, municipals, etc.) and make decisions concerning the fund/ETF family or provider (Fidelity, Vanguard, Blackrock Ishares®, etc.), maturity structure of the fund/ETF, credit risk, tax issues, and more. Buying individual fixed-income securities is even more complex. Investors who decide to buy individual corporate and municipal bonds should carefully read section IV in its entirety. It presents the intricacies, peculiarities and risks of buying individual fixed-income securities, and in particular individual corporate and municipal bonds. These are things I have learned after 20 years of my personal experiences buying individual bonds.

FIXED-INCOME INVESTING PRIMER¹

I. INTRODUCTORY COMMENTS

I.A. WHY I WROTE THIS PRIMER

I have been buying individual bonds using the Fidelity and Vanguard bond sites, for over 20 years. It's provided many insights into the subject, even with my Ph.D. in Finance. The initial reason I wanted to write this primer was to convey many of the things I learned about buying individual bonds... things that not many individual investors know.

Then I decided to broaden the subject from individual bonds to cover the entire realm of fixed-income investing for individual investors.

For many investors, investing in fixed-income securities is more challenging than investing in stocks. Many investors find it easier to select an equity mutual fund or exchange traded fund (ETF), or to buy 100 shares of Apple, than to choose among fixed-income funds and ETFs. There are several plausible reasons for this. Perhaps it is because fixed-income values follow more exact mathematical principles than do equities. Perhaps it is because it is easier to take advantage of a naïve fixed-income investor than a stock investor. Perhaps it is because the fixed-income market has different segments that appeal to unique investor-types (think of how taxes affect the decision to buy municipal bonds vs. corporate bonds). Perhaps it is because large financial institutions dominate most fixed-income markets. Perhaps it is psychological. Perhaps it is unfamiliar bond market jargon. Or maybe it's that investing in equity index funds and index ETFs is so easy.

No matter the reason, I wrote this primer to help individual investors navigate their fixed-income investing path. Fixed-income investing is important for many reasons, such as diversification. Adding some fixed-income investments to your portfolio of equities will reduce the total risk of your portfolio. Generally, the percentage of your portfolio invested in fixed-income will grow as you age. Fixed-income securities tend to be safer investments than equities.

The primer first provides information on getting started in fixed-income investing. You must have a brokerage or trading account with a financial institution.

Then, I cover the principles of investing in fixed-income mutual funds and ETFs. This is how most investors get most of their fixed-income exposure.

Finally, I present what you need to know if you are going to go down the treacherous path of buying individual fixed-income securities, because you need to be educated in the jargon and peculiarities of fixed-income securities and markets. I present the basic terminology and principles of investing in individual securities. What I present is the very minimum you should know. You need a great deal of knowledge before you invest in individual bonds. If you are not willing to learn what I present, then don't invest in individual fixed-income securities (other than, perhaps, Treasuries and insured noncallable CDs).

¹ Many thanks to Amanda Adkisson, Mike Alderson and Paul Allen for their helpful comments on a prior version of this primer. All errors, of course, are the sole responsibility of the author.

I.B. WHO IS THIS PRIMER IS FOR?

This primer will be useful for almost all investors, but in particular, it is written for

1. Individual investors who make their own decisions, including fixed-income investments.
 - A. Investors who buy fixed-income mutual funds and ETFs
 - B. Investors who buy individual fixed-income securities, such as bonds
2. Individual investors who have hired financial advisors to make their investing decisions, AND who want to learn more why their advisor put them in the investments that they did. Learning the material in this document will enhance your ability to ask intelligent questions and have intelligent conversations with your advisor about fixed-income investing.
3. Anyone else who wants to learn or solidify their understanding about the fundamental principles of fixed-income investing and securities. This includes business school students, for whom this primer can serve as a pedagogical note.
4. Bond market professionals, portfolio managers and even finance academics will (hopefully) be familiar with almost all the material; but even they may learn something new, particularly in section IV, where I discuss some of the peculiarities I have learned from my individual bond investing experiences.

I avoid bond mathematics, and I try to avoid finance jargon. Because the cash flows are fixed (known) and because they often have “embedded options” like call provisions, bonds are amenable to being modeled using precise formulas. There are many books available explaining the mathematics of bonds. You might start with several written by Frank Fabozzi, which are available on Amazon.

II. GETTING STARTED WITH FIXED-INCOME INVESTING

II.A. WHAT ARE FIXED-INCOME SECURITIES?

The two major security types are usually said to be stocks and bonds. Bonds are one particular type of fixed-income security. It’s probably more accurate to say that the two main security types are stocks and fixed-income instruments.

Fixed-income securities are lending contracts. When you buy a US Treasury Bond you are lending money to the US Government. You own the bond which entitles you to a stream of contractually-fixed payments (interest, or coupon interest) and then you receive the bond’s principal (face value or maturity value) at maturity. Most fixed-income securities pay a fixed amount of interest every six months. At maturity, the loan is repaid.

In the event of bankruptcy, or default, bondholders usually get repaid before stockholders receive anything of value.

Fixed-income securities are regarded as safer investments than stocks. Perhaps because of that lower risk, the rates of return earned on fixed-income securities have been lower than the returns realized from stocks.

II.B. HOW DO YOU GET STARTED INVESTING IN FIXED-INCOME SECURITIES?

To buy and sell individual bonds (fixed-income securities), fixed-income mutual funds and fixed-income Exchange Traded Funds (ETFs), you must first open a brokerage or trading

account. If you are a beginner in fixed-income investing, there is no reason that you will or should want to buy anything other than these types of financial assets.

I recommend you open your account with a large discount financial institution. I have used Fidelity, Charles Schwab and Vanguard. Here is one source of comparing these three brokerage firms: <https://www.benzinga.com/money/vanguard-vs-fidelity-vs-schwab#> . But there are many other good brokers with whom you can place your orders to buy and sell bonds, mutual funds and ETFs.

If you want to pay for more contact with an individual (human) advisor, want more advice and/or want more handholding, then there are many other brokerages you can deal with. You will likely have to pay for this human contact. Whoever you choose, your broker should offer you all the help, guidance and advice you need to invest, at a low cost. Shop around and compare. Also be aware that low (zero) commission trading can come with other hidden costs such as poor trade execution; you don't pay a commission, but you pay a higher price when you buy and receive a lower price when you sell. See for example, <https://merage.uci.edu/press-releases/2022/10/Uncovering-the-Hidden-Retail-Prices-of-Zero-Commission-Stock-Trades.html>. I prefer larger brokers because their size also lets them offer other investing products, services and advantages that smaller institutions cannot match.

The best brokerage firms will offer you the ability to trade with low fees/costs/trading commissions. You should be able to buy and sell individual securities (stocks and bonds), ETFs and most mutual funds with minimal commissions and good execution; often you might pay zero commissions. Your broker should offer you a user-friendly platform for trading that you feel comfortable using and some research tools that help you make better investment decisions. If the broker you are investigating has a minimum dollar amount to set up your account, you should be able to satisfy that requirement. See <https://www.sec.gov/investor/pubs/sec-guide-to-savings-and-investing.pdf> for common-sense advice about opening a brokerage account.

If you are buying ETFs, you might pay attention to your broker's execution quality. This is difficult to do, but the fact is that some brokers with low commissions make their money by executing your trades at poor prices; you'll pay a few cents more when you buy and receive a few cents less when you sell. If you google the name of your broker along with the phrase "trade execution quality", you will get some information. Compare your broker to other brokers' trade execution quality. This paragraph does not apply to mutual funds, because you always buy and sell them once/day, at their 4PM net asset value (NAV).

Your brokerage firm should charge little-to-no cost to set up your account and offer free online help and phone help, to get you started.

Here are some places to read more about starting an account with a broker:

<https://www.kiplinger.com/investing/wealth-management/online-brokers/605136/the-best-online-brokers-and-trading-platforms>

<https://www.investopedia.com/best-brokers-for-low-costs-4587874>

<https://www.cnbc.com/select/best-brokerage-free-stock-trading/>

<https://www.forbes.com/advisor/investing/best-online-brokers/>

<https://www.wsj.com/buyside/personal-finance/investing/best-online-brokers-stock-trading>

If any of these links don't work, then visit the parent site just using the dot-com site name (e.g., www.investopedia.com or www.cnbc.com), and search around the site. I encourage you to read what each of them says.

Some reputable websites offer investing advice for beginners. You might want to look at <https://hbr.org/2021/08/how-to-make-smart-investments-a-beginners-guide> , and <https://www.investor.gov> . Or, perform an online search for “best brokers for investing beginners”.

II.C. DO YOU NEED A FINANCIAL ADVISOR?

I am agnostic about this question. Some investors are independent and like to manage their own affairs. Others value the services offered by financial advisors. No matter which you choose, always keep an open mind that you might be better off with the other. If you are handling your own finances, including managing your own portfolio, consider a financial advisor. You might check out <https://www.wsj.com/buyside/personal-finance/investing/is-a-financial-advisor-worth-it#> . If you are paying for financial advice and decision-making help from a financial advisor, be aware that some advisors charge unwarranted high fees, and their investment performance may be below what you could achieve on your own with low-cost mutual funds and ETFs. Also check out <https://www.gao.gov/products/gao-24-104632> .

You may need a financial advisor if you are too busy to monitor your investments and financial markets, feel insecure making your own financial decisions, need specialized financial advice (such as tax minimization, retirement planning or estate planning) or you just are not interested in learning the intricacies of securities and financial markets. Some advisors may be able to get you invested in products that otherwise are not available to you, such as private debt² and other equity-based products such as hedge funds and venture capital. Advisors are compensated in many different ways, including hourly rates, flat fees, a % of your assets under management (AUM), etc. No matter which way your advisor is compensated, I recommend that you add up everything you pay (or likely will pay) in a calendar year, and that total annual amount should not exceed 1% of your beginning portfolio value. Some advisors are compensated with commissions. You should be very aware that commissions can encourage advisors to over-trade (churn) your portfolio and/or to steer you into financial products that benefit THEM (the advisor) and not you. Commissions create conflicts of interest, and I recommend a) you ask if your advisor is paid with commissions in any way and b) that you ask if your financial advisor is a fiduciary who works in your interest. I would not use any advisor who isn't a fiduciary and who does not have a professional certification. The Chartered Financial Analyst (CFA) or Certified Financial Planner (CFP) certifications are very good. But this doesn't mean that some advisors without these designations are incompetent. You should always feel comfortable meeting with your advisor. Your advisor should communicate clearly and listen well. Before signing anything with any advisor, check to see if they have had any disciplinary problems at <https://brokercheck.finra.org>.

Some advisors sometimes outperform their benchmark after fees. Very few outperform consistently. It is difficult to identify who will outperform in the future. Just because an advisor has outperformed in the past few years doesn't mean they will outperform in the future. And just

² After fees, it is debatable whether investing in private debt is a good or bad strategy. To learn more about private debt, see <https://www.elibrary.imf.org/display/book/9798400257704/CH002.xml> and https://bfi.uchicago.edu/wp-content/uploads/2023/01/BFI_WP_2023-10.pdf

because an advisor has recently trailed their benchmark, after fees, doesn't mean they are not doing their job well; nor does it signal that they will continue to underperform. They may outperform in the future.

Sometimes you may become unhappy with your advisor. Here are some problem signs that you should part ways with your advisor: <https://www.bankrate.com/investing/financial-advisors/signs-you-may-need-a-new-financial-advisor/>.

II.D. WHY BUY FIXED-INCOME?

First, one incorrect reason to buy fixed-income is to get rich. If your investing goal is to get rich, buy stocks.

But there are several reasons for you to invest in fixed-income instruments:

1. Income
2. Diversification
3. Rebalancing
4. Increased perceived stock market risk
5. For retirement
6. For near-term anticipated expenditures such as buying a car, a house, pay for education, a medical procedure, etc.

Each of these reasons are next briefly discussed.

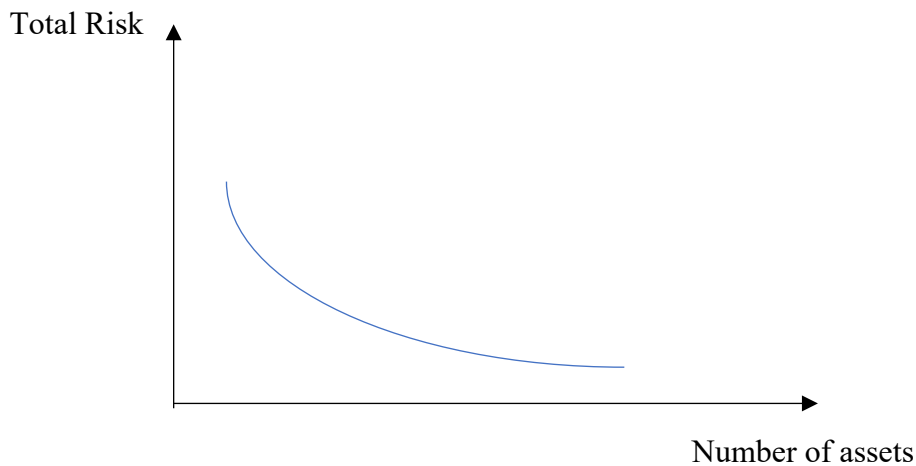
II.D.1. INVEST IN FIXED-INCOME FOR INCOME

Typically, the income you receive from fixed-income securities exceeds the dividend income you can receive from the same amount invested in stocks. Some stocks do have high dividend yields, but companies may cut or reduce the dividends they pay, and you have greater price risk with stocks than with bonds. Bonds mature, so unless the issuer defaults, you know you will get your bond principal back.

Most bonds will pay a steady and (except for high yield bonds) safe fixed semi-annual income stream. Many investors rely on that income stream to live on.

II.D.2. INVEST IN FIXED-INCOME FOR DIVERSIFICATION

When asset classes (e.g., stocks and bonds) values don't move exactly together, and when individual securities' returns don't move together, then you will realize diversification benefits. The riskiness (range of outcomes, dispersion) of your portfolio returns will decline. The lower the correlations (i.e., their values don't move together) of the assets, the greater is the decline in your portfolio's risk, and this occurs because of diversification. The following graph depicts how portfolio risk declines as the number of assets in your portfolio increases:



Combining stocks with fixed-income securities offers a great deal of diversification benefits because the two asset classes often do not move together. But there are extended periods during which they do move together, and during these times the benefits of diversification exist, but are reduced.

The two major risks in a portfolio consisting ONLY of fixed-income securities are interest rate risk and default risk (though default risk is pretty much nonexistent for Treasuries and FDIC-insured securities). Because almost all fixed-income investments have interest rate risk, you cannot diversify away this risk. But holding a well-diversified portfolio of bonds and other fixed income securities does diversify away most of the default risk. If one issuer defaults then you benefit because all the other issuers didn't default. If one bond gets a rating downgrade but none of the other bonds in the portfolio are downgraded in credit quality, then again you will realize diversification benefits within your portfolio of fixed-income securities.

The most important benefit from investing in corporate bond and municipal bond funds and ETFs is provided by diversification; it is not unusual for these funds and ETFs to have bonds from hundreds of different issuers. The potential loss from defaults and rating downgrades is greatly reduced. If you invest in individual corporate and/or municipal bonds, you will need to own a lot of them to fully realize diversification benefits within your bond portfolio. It would be a tragedy if you had a large chunk of your fixed-income portfolio in the bonds issued by one company or municipality that defaulted. Diversify!

II.D.3. INVEST IN FIXED-INCOME TO REBALANCE YOUR PORTFOLIO

All investors should have portfolio with a targeted stock-bond mix. This is called the "asset allocation" decision. Younger and less risk averse investors will tend to have a higher percentage in stocks. Older and more risk averse investors should have more invested in fixed-income securities. You should rebalance as you get older and/or if the values of your stocks and bonds cause your actual asset allocation percentages to deviate from your target percentages.

E.g., you may want a 60-40 portfolio, with 60% of your assets in stocks and 40% in bonds. But suppose there is a stock market rally, while bonds remain unchanged. Because of this, perhaps you are 65% in stocks. To rebalance, sell some stocks and invest the proceeds in fixed-income securities to get your portfolio percentages back to your 60-40 target.

II.D.4. INVEST IN FIXED-INCOME IF YOU ARE WORRIED ABOUT A STOCK MARKET DECLINE

I don't recommend you change your stock-bond investment mix because of this reason, but many investors do. When these types of investors become nervous (more risk averse) that stock values are about to decline, they may sell their stocks and invest in fixed-income securities. If they sell stocks to invest in Treasuries, it is called a "flight to quality".

I don't recommend this because very few investors get it right. Virtually no one can consistently predict what the stock market will do in the near future. It's better to buy-and-hold and meet your targeted stock-bond asset mix.

A corollary to this motive is that if you are risk averse (i.e., you don't like risk and are unwilling to live with risk unless you are very well compensated), you should have a portion of your portfolio in fixed-income. But your level of risk aversion, in general, should be a trait that does not change from month-to-month or year-to-year based on your guess of what the stock market will do. Many investors who lived through the 1929 stock market crash and the Great Depression that followed it became extremely risk averse and invested solely in U.S. Treasuries, insured bank savings accounts and CDs. If you are an extremely risk averse investor, I still recommend that you invest perhaps 5-10% in a stock market index fund, with the remainder in fixed-income. It may be counterintuitive, but having 5% in stocks actually creates a less risky portfolio than having 100% invested in fixed-income.

II.D.5. INVEST IN FIXED-INCOME FOR RETIREMENT

As most investors age and get closer to retirement, it is commonly recommended that they should reallocate their portfolios so that they have relatively more invested in fixed-income and relatively less in risky stocks. A retiree's worst nightmare is to be too heavy in stocks at retirement, and then the stock market has one of those terrifying years when stock prices decline by 30% or more. All your retirement plans will be in jeopardy.

To make things worse, if stocks fall by 30% or more, it's not unusual for investors to sell their stocks at the wrong time at their bottom.

It's no wonder that researchers have found that antidepressant prescriptions increase and demand for psychotherapy increases when stocks fall, in particular by individuals close to retirement.

Better to have your target, and actual, asset allocations gradually increase in favor of fixed-income as you near retirement. You will sleep better.

II.D.6. INVEST IN FIXED-INCOME FOR UPCOMING ANTICIPATED EXPENDITURES

If you are saving for a special purchase, you should generally save in low-risk fixed-income securities. The maturity of your bonds should be about the same length of time as when you think you'll make that purchase. E.g., if you are saving for your daughter's college education in 3 years, buy 3-year CDs and Treasuries. Money market mutual funds also provide a safe and readily available (liquid) source of money to immediately spend.

You don't want to be in stocks when you are saving for a specific purchase because stocks can sharply decline in value. In the three years beginning in the year 2000, the S&P500 fell by 42%. In 2008, the S&P500 fell by over 36%. In just two months of 2020 (February and March 2020), the S&P500 lost 22% of its value. If you are saving for a purchase, these sorts of stock market declines can destroy your plans.

Some investors park their excess funds in money market mutual funds, in anticipation that a stock market decline will open opportunities to buy stocks at lower prices. For the reasons I cite in section II.D.4, I don't usually recommend this as a reason for fixed-income investing. But it is sort of saving for an upcoming anticipated expenditure.

Many investors choose the maturities of their fixed-income investments to match their upcoming needs for cash.

III. INVESTING IN FIXED-INCOME MUTUAL FUNDS AND ETFs

Three important decisions you must make before investing in fixed-income mutual funds and ETFs:

- You must decide which of several fund / ETF categories (treasuries, corporates, municipals, etc.) to invest in. These decisions will determine how much credit (default) risk you want and also depend on your tax situation. The categories are described below.
- You will have to choose a maturity preference. Do you want short-term funds and ETFs? Or do you want funds and ETFs that invest in long-term securities?
- You must decide which specific mutual funds and ETFs are likely to be best for you. You may want to buy funds and/or ETFs from Fidelity, from Vanguard, from Blackrock iShares®, or from other sponsors.

III.A. WHAT ARE THE MUTUAL FUND / ETF CATEGORIES THAT YOU SHOULD CONSIDER?

Most large brokers have web pages that list fixed-income mutual fund and ETF categories.

Let me clarify ... I am talking about OPEN-END mutual funds, such as those offered by Fidelity, Vanguard, iShares® and others. In contrast, closed-end funds also exist, but I believe they have several disadvantages: they tend to have high expense ratios, use leverage (which creates added risk), sell at a time-varying discount to their net asset value (which also adds to their risk) and can be illiquid.

Let me add that buying a closed-end fund during its IPO (Initial Public Offering) is one of the worst financial decisions anyone can make. Chances are that on the first day of trading, the closed-end fund price will be 5-10% below your IPO price³. The reason is that for every dollar you invest, the underwriters of the IPO will take about five cents. Thus only 95% of what you invest in the closed-end fund is actually invested in the fund's stocks and bonds.

I have invested in both ETFs and (open end) mutual funds. There are some advantages and disadvantages for each. I think the pros and cons are small and net to about zero, but some experts claim that ETFs are slightly more tax efficient than mutual funds. Active traders will definitely use ETFs; but I think either an ETF or a mutual fund is ok for a long-term buy-and-hold investor if their expense ratios are comparably low. You can buy and sell (almost) all of

³ See, for example, Diana Shao and Jay Ritter, "Closed-End Fund IPOs: Sold, Not Bought", at https://site.warrington.ufl.edu/ritter/files/2018/06/CEF_IPOs_June15_2018.pdf. They say, "... Taxable FI and municipal bond CEF IPOs underperform by 6-7% in the first six months and by about 8% in one year. In unreported results, we find that only 10% of municipal bond CEF IPOs outperform their size-matched seasoned fund in the six months post-IPO."

them using a good broker with no commissions. Here is one site that lists the modest ways that ETFs and mutual funds differ: <https://www.schwab.com/etfs/mutual-funds-vs-etfs> . I have never invested in closed-end funds.

Here are the most common fixed-income mutual fund and ETF categories:

- Money Market
- Treasuries
- Investment Grade Corporates
- High Yield Corporates
- Munis
 - Single-state-specific vs. national
 - High yield
- International fixed-income
- Inflation-protected (TIPS) funds
- Floating rate funds

After selecting a security-type category, you will have to make some decisions:

- What is the typical maturity of the securities bought by the fund/ETF? Does it match what you want?
- How much credit risk is the fund/ETF taking on? Is it what you are seeking?
- Is liquidity important for you? Are you planning to hold the mutual fund or ETF for a long period of time (say, 5+ years) or are you planning to sell sooner?
- Tax considerations
- Expense ratios – ALWAYS keep them low
- Do you want actively managed funds/ETFs or passive (index) funds/ETFs? Expense ratios of index funds are almost always less than those of actively managed funds. Note that some index funds don't track their benchmark index as closely as other index funds, but usually this will not be important for you.

I repeatedly warn readers to invest in funds and ETFs with low expense ratios. Expense ratios are the fees you pay for a fund's marketing and management expenses, portfolio management expenses, administrative expenses, legal fees, accounting/auditing fees, custodial services, etc. They are taken out of your investment every day; you will never notice them, but they lower the return you will earn on your investment. A good discussion is provided by the SEC at https://www.sec.gov/files/ib_mutualfundfees.pdf .

Avoid any fund that has 12b-1 fees tacked on when you buy them, and avoid funds with a "load". These are unnecessary additional costs for you to pay, and they reduce the rate of return that you will earn on your investment.

Next, I will provide a brief description of each category of fixed-income mutual funds and ETFs that I listed above.

III.A.1. TYPES OF FIXED-INCOME MUTUAL FUNDS AND ETFs: MONEY MARKET FUNDS

Money market funds (MMFs) invest in short term (maturing in 397 days or less) debt securities issued by governments, agencies, banks, and corporations. Because they invest in safe,

short term debt securities, you will usually earn a low rate of return from your MMF investments.

MMFs are NOT insured by the FDIC or any other insurer. But they invest in very safe short term fixed-income securities. They (almost) always have a price of \$1/share. The last time a MMF “broke the buck” (its price fell below \$1) was in 2008, when the Reserve Primary Fund was stuck holding \$785 million in Lehman Brothers securities when Lehman Brothers went bankrupt. Hence, while it is **extremely** unlikely, you CAN lose some money when you invest in a MMF. To learn more about what products are FDIC insured, and the limits on FDIC insurance, visit <https://www.fdic.gov/resources/deposit-insurance> . If the lack of FDIC insurance concerns you, consider investigating FDIC-insured high yield bank savings accounts; the yields some banks offer are often comparable to MMFs.

Because you can (almost certainly) buy and sell your MMF shares at any time for \$1/share, they are very liquid. There is no safer mutual fund or ETF than a MMF.

Some MMFs invest in municipal securities, providing income that is exempt from federal income taxes.

Invest in MMFs for their liquidity, price stability and safety. IMPORTANT: Invest in MMFs with very low expense ratios.

See <https://www.finra.org/investors/insights/money-market-funds> for what FINRA has to say about MMFs.

III.A.2. TYPES OF FIXED-INCOME MUTUAL FUNDS AND ETFs: U.S. TREASURY FUNDS

There are many mutual funds and ETFs that invest ONLY in U.S. Treasuries. When a fund buys a U.S. Treasury Bill, Note, Bond, or TIPS, it is lending money to the government. The securities are backed by the full faith and credit of the U.S. Government. The mutual funds and ETFs in this category only buy U.S. government securities.

Usually, an adjective will be added to the fund’s name that states its maturity focus: e.g., short term, intermediate or long term. Short term often means four years to maturity or less. Long term often means more than 10 years and sometimes more than 20 years.

There is no default risk on the securities owned by these funds, but still, the mutual funds and ETFs are NOT themselves FDIC-insured.

When interest rates rise, the prices of these mutual funds and ETFs will fall. When interest rates fall, their prices will rise. These funds and ETFs have interest rate risk, but no default risk (other than the political risk caused by government craziness).

The longer the maturity of the securities owned by the fund, the greater the price changes caused by changing interest rates. If interest rates rise, long term fixed-income mutual funds and ETFs will fall more in price than short term mutual funds and ETFs. Over a two-year period beginning October 2021, the Vanguard long-term Treasury mutual fund declined in value by about 43%. The short-term Treasury mutual fund fell by about only 9%.

The prices of long-term U.S. Treasury mutual funds and ETFs will rise more than short-term U.S. Treasury funds and ETFs if interest rates fall.

The income you earn on U.S. Treasury funds is taxable by the U.S. government. But usually, you do not have to pay state income taxes on the interest you earn from mutual funds and ETFs when they invest only in Treasuries.

Invest in this class of mutual funds and ETFs when you do not want to bear any credit risk. You will still have interest rate risk. The longer the maturities of the investments, the

greater the interest rate risk. These types of mutual funds and ETFs are usually bought by very risk averse conservative investors.

Some investors choose the maturity they want based on their interest rate forecasts. If they think interest rates will rise, they invest in short-term funds and ETFs. If they think interest rates will fall, they invest in longer term funds and ETFs. Other investors choose the maturity based on what they are saving for. If they are saving for retirement in 30 years, they invest in long term funds and ETFs; if they are saving for a purchase they'll make in less than 3 years, they invest in short term funds and ETFs. Yet other investors diversify across maturities and spread their investment funds over Treasury mutual funds and ETFs with different maturities; perhaps allocate 1/3 to short term, 1/3 to intermediate term and 1/3 to long term.

Some Treasury funds are actively managed, and others are indexed. The managers of active Treasury funds choose different maturities based on their interest rate forecasts. If I invested in U.S. Treasury funds, I would prefer index funds because they have lower expense ratios and it's very difficult for fund managers to correctly predict where interest rates will move in the future.

Be sure to invest in mutual funds and ETFs with very low expense ratios. After identifying the maturity you wish, expense ratios should be the primary determinant for deciding which U.S. Treasury mutual fund or ETF you want to invest in. 0.2% is a very low expense ratio. Indexed funds may even be lower. Anything above 1% is too high.

III.A.3. TYPES OF FIXED-INCOME MUTUAL FUNDS AND ETFs: INVESTMENT GRADE CORPORATES

Investment grade corporate bond funds and ETFs invest in corporate bonds with a bond rating of BBB- or higher (S&P) and/or Baa3 or higher (Moody's). The managers often skew more towards BBB and Baa rated bonds because they offer higher yields. But that means they are taking on more credit risk because BBB and Baa rated corporate bonds are more likely to default than AAA and Aaa rated corporate bonds.

These funds offer higher yields and rates of return than Treasury funds, but they are riskier than Treasury funds because of their default risk.

Interest is taxed by both the federal government and by state and local governments.

Focus on the expense ratios of the funds you are considering. 0.20% is very low. Indexed funds might be lower. Anything above 1% is too high.

Again, many corporate bond funds will have an adjective to describe its maturity focus: short term, intermediate term and long term.

The Federal Reserve Bank of St. Louis (<https://fred.stlouisfed.org/series/BAA10Y>) shows that since 1986, Baa-rated corporates have typically had yields 1.5% - 2.5% more than treasuries, with occasional spikes in that yield difference. Those spikes usually occur during recessions, when investors may believe that many Baa rated corporate bonds are likely to be downgraded to junk, hence they price them like junk; at the peak in 2009, Baa corporates had yields 6% higher than treasuries.

Because defaults by the issuers of investment grade corporates are relatively rare, you will likely earn that additional yield (above Treasury yields) when you invest in investment grade corporate bond funds and ETFs.

If you are thinking of buying individual corporate bonds, it is imperative that you read and understand all the material in section IV.

III.A.4. TYPES OF FIXED-INCOME MUTUAL FUNDS AND ETFs: HIGH YIELD CORPORATES

High yield corporates are sometimes called junk bonds. They are bonds that are rated BB or lower (S&P) and/or Ba or lower (Moody's). They are subject to considerably more default risk than investment grade corporates.

The mutual funds and ETFs in this category invest in high yield corporates. There are also funds and ETFs that invest in high yield municipals.

High yield corporates have higher yields than investment grade corporates. Generally, high yield corporate funds and ETFs have provided higher rates of return than investment grade corporates. But during economic downturns, high yield corporate bond rates of return have been lower because of the greater number of bond rating downgrades, defaults and corporate bankruptcies.

Yardeni (see <https://yardeni.com/charts/us-bond-yields/>) shows that between 1998 and 2024, high yield corporates typically yield about 4%-5% more than Treasuries. But during recessions, high yield corporates yield much more, peaking at almost 20% (!!) more during the 2008-2009 financial crisis, and 10% more in 2001-2003 and again during the 2020 pandemic crisis. When the yield difference declines to 2%, it's probably a good reason to avoid investing in high-yield securities; at 2%, you are probably not being adequately compensated for the default risk you are bearing.

Because some high yield corporate bonds default, you will probably actually realize a return that is less than the higher yield that high yield bond funds and ETFs are priced to provide. If enough junk bonds default, you may even earn less than treasuries were yielding when you bought your high yield corporate fund or ETF. Historically, during recessions, it is not unusual for 5-10% of all high-yield bonds to default. In three of the fifteen years ending 2023, high yield fixed-income funds and ETFs lost money; investors in them experienced negative rates of return.

Expense ratios of high yield bond funds and ETFs are usually higher than investment grade funds and ETFs. Try to invest in funds with low expense ratios. Never pay more than a 1% expense ratio for a high yield mutual fund or ETF. Some charge less than 0.5%. And avoid funds with sales charges, redemption fees, loads and/or 12b-1 fees.

The lesson: high yield corporate bond mutual funds and ETFs are risky. Most of the time you will realize higher rates of return by investing in high-yield bond funds and ETFs than by investing in funds and ETFs that invest in treasuries. If you believe a recession will occur within the next year, it is probably good to avoid high-yield bond funds and ETFs.

If you are thinking of buying individual high-yield corporate bonds, it is imperative that you read and understand all the material in section IV.

III.A.5. TYPES OF FIXED-INCOME MUTUAL FUNDS AND ETFs: MUNICIPAL BOND FUNDS

Municipal (muni) bonds are issued by state and local governments. ***Most*** munis offer coupon interest that is free of federal income tax. Buying muni funds that invest only in the munis issued only by the state of your residence adds the benefit that the coupon interest will also ***usually*** be free of your state income tax; you may also escape local income taxes as well, if you pay local income taxes. When munis' coupons are not subject to the federal income tax, their yields will be lower than corporate and treasury securities with a similar maturity and bond rating. If you desire to buy muni funds and ETFs that provide tax-free income, look for the term "tax-free" or "tax-exempt" in the name of the fund or ETF.

There are a wide range of muni bond funds and ETFs. Some are money market funds holding very short-term munis; others are intermediate to long-term. Some invest in investment grade munis, and others hold high yield (below investment grade; “junk”) munis. Some are state-specific, and others are national funds. Some invest in specific types of munis (general obligation vs. revenue bonds). Sometimes the AMT (alternative minimum tax) plays a role in their investments; if you are subject to the AMT and invest in muni funds and ETFs, you should pay attention to the securities owned by your fund; try to buy funds that are labeled “AMT-free.” Some funds and ETFs are actively managed, and others are indexed.

If you live in a state with a state income tax and own a national muni fund or ETF, be sure to find out how much of your income came from munis issued by your state. That part of the dividends you receive will be exempt from your state and local taxes. The information can be hard to find, but it will be there at the fund’s website. Look for it. Interest from U.S. Treasuries may also be exempt from your state and local income taxes.

When you buy a tax-exempt muni bond fund or ETF, you will typically receive three types of distributions. The coupon interest distributions usually occur monthly, and they will be exempt from federal income tax. But typically, once or twice a year, you will also receive a short-term capital gain distribution and a long-term capital gain distribution. You will have to pay taxes on these distributions⁴.

Your marginal tax rate will determine whether muni funds or corporate bond funds are right for you. “Marginal” means the rate you pay on the next dollar of taxable income you receive.

E.g., suppose taxable corporate bond funds are yielding 5% before tax, and muni funds with the same credit quality are yielding 4% before tax. If your marginal tax bracket is higher than 20%, then muni funds and ETFs may make sense for you. If your tax bracket is 25% then the after-tax yield on corporate funds will be $5\% \times (1-0.25) = 3.75\%$ after tax; the 4% yield for muni funds is higher than the 3.75% after-tax yield on corporate funds. But remember that you do pay taxes on capital gains distributions made by the muni fund; not all of your return is tax-free. This example is only a rough approximation because the tax laws are complex, your tax bracket is difficult to estimate when you get three different types of distributions that are taxed at different rates, and tax rates and laws can change anytime.

If you are thinking of buying individual municipal bonds, it is imperative that you read and understand all the material in section IV.

As always, focus on the expense ratios of the funds you are considering. Indexed muni funds and ETFs might have expense ratios of 0.1% - 0.2%, which is low.

III.A.6. TYPES OF FIXED-INCOME MUTUAL FUNDS AND ETFs: INTERNATIONAL FIXED-INCOME FUNDS

Global funds buy securities from all over the world, including the U.S. International funds do not buy U.S. securities. The securities may be issued by governments or by corporations. Some international funds and ETFs specialize in the developed world and others specialize in emerging markets; the latter group are riskier.

Some of these funds and ETFs hedge currency risk. If they don’t hedge currency risk then the prices of these funds and ETFs will fall when foreign currency prices fall, all else equal. If foreign currency values rise, then the prices of these funds and ETFs will rise, all else equal.

⁴ Capital gains tax rates periodically change. As of October 2024, low-income taxpayers enjoyed a 0% capital gains tax rate.

Hedged funds and ETFs have little to no currency risk. Besides unhedged currency risk, you also face country risk when you invest in global and international funds and ETFs. Foreign governments can take actions that diminish the values of securities issued in their countries.

International fixed-income funds offer diversification benefits. The values of bonds issued by foreign entities are less correlated with those issued by U.S. entities. There are two main reasons for buying global and international fixed-income funds: diversification and if interest rates are higher abroad than in the U.S., you might benefit from the higher yields they offer. I say “might” because currency risk can negate those higher foreign interest rates.

Expense ratios are usually higher for international and global fixed-income funds than other fixed-income funds. Actively managed funds must be very well managed to overcome the higher expense ratios they charge. There are few, if any, actively managed funds that consistently cover their higher expense ratios.

III.A.7. TYPES OF FIXED-INCOME MUTUAL FUNDS AND ETFs: INFLATION-PROTECTED (TIPS) FUNDS

Some funds and ETFs invest in Treasury Inflation-Protected Securities (TIPS). The principal (maturity value) of TIPS adjusts monthly, based on changes in the Consumer Price Index (CPI). In this way, TIPS protect you from the ravages of inflation.

Basically, you will earn a higher rate of return on TIPS funds and TIPS ETFs when there is inflation. They provide a “real” rate of return, which is a rate of return over and above the rate of inflation.

In early September 2024, ten-year Treasury Notes were yielding 3.7%, while ten-year TIPS were yielding 1.7%. This implies that investors expected the inflation rate to be about 2% ($3.7\% - 1.7\% = 2\%$) over the next ten years. If inflation exceeds 2%, you will ultimately do better investing in TIPS; e.g., if inflation is 2.8%/year during the ten-year period, you will actually earn 4.5% on your TIPS ($1.7\% + 2.8\% = 4.5\%$). But if inflation is less than 2%/year, TIPS will perform worse than Treasury notes.

The rates of return are approximate, particularly with mutual funds and ETFs. There can be considerable year-to-year fluctuations in your rate of return.

There are TIPS funds that specialize in certain maturities (short term, intermediate term, long term; but there are not many long-term TIPS funds and ETFs). Some are actively managed and others are indexed. Index funds will have lower expense ratios.

If you are worried about inflation and believe it will be higher than the “breakeven inflation rate” (the rate that will result in both “normal” Treasuries and TIPS providing the same rate of return... 2% in the example of the prior paragraph), then investing in TIPS funds and ETFs will likely be attractive investments for you. But remember that TIPS still have interest rate risk. When the real rate of interest rises, the value of TIPS, TIPS funds and TIPS ETFs will decline. Your rate of return on TIPS funds and ETFs will vary from year to year.

III.A.8. TYPES OF FIXED-INCOME MUTUAL FUNDS AND ETFs: FLOATING RATE FUNDS

Floating rate funds are often recommended when interest rates are expected to rise. Because they are “floating” rate funds, they invest in securities that pay higher rates of return to investors if interest rates rise. In turn, you, as the owner of the floating rate fund or ETF, also receive higher returns if interest rates rise.

One important caveat with these funds is the amount of credit risk their bond portfolios have. Be sure to review their credit quality breakdown. Many of these funds invest in high-yield (“junk”) floating rate bonds. I.e., they are not investment quality. Non-investment grade floating rate funds and ETFs may show they have high yield measures when you buy them (30-day SEC standardized yield, yield to maturity, etc.). But if these funds experience credit quality declines and defaults in their portfolio, the rates of return you will earn will be less than the yields they display. If you are willing and able to take the risk of bond defaults, then floating rate funds and ETFs that are not investment grade are a substitute for investing in high yield mutual funds and ETFs; they are risky investments and you can lose money on them.

Investment grade floating rate mutual funds and ETFs will display lower yields. They have less credit risk. If you are risk averse and don’t want to bear the risk of bond defaults, investment grade floating rate mutual funds and ETFs are a substitute for short term investment grade bond funds and ETFs.

Besides deciding how much credit risk you want in your fund or ETF, also examine their expense ratios. Passively managed funds that try to adhere to a floating rate index (call them index funds) will have much lower expense ratios than actively managed floating rate funds. Keep your expense ratios low!

III.A.9. TYPES OF FIXED-INCOME MUTUAL FUNDS AND ETFs: TWO OTHER FUND TYPES

There are many other types of fixed-income mutual funds and ETFs. I will mention two.

“Multi-sector funds” can invest in any type of fixed-income security they want to. You are betting that the fund manager knows which category of fixed-income securities will perform best. They may invest in U.S. Treasuries, U.S. investment grade corporates, high yield corporates, and/or any type of international fixed-income security. They can select any maturity they want. Personally, I see no reason anyone would want to speculate in this type of fund, but if the fund manager is highly skilled, they might do well. Because they are actively managed, they often have high expense ratios. Many of these funds are called “strategic income” funds, “unconstrained bond funds” or “nontraditional bond funds.”

But there is another class of ETFs that recently became available that I have invested in. They are called “fixed-term ETFs” or “target maturity ETFs”. iShares® iBonds ETFs (<https://www.ishares.com/us/strategies/bond-etfs/build-better-bond-ladders>) and Invesco BulletShares® fixed-income ETFs (<https://www.invesco.com/us/en/solutions/invesco-etfs/bulletshares-fixed-income-etfs.html>) offer portfolios of similar security types all maturing in the same year. The security type might be U.S. Treasuries, TIPS, munis, investment grade corporates or high yield corporates. E.g., IBDY is an iShares® portfolio of investment grade bonds maturing in 2033. These ETFs permit you to buy a well-diversified portfolio of one category of fixed-income securities all maturing in the same year. At the end of the term, all the securities mature and you get a principal amount back.

To highlight the difference between iBonds and BulletShares and a typical fund or ETF, the latter might invest in a portfolio of long-term bonds, but as time passes, the remaining maturity will no longer match its desired maturity; e.g., what was originally a long-term bond will eventually not be long-term. Thus, securities must be sold. This increases the turnover and expenses of the typical fixed-income mutual fund or ETF. iBonds and BulletShares ETFs will typically buy and hold all its securities until maturity. Another difference is that iBonds and BulletShares mature; typical fixed-income funds and ETFs do not.

A good investment strategy might be to ladder the maturity years of several fixed-term ETFs. I.e., spread your investment over five of the iBond or BulletShares ETFs that mature in 2030, 2031, 2034. You get diversification benefits because each ETF holds many individual bonds. And you ladder across a range of target date maturities.

Being a relatively new security type does inject a bit of risk into investing in iBonds and BulletShares ETFs, but the concept seems good.

III.B. CONSIDER REALIZING YOUR TAX-DEDUCTIBLE LOSSES

If you have a loss on a fund that you own, consider selling it to realize a tax-deductible loss, and invest the proceeds in a similar fund. If your holding period on the losing fund or ETF is less than one year, then your tax-deductible loss is short term, which may prove to be even more beneficial for you, since short term losses are fully deductible, while long term losses are partially deductible. Keep in mind that tax laws change frequently, so check the current tax rules before proceeding.

As an example, you might own FBNDX, the Fidelity Investment Grade Bond Fund. If you have a loss on this investment, perhaps because interest rates have recently risen, consider selling FBNDX and buying VWESX, the Vanguard Long-Term Investment-Grade Fund. You can deduct the loss on FBNDX. If you have owned FBNDX for less than a year (or whatever currently delineates short term losses from long term losses), then it is particularly good to realize your loss while it is still a short-term loss.

IV. INVESTING IN INDIVIDUAL BONDS

IV.A. SHOULD YOU INVEST IN FIXED-INCOME MUTUAL FUNDS AND ETFs, OR IN INDIVIDUAL BONDS?

Fixed-income mutual funds & ETFs are easier to invest in than individual bonds. It takes considerable time and expertise (which is a reason I wrote this primer) to buy and monitor a personally created portfolio of individual bonds. Funds and ETFs offer you diversification and expertise.

But investing in and creating your own personal portfolio of individual bonds offers some benefits. You avoid the expense ratios and fees of funds and ETFs. You avoid the trading costs that most funds and ETFs bear because they often sell their bonds when the bond maturity no longer meets their stated maturity objective. You can tailor the maturity of the bonds you buy to meet your needs. You can often find individual bonds with higher yields than you can get from funds and ETFs. Absent a default, you know you will eventually get your principal back from individual bonds.

But, while there are benefits from creating your own bond portfolio, unless you have read and understand pretty much everything I cover next in this primer on fixed-income investing, then I don't recommend you invest in individual fixed-income securities (other than, perhaps, U.S. Treasuries and/or non-callable insured CDs).

Let me repeat, buying individual fixed-income securities is only advisable for investors who are well educated in the intricacies of bonds, interest rate risk, credit risk, tax issues, call provisions, bond indentures, and more. So, unless you have the knowledge, and/or have the time to learn and understand what I present below, do not buy individual corporate bonds or municipal bonds. Instead, use fixed-income mutual funds and ETFs to get your fixed-income exposure.

If are interested in buying individual bonds, your broker should have a “bond desk” or “bond center”, staffed by experts who are available to help you with your bond investing decisions. Some good ones are

- <https://us.etrade.com/what-we-offer/investment-choices/bonds>
- <https://www.fidelity.com/fixed-income-bonds/understanding-bonds>
- <https://www.schwab.com/fixed-income/individual-bonds>
- <https://investor.vanguard.com/investor-resources-education/understanding-investment-types/what-is-a-bond>

But beyond these sites, I urge to you read on, below

IV.B. WHAT IS A BOND? BOND TERMINOLOGY

When you buy a bond or other fixed-income security, you are lending money to a borrower. Buy a bank CD and you are lending money to that bank. Buy a treasury security and you are lending money to the U.S. government. Buy a corporate bond and you have lent money to a corporation.

Bonds are one type of fixed-income instrument. Fixed-income instruments have several common characteristics. But many bonds have unique and unusual characteristics as well, which makes challenging to invest in them.

Bonds will have a face value, also called its principal amount or its par value. This is the amount you will receive when the bond matures. At maturity, the bond issuer pays you back the bond principal, which is usually (but not always) the amount lent when the bond was first issued. The face value of most bonds is \$1000. Some securities, like Treasury Bills, have a higher face value of \$10,000. A very few bonds may have even higher face values.

The time to maturity is the amount of time until you receive the bond’s face value. The issuer redeems the bond on its maturity date.

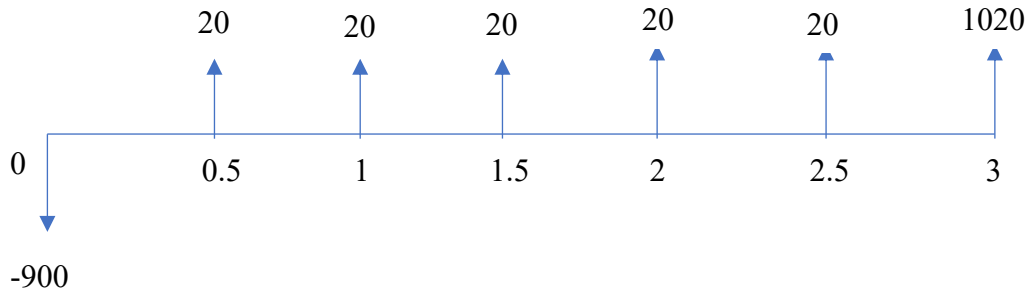
Most bonds will pay you a fixed amount of interest periodically. Most of them pay semi-annually, every six months. But some bonds (known as pure discount bonds, or zero-coupon bonds) do not pay any interest until maturity. When you buy a pure discount bond, you pay an initial price (less than its face value), and then you receive the bond’s face value at maturity. Zero-coupon U.S. Treasury securities are also known as STRIPS. FINRA is a U.S. Government agency, and it offers a one-minute guide to zero-coupon bonds at <https://www.finra.org/investors/insights/zero-coupon-bonds> .

But most bonds have coupons, and they will pay you interest periodically. The annual amount you receive is computed by multiplying the bond’s coupon rate by its face value. For example, a bond may have a coupon rate of 4% and a face value of \$1000. This means you will receive \$40/year in interest payments. If the bond pays its coupons semi-annually (as most do), then every six months you will receive \$20.

Thus, during a bond’s life, there are three types of cash flows: 1) the bond’s initial price that you pay. It is a cash outflow, meaning that you must buy the bond and pay for it. 2) typically, you will receive periodic interest payments which are equal to (Coupon rate X face value)/number of payments per year. 3) you will receive the bond’s face value at maturity. The reason that bonds are fixed-income instruments is that the coupons and bond principal are fixed; they do not change for the life of the bond (if the bond is not a floating rate bond, not called early, or the issuer does not default on their promises).

You can buy a new bond from the original issuer, or you can buy it in the secondary market from some other investor. You can do both with your broker.

Suppose a bond's price is \$900, its face value is \$1000, its coupon rate is 4%, coupons are paid semi-annually, and the bond matures in 3 years. A diagram of cash flows looks like this:



The horizontal line is a timeline. At time zero, today, you have a cash outflow of \$900 because you buy the bond. Then, 0.5, 1, 1.5, 2, and 2.5 years from today you receive the semiannual coupon interest payment of \$20. That last cash flow of \$1020 consists of \$20 in coupon interest and \$1000 from the bond's face value.

When you buy a bond, it is characterized by its yield, or yield to maturity. A bond's yield is a measure of the annual rate of return you will earn from buying the bond, if all payments are made (the issuer does not default), and the bond is not called or redeemed early. Without going into technical details, it is the discount rate that makes the present value of future cash flows equal to the bond's price. The bond illustrated above has a yield to maturity of 7.8%. You can compute this by using a financial calculator or a spreadsheet.

Perhaps the most important concept of finance is that when interest rates rise, bond prices fall, and when interest rates fall, bond prices rise. When I taught, I often said that any business school student who doesn't know this, doesn't deserve to get a diploma.

The reason bond prices fall when interest rates rise can be explained using the above example. Suppose you were willing to pay \$900 for this bond with its 7.8% yield and current interest rates. Now, suppose interest rates rise. Presumably if rates rise, you will want to earn more than 7.8% to invest in this bond. The future cash flows are fixed. The only way you can earn a rate of return higher than 7.8% is if its price declines. If the bond's price were to fall to \$890, then its yield to maturity will rise to 8.21%.

The maturity decision may be the most important decision you must make when buying fixed-income securities. Should you buy securities maturing in one year? In ten years? Thirty years?

The yield curve is also known as the term structure of interest rates. It is a plot of Treasury yields (the y-axis) as a function of maturity. Here is one site that shows the current, and historical, yield curves: <https://www.ustreasuryyieldcurve.com> . Some sites, such as <https://www.briancjenkins.com/animations/yield-curve-animation.html> and <https://stockcharts.com/freecharts/yieldcurve.php> , show an animated depiction of how the yield curve has changed since the 1960's. It is fascinating to see how the yield curve changes over time.

The shape of the yield curve is one important factor that goes into an investor's maturity decision. Most times, the yield curve is upward sloping so that you can earn higher yields on longer maturity securities. There are other times when the yield curve is downward sloping

(inverted) so that shorter maturities offer higher yields than long-term securities. The yield curve can also be hump-shaped or U-shaped.

There are reasons that the yield curve has its shape. One is investors' expectations of future interest rates. Are interest rates in general expected to rise or fall? Usually, an upward sloping yield curve exists because interest rates are expected to rise. The yield curve will have a downward slope (short term bonds yield more than long term bonds) when interest rates are expected to fall. When making your maturity decision, you should consider both the current shape of the yield curve, as well as how the shape of the yield curve is expected to change. Expected future interest rate changes play a role in your maturity decision. It is commonly believed that investors' expectations about future interest rate changes are built in (reflected in) the shape of the yield curve. The only way you will earn an unexpectedly higher rate of return is for you to correctly bet that your beliefs about future interest rate changes are more accurate than those reflected in the shape of the yield curve. You are not encouraged to make bets like this. What makes you think you know more than a million other investors, many of whom make a living trading on their beliefs about interest rates?

Nonetheless, let's assume you want to play this game. For example, maybe most investors believe interest rates will fall, but you believe they will stay high for a relatively long period of time. Because most investors think rates will decline, the yield curve is downward sloping, meaning that short maturity bonds are offering higher yields than longer maturity bonds. To bet on your unique beliefs, you would invest in short term securities, perhaps maturing in a year or two. If you are right, you will do well.

The same argument applies if most investors believe interest rates will rise sharply in the next year or two, but you believe rates will stay where they are today. The market's expectations will create an upward sloping yield curve. To bet on your unique beliefs that rates will remain unchanged, you would buy longer maturity securities that currently offer higher bond yields.

What if you are like most people, who don't have a clue about where interest rates are heading? In this case, two strategies that make sense for your situation are to ladder, or to match the maturities of your fixed-income securities to your expected remaining life and expected future cash flow needs. Your expected longevity and your expected future income and expenditures are your unique personal circumstances. The longer you believe you will live (i.e., the younger you are), the longer the maturity of the fixed-income securities you should buy. If you are in your 20s, it is logical to buy 30-year bonds. If you are in your 60s, then shorter 10-year bonds may be more logical.

Matching your bond maturities to your spending and income patterns is also a valid strategy. If you have ample income coming in the next ten years, then the rule is don't buy bonds maturing in less than ten years. If you are planning on retiring twenty years from now, then buy bonds maturing in twenty or more years. If you need money for a medical operation you will have next year, buy one-year fixed-income securities or invest in a money market fund.

Laddering is also a valid strategy no matter how old you are. Laddering the maturity of your bond investments stipulates that you spread your investment capital across bonds with different maturities. You might buy bonds maturing in each of the next 10, 20, or even 30 years. Or you might delay the ladder by buying bonds maturing 5, 6, 7, ... 25 years from now. As time passes, bonds will mature. Laddering dictates that you reinvest the proceeds (the bond's principal or face value) in longer bonds. This maintains the ladder.

E.g., suppose you begin by spreading your investable funds evenly in bonds maturing 1, 2, 3, 20 years from now. This means you will invest about 5% of your money in each of

twenty different bonds maturing at twenty different times. One year hence, your one-year bonds will mature. You take the proceeds and buy bonds that mature 20 years later. Basically, every year you will have bonds mature, and you should reinvest the proceeds in new 20-year bonds. In this way, you are always laddered with bonds maturing in each of the subsequent twenty years.

I have discussed the concept of “maturity.” A related term for bond maturity is “**duration**.” Duration is sometimes called effective maturity, and it is also a measure of a bond’s interest rate risk. The greater a bond’s duration, the more its price will change if interest rates change. Maturity is the most important determinant of a bond’s duration. The second most important determinant is the bond’s coupon rate; all else equal, the lower the coupon the longer is the bond’s duration. The bond’s yield plays yet a smaller role in computing duration. The duration of a zero-coupon bond equals its maturity. The duration of a coupon bond is shorter than its maturity. Spreadsheets compute bond durations with their duration function.

Long duration bonds will lose a greater percentage of their value if interest rates rise, compared to short duration bonds. If you think interest rates will rise, reduce the duration of your bond portfolio by buying shorter maturity bonds with higher coupon rates. If you think interest rates will fall and you want to speculate on your beliefs, extend the duration of your portfolio by buying longer maturity bonds with low coupon rates. One of the most fundamental facts about fixed-income securities is that when interest rates rise, bond prices fall. When interest rates fall, bond prices rise. A second fundamental fact is that if interest rates change, bonds with longer maturities (durations) will have greater price changes than those with shorter maturities (durations)⁵.

When interest rates rise and bond prices fall, you will experience regret for having locked your money at the lower interest rate that existed at the time of your purchase. Your regret will be somewhat mitigated because you can reinvest your coupon payments at higher rates. But the important bottom line is this: If you think interest rates will rise, buy short maturity bonds. If you think interest rates will fall, you should buy longer bonds. But also keep in mind that very few people, indeed perhaps no one, can consistently correctly predict interest rate changes. Hence a good strategy is to either ladder and/or consider your personal circumstances (age, income and expenditure plans) when deciding on the maturity of your fixed-income investments.

IV.C. VALUATION: WHAT DRIVES BOND VALUES?

Interest rates, and changes in interest rates, are the primary determinant of a bond’s value.

When they are first issued, most bonds have a coupon rate equal to the interest rate appropriate for the bond. Thus, the bond is sold at its par value, typically \$1000. The appropriate interest rate depends on the bond’s maturity, and its credit quality.

As interest rates change after issuance, so do bond values. If interest rates rise, bond values fall. Bond values rise if interest rates fall. If the interest rate changes and becomes higher than the bond’s coupon rate, then the bond becomes a discount bond. If interest rates become lower than the bond’s coupon rate, the bond becomes a premium bond. If the price stays at \$1000, it is a par bond.

Besides changing interest rates, the second most important factor that causes a bond’s value to change is changes in the issuer’s credit quality. Bond rating agencies such as Moody’s and Standard & Poor’s (S&P) rate bonds for their credit worthiness. Investment grade bonds are

⁵ This second fundamental fact does not apply when dealing with callable bonds selling at a premium to their face value.

rated BBB or higher by S&P, and Baa or higher by Moody's. High yield, or junk, bonds are rated BB or lower by S&P, and Ba or lower by Moody's.

Of course, taxability of the bond's coupon interest payments, and the tax-impact of capital gains (for discount bonds) or losses (for premium bonds) affect bond values.

Many other factors have relatively smaller impacts on value. Callability, sinking fund provisions, bondholder protections in the bond's indenture (contract), the perceived quality and honesty of management, forecasted future profitability, and more all impact the values of fixed-income securities.

IV.D. TYPES OF INDIVIDUAL FIXED-INCOME INSTRUMENTS YOU MIGHT BUY

Fixed-income instruments differ based on their issuer. In this section I briefly describe the different issuers of fixed-income securities that most individual investors will buy.

Along the way, I describe many peculiarities, risks, subtleties, and features of these different fixed-income securities and the markets in which they trade. Fixed-income investors must understand these facets of investing in bonds.

IV.D.1. TYPES OF FIXED-INCOME INSTRUMENTS: U.S. TREASURIES

U.S. Treasury Bills, Notes and Bonds are issued by the U.S. government. They are considered to be free of default risk because the U.S. government can print money to pay off its obligation to you. It is unfortunate that political risk has created the perception of a minuscule amount of default risk by the U.S. government. It's a VERY low risk but at some future date, the U.S. Congress could refuse to increase the U.S. deficit and because of this, the owners of Treasuries won't be repaid on time. It is because of this slight possibility that in 2013, Standard and Poor's (S&P) lowered the rating of U.S. Treasuries from AAA to AA+. AAA is the highest rating. As of July 2024, only two companies: Johnson and Johnson and Microsoft, had AAA ratings from S&P. The other major bond rating agency is Moody's, which still rates U.S. debt obligations as AAA, but also has a "negative outlook" on them. The negative outlook means that it is possible their rating will be lowered in the future.

If the U.S. government defaults because of political reasons, I predict that the default will only delay payment for a day or two because the financial markets will panic, which will lead Congress to act. But it will damage the sacred reputation that Treasuries possess... that they are "riskless" in the sense of default risk, and the brief default could lead to further decay in Treasury bond ratings. I am not concerned about the long run impact of a brief default, but financial markets are concerned. The short run impact could be scary.

That said, I have been wrong with my predictions and concerns many times.

When they are first issued, Treasury Bills mature in less than a year. They are pure discount securities. You pay a price less than \$10,000 when you buy them, and you get \$10,000 back when they mature.

Treasury Notes initially have maturities ranging between two and ten years. Treasury Bonds initially have maturities of 20 or 30 years. Notes and bonds have coupons, so they pay interest every six months.

Besides their (near) zero default risk, another benefit from buying U.S. Treasury notes and bonds is that you do not have to pay state and local income taxes on the coupon interest you receive while you own them. You must, however, pay federal income taxes on their coupon payments and on the capital gains you would realize if you paid less than what you get from your sale, or less than the face value you receive at maturity if you hold them until maturity.

You can buy Treasuries from your broker in the primary market (from the U.S. government, in its upcoming auctions of newly issued securities) or the secondary market (previously owned Treasuries). You can also buy newly issued Treasuries directly from the U.S. government at www.treasurydirect.gov (warning: it's not a user-friendly website).

STRIPS are long-term zero-coupon Treasury securities. You pay the price to buy them today and then you wait until maturity, at which time you get the face value of \$1000. You can only buy STRIPS through your broker. Like Treasuries, they are backed by the full faith and credit of the U.S.

IV.D.2. TYPES OF FIXED-INCOME INSTRUMENTS: TREASURY INFLATION-PROTECTED SECURITIES (TIPS)

TIPS are Treasury Inflation-Protected Securities issued by the U.S. Like other Treasuries, they are free from default risk (other than a politically created default). Semi-annual interest payments and the face value of these securities both increase if inflation occurs. TIPS offer you the opportunity to earn a real rate of return, which is a rate of return over and above the inflation rate. TIPS yields peaked at just above 4% in 2000, and actually became negative in 2011-2014 and again in 2020-2022.

You can buy TIPS directly from the U.S. government when they are issued (see <https://www.treasurydirect.gov/marketable-securities/tips/#id-how-tips-protects-you-against-inflation-354350>) or you can buy them through your broker in the primary (to be sold by the government in an upcoming auction) market or in the secondary market (in the secondary market, you buy them from someone else who no longer wants to own them).

TIPS offer real yields. They accomplish this by adjusting the principal value of the security for inflation (the CPI). This results in both your semiannual interest payments growing because of inflation, as well as the principal you receive at maturity growing because of inflation. The principal amount that has been adjusted for prior inflation is called the “adjusted principal.”

If you subtract the yield on a TIPS security from the yield on a “normal” Treasury security with the same maturity, you will have an estimate of expected inflation over the maturity period of the security.

TIPS yields were negative roughly between May 2020 and May 2022. The lowest real rate during this time was -1.1%. Investors who bought long term TIPS with negative real rates experienced considerable losses on their holdings when the real rate rebounded to hit 2.25% in late 2023. When real interest rates rise, the prices of TIPS fall. When nominal interest rates rise, the prices of other fixed-income securities (those with no embedded options such as call provisions) fall.

You can find graphs of the historical path of real TIPS yields online. For example, see <https://tradingeconomics.com/united-states/10-year-tips-yield>.

When real yields are high, say above 2-2.5%, it's probably a good opportunity to buy TIPS. When real yields on TIPS are negative, think carefully of what you are buying; you might want to avoid TIPS. These real yields will be earned over the entire maturity / lifetime of the securities. On a year-to-year basis, you will experience positive or negative annual rates of return from price fluctuations. But unless you sell your TIPS, they are paper losses. If you hold TIPS until maturity, you'll earn approximately the original promised REAL yield. E.g., if the real TIPS yield is 1% when you buy them, then you will earn about 1%/year over the inflation rate until maturity; if inflation is high, say 4%, then your rate of return will be about 5%.

During deflationary periods (current or expected), buying newly issued individual TIPS has an advantage over buying previously issued TIPS or Inflation-Protected (i.e., TIPS) mutual funds and ETFs. Basically, the prices of newly issued TIPS provide some additional price protection against deflation; the amount you receive at maturity cannot be below their face value (\$1000) at maturity, even if their adjusted principal is less than \$1000 because of deflation. But prices of previously issued, older, TIPS don't offer the same protection. If there was previous inflation, their adjusted principal will be above face value. If you buy one of these older TIPS, then their adjusted principal amounts can subsequently fall more than those of newly issued TIPS. Most mutual funds and ETFs own the older TIPS, so they don't have the protection against deflation that newly issued TIPS have.

As an example of how this adjusted principal amount affects TIPS pricing, consider that on October 23, 2024, there were two TIPS maturing in 2034. The TIPS maturing on January 15, 2034, had an adjusted principal of \$1023, meaning that if there was deflation, you could lose as much as \$23 by the maturity date; you cannot receive less than \$1000 at maturity. The TIPS maturing on July 15, 2034 had an adjusted principal of \$1003, hence you could lose only \$3 by the maturity date. All else equal the latter security offers better price protection. But other investors recognized this: the yield on the January 15, 2034 TIPS was 1.935%, while the yield on the July 15, 2034 TIPS was 1.917%. You pay for the additional protection by accepting a slightly lower yield. The lesson is that TIPS with adjusted principals close to \$1000 are a better investment than TIPS with higher adjusted principals; lower adjusted principal amounts are better hedges against deflation.

If you buy individual TIPS, I think it's best to buy them in an IRA, rather than in a normal taxable account. The annual income tax on TIPS held in a taxable account can be difficult to compute. The tax law on TIPS "income" may work to your disadvantage if they are held in a taxable account, but I will not go into the tedious detail. Just be familiar with how TIPS are taxed if you buy them in a taxable account.

To summarize, if you want them, buy newly issued individual TIPS securities in a tax-deferred account such as an IRA.

Investors should consider having some small % of their fixed-income portfolio in TIPS and/or TIPS mutual funds or ETFs. You still must decide on the proper maturity; you can buy TIPS and/or inflation-protected funds with different maturities. Newly issued TIPS have maturities of 5, 10 or 30 years. If TIPS real yields are high (above 2.5%) consider extending the maturity of your TIPS. Otherwise match the maturity of your TIPS to your likely longevity (if you are young, consider longer TIPS; if you are older, consider shorter TIPS), think of what you believe inflation might be in next few years, match maturities to your upcoming obligations, or ladder your maturities.

I-Bonds are an alternative investment that get you inflation protection. They work differently than TIPS. You can only buy I-Bonds at the Treasury Direct website. Before doing that, read about them at <https://www.treasurydirect.gov/savings-bonds/i-bonds/>.

IV.D.3. TYPES OF FIXED-INCOME INSTRUMENTS: AGENCY SECURITIES

There are several agencies that are linked to the U.S. government. Examples include the Federal Farm Credit Banks Funding Corporation, Federal Home Loan Banks, FreddieMac, FannieMae, and the Tennessee Valley Authority. The U.S. government does not provide a specific guarantee that their bond interest and/or principal will be repaid. That said, these agency securities are very highly rated (AA to AAA), and many "experts" believe the U.S. government

would never let them default. Hence, there is almost no default risk, but still, a bit more default risk than Treasuries. Hence, agency bonds usually yield a little bit more, perhaps 0.3%, than similar-maturity Treasuries. Beware of call risk (described below) if you buy agency bonds.

IV.D.4. TYPES OF FIXED-INCOME INSTRUMENTS: CORPORATE BONDS

Corporate bonds are issued by corporations. They are loans to corporations. Because they (almost) always have more default risk than Treasuries, you will be compensated up front with a higher yield. If the issuer never defaults, you will earn (approximately) that higher yield over your entire holding period, until the maturity date. But if the corporation does default, you will earn considerably less than the yield you were initially “promised.” You may even lose all your initial investment.

You must pay federal, state and local income taxes on the coupon interest paid by corporate issues. Recall that coupon interest on Treasuries is exempt from state and local income taxes.

Corporate bonds are rated by rating agencies such as Standard and Poor’s (S&P) and Moody’s. S&P rates bonds from AAA to AA to A to BBB to BB to B to CCC and lower. S&P also provides more refinement to its ratings by adding + or – to its rating. Thus, a bond might be rated A+, A or A-. Any bond rated BB+ or lower is considered “high yield” or “junk.” Moody’s ratings range from Aaa to Aa to A to Baa to Ba to B to Caa and lower. Moody’s creates greater refinement by adding a 1, 2 or 3 to its rating. Thus, a bond might be rated A1, A2, or A3. Ratings of Ba1 and below are high yield or junk. Typically, the lower that rating, the higher the promised yield to maturity. I add the adjective “promised” because corporate issuers can default, meaning they won’t pay you what they promised. Default rates increase as bond ratings deteriorate. Bond ratings often change as an issuer’s circumstances and creditworthiness change. Bond ratings are only opinions, and the rating agencies’ opinions can be incorrect.

Always remember.... If interest rates rise, the prices of bonds fall. You have interest rate risk when buying corporate bonds. Other risks may include call risk, sinking fund risk and credit risk. Credit and default risk is highest for high yield bonds.

IV.D.5. TYPES OF FIXED-INCOME INSTRUMENTS: MUNICIPAL BONDS

Municipal (muni) bonds are issued by state and local governments. Most (NOT ALL!) munis pay coupon interest that is exempt from federal income tax. You do have to pay state and local income taxes on the interest unless the issuer is from the state of your residence. Often (NOT ALWAYS!), coupon interest paid by muni bonds issued by the state in which you reside is exempt from your state’s income tax.

But the world is not so simple. Munis may expose you to several other taxes. You should review what Schwab has to say at <https://www.schwab.com/learn/story/not-always-tax-free-7-municipal-bond-tax-traps>.

NEVER buy tax-exempt municipal bonds in your IRA or other tax-deferred retirement accounts. Buying taxable munis in your tax-deferred accounts is fine.

Munis are rated by Moody’s and Standard & Poor’s (S&P). There are investment grade munis (rated BBB and higher, or Baa and higher), and high-yield (junk) munis (rated BB and lower, or Ba and lower). The latter offer higher yields but have more default risk.

Some munis are insured by a monoline insurer. “Monoline” means that they only insure muni bonds, and nothing else. If the muni bond issuer cannot make interest and/or principal payments, they will be made by the insurer. Investing in insured munis is good, particularly if

you don't give up any (or just a little) yield. You do face the small risk that the issuer and the insurer will both default. Fidelity lets you know (with an "I" on its list of bonds) when a muni is insured. NOTE that insurance is only against the issuer defaulting on their required interest or principal payments. All other risks (such as interest rate risk and call risk) still exist.

I have avoided buying low-rated munis (below BBB), even if they are insured.

When munis pay interest that is exempt from federal income taxes, their yields are lower than similarly rated corporate bonds. Investing in tax-exempt munis might be appropriate for you, depending on your marginal income tax bracket. Suppose corporate bonds are yielding y_{corp} and your marginal tax rate is t . Compare $y_{corp} \times (1-t)$ to the yield on similarly rated muni bonds. If $y_{corp} \times (1-t)$ is less than the yield on munis, then munis may be appropriate for you. But this analysis is over-simplified because with tax-exempt munis, some of your return will be tax-free, but other parts of your return may be taxed at your marginal rate or the capital gains rate (both of which can also change in the future). See the "de minimis rule" discussion in the next section.

For example, in October 2024, the median A-rated 10-year corporate bond yield was 4.49%. The median A-rated 10-year muni yield was 2.92%. If your marginal tax bracket was higher than about 35%, then you might consider investing in munis because $4.49(1-0.35) = 2.92$. At a marginal tax rate of 35%, you would be indifferent between investing in munis and corporates. But also read about the de minimis rule for munis, in the next section. This example is only an approximation because the tax laws are complex.

Some munis pay coupon interest that is taxable as ordinary income by the U.S. government. Treat them like corporate bonds. Their yields are comparable to similarly rated corporate bonds. I look for taxable munis that are insured by a 3rd party insurer.

I will repeat that you should NEVER buy tax-exempt municipal bonds in your IRA or other tax-deferred retirement accounts. But it is fine to buy taxable munis in your tax-deferred accounts. You should compare the yields on taxable munis to the yields on similar-rated corporate bonds, since both are taxed identically at the federal level. If you invest in taxable munis issued by the state in which you reside, you may escape state and local income taxes on the coupon interest. This is good, but be sure to check out the details for your state of residence and for the taxable muni you are considering.

Some munis are general obligation (GO) bonds and others are revenue bonds. The issuing municipality is obligated to pay you interest and principal on GO bonds. Revenue bonds are often regarded as being riskier because the underlying project (a toll road or bridge perhaps) must generate sufficient revenue to pay bondholders. In other words, revenue bonds may have more credit risk than GO bonds.

There are some unusual issues you must consider before investing in municipal bonds. These include call risk, the de minimis rule, and other risks. These are described next.

IV.D.5.a. THE DE MINIMIS RULE FOR MUNIS

When you buy a tax-exempt muni, your coupon interest is tax-free, but you will likely have to pay taxes on any capital gains. If you buy a muni at a discount (less than its par value) in your taxable account, and hold it until maturity, you will likely have a taxable capital gain at maturity. But to compute your after-tax yield, what tax rate will you pay on that capital gain?

Because of the de minimis rule, if you invest in a municipal bond that sells at a (sufficiently large) discount to its face value, then the price appreciation you earn (the difference between the bond's face value and the price you pay) will be taxed at your ordinary marginal tax

rate. This means that a portion of your return (the coupon interest) will be free of federal income tax, but the price appreciation will be taxed at your marginal tax rate, not at a lower capital gains tax rate. Either way, paying taxes on your gain at maturity will reduce your after-tax yield, but the de minimis rule lowers it more.

Fidelity warns you about this by saying

“The bond you have indicated you want to purchase is being offered at a discount and may be subject to the IRS’s de minimis rule. Under the de minimis tax rule, if a municipal bond is purchased at a significant discount, the principal gains (or appreciation) are subject to ordinary income taxes rather than capital gains taxes. The price cutoff for the appreciation to be treated as a capital gain is one-quarter point per full year between acquisition and maturity. Click here to learn more about the potential tax implications from buying bonds at significant discounts to par. Please consult a tax professional with any questions about how this purchase could affect your personal tax status.”

What is the impact of this? Assume you are interested in a ten-year muni when the bond’s before-tax rate is 5%. If you buy the muni at par, with a 5% coupon, the before-tax yield and after-tax yield are the same, 5%. But suppose the bond’s yield is 5% and its coupon rate is 1%; it will be a discount bond. If you can use a capital gains tax rate of 20% on your gain at maturity, your after-tax yield will be 4.37%, which is 0.63% less than a par bond. If, because of the de minimis rule, you must use your marginal ordinary income tax rate of 35% on your gain at maturity, your after-tax yield will be 3.88%, which is 1.12% less than you get from buying the muni at par.

The spreadsheet used to compute these yields in the above example are in the Appendix.

The takeaway is that tax laws have a big impact when computing the after-tax yield of munis, and they are complex.

IV.D.5.b. OID MUNI BONDS: BEWARE!

An OID bond is an “original issue discount” bond. Most bonds are issued at par (face value), meaning that the coupon rate on the bond equals the bond’s yield to maturity. But OID bonds are initially issued at a price less than their face value. When issued, these bonds have a coupon rate less than their yield; zero coupon bonds are the most extreme example of OID bonds. The discount equals the difference between face value and the original issue price.

All else equal, OID bonds are not good investments for investors. There are reasons for this: added default risk, a higher tax liability, and tax complexity for the OID bond buyer.

The default risk argument arises because you must ask yourself why is the issuing company or municipality selling the bond with a lower coupon (lower price)? The answer may be that the issuer cannot afford to pay the higher interest if the bond was issued at par. If so, it is a signal of financial weakness.

The added tax liability arises because the IRS regards the original discount as a form of interest. Hence, you may have to pay taxes on a portion of the discount each year, even though you aren’t actually receiving interest. There is actually a complex additional tax form, Form 1099-OID, that you must file if you buy an OID bond. And, if you really want to get spooked about the tax problems created by OID bond investing, just read what the IRS expects of you at <https://www.irs.gov/publications/p1212> .

Thus, if you buy a zero coupon OID bond, not only do you not receive any coupon interest payments, but you also actually must pay income taxes as if you are receiving interest. You pay income taxes on fake, phantom, imaginary income!

Fidelity warns you.... *“Tax reporting of OID obligations is complex. Consult your tax advisor or IRS Publication 1212, “List of Original Issue Discount Instruments,” for specific reporting information.”*

Fidelity also warns you when attempting to buy an OID bond:

“The municipal security you are attempting to purchase was issued at a price that included an original issue discount (OID). Municipal OID bonds may be subject to taxation at ordinary income rates when purchased on the secondary market for a price that is less than the adjusted issue price by more than a statutory amount. Consult your tax advisor prior to making an investment decision.”

The bottom line is this: you may frequently observe that the highest yielding muni bonds you find are OID bonds. There are reasons for this. OID bonds are often less liquid, often have greater default risk, have added tax complexity and have a hidden tax liability for the buyer. Avoid OID bonds, or at the very least, take the time to fully understand what these disadvantages mean for you.

IV.D.6. TYPES OF FIXED-INCOME INSTRUMENTS: INSURED BANK CDS

Insured bank certificates of deposit (CDs) are issued by large banks and insured by the FDIC. They have no default risk. Often, their yields are higher than other zero-default securities such as Treasuries. However, interest earned on CDs is taxable by the federal government as well as state and local governments (recall that interest on Treasury notes and bonds is not taxable at the state and local level).

CDs have a coupon. They may pay interest monthly, quarterly, semiannually or annually.

Many / most CDs that you buy from a broker are callable. You must be very attentive to the implications of their callability.

A few CDs have maturities as long as 15-20 years. Most are shorter.

The “brokered CDs” you buy through a broker are liquid; you can sell them if you need money, but you will sell them at a small discount to their value (bid prices are less than asked prices). Other “bank CDs” are purchased directly from a bank, which will usually penalize you if you want early withdrawal. You should ask the bank what penalty you face if you withdraw your money out of a bank CD early.

During just about any type of financial distress, bank CD yields may be considerably higher, perhaps 1% - 2%, than equivalent maturity Treasuries. This is a good time to invest in CDs. You should never buy a CD if you can get a higher yield on a Treasury with the same maturity.

Always double check that the CD you are buying is FDIC insured. There are shady products out there under names like “term deposits”, “high yield deposits” and other names that are scams. You can learn more at <https://www.wsj.com/finance/investing/yield-term-deposits-paul-regan-8042122d> . In another fraud, a U.S.-based firm marketed CDs issued by a Caribbean bank, which meant they were not FDIC-insured. If a CD-like product is offering a yield that looks too good to be true, it is probably a scam. If you buy your insured bank CDs through a reputable broker like Fidelity or Vanguard, you will be OK.

Finally, keep in mind that there are limitations on the amount of FDIC insurance you get. The standard deposit insurance coverage limit is \$250,000 per depositor, per FDIC-insured bank, per ownership category. Trusts have different rules. If this sounds confusing, visit <https://www.fdic.gov/resources/deposit-insurance/financial-products-insured/> to learn more. If you have more than \$250,000 deposited in a single bank, be sure you understand how FDIC insurance limits operate.

IV.E. HISTORICAL PERFORMANCE OF BONDS

If the issuer doesn't default and the bond is not called, you will get your periodic coupon interest payments and bond principal as scheduled. This is why it's called "fixed-income"; the promised payments are contractually fixed. Even with these fixed payments, during short holding periods, you may watch the value of your bond investments go up or down. If interest rates fall, you will see the values of your bonds increase. If interest rates rise, the value of your bonds will decrease. But unless you sell your bonds, these are short-term holding period paper gains and losses.

In 2022, bond yields rose sharply. If you owned a well-diversified portfolio of bonds, their value would have fallen by about 13%, which made it perhaps the worst year in bond-investing history. Thirty-year zero-coupon bonds lost about 39% of their value; recall that longer maturity bonds lose more value when interest rates rise, compared to shorter maturity bonds. In 1980 the value of a well-diversified bond portfolio bond values fell by about 9%.

In 1982, interest rates fell sharply. Ten-year treasuries increased in value by over 32%.

These are illustrative of the most extreme annual price changes caused by changing interest rates. In general, over the entire holding period during a bond's life, you should expect to realize an annual rate of return approximately equal to the yield to maturity that existed when you bought the bond. See section IV.F. for more details.

Siegel (2022)⁶ reports that between 1802 and 2021, the annualized rate of return on long-term Treasuries was 5%/year. On Treasury Bills it was 4%/year. Both were well above the average inflation rate of 1.4%/year, but below the 8.4% annual rate of return earned on stocks. Fixed-income securities are considered to be less risky than stocks, so it makes sense that investors will usually earn a lower rate of return on fixed-income securities than on stocks.

Between 2003 and 2023, investors earned an average rate of return of 7.4%/year by investing in high-yield corporate bonds. This was above the 4.2% annual rate of return from investment-grade corporates, but still below the 10.5% rate of return from U.S. stocks.⁷

Before you accept all of Siegel's (2022) conclusions that investing in stocks outperforms bonds, you should also read McQuarrie (2024)⁸, who presents evidence that sometimes stocks outperform bonds, sometimes bonds outperform stocks, and sometimes their returns are pretty much identical.

⁶ Jeremy J. Siegel, *Stocks for the Long Run*, 6th edition, 2022. McGrawHill. It's an excellent classic book to read.

⁷ Amine Khanjar, *Characteristics of the BBG HY Very Liquid Index (VLI)*. June 2023. Bloomberg Professional Services, available at <https://assets.bbhub.io/professional/sites/27/Bloomberg-Index-Publications-US-High-Yield-the-BBG-VLI-index.pdf>

⁸ Edward F. McQuarrie, "Stocks for the Long Run? Sometimes Yes, Sometimes No," *Financial Analysts Journal*, Vol. 80, 2024, Issue 1, pp. 12-28.

IV.F. ANNUAL RATES OF RETURN vs. HOLD-TO-MATURITY RATES OF RETURN

If you buy a bond, hold it until maturity, and reinvest the coupon interest you receive, and if the issuer does not default, your annual holding-period rate of return will be about equal to the yield that existed when you first bought the bond.

But your annual rates of return can vary wildly, depending on whether interest rates rise or fall. Year-to-year, your fixed-income securities can have paper (unrealized) gains or losses.

I recommend you generally hold your bonds until maturity. The exception is that if you have unrealized losses on any fixed-income investment, particularly short-term capital losses, you can sell your bonds to get the tax-loss benefit, and proceed to buy an (almost) equivalent fixed-income security. For example, sell a ten-year A-rated bond on which you have a loss, and buy a different ten-year A-rated bond from a different issuer. Note that if you do this, the realized loss should be sufficiently large to cover the transactions costs (commissions and the bid-ask spread) you pay from selling the old bond and buying a replacement bond.

Let me illustrate how these yearly paper gains and losses can occur, using the example in this spreadsheet:

date	years to maturity	interest rate for the appropriate maturity	bond price	annual rate of return (incl. coupon & price change)
9/5/24	5	0.05	100.000	
9/5/25	4	0.04	103.630	8.630%
9/5/26	3	0.03	105.657	6.781%
9/5/27	2	0.02	105.825	4.891%
9/5/28	1	0.01	103.960	2.963%
9/5/29			100.000	1.000%
9/5/24	5	0.05	100.000	
9/5/25	4	0.06	96.535	1.535%
9/5/26	3	0.07	94.751	3.332%
9/5/27	2	0.08	94.650	5.170%
9/5/28	1	0.09	96.330	7.058%
9/5/29			100.000	9.000%
9/5/24	5	0.05	100.000	
9/5/25	4	0.05	100.000	5.000%
9/5/26	3	0.05	100.000	5.000%
9/5/27	2	0.05	100.000	5.000%
9/5/28	1	0.05	100.000	5.000%
9/5/29			100.000	5.000%

initial: 5-year, 5% coupon par bond with annual coupons

In the example above, you buy a 5% coupon bond with five years to maturity, when it has a 5% yield. You pay \$100 for the bond. In the first panel, interest rates fall every year. So, on 9/5/2025, your bond has four years remaining to maturity and it has a 4% yield. On 9/5/2025, your bond has three years to maturity and it has a 3% yield. And so on.

In the last column, you can see that your first-year rate of return is 8.63%, which exceeds the 5% yield that existed when you bought it. Your second-year rate of return is 6.781%, which exceeds the 4% yield that existed at the start of the year. And so on. Because bond prices rise when interest rates fall, in each year, you earn a rate of return greater than its yield at the start of the year.

In the second panel, interest rates rise each year. If interest rates rise each year, bond prices fall each year, and you earn a rate of return less than the yield at the start of the year.

In the third panel, interest rates remain at 5% every year, so you earn 5% each year.

Comparing the first two panels, you can see how your annual rates of return differ greatly from year to year, depending on whether interest rates rise or fall.

BUT.... Regardless of whether interest rates rise or fall, if you buy a bond, hold it to maturity and if the issuer does not default and there is no early call, you will actually earn about 5%/year over the five-year holding period. Your year-to-year unrealized rates of return will fluctuate depending on what interest rates do, but over the life of the bond, you will realize about its original yield when you bought the bond.

I repeatedly used the words “about” and “approximately” in the above example because your actual realized rate of return will depend on what you do with the coupon interest when you receive your interest payments. I won’t go into the details as they require bond mathematics; “about” will suffice for this primer.⁹

IV.G. CALLABLE BONDS

IV.G.1. ORDINARY (TYPICAL) CALL PROVISIONS

So far, I have discussed plain vanilla bonds with no “embedded options.” However, many bonds are callable by their issuer. This means that the issuer can redeem the bonds prior to their maturity date. When most bonds are called, the owner will receive their face value. Issuers will call a bond when it’s in their best interest to do so. In particular, if interest rates fall an issuer will call its callable bonds early, because they can then issue a new bond with a lower coupon rate.

Call provisions are an option because the issuer has the right to redeem the bond early. It does not have to call if it is not to their advantage. The issuer has the right but not the obligation.

Most corporate bonds, agency bonds and longer term brokered CDs are callable.

Callable bonds create a “heads you lose, tails they win” situation. Suppose you buy a long-term bond today with a 6% yield. If interest rates rise, then you lose because you are only earning 6%; you will regret having locked up your investment capital at the low 6% yield. You will experience paper losses on your investment. But if interest rates fall, the issuer wins because they will call the bond early and you will only receive face value when they call. You can reinvest your proceeds, but at the new lower interest rate.

⁹ Interestingly, you will earn a little above the original 5% yield if you reinvest the coupons to earn the higher interest rates when rates rise. You will earn a little less than the 5% yield if coupons are reinvested at the lower rates, if interest rates decline.

This may be confusing to you. Options are complex provisions, so don't feel bad. But an investing rule of thumb is don't invest in things you don't understand. If you don't understand why buying a callable bond may be hazardous to your wealth, don't dabble in callable bonds.

But there are even more complications. Many callable bonds have "make whole" call provisions. This mitigates the callability problem. If you own a bond with a make whole call provision, and the issuer calls the bond, you will receive its (approximate) value, not its face value. In other words, if interest rates fall then bond prices rise. With a make whole call provision, you will receive that higher bond price/value, not its \$1000 face value. So, it is not a bad thing to invest in bonds with a make whole call feature. Make whole callable bonds are discussed in section IV.G.2.

Many bonds have delayed call features. You might buy a callable bond with ten years to maturity, but the first call date might be eight years from today. This reduces your exposure to call risk. At worst, you thought you were buying a ten-year bond, but if interest rates are lower in the future, it might end up being perhaps an eight-year bond. In contrast, if you buy a 10-year callable bond at a price close to or above its face value when it can be called next year, then you should anticipate that you have bought a 1-year bond.

Here is an example of where ignorance about how call provisions work would hurt you:

State	Description	Coupon	Maturity Date	Next Call Date	Rating		Underlying Rating		Bid		Ask		Depth of Book	3rd Party Price / Recent Trades	Attributes and Issuer Events	
					Moody's	S&P	Moody's	S&P	Yield	Price Qty(min)	Price Qty(min)	Yield to Worst/ Yield to Sink				Yield to Maturity
FL	PASCO CNTY FLA SCH BRD CTFS PARTN COPS 05.000000% 12/01/2037SER. 2014	5.000	12/01/2037	12/01/2024	A1	AA	A1	--	--	No Bid --(-)	102.150 15(15)	-1.736	4.779	--	100.105 View	ME SFP ER R I

Source: www.Fidelity.com

If you naively focus on a bond's yield to maturity, you might have considered buying this long-term municipal bond in July 2024, as it was yielding 4.779%. But the bond was callable in just five months. Since the bond had a 5% coupon rate and similar new munis were being sold with coupon rates less than 3%, it was highly likely that the bond would be called on Dec. 1, 2024. As you can see, if the bond was called, your actual yield on this bond ("yield-to-worst") would be **negative** 1.736%! Buying this bond would have been a horrible investment to make on the day shown.

If interest rates fall, the prices of "normal" bonds will rise. But a call provision is what is called an embedded option; callable bonds are not normal bonds. If a callable bond is selling at or above its face value, then if interest rates fall, its price may not rise. The call provision basically puts a cap on the price of the bond. I am referring to callable bonds that can be called immediately, or in the very near term. Basically, you should treat a long-term callable bond that is selling at or above its face value, as a short-term bond, because it will likely be called as soon as the issuer can call it. If the bond's price is at, or above, its face value, use the nearby call date as its expected maturity date, not the actual maturity date.

You SHOULD get compensated with a slightly higher yield when you buy a callable bond. But measuring what extra yield you are getting is difficult. Knowing what extra yield you DESERVE for exposure to call-risk is even more difficult. Consider the following example for insured bank CDs:

Description	Coupon /Frequency	Maturity Date	Moody's Rating	S&P Rating	Fractional CD	Yield	Call Protected	Offering Period	Settlement Date	Attributes
RIVERHILLS BANK	4.350 monthly	09/06/2044	--	--	No	4.350	No	--	09/06/2024	SFP FDIC SO
JONESBORO STATE BANK	4.600 monthly	08/30/2034	--	--	No	4.600	No	--	08/30/2024	SFP FDIC SO SKY
APEX BANK	3.700 monthly	08/23/2034	--	--	No	3.700	Yes	--	08/23/2024	CP SFP FDIC SO

Source: www.fidelity.com

Look at the Jonesboro and Apex CDs. Both mature in August of 2034. The Jonesboro CD is not call protected (i.e., it can be called) and the yield is 4.6%. The Apex CD is call protected (see the “CP” attribute in the last column) but is only yielding 3.7%. Thus, you are being compensated with an extra 0.9% of yield if you are willing to face call risk of the Jonesboro CD. Given that at the time, interest rates were believed likely to decline, the Jonesboro CD would then be likely to be called well before its 2034 maturity date. The details on WHEN the Jonesboro CD can be called are not provided here, but it is extremely important to find out before buying that CD. If the Jonesboro CD can be called in a year, then you are likely effectively buying a one-year CD. On the other hand, if it cannot be called until 2032, it is almost surely a better investment than the Apex CD.

Here is a recent article about callable CDs: https://www.wsj.com/personal-finance/certificates-deposit-high-yield-callable-db7635b3?mod=djemMoneyBeat_us. One quote that stuck with me was “*In the rush to lock in easy returns, many everyday investors likely purchased callable CDs without understanding what they were signing up for...*”. Providing that understanding and awareness is one reason I wrote this primer.

IV.G.2. MAKE WHOLE CALL PROVISIONS

Callable bonds sometimes have “make whole” call provisions. This means the bond is callable, but if the bond is called the issuer is supposed to pay you a fair price for the bond.... A price that reflects the bond’s quality and maturity given recent yields available on similar bonds.

If the bond is a premium bond (which it almost surely will be, if the bond is indeed called) the make whole call provision is better for you than an “ordinary call” provision in which the issuer pays you the bond’s face value (\$1000).

I have two caveats. The first is that sometimes, the issuer can use the recent yield on similar-maturity treasuries plus a risk premium when computing how much you will receive if the bond is called. What if the risk premium is too high? If so, then the price they pay you to satisfy the make whole call provision will be too low (remember.... Higher discount rates mean lower bond prices). In other words, you cannot be sure you will receive a fair price if the bond is called as part of a make whole call. You must read the bond indenture to find out the details behind the calculation of what you will get if there is a make-whole call. This is not easy to find.

The second caveat is that you may think you are buying a bond with a long maturity. Actually, if the bond is “continuously callable,” it means the bond can be called at any time. So, you may think you are buying a long-term bond, when actually your bond may be called at any time... maybe even tomorrow!

IV.G.3. SINKING FUNDS

A bond might be noncallable, and yet it might still be redeemed early. Effectively, this means some noncallable bonds can still be called.

A sinking fund is an indenture provision that requires the issuer to gradually redeem a bond. The issuer might fulfill a sinking fund requirement by buying a specified fraction of the outstanding bonds in the bond market. It will do this if the bond is selling below its face value. This might be good for you by creating demand for the bond. You don't have to sell the bond if you don't want to.

But alternatively, if the bond is selling above its face value, the sinking fund requirement can be satisfied by the firm calling the bond from some of its owners, and paying them the bond's face value. This is NOT GOOD for you. If you are one of the unlucky bond owners who has been randomly selected for the sinking fund, then you are required to sell the bond back to the issuer for its face value. This is not good for you if the market value (price) of the bond is above its face value.

Hence, when you buy a bond that is near or above its face value, look for an attribute term like "SFP", which means sinking fund protected. Otherwise, you may have your bond redeemed for its face value to satisfy a sinking fund requirement, even though the bond is not callable. The SFP provision is good for you.

IV.G.4. EXTRAORDINARY REDEMPTION FEATURE

Many municipal bonds, even noncallable bonds, can be redeemed early (effectively, called early) due to an extraordinary redemption, perhaps denoted as "ER". This attribute allows the issuer to redeem the bond early for its face value if an unusual event occurs. The extraordinary events are spelled in the bond's offering statement (similar to a bond covenant). But it turns out that issuers often have considerable latitude in how they define "extraordinary", and many munis in particular are indeed called early due to these not-so-extraordinary events. The bond owner only receives the bond's face value, so these extraordinary redemptions will occur most frequently for bonds selling at a premium (above face value).

Hence, even though a bond may exhibit a "CP" note, meaning it is "call protected," if it has an extraordinary redemption (ER) clause, it can still effectively be called early. Try to avoid premium bonds with the ER attribute.

IV.H. UNDERSTANDING INFORMATION PROVIDED IN A BOND TRADING WEBSITE

Shown below is the information provided at the Fidelity bond site at www.fidelity.com. The data are from August 2024.

Description	Coupon	Maturity Date	Next Call Date	Rating		Bid			Ask		Depth of Book	3rd Party Price / Recent Trades	Attributes and Issuer Events
				Moody's	S&P	Yield	Price Qty(min)	Price Qty(min)	Yield to Worst/ Yield to Sink	Yield to Maturity			
ROYAL BK CDA SER I MTN 6.50000% 10/18/2038	6.500	10/18/2038	10/18/2025	A1	A	6.608	99.000 500(10)	101.500 2(2)	5.200 --	6.337	--	101.097 View	IE SFP
CITIGROUP INC SER G MTN 6.60000% 10/29/2038	6.600	10/29/2038	10/31/2026	A3	BBB+	5.675	101.899 200(5)	102.700 22(1)	5.304 --	6.309		101.650 View	SFP D
DEUTSCHE BK AG SER E NOTE 6.25000% 06/14/2034	6.250	06/14/2034	06/14/2026	A1	A	6.443	98.597 500(20)	101.300 141(15)	5.504 --	6.072		100.288 View	SFP D
CANADIAN IMPERIAL BKCOMM TORO MTN 6.15000% 12/20/2038	6.150	12/20/2038	12/20/2025	A2	A-	6.282	98.750 500(20)	100.750 5(5)	5.575 --	6.070		99.250 View	IE SFP D
BANK AMERICA CORP SER P MTN 6.05000% 08/25/2038	6.050	08/25/2038	08/25/2025	A1	A-	6.036	100.009 500(20)	100.565 1(1)	5.493 --	5.989		100.018 View	IE SFP D
ROYAL BK CDA SER I MTN 6.00000% 11/30/2032	6.000	11/30/2032	11/30/2024	A1	A	6.154	99.000 250(5)	100.063 1,000(10)	5.747 --	5.989		99.474 View	IE SFP D
JPMORGAN CHASE & CO SER A MTN 6.10000% 12/10/2038	6.100	12/10/2038	12/12/2025	A1	A-	5.860	100.302 200(5)	101.223 10(5)	5.154 --	5.971		100.293 View	IE SFP D
ROYAL BK CDA SER J MTN 6.05000% 05/15/2036	6.050	05/15/2036	05/15/2026	A1	--	5.891	100.255 1,500(1)	100.650 530(15)	5.657 --	5.971		100.483 View	IE SFP D
DEUTSCHE BK AG SER E NOTE 6.00000% 07/17/2034	6.000	07/17/2034	07/17/2026	A1	A	6.238	98.250 1(1)	100.250 675(1)	5.862 --	5.966		100.058 View	IE SFP D
ROYAL BK CDA SER I MTN 6.00000% 06/15/2038	6.000	06/15/2038	06/15/2025	A1	A	6.183	98.300 500(10)	100.364 2(2)	5.557 --	5.960		98.800 View	IE SFP D
BANCO SANTANDER S.A.SER SUBSAN-221 NOTE 6.35000% 03/14/2034	6.350	03/14/2034	View	BAA2	BBB+	5.981	102.661 400(200)	103.012 1,000(200)	5.933 --	5.933		102.430 View	IE SFP D
DEUTSCHE BK AG SER E NOTE 6.00000% 06/28/2034	6.000	06/28/2034	06/28/2026	A1	A	--	-- --(-)	100.500 8(1)	5.716 --	5.932	--	100.228 View	SFP
REGIONS FINANCIAL CORP NEW NOTE 7.37500% 12/10/2037	7.375	12/10/2037	--	BAA1	BBB	6.011	112.390 250(2)	113.205 325(2)	5.929 --	5.929		111.927 View	IE CP SFP D
WELLS FARGO & CO SER T MTN 6.00000% 12/13/2035	6.000	12/13/2035	12/13/2025	A1	BBB+	6.041	99.655 470(5)	100.723 16(5)	5.438 --	5.911		100.365 View	IE SFP D

The first column, description, presents the issuer, coupon rate and maturity date.

The second column, coupon, is the coupon rate. For the first bond, issued by Royal Bank of Canada, the coupon rate is 6.5%. This means the owner will receive \$32.50, two times per year. $0.065 \times \$1000 = \65 , but coupon interest is paid semi-annually, so you receive \$32.50 twice a year.

The third column is the bond's maturity date.

The fourth column is the next date that the bond can be called. For the Royal Bk Cda bond, the next call date is just about 14 months away, 10/18/2025. Because this bond is selling near its par value and the issuer will likely be able to issue a new bond with a lower coupon rate on 10/18/25, this bond is likely to be called on its next call date. If you buy the bond, you are likely buying a bond with only 14 months to maturity. Further down, for the Banco Santander bond, you see the word "view" in this column. If you clicked on that word, you would see that the bond is "continuously callable," meaning that it can be called at any time. Finally, although no such bonds appear in this figure, often, bonds are not callable for several years in the future. Pay attention to when the next call date is. The Regions Financial Corp bond is not callable, because of that "CP" designation in the last column.

The fifth column is the Rating column, showing both Moody's rating and Standard and Poor's (S&P) rating. You can see they often disagree on the credit risk. Moreover, one or the other or both of their ratings can be incorrect assessments of credit risk. For this reason, you will often find yields appear to reflect a different rating than the one assigned by Moody's and/or S&P. But short of doing your own assessment of default risk, there is little you can do except accept the ratings you see and take them with a grain of salt. All these bonds are investment grade. If you want to view high-yield bonds, you must click on a different tab to view them.

The sixth column is labeled "Bid." This information is relevant if you are selling your bond. See what I say for the 7th column.

The seventh column is labeled "Ask.", which presents information for buyers. The asked price is the price you will pay if you enter a buy order. You should multiply the number you see by ten to find the price you will pay for one bond. For the Royal Bk Cda bond the price you will pay is \$1015¹⁰ for a bond with a face value of \$1000. Below the ask price you see the maximum quantity of bonds you can buy and in parentheses, the minimum number of bonds you can buy at that price. These numbers can vary greatly across bonds. You must buy two of the Royal Bk Cda bonds. For the 2nd bond, issued by Citigroup, you can buy as many as 22 bonds and as few as one bond. Look at the Banco Santander bond.... You can buy as many as 1000 of them (it would cost you \$1,030,120 to do this) or as few as 200 bonds (which would still cost you a hefty \$206,024). But don't despair the minimum amount shown is only if you want to pay the ask price that is shown. If you are willing to pay more (usually just a little more), you can buy fewer than the number of bonds shown; see what I say for column 8.

I encourage you to shop around. Many of the same bonds are being bought and sold at different brokerages at the same time. The bid and asked prices often differ, depending on where you are shopping.

There are two other sub columns for column 7. They show yield-to-worst and yield to maturity. The yield to worst assumes the bond will be called. All but one of the bonds you see in this table are callable and all the bonds shown are selling at or above par. So, you should assume all these bonds will be called, and that you are buying a bond with the yield-to-worst. You will

¹⁰ You will also pay something called "accrued interest." You will basically get that accrued interest amount back when the bond pays its next coupon. If you sell a bond, you will receive the bid price shown, plus accrued interest.

actually earn about the yield to worst for your rate of return. The yield to maturity assumes the bond will not be called and that you will hold it until maturity. Over either of the holding periods (until it is called or until maturity), the yields are about what you will realize for your rate of return.

Column 8 is depth of book. If you want to buy more than the maximum or less than the minimum number of bonds, you should click on the symbol shown, and you will see that you can pay more if you want to buy more than the maximum number of bonds, or fewer than the minimum number of bonds displayed in column 7.

The 9th column is labeled 3rd party price / recent trades. The price shown is representative of what other parties, outside of the Fidelity network, have been trading the bond for. If you click on the word “view” you can see recent prices for actual recent buy and sell trades.

Finally, the last column has some bond attributes, including “CP” for call protection, “SFP” for sinking fund protection, “ER” for extraordinary redemption, and “IE” for information about recent events regarding the issuer. The Regions Financial Corp bond is not callable, because of that “CP” (call protected) designation.

Other bond attributes appear for municipal bonds, including “ME” for material events regarding the issuer (like “IE” for corporates), “I” for insured, “R” for revenue bonds, “GO” for general obligation bonds, and “AMT” for bonds subject to alternative minimum tax.

All these bond attributes are important. Understand them if you are buying corporate bonds or municipal bonds.

IV.I. THE IMPORTANCE OF BOND COVENANTS

Bond covenants are legal contracts that are written to protect investors who buy the bonds. They exist in bond indentures, which are lengthy and detailed legal documents describing the bond and what the issuer can and cannot do.

Without bond covenants, issuers would be able to do all sorts of sleazy things that hurt their bondholders and benefit the issuer and its stockholders. Consider that without a bond covenant preventing them, a company could sell all its assets and pay its stockholders a huge liquidating dividend. This would leave the bondholders with nothing.

Many bond covenants exist to protect bondholders. See <https://www.treasurers.org/ACTmedia/MoodyCovenantAssessmentconsultationSept06.pdf> for a discussion of some of the more important covenants. Don't skip reading the mini-case histories at the end of this document I just referenced.

In the past 20 years or so, many issuers have sold bonds that are called “covenant light.” These bonds might offer bondholders slightly higher yields, but the bondholders could see themselves in a precarious position if the firm took any one of many (non-prohibited, if their covenants are weak) actions that damaged the bondholders' position.

Moody's has a bond covenant evaluation service. It would be nice if brokers offered this service or something similar to it, to their customers who are bond buyers. Beyond this, the sad fact is that as a bond investor, you are at risk if bond covenants are weak.

Issuers have offered me \$5-\$10 per bond (\$1000 face value) to amend the covenants of some bonds I owned. The amendments would have severely reduced my security, allowing the company to pay huge dividends or engage in asset sales that reduced my collateral. Fortunately, these attempts to cheat me and other bondholders were rejected.

Recently, Kroger, which was in the process of merging with Safeway, made an exchange offer for Safeway bonds. They offered \$1 per bond to the bondholders if they would consent to

"eliminate from each of the ACI Indentures (i) substantially all of the restrictive covenants, (ii) certain of the events which may lead to an "Event of Default," (iii) the reporting covenant, (iv) any restrictions on the applicable ACI entities from consolidating with or merging into any other person or conveying, transferring or leasing all or any of their properties and assets to any person, (v) the covenant requiring certain subsidiaries of ACI to guarantee certain of the ACI Notes and (vi) any obligations to offer to repurchase the ACI Notes upon certain change of control transactions along with certain other ancillary amendments as further described in the Offering Memorandum and Consent Solicitation Statement."

Read what bondholders were asked to agree to in the above paragraph. Covenants protect bondholders from firm actions that would harm them. Bondholders were asked to eliminate almost all of them! And more! This was a horrible give-away for one measly dollar in compensation.

Equally egregious is the recent trend for an issuer in financial distress to negotiate beneficial terms with some of its bondholders, at the expense of other bondholders who cannot participate. The left-out bondholders then see their bonds downgraded by ratings agencies, and in the event of default, they recover less than the privileged bondholders who did participate in the renegotiations. Search for "liability management exercises" for details about this practice. But other than avoiding high-yield junk bonds, there is little you can do about it.

IV.J. BANKS' BAD BEHAVIOR IN THE CD MARKET

I have read that some large banks have basically defrauded small investors in a special-maturity CD with a very high promotional interest rate. The fine print says that if you do nothing at maturity, the CD will roll over in the same maturity CD. But the interest rates the bank will pay on those rolled-over CDs turns out to be very low. Naïve investors just let their CDs roll over without paying attention to the new low rates they are receiving.

Shown below are rates offered by one large bank in June 2024. While the bank could offer reasons for the low ten-month rate, I think the low rate only serves to take advantage of naïve CD buyers and owners. Caveat emptor!

Featured CD/IRA^{†‡}

7 Month

<u>Account Balance</u>	<u>Rate %</u>	<u>APY %</u>
Less than \$10,000	4.65%	4.75%
\$10,000 - \$99,999	4.65%	4.75%
\$100,000 - \$999,999	4.65%	4.75%
\$1,000,000 and over	4.65%	4.75%

10 Month

<u>Account Balance</u>	<u>Rate %</u>	<u>APY %</u>
Less than \$10,000	0.05%	0.05%
\$10,000 - \$99,999	0.05%	0.05%
\$100,000 - \$999,999	0.05%	0.05%
\$1,000,000 and over	0.05%	0.05%

13 Month

<u>Account Balance</u>	<u>Rate %</u>	<u>APY %</u>
Less than \$10,000	4.65%	4.75%
\$10,000 - \$99,999	4.65%	4.75%
\$100,000 - \$999,999	4.65%	4.75%
\$1,000,000 and over	4.65%	4.75%

THE LESSON: Pay attention to these automatic CD renewals. Pay attention to any automatic renewal on EVERY product you buy, whether it's a CD, magazine, a membership, your cable service, etc.

IV.K. SOME ADDITIONAL THOUGHTS ABOUT BUYING INDIVIDUAL BONDS

1. Most brokers charge a commission when buying and selling a bond. If you buy a short-term bond or CD, that small commission may have a large impact on the rate of return you will earn. For example, you may be considering buying a one-year bond at par with a 5% coupon and a yield of 5%. But if you pay a \$5 commission on your purchase, the yield drops to 4.47%. For this reason, you may want to avoid buying individual bonds and CDs with short (one or two years) maturities.

2. I haven't discussed collateral, but in the event of default, there are often more assets backing corporate bonds than bank bonds. For this reason, if the issuer of a corporate bond defaults, bondholders on average recoup about 50% of the bond's face value after the issuer recapitalizes or liquidates. But if a bank defaults, investors usually get nothing. Don't over-concentrate your bond portfolio in the bonds issued by banks. But their insured CDs are safe because the FDIC guarantees you will get repaid.

3. Let me emphasize that laddering a bond portfolio is a good strategy. With it, you diversify across maturities and across issuers. Initially, you might spread your money across bonds maturing over the next, say, 20 years. A year later, your one-year bonds will mature, so you reinvest the proceeds in 20-year bonds. Every year, about 5% of your bond portfolio will mature and you always reinvest in 20-year bonds. There may be times you want to tweak this strategy a bit; e.g., in 2020-2022 when bond yields were very low, you may have wanted to avoid locking your money up for 20 years. But “tweak”, don’t totally blow up the laddering strategy.

4. Financial crises and panics can open unusual opportunities in fixed-income investing. After Lehman, Washington Mutual, AIG, FNMA and FreddieMac failed or were rescued in 2008, the market priced in possible defaults by many other of our largest financial institutions. Some bank bonds saw their yields soar. In retrospect, this was a great opportunity to bet we’d save ourselves from a total meltdown; investing in bank bonds (at least those that didn’t fail) during the height of the crisis proved to be a good bet. Very high yields were also provided by bank bonds during the 2023 banking crisis. Even CD yields rose, even though they were FDIC-insured. I say all of this with 20-20 hindsight. At the time of these crises, financial markets were in turmoil. The high yields existed because risk was very high.

5. Perhaps this belongs in the discussion about bond indentures, but an unusual risk exists when you invest in a bond issued by a subsidiary of a larger company. Sometime the original issuer became a subsidiary because of a merger/acquisition. Other times it becomes a subsidiary because of the legal maneuvering of the parent company. Either way, there are times that a subsidiary can default, even while the parent is financially healthy. You may think you have a safe bond with low default risk, but if the issuer is a subsidiary and the parent doesn’t guarantee payments, you may have more risk than you think. Subsidiaries might default while the parent doesn’t.

6. Another unusual risk arises when a hedge fund buys a company and then saddles it with a ton of additional debt. You may have owned what was an investment grade bond, and see it downgraded to junk status because of this.

7. NOBODY knows whether interest rates will rise or fall in the future. To a large extent, expectations about future interest rates are already embedded in today’s interest rates. Because of this, it’s good advice not to speculate, but rather diversify across fixed-income issuers and securities, and market sectors. Target an appropriate asset allocation mix between stocks and bonds that is appropriate for you and your circumstances and adhere to that mix. Rebalance when your actual mix doesn’t equal your target mix. Diversify! Don’t try to make bets and don’t try to time markets. It is likely that you don’t know more than millions of other investors, many of whom are financial professionals with a lot more information and knowledge than you.

8. I didn’t discuss investing in mortgage-backed securities (MBSs). These are complex securities that are backed by pools of property mortgages loans. You can invest in them via mutual funds and ETFs, or as individual securities. They have unusual risks that few individual investors understand, such as the fact that you don’t know what their time to maturity will be because you don’t know if and when property owners will prepay their mortgages. When interest rates fall and you wish you had locked up your money for 20-25 years, it will turn out that your MBS might have only 5 years to maturity. When interest rates rise and you wish you had invested in a 5-year bond, it will turn out that your MBS may have 20-25 years to maturity. These are not good outcomes. Here is what the government has to say about MBS:

<https://www.investor.gov/introduction-investing/investing-basics/glossary/mortgage-backed->

[securities-and-collateralized](#) . Some MBS are safer (in terms of credit risk) than other MBS, and other MBS are considered to be high yield (junk). Historically, there have been times that their credit worthiness and credit agency ratings were very volatile. Some commercial MBS (CMBS, which are MBS backed by specific commercial properties) saw their ratings slashed from AAA to junk in the past few years ending 2024.

IV.L. CLOSING ADVICE

Buying individual bonds makes sense only for a relatively few investors who understand them and their risks. The risks are interest rate risk, default risk, callability, sinking fund provisions, the impact of taxes, poor lender protections in bond covenants, and more. If you do not understand these issues, then my advice is not to buy individual fixed-income securities other than Treasuries and noncallable bank CDs. Instead, if you want to engage in fixed-income investing, buy fixed-income mutual funds and ETFs. If you didn't understand the material in this primer, then don't buy individual bonds, other than plain vanilla Treasuries and noncallable bank CDs.

Treasuries and noncallable bank CDs pretty much only have interest rate risk. Tax issues can be complex, but tax treatment of interest and capital gains from Treasuries and bank CDs is relatively straight forward; it is like the tax effects from buying and selling stocks.

So, unless you are knowledgeable about bonds, if you want to invest in fixed-income, my advice is to buy them indirectly, using mutual funds and ETFs. The risk of buying inappropriate/unsuitable individual fixed-income securities is too great. Either learn the intricacies of fixed-income securities or avoid individual corporate bonds and municipal bonds.

IV.M. AND FINALLY....

At the risk of being self-serving, if you want to improve your basic financial literacy (and maybe get some life literacy as well), consider buying a copy of my book, Your Total Wealth, co-authored with Lyle Sussman. You can learn more about it at www.yourtotalwealth.com. It is available on Amazon. The book provides succinct (less than 400 words each) definitions of 74 basic, but important, financial terms. Associated with each term is a succinct and entertaining life lesson.

APPENDIX
AFTER-TAX YIELD CALCULATIONS ON MUNICIPAL BOND EXAMPLE
(SEE SECTION IV.D.5.a.)

	A	B	C	D
1				
2	marginal ordinary tax rate		35%	
3	capital gains tax rate		20%	
4				
5	settlement	purchase date	9/29/24	
6	maturity	maturity, or call, date	9/29/34	
7	coupon rate		1%	
8	price		69.11306	
9	redemption	before tax	100	
10	redemption	after ordinary tax on CG	89.189571	due to de minimis rule
11	redemption	after CG tax rate on CG	93.822612	
12	frequency		1	
13				
14	before-tax yield		5.00000%	=YIELD(D5,D6,D7,D8,D9,1)
15	after-tax yield	due to de minimis rule	3.87991%	=YIELD(D5,D6,D7,D8,D10,1)
16	after-tax yield	use CG tax rate on gain	4.37355%	=YIELD(D5,D6,D7,D8,D11,1)

ABOUT THE AUTHOR

Dr. David Dubofsky has published over 40 articles in journals such as *Journal of Finance* and *Journal of Financial and Quantitative Analysis*. He is the author of *Your Total Wealth: The Heart and Soul of Financial Literacy* (co-authored with Lyle Sussman), *Derivatives: Valuation and Risk Management* (co-authored with Tom Miller), and *Options and Financial Futures: Valuation and Uses*. Prior to retiring in 2020, Dr. Dubofsky held faculty and administrative positions at TCU Neeley School of Business, the University of Louisville, Texas A&M University, Virginia Commonwealth University and Seattle University. He was also a visiting academic scholar for the Office of Economic Analysis at the U.S. Securities and Exchange Commission and worked for Nalco Chemical Company and Standard Oil of Indiana. He earned his PhD in Finance from the University of Washington, MBA from the University of Houston, and BE in Chemical Engineering from City College of New York. He is a CFA® charterholder.

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