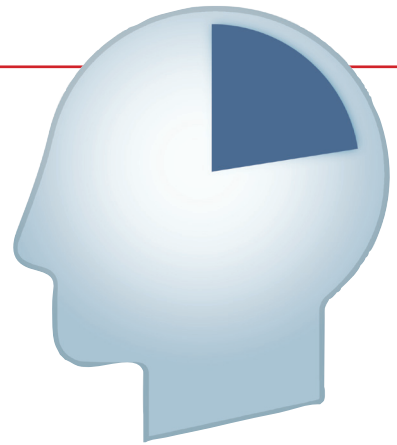

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Understanding Bonds

It is said that the great Vince Lombardi, legendary coach for the Green Bay Packers, started every season with a team meeting. Coach Lombardi would hold a football high in the air proclaiming to rookies and veterans alike, “Gentleman, this is a football.” In his own unique way, Lombardi was saying that the key to greatness is to be brilliant at the basics, never forgetting where it all begins.

Since this is primarily a book about investing, it seems appropriate to start off by developing an understanding of some of the primary building blocks of an investment portfolio. Too often, we jump into complex topics, but lack an understanding of the foundation. The result is that we tend to draw faulty conclusions and end up making grave mistakes that could cost us our financial futures.

Give Me Money

Some say that it takes money to make money—and for the corporate world, truer words were never spoken. Equipment, infrastructure, distribution, advertising, and every other aspect of business all require money before a single light switch can be flipped. Raising several billion dollars for a company’s operations is often no easy task—it’s not as simple as going down to the local bank for a loan. Because of this, corporations turn to the public markets for capital, and one way they raise money in this market is through the issuance of bonds.

What is a Bond?

A *bond* is simply a tool that is used when a company, mortgagee, or governmental unit borrows money. Bonds are usually issued in even denominations of \$1,000, \$5,000 and \$10,000, and they typically have a certain period of time before they *mature* (or end). For instance, if an investor buys a \$1,000 ten-year bond, he can expect to receive the bond’s face value (or \$1,000) back ten years from the date the money was first borrowed. During this ten-year period, the borrower makes interest payments to the lender/investor.

In the old days, bonds had coupons attached to them for the interest payments, which were redeemed on a regular basis by the lender/investor. Because of our increasingly paperless way of doing business, this method of paying interest is no longer used, but the term coupon is still used to refer to the interest payment associated with the bond. Most bonds make interest payments every six months, or semi-annually.

Why Invest in Bonds?

Author Mark Twain once said, “I am more concerned about the return *of* my money than the return *on* my money.” My guess is that Mr. Twain was a bond investor, because one of the main reasons we invest in bonds is because of their stability. Many bondholders choose bonds for this very reason, and consequently, they are among the first groups in line to get their money back when the issuer of their bonds runs into financial difficulty. As we’ll see later, though, bonds often go up in value when stocks go down. This reduces volatility when stock markets aren’t doing well. Unfortunately, many investors get impatient with the lower returns that they usually see associated with bonds and break this cardinal rule.

One type of bond is a *high-yield bond*. By definition, high-yield bonds are those issued by companies in financial distress. When the market goes down and the economy falters, it is these distressed companies that often default on their loans. This can cause both the stock and bond segments of our investments to go down together. This occurred in the stock and high-yield bond market during the economic downturn in late 2007, 2008 and early 2009. Many high-yield bond funds lost 40% or more of their value at the same time stocks declined in value. The mistake that investors often make is that they invest in these so-called high-yield bonds to increase their returns, but anytime we have the potential for greater returns, as is the case with high-yield bonds, we must realize that there is greater risk involved.

Maturity Ranges

There are three typical maturity ranges associated with bonds:

1. **Short-Term**—Less than five years.
2. **Intermediate**—Between five and ten years.
3. **Long-Term**—Over ten years.

The greater the amount of time a bond has until it matures, the greater the potential amount of volatility that can be experienced by the investor. The major cause of fluctuations in bonds is *interest rate risk*.

Interest Rate Risk

I fondly remember one of my favorite childhood activities on the elementary school playground was riding the seesaw. The concept of a seesaw is simple enough; If you find someone nearly equal in weight, each time you push off the ground and go up, your friend will go down—and vice versa. Investing in bonds can be a lot like that old childhood toy. When interest rates climb, bonds prices go down. When interest rates drop, bond prices increase. To understand why this occurs, let's look at a simple example.

Let's say that I've decided to buy a single bond issued by a well-established corporation. This bond matures in five years, has a triple-A rating (more on ratings below), and has a six percent coupon (interest) rate. In year one of our example, I invest the \$1,000. For the next five years, I would expect to receive \$60 (which is six percent of \$1,000) per year, or \$30 every six months. Visually, it would look like this:

ABC Corporation 5-Year Bond



Now imagine that one year from the date I made my \$1,000 investment, interest rates climbed such that new bonds were paying more to investors than they were just a year ago. For example, let's say our corporation would now have to pay eight percent on the new four-year bonds they are issuing. (Note that this four-year bond will mature at the same time that my five-year bond will mature, because it was issued in year two of my five-year bond.)

Now here is the question, if I want to sell my five-year bond, what must I do to entice someone to buy it from me? The problem I face is that my bond will

still only pay \$60 per year for the remaining four years, and the new \$1,000 bonds are paying \$80 per year. The only way to sell my bond is to drop the price. In other words, I must discount the bond so that the investor choosing between my bond and the new, four-year bond will be indifferent between the two alternatives. Investors must get the same yield or return regardless of which bond they choose to buy. Again, visually, it would look like this:

ABC Corporation 5-Year Bond



ABC Corporation 4-Year Bond



The investor in the six percent bond will be just as happy receiving \$60 per year because he paid only \$934 for the bond, and he will of course receive \$1,000 when the bond matures. Thus, it is easy to see how risk rises as a bond's years to maturity increase. The longer an investor holds on to old, lower yielding bonds, the longer he must accept lower interest, and demand greater discounts.

Risks of Bond Investing

Credit Risk. Go down to your local check-cashing location and you will find many people who are credit risks walking in and out of the doors. Check cashing businesses charge high rates for their services, but when people have poor credit that may be their only option, and they usually have to pay more to borrow money. The same is true in the world of capital.

Inflation is the depreciation of the purchasing power on the dollar. We see this concept manifest itself as prices increase at the gas pumps, grocery stores, car dealerships, and so on. You may remember that stamps used to be thirteen cents in the 1970s, new cars were a couple of thousand dollars, and a new house cost around \$25,000. The cost of goods and services are continually rising due largely to inflation.

What most of us don't realize, or think about, is that we actually *own* the entities that are raising prices when we own stocks. To understand the significance of this, we must look at the P/E ratio. You may have heard of the *P/E ratio* before—it is simply a reflection of the amount of money the market is willing to pay for each dollar of earnings from a company. “P” stands for “price” and “E” represents “earnings,” so it is the ratio of the market value (or price) per share to the earnings per share.

Stock analysts often use this statistic to make sure the price they are paying for a stock is reasonable. Calculating a stock's P/E ratio is easy. If a stock is selling for \$50 per share (P), and has earnings of \$5 per share (E), then its P/E ratio is

$$\text{P/E RATIO} = 50/5 = \mathbf{10} \text{ (or } 10/1\text{)}$$

This tells us that traders are willing to pay \$10 for every \$1 in earnings.

Taking a deeper look, we can see why stocks can help protect us against inflation. As mentioned earlier, in the P/E ratio, the “E” in the denominator is “earnings.” From accounting class, we learned how to arrive at earnings:

EARNINGS =

SALES - COST OF GOODS SOLD - GENERAL OPERATING EXPENSES
- INTEREST - TAXES - ETC...

And with this calculation, we'll get down to the company's earnings.

When the dollar depreciates, companies raise their prices to make sure they are getting fairly paid for their products and services. That means the "sales" number in the formula above will go up. Of course, all the other numbers will most likely go up as well. Eventually, the company will make sure the earnings increase—they must in order to stay in business. This will positively affect the price of the stock; therefore, it will provide inflation protection.

For example, if a company has a P/E ratio of 15/1, and the dollar's purchasing power is cut in half, the company in question will start to raise prices. This will drive up the "sales" figure and eventually their earnings will double. All else being equal, the stock price will have to rise to \$30 to keep the P/E ratio the same ($15/1 = 30/2$). As you can see in our example, our stock price doubled when costs doubled. This is not to say that stocks necessarily benefit over the short run from inflationary environments, but in the long run, they protect investors against inflation far better than other investments.

Stock Prices and the Market

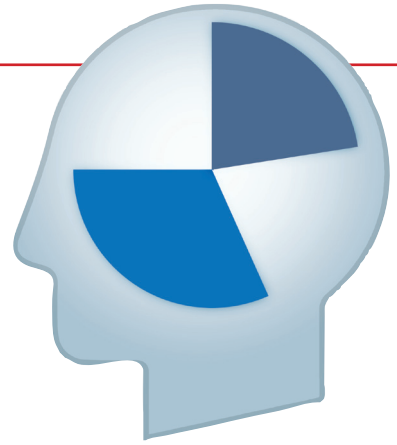
The stock market is largely driven by supply and demand. Thus, stock prices are literally set by a willing buyer and a willing seller agreeing on the fair price for the stock they are trading. There is a formula that can help you get an idea of what kind of information traders use to determine if the price is right for a stock. It is called the *Gordon Growth Formula*, named after Professor Myron J. Gordon of the University of Toronto. It is calculated by the following:

GORDON GROWTH FORMULA

$$P = D \times (1+G) / (R-G) \text{ Price} = \text{Dividend} \times (1 + \text{Growth Rate}) / (\text{Cost of Capital} - \text{Growth Rate})$$

Although the model has some flaws, it is quite useful for understanding many of the price movements we see in the stock market.³ (By the way, there won't be a test on the formula.)

The Media and Investing



Many investors view the general media as an unbiased source of information about investing and other financial topics. Magazines, newspapers, television, newsletters and other information sources all claim to give us solid, factual information on what we should do with our money. However, I've seen many portfolios in complete disarray that were formulated based on the information and advice obtained from these sources of mass communication.

The financial media's desire to make good investment decisions for the general public is certainly nothing new, but unfortunately, their track record does not positively reflect these desires. During the market downturn of 2002, I had to reassure investors by urging them to look back at past downturns and show how the financial writers were unable to give investors any meaningful insights to cope with their circumstances. In fact, in a marathon research session at my local library, I found several articles that showed how the financial world has often misled investors. In many cases, the parallels were uncanny. It seemed that there was a link between misleading information from the media and market downturns—so much for unbiased, solid information. 2008 and 2009 were even worse.

When Knowledge Isn't Power

Despite the commonly held notion that knowledge is power, sometimes the power that comes from an increase in knowledge can have adverse effects. You might ask, "Paul, what is the harm of following financial topics in the general media? I'm just trying to learn about what's going on." The harm is not in listening to the advice and examining its validity; rather, the harm lies in how we react to the information we receive. Even the most well educated investors can easily become ensnared in the misguided, emotionally driven information that they collect from financial reporting outlets.

the article was not to make us all rich; rather, it was to entice us to buy the magazine so that we would see the advertisements contained inside.

A follow-up article by Nellie S. Huang entitled “How the Kip 25 funds performed,” points out some interesting facts that should be red flags to readers.

Huang states that “only a handful” of their US stock fund picks beat the Standard & Poor’s 500 stock index over the previous 12 month period. Not to be discouraged, she points out that “the trend is moving in the right direction.” Why? The previous year their stock funds actually LOST 9.0% for the period that ended in February 2016.

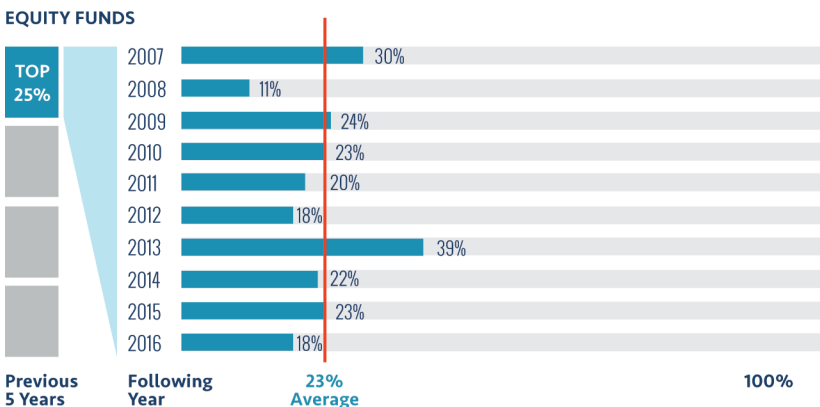
The same problem plagued the international stock fund choices. Two out of three of their chosen international funds lagged their benchmarks – one by 7.9%.

Need More Evidence?

To graphically illustrate the inability of fund managers to repeat their performance of the past, consider this graph depicting the number of mutual funds that were in the top 25% of their peer group, in terms of past performance, and how few of them went on to repeat in the following year. As you can see, the top managers of the past rarely repeat as the top managers of the future. *Superior track record* carries little weight.

PAST PERFORMANCE IS NOT ENOUGH TO PREDICT FUTURE RESULTS

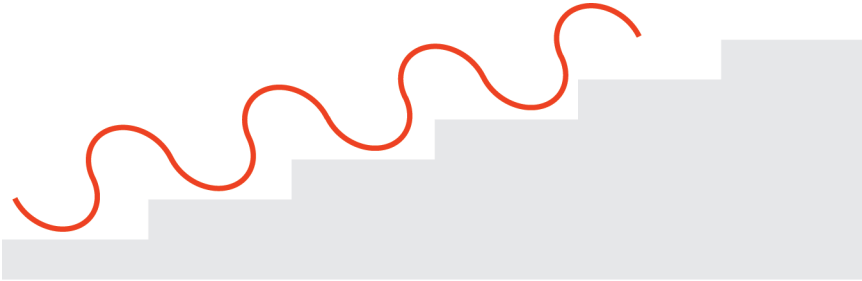
Percentage of top five-year performers that also ranked in the top quartile of annual performance in the following year



At the end of each year, funds are sorted within their category based on their five-year total return. The tables show the percentage of funds in the top quartile (25%) of five-year performance that ranked in the top quartile of one-year performance in the following year. Example: For 2007, only 30% of equity funds in the top quartile of previous five-year returns through the end of 2006 maintained a top quartile ranking for one-year returns in 2007. U.S. domestic open-end mutual fund data is from Morningstar and Center for Research in Security Prices (CRSP) from the University of Chicago. **Past performance is no guarantee of future results. See Data Appendix for more information.**

24% (10 plus or minus 2 times 17). As you can see, the lower the standard deviation number is, the less the portfolio deviates from the average.

Imagine a child walking up a set of stairs with a yo-yo. The general trend of the yo-yo will be up as the child climbs the stairs, but because the yo-yo itself is going up and down, there will be times when the toy's altitude will go down despite the child's climb. If the string is short, then the downward movements will be small. Think of that short string as a low standard deviation; conversely, if the string is long, it has a high standard deviation.



You may have noticed that I mentioned historical returns as I described standard deviation. As you know, there are no guarantees about the future. Things can always happen that have never occurred before. Standard deviation just gives us a tool to shed light on possible outcomes in the future based on the past. It is for this reason that we like to have as much data as we can for the longest period of time possible when determining the best mix for our portfolio. Most of the data on stocks goes back to the 1920s. Since that period, we have seen great changes—both good and bad—that have given us a glimpse of how the market reacts to various scenarios.

Risk and the Probability of Success

The measurement of risk is a primary tool used in a process called *probability analysis*, or a *Monte Carlo simulation*. The idea behind such a simulation is that people like to know their odds of having a successful outcome with their chosen investment strategy. If an investor realizes beforehand that the strategy he is using has little odds of success, then he may be inclined to look for other strategies that may lead to a better chance of success.

The major problem that Monte Carlo simulations solve is that returns in the market are unpredictable; therefore, linear returns projections don't give us a realistic picture of what is likely to happen with our investments over time.