

FIN 303 Concepts Applied to Investing

Fin 303
Fall 2017
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Outline



1. Investing Curriculum and Overview
2. Risk-Return Tradeoff
3. Diversification
4. Asset Allocation
5. How do you invest?

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In this PowerPoint we will apply certain techniques we learned in FIN 303 to the problem of investing.

Part 1 introduces the basic problem and also discusses other finance courses where you can learn more about investing.

In part 2, we will review the concept of the risk-return tradeoff. In part 3, we review correlation and diversification.

In part 4, we will apply these two concepts to construct an appropriate asset allocation.

In part 5, we will talk about how you actually go about making investments, once you know what you want to invest in.

I should point out that investing is a complicated (and interesting!) subject and you should be sure to get additional education (or advice) before making investment decisions. This is just an introduction using some of the concepts we've explored in class.

1. Investments Curriculum



- FIN 352 - Investment Management
- FIN 436 - Futures and Options
- FIN 452 - Investment Analysis
- FIN 462 - Fixed Income Investments
- FIN 491 - Seminar in Financial Analysis

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Our basic investments course, which is required for all majors and minors, is FIN 352. Majors should try to take this course as soon as possible as it is a prerequisite for investment elective courses. FIN 436, 452, and 462 are elective courses that focus on specific aspects of investments (436: Derivatives, 452: Portfolio Management, and 462: Bonds). Students interested in working in the investments industry or taking the CFA exam should try to take all three, recognizing that all three are very technical courses and are best attempted by students getting good grades in FIN 303 and FIN 352.

FIN 491 is small seminar where students manage a part of the university's endowment; deciding each semester which stocks to buy or sell. This is listed as an honors course, however it is not limited to students in the honors program. Students must apply to be admitted to the class.

A Basic Investment Problem



- Saving for retirement, what do you invest in?
- FIN 303 Concepts
 - Stocks and Bonds
 - Risk-Return Tradeoff
 - Correlation and Diversification
 - Valuation of Stocks and Bonds

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In the personal finance powerpoint, we looked at a basic financial problem where you are saving for retirement. In that problem, the interest you earned on your savings was fixed. However, in practice, what return you get will depend on how you invest your money.

This powerpoint goes through some of the FIN 303 principles that are used when making that decision.

What can you invest in



- Equity/Stocks
- Debt/Bonds

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In the valuation part of the class, we were introduced to two kinds of financial instruments: stocks and bonds. We said that stocks were a type of equity and bonds were a type of debt. The basic investment decision we will make is called the asset allocation decision, basically how much of your savings will you put into equity and how much into debt (that is, how much into stocks and how much into bonds). In this section, we review the basic characteristics of stocks and bonds.

A share (of stock) represents ownership in the company. Stocks generate capital gains (or losses) based on the change in their price and they may also pay dividends. Your total return is the sum of the capital gain and the income from dividends. For example, you buy a stock for \$40 per share, next year it pays you a dividend of \$2/share and you sell your shares for \$50/share. The dividend is \$2/share for a return of 5%. The capital gain is \$10/share for a return of 25%. Your total return is 30%. Stock returns are uncertain since the share price might fluctuate and the amount of dividends paid (if any) can change.

Bonds represent an IOU issued by companies or governments. Income comes from the coupons paid by the bonds while changes in the price of the bond can generate capital gains (or losses).

Bonds have less risk (that is, their returns are more certain) than stock since the coupon rate is stated in advance while stock dividends are generally not specified and there are smaller consequences if they are not paid. In addition, more of the

return to stocks comes from capital gains, which are harder to predict.

(more)

- Bank Deposits/CDs
- Money Market/Cash
- Other things: e.g. Real Estate

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There are three other common asset classes that we won't focus on here. Bank deposits are a kind of debt and so we can include them with bonds in our asset allocation. They have very low risk as the value is insured and the interest payments set ahead of time. But because of their low returns they are not typically used for long-term investing by young investors.

Money market securities are low-risk, liquid, short-term debt that typically offer very low interest rates. These instruments typically are used as a temporary place to "park" money or a place to put emergency funds. Because of their low returns they are not typically used for long-term investing by young investors. In asset allocations, money market instruments are commonly referred to as "cash".

We don't discuss investing in real estate in this class, but for those who are interested, CSUN offers both a major and minor in real estate. For those interested in the finance side of real estate management, combining a real estate major with a finance major can be beneficial.

2. Risk-Return Tradeoff



- What is Return?
- What is Risk?

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Risk and probability were covered in the risk chapter of the notes and you should review that. Since we are now focusing on how our investments will behave in the future, return will be taken to mean “expected” or “average” returns. For that chapter, risk was measured as how likely it is that your return will be different than expected (there are alternate definitions of risk you will get in more advanced classes)

What is the Risk-Return Tradeoff?



- Assets with higher risk will generally offer a higher expected return.
- You can choose:
 - investments with *high* risk and *high* return
 - investments with *low* risk and *low* return
 - but probably not *low* risk and *high* return

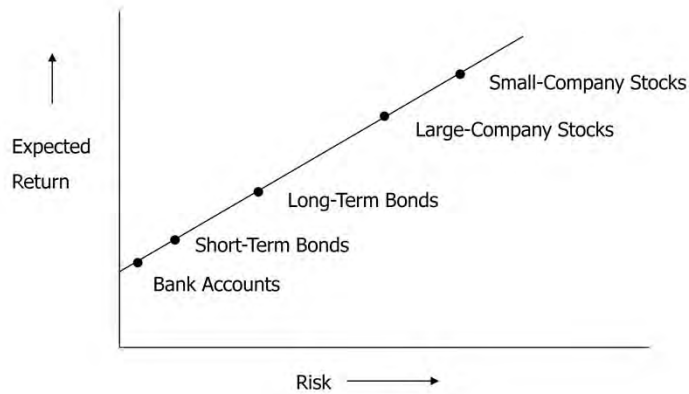
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Because investors do not like risk (they are “risk averse”) investments with more risk require investors to be compensated with a higher expected return. Some investments have high risk and so will have to offer a higher expected return to get investors to hold them. Other investments have lower risk and so only need to offer a low expected return.

Important! Riskier investments should offer a higher *expected* return but they do not offer a higher *guaranteed* return. So if you invested in these assets you could actually end up with a lower return than an investment in a low risk asset (that’s why it’s called risk), but you would expect, on average, to earn a higher return.

There are a range of assets



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There are a number of different types of assets offering a range of risk and expected return. The graph shows major asset categories ordered by risk (the chart is just illustrative, it's not a plot of actual numbers).

Ordered from the most risk to least risk:

Small-company stocks (here "small" means small market capitalization)

Large-company stocks

Long-term bonds

Short-term bonds

Bank accounts

3) What is Diversification?



- Correlation
- Don't put all your eggs in one basket.
- You can reduce risk without hurting your expected return.

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In the class lecture on risk, we saw that if we constructed a portfolio with two assets whose returns are not perfectly correlated, that we could reduce the standard deviation of the portfolio return. In the lecture example, the correlation was -1 so we could eliminate all risk. In practice, most correlations between asset returns are between 0 and 1 so that we can reduce some risk by diversification but we can't eliminate it entirely.

If our entire portfolio consisted of only one stock, there would always be the danger that a poor performance of that one stock would undermine our retirement plans. If we held multiple stocks, poor performance by one stock can be balanced out by better performances by other stocks. This idea gives us the saying "don't put all your eggs in one basket"

Diversification is the one "free lunch" in finance. It allows us to get rid of something we don't like (risk) while not hurting our expected return.

4) Asset Allocation



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Now that we know the different things we can invest in (stocks, bonds) and we know about risk and return, we have a decision to make. How much of your portfolio should go into stocks and bonds? This is called the asset allocation decision.

How do we describe an asset allocation?



- Asset allocation refers to how you allocate your wealth across different assets.
- For example:
 - 60% Stocks
 - 30% Bonds
 - 10% Short-Term Assets (Cash)

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Say that we have

\$120,000 invested in stocks

\$60,000 invested in bonds

\$20,000 invested in a liquid bank account

For a total of \$200,000.

We describe our asset allocation as the percentage of our wealth in each asset class:

60% Stocks

30% Bonds

10% Cash

How to determine the best allocation?



- The appropriate allocation depends on:
 - Your investing horizon
 - Your tolerance for risk
- You can find programs online that will suggest allocations for you.

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The further in the future your investment goals are, the more risks you can take, which means your asset allocation should be biased towards stocks and away from bonds.

Similarly, the more you can tolerate risks (i.e., you are comfortable making risky investments), the more you should invest in stocks

An asset allocator is a program that takes information about your investing situation and recommends an asset allocation.

Here is a very simple one:

<http://money.cnn.com/tools/assetallocwizard/assetallocwizard.html>

(you can find more complicated ones online or through a financial advisor. Don't rely exclusively on any single allocator; see if they are giving you similar advice based on your situation)

An Example



- A hypothetical family
 - 20+ years until retirement
 - Can handle a reasonable amount of risk
- Recommended allocation is
 - 20% foreign stocks
 - 20% small-cap stocks
 - 50% large-cap stocks
 - 10% bonds

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The allocator divides assets into four classes,

Bonds

Large-cap stocks

Small-cap stocks

Foreign stocks

Cap (or capitalization) refers to the total value of a company's stock at the market price. Small-cap stocks and foreign stocks have the most risk. Large-cap stocks have less risk, bonds have the least risk.

We assume:

Need the money in 20+ years,

Handle a reasonable amount of risk

OK with missing goal by a year or two

Do nothing in a market sell off

The recommended allocation is:

Bonds:10%

Large Cap Stock 50%

Small-cap stocks 20%

Foreign stocks 20%

Stock Picking



- Judging whether a particular company's stock is undervalued.
- Difficult to do.
- Not recommended or necessary for the average investor.
- If you take this approach, do your research.

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Stock picking refers to investing in specific stocks with the idea that they are undervalued in the market but will later increase in value when the market catches on. It is difficult to do successfully and requires spending a significant amount of time doing research on different companies. Because of that, it's not recommended (or necessary) for the average investor, but it can be interesting for advanced investors.

Finance shows on TV often focus on stock picking; however, these shows should be treated more as entertainment than serious financial advice.

In FIN 303, we learned basic techniques for valuing stocks and bonds. More advanced versions of these techniques are used in investing to find undervalued assets.

5) Who can you invest with?



- Stock Brokers
- Mutual Funds
- Through Your Employer

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Now that you have a plan for your asset allocation, you need to make your investments in stocks and bonds. If you want to buy individual stocks and bonds, you do this through a stock broker. Another approach is invest through a mutual fund which is an institution that takes in money from a large number of investors and then invests it according to the goals of the fund. Some companies offer investment options through the company (typically for 401k accounts) and these are usually through mutual funds.

Why brokers?



- You have a specific reason for buying an individual stock.
- You have a large amount of wealth and need specialized advice.
- Mutual funds are fine for the typical investor.

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If you want to buy individual stocks or bonds you will need to go to a brokerage and open an account. You give them money and instructions for what to buy and they will execute the order and hold the stocks for you in your account. Brokers earn income through charging fees on transactions and by taking a small percentage of assets under management.

Brokers are best used if you have special needs. But for most people, mutual funds are the most convenient way to invest and will do fine. We'll discuss them next.

Investing Using Mutual Funds



- What are mutual funds?
- What is a mutual fund family?
- Why mutual funds?
- How to invest in mutual funds?
- What kind of fees are there?

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We'll go through each topic individually.

What is a Mutual Fund?



- It is a financial company.
- Allows small investors to pool their money.
- Professional managers at the fund choose how to invest the money.
- They invest in stocks, bonds and other assets.

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Basically a mutual fund is a financial institution that pools investors' money and uses it to invest in stocks, bonds and other assets. Investors buy "shares" in the mutual fund and then the mutual fund uses this money to buy stock and bonds. The value of the shares (and so the value of the investment) will change when the prices of the assets change.

Exchange-traded funds (ETFs) differ from ordinary mutual funds in how they are bought and sold, but from an investment perspective are very similar so we will not discuss them in this class. If you are interested, there is a great deal of information online.

Why Mutual Funds?



- Advantages
 - Can invest small amounts
 - Easy to be diversified
 - Convenient
 - Professional management
- Disadvantages
 - Less flexibility in choice of securities
 - May have tax disadvantages

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Even if you only have \$5,000 to invest, this money will be pooled with the money from thousands of other investors which will give the mutual fund enough money to invest in a wide variety of assets and so be well-diversified.

Professional managers choose which assets to buy and so this allows the average investor to have access to sophisticated management (however, it's not clear how valuable this is – something that is discussed more in FIN 352)

There are some disadvantages to mutual funds. If you want only to invest in 10 specific companies, you will need to go through a broker since a mutual fund is unlikely to invest only in those 10 companies.

Mutual funds also have less flexibility in determining when capital gains are realized which may result in paying more taxes. This is an advanced topic covered in FIN 352.

What is a Mutual Fund Family?



- Most mutual fund companies offer a number of different individual funds.
- Each fund will have its own specific investment goals and strategies.
- You will need to choose which specific funds to invest in.

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A mutual fund company typically offer a number of different mutual funds, each investing in a different mix of assets. Taken together, the funds are called a mutual fund family.

For example, Vanguard (a mutual fund company) offers over 100 different funds, some specializing in stocks, others specializing in bonds, others holding a mix of stocks and bonds.

You can browse through all their different funds here:

<https://investor.vanguard.com/mutual-funds/vanguard-mutual-funds-list>

How to Invest?



- Buy *shares* in the mutual fund.
- When you want to collect your return, you redeem your shares (sell them back to the mutual fund).

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Shares in a mutual fund are sold at their Net Asset Value (NAV) (more on this in a moment). If you have \$5,000 to invest and the NAV of a fund is \$100/share, you can buy 50 shares of the fund. When you want your money back, you redeem your shares (in effect, sell them back to the mutual fund) at whatever their current NAV is. This can change depending on how the investments of the mutual fund have performed.

Net Asset Value (NAV)



- $NAV = (\text{value of all the securities in the fund's portfolio}) / (\# \text{ of shares})$.
- Funds generally will sell and redeem shares at the NAV.
- If the value of the securities increases, the value of your shares will increase too.
- Holding shares in a mutual fund is just like owning the underlying assets.

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If the mutual fund holds assets (stocks or bonds or whatever it invests in) worth \$100 million, and there are 1 million shares *in the mutual fund*, then the Net Asset Value of a share is \$100. That is, one share in the mutual fund is worth \$100.

If the value of the assets in the above fund increased 50% from \$100 million to \$150 million, the NAV of the fund would increase to \$150. If you had 50 shares that you bought for \$100 each, you could redeem them for \$150 (aside from fees) and have earned 50% on your investment, just like if you held the underlying assets.

Fees



- Fees reduce whatever return you earn – shop around.
- One-Time Fees
- Annual Fees

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We'll walk through examples with both kinds of fees.

One-Time Fees (Loads)



- Loads are like sales commissions.
- Front-end loads are charged when you first buy the shares.
- Back-end loads are charged when you redeem the shares.
- No-load funds do not charge loads.
- Sometimes fees are charged if you redeem the shares soon after you buy them.

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Font-end loads are a fee that is charged when you first buy shares. Say that the NAV is \$100, the front-end load is 3% and you have \$5,000 to invest:

You start with \$5,000

Subtract the load

$$-0.03 * \$5,000$$

Leaves you with \$4,850

So you buy 48.5 shares

(yes, you can own fractional shares. This just represents your share of a pool of assets)

A back-end load works a similar way when you redeem your shares. With certain funds, you only have to pay a back-end load if you redeem your shares before a certain time has passed. This is to discourage investors from constantly buying and redeeming shares and generating turnover costs for the fund.

Annual Fees



- Management fees – The mutual fund company will take a percentage of the asset's value each year – this is how they make their money.
- 12(b)-1 Fees – fees for marketing and promoting.

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If a mutual fund has \$100,000 of assets under management, and they charge a 1% management fee, they will take 1% of the assets as income. So if the fund earns 5% in a year, the investors will only see a 4% increase in the value of their assets (1% going to the company that ran the fund)

How to get information



- Online!
- A prospectus provides the details.
- What to look for:
 - What does the fund invest in?
 - Does it match your investing plan?
 - What are the fees?
 - How has it performed in the past?

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A prospectus is a document that offers a variety of information about the mutual fund including its investment strategy, fees and past performance. Mutual funds typically offer this information online too. For example, here is the information for the Vanguard Total World Stock Index Fund

<https://personal.vanguard.com/us/funds/snapshot?FundId=0628&FundIntExt=INT>

You can click on the headings (tabs) to see the kind of information available.

Types of Funds



- Money Market Funds
 - Low risk but low return
 - You can write checks
- Bond Funds
 - Corporate bond funds
 - High-yield bond funds
 - Municipal bond funds
 - International bond funds

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There are a variety of different kinds of mutual funds. They are generally broken into different categories.

Money market mutual funds invest in short-term low-risk assets such as Treasury Bills. These have little risk but also offer little return. They typically allow check writing which makes them a good option for emergency funds or for a place to park money short-term.

Bond funds can hold a wide variety of bonds or can specialize in specific bond types. Corporate bonds are bonds issued by companies. High-yield bonds are corporate bonds with more risk. Municipal bonds are issued by state and local governments and offer tax advantages but also lower returns.

Types of Funds (cont'd)



- Stock funds
 - Growth
 - Income
 - Value
 - Sector
 - International
 - Balanced/Hybrid

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There are also a wide variety of stock funds. They might invest in fast-growing companies or stable companies that pay dividends or companies that are in a specific industry (for example, a technology fund) or invest in companies located in other countries.

Balanced (or hybrid) funds invest in stocks and bonds.

Types of Funds (cont'd)



- Index Funds
 - Follows some index (S&P500)
 - Stocks or bonds
 - Low fees and highly diversified
 - Good choice
- Asset Allocation Funds
- Real Estate Funds

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Index funds follow some index. For example, an S&P 500 fund would invest in stocks in the same proportion as they are included in the S&P 500 index. Since they are “passively” managed (the managers don’t look for undervalued assets), they have low fees and are highly diversified. Since it is unclear how successful active managers are (that is, managers who are trying to beat the market), index funds are often an excellent choice for individual investors.

Asset allocation funds hold a mix of stocks and bonds, where the mix changes over time (towards more bonds and fewer stocks) to match the desired mix as an investor gets older.

Real estate funds (REITs) invest in income-earning properties and related investments.

Implementing your investment plan using mutual funds



- Start with an asset allocation.
- Choose 2 or more funds that match your asset allocation (i.e. one fund for each asset class)
- Look for diversified funds (internationally too)
- Take advantage of index funds.
- Shop around for low fees.

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For example, if you have an asset allocation of 60% stocks and 40% bonds you could put 60% of your money in a stock index fund and 40% in a bond index fund.

If the stock index fund didn't include international stocks you might want to hold some of your money in a domestic stock index fund and some of your money in an international index fund.