

Investment Basics II

John B. Shoven

Spring 2023

Economics 43

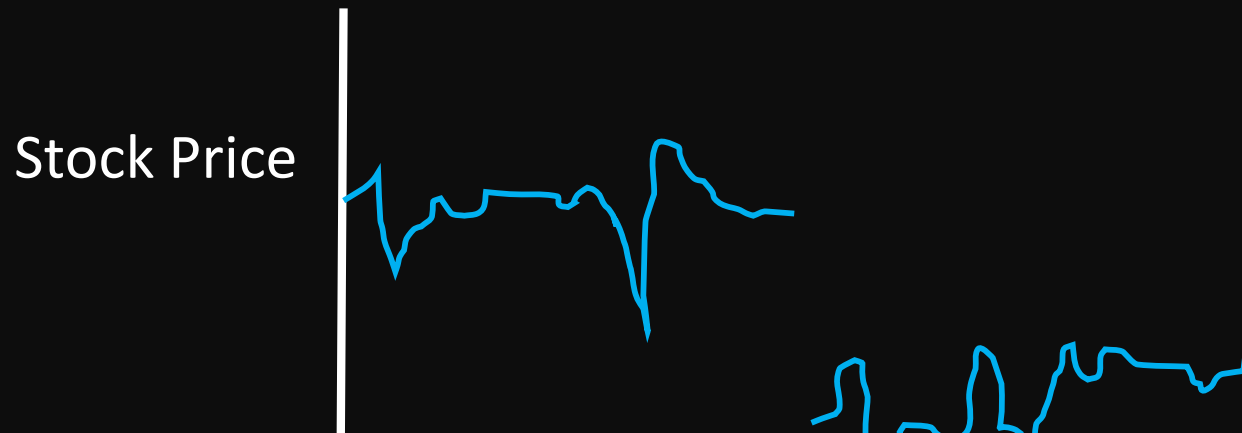
Investment Basics II: Table of Contents

- Payment of Dividends (where we left off)
- Share Repurchases
- Fluctuating vs. Steady Returns
- Sectors of the Market
- International Investing
- Selling Short
- Buying on Margin
- Historical Performance of Stocks, Bonds, and Inflation (1802 – 2012)

Payment of Dividends

- Most well established firms pay quarterly dividends
- Holders of stock on ex-dividend date receive the dividend
- Payable date is usually a few weeks after ex-dividend date
- If you buy shares after ex-date but before payable date, you don't get the dividend
- Annual dividend rates range from a fraction of 1% to about 10%. AT&T would be an example of a stock with a high dividend yield (6.09%)
- What do you think happens to the stock price right after the stock reaches the ex-dividend date?
- Answer – it tends to go down by the amount of the dividend

If the stock didn't tend to go down by the amount of the dividend, you could make money simply by buying the stock right before it went ex-dividend and selling it right afterwards, simply capturing the dividend



So, investors break even (they get the cash dividend but the stock goes down by the amount of the dividend), but the stock indices such as the DJIA and the S&P500 go down because they are price indices and not return indices. For the DJIA, this happens 120 times per year

The gap tends to be the amount of the dividend. The investor does not lose any money when the stock goes ex-dividend, they receive the cash dividend and the stock goes down by the amount of the cash dividend

Dividend Increases and Cuts

- Many companies increase their dividend payout from time to time. Some do this pretty much every year.
- Some companies have a rough target of what fraction of earnings they pay out as dividends.
- Paying more money as dividends leaves less money for growth and acquisitions
- Dividend cuts are rare and a very bad sign for the company and stock. Even in the Great Depression, dividend cuts were not that common.

Taxation of dividends and realized capital gains

- The current federal income tax gives special treatment to qualified dividends and long-term capital gains.
- Only realized capital gains are taxed. Short-run realized capital gains (on positions held for a year or less) are taxed at ordinary income tax rates. Long run capital gains (on positions held more than one year) are taxed at special lower rates
- Qualified dividends (which are the vast majority of dividends) are also taxed at the same special lower rates
- The rationale for this is that this income has already been subject to the corporation income tax (current rate is 21%).

The special rates on realized long-term capital gains and qualified dividends for 2023

- For singles with
 - Taxable income between 0 and \$44,625 0%
 - Taxable income between \$44,676 and \$492,300 15%
 - Taxable income above \$492,300 20%
- For married couples filing jointly with
 - Taxable income between 0 and \$89,261 0%
 - Taxable income between \$89,261 and \$553,851 15%
 - Taxable income above \$553,851 20%
- Note: For singles, the standard deduction in 2023 is \$13,850 and for married couples filing jointly it is \$27,700

There is another tax applying to dividends, realized capital gains, interest income, & rents & royalties

- The Net Investment Income Tax was introduced in 2013. It is a surtax on investment income for those with relatively high income. The surtax rate is 3.8%
- This was introduced to help pay for Obamacare.
- The surtax applies to singles with taxable income greater than \$200,000 and married couples with taxable incomes greater than \$250,000.
- This is why the current top rate on long-term capital gains and qualified dividends is actually 23.8%

Share Repurchases: Dividends Are Not The Only Way for Companies to Return Cash to Shareholders

Companies usually have a “Use of Cash” policy, which determines roughly how much of profit and net cash flow is retained for growth and acquisitions and how much is returned to shareholders

Companies can buy back their own shares on open market. They can also offer to buy back shares directly from shareholders. This will lower the number of shares outstanding, increase earnings per share, and increase the remaining shareholders' fractional ownership of the firm

Share Repurchases are BIG

- In 2021, the 500 companies in the S&P 500 bought back a total of \$881.7 Billion worth of stock.
- These same companies paid total dividends of \$511.2 Billion
- From these two mechanisms, stockholders received \$1.4 Trillion from companies. And, share repurchases were larger than dividends
- Big recipients of these payments would include pension funds, mutual funds, university endowments, etc. The ultimate beneficiaries are all people, not institutions
- Warren Buffet famously said in his 2023 letter to shareholders that, “someone who views all repurchases as harmful “an economic illiterate or a silver-tongued demagogue.”

Advantages of Share Repurchases over Dividends

- Flexibility. Share repurchase programs can be started and stopped with little if any market penalty. They do not convey a promise to continue the program (unlike dividends)
- Some companies have an “opportunistic” program of buying back shares. This kicks in after the stock has fallen significantly
- Stock repurchases have a modest tax advantage. They tend to generate capital gains rather than dividend income, and capital gains can be realized when the shareholder chooses

Consider Two Identical Companies...

- They have the same assets and liabilities, revenues, costs and profits. Their financial statements look the same
- Firm DIV institutes a dividend equal to 2% of its stock price and maintains that 2% dividend yield for the next 5 years.
- Firm SR devotes the same amount of cash for share repurchases. Every year the two firms have the same assets, liabilities, revenues and costs
- Which stock will have the higher price at the end of 5 years? By how much? Which will have the fewer shares outstanding? Which will have the higher earnings per share?
- If you had an option to buy shares in the company at a particular price for the next five years, which policy would you prefer?

Fluctuating vs. Steady Returns

How much would \$10,000 grow to in 20 years at a steady 9% return per year?

$$\text{Answer} = \$10,000 \times 1.09^{20} = \$56,044$$

How much would \$10,000 grow to in 20 years if you earned +29% in 10 of those years and -11% in the other 10 years? Is the answer going to be more or less than \$56,044?

What is your average return in this case? Arithmetic or simple average return = 9%

$$\text{Answer to balance after 20 years} = \$10,000 \times 1.29^{10} \times .89^{10} = \$39,790$$

Generalization: Significantly fluctuating returns compound to substantially less money than steady returns when they both have the same (arithmetic) average return

Fluctuating vs Steady Returns (continued)

In the case of 10 returns of +29% and 10 returns of -11%, we found that your final balance was 3.979 times your initial balance. What steady return over 20 years would multiply your money by 3.979 times?

$$(1+r_g)^{20} = 3.979$$

$$1+r_g = 3.979^{.05}$$

$$r_g = 3.979^{.05} - 1 = .0715 \quad \text{or 7.15 percent}$$

r_g is called the geometric mean of the returns. For fluctuating returns, it is always less than the arithmetic average of returns. In this case 7.15% instead of 9%. The geometric mean tells you the equivalent steady return in terms of how your money grew. The easiest way to calculate it is to take the ratio of your final balance to your initial balance. Then take that to the $1/T$ power and subtract one.

Classic example of the difference between arithmetic average returns and geometric average returns

- Say you realized a 100% return in a year followed by a -50% return. In other words, you doubled your money in the first year and then halved it in the second.
- What is your arithmetic average return?
 - Answer = $(100 - 50) / 2 = 25\%$
- What is your geometric average return?
 - Answer = Zero
- Which one is more descriptive of what happened to you?

Now, to real data. The next slide has the total returns on the S&P 500 since 2000... also the realized rate of inflation since 2000

YEAR	TOTAL RETURN FOR S&P500 (%)	INFLATION (CPI) (%)
2000	-9.10	3.4
2001	-11.89	2.8
2002	-22.10	1.6
2003	28.68	2.3
2004	10.88	2.7
2005	4.91	3.4
2006	15.79	3.2
2007	5.49	2.8
2008	-37.00	3.8
2009	26.46	-0.4
2010	15.06	1.6
2011	2.11	3.2
2012	16.00	2.1
2013	32.39	1.5
2014	13.69	1.6
2015	1.38	0.1
2016	11.96	1.3
2017	21.83	2.1
2018	-4.38	2.4
2019	31.49	1.8
2020	18.40	1.2

What if you add up all the returns and divide by 21? That is the arithmetic average return of the S&P 500 since 1/1/00. The number is 8.19%

What if you multiplied $(1+r_1)(1+r_2)\dots(1+r_{21})$?
You get that your investment is worth 3.83773 times it's initial value. That is \$10,000 would have grown to \$38,377.30

What steady return would generate 3.83773 times your money in 21 years?

To find the answer, take the 21st root of 3.83773 and subtract 1. That is the geometric average return. The answer is 6.6137%

A Couple More Thoughts about 2000 – 2020 Returns

- We learned that the arithmetic average annual return on the S&P 500 was 8.19% and the geometric average was 6.61% between 2000 and 2020.
- These are nominal returns. Inflation averaged 2.1%. There would be little difference between the arithmetic average rate of inflation and the geometric average rate. Why? Because inflation did not fluctuate much.
- But, that means that your real geometric rate of return between 1/1/2000 and 12/31/2020 was about 4.5%
- You may have to pay some taxes on top of that, lowering your net, real return even further. If you hold the S&P 500 in a fund, there may be fees.

Diversification

- Owning a single stock (or a single corporate bond) is quite risky. For a representative stock on U.S. exchanges, the average standard deviation of annual rates of return is 40% or more. If it was 40% and the average outcome was +10%/year, then the +/- one standard deviation range is +50% to -30%.
- Owning a portfolio of stocks is still risky, but much less so than a single stock. You can use fractional shares, mutual funds or ETFs to achieve diversification. With fractional shares, you can buy as little as \$5 worth of any stock in the S&P500.
- More on diversification in Wednesday's lecture

Sectors of the Equity Market

State Street divides the S&P 500 into 11 Sectors

- Consumer Services XLC 9.19%
 - Meta, Alphabet, Netflix, Comcast, Disney, T-Mobile, AT&T, Verizon, Twitter
- Consumer Discretionary XLY 11.9%
 - Tesla, Home Depot, McDonalds, Nike, Lowe's, Starbucks, Target, Booking Holdings, TJX, Ford, Marriott
- Consumer Staples XLP 6.52%
 - Proctor & Gamble, Costco, Coca Cola, Pepsico, Phillip Morris, Walmart, Mondelez International, Altria, Colgate Palmolive, Kimberly Clark, Estee Lauder
- Energy XLE 4.17%
 - Exxon Mobil, Chevron, Schlumberger, Conoco Phillips

Sectors of the Equity Market (continued)

- Financials XLF 11.02%
 - Berkshire Hathaway, JP Morgan, Wells Fargo, BankAmerica, Citigroup, Morgan Stanley
- Healthcare XLV 14.21%
 - Johnson & Johnson, Pfizer, UnitedHealth, Abbot Labs, Eli Lilly, Merck, Thermo Fisher Scientific, Bristol-Myers Squibb
- Industrials XLI 7.87%
 - Union Pacific, Raytheon, UPS, Honeywell, Caterpillar, Deere, Lockheed, GE, Boeing
- Materials XLB 2.72%
 - Linde, Sherwin Williams, Air Products, Freeport McMoran

Sectors of the Equity Market (continued)

- Real Estate XLRE 2.88%
 - American Tower, Crown Castle, Prologis, Equinix, Public Storage, Simon Properties
- Technology XLK 26.62%
 - Apple, Microsoft, Visa, Nvidia, Mastercard, Broadcom, Adobe, Intel, Cisco
- Utilities XLU 2.89%
 - NextEra Energy, Duke Energy, Southern Company, Dominion Energy, American Electric Power

My Advice

- Buying a single sector fund is not really being diversified. Buying the health sector fund is better than buying a single health stock, but you would still not be well diversified.
- If you want to hold a portfolio of stocks, pick stocks from several different sectors. That would lead to decent diversification
- Another strategy is to buy a fund that covers most or all of the market

A Good Source for Supplemental Learning Regarding Diversification, Mutual Funds and Market Efficiency

- NPR produced a podcast titled “Index Funds and the Big Bet” which includes the story of a \$1 million bet placed by Warren Buffet
- It covers diversification, index funds, and the efficient market hypothesis, all topics of the next couple of lectures
- It is easy to follow and interesting. It would be 33 minutes well spent
- Here is the link: <https://www.npr.org/2021/07/29/1022440582/planet-money-summer-school-2-index-funds-the-bet> We will send an email with the link
- Thanks to Adam Rosenberg for recommending this audio file

Small Capitalization Stocks

- Even the sector funds tend to hold only large capitalization stocks (stocks that are members of the S&P 500)
- The 500 largest U.S. companies in terms of market cap represent about 75% of the total market cap
- There is some evidence that smaller cap stocks have better long run rates of return than large caps. The evidence is fairly weak, however.
- One way to invest in them would be to buy a mutual fund that invests in the Russell 2000

Preferred Stock

- Unlike common stock, preferred stock has a fixed dividend.
- Failure to pay the dividend does not force bankruptcy (unlike failing to pay interest or principal to bondholders). Most preferred stocks are “cumulative preferreds” meaning that all missed dividends must be paid before any dividends can be paid to common shareholders
- The vast majority of equities are common stocks

International Diversification

Rank	Country	Total market cap (in mil. US\$) ^[2]	Total market cap (% of GDP) ^[3]	Number of domestic companies listed ^[4]	Year
1	United States	40,719,661	194.5	4,266	2020
2	China	12,214,466	83.0	4,154	2020
3	Japan	6,718,220	122.2	3,754	2020
4	Hong Kong	6,130,420	1,768.8	2,353	2020
5	United Kingdom	3,570,894	116.5	1,858	2014
6	Canada	2,641,455	160.7	3,922	2020
7	India	2,595,466	99.0	5,215	2020
8	Saudi Arabia	2,429,102	347.0	207	2020
9	France	2,365,950	84.9	457	2018
10	Germany	2,284,109	60.0	438	2020
11	South Korea	2,176,190	133.5	2,318	2020
12	Switzerland	2,001,603	267.6	236	2020

More on International Diversification

The pros and cons of adding international stocks to your portfolio

- Pro: International stocks enhance diversification. This is true for both stocks in developed markets and emerging markets
- Cons:
 - Different accounting standards, lack of SEC oversight, higher transaction costs
 - Additional exchange rate risks
 - Investors have less first-hand experience with the company and its products
- Note: Big U.S. companies provide substantial exposure to foreign economies, all within U.S. accounting standards and SEC oversight
- In the mutual fund world, international means non-U.S., whereas global means U.S. and non-U.S. stocks.
- Total global market capitalization of listed equities is about \$100 Trillion

Selling Short

- How can you profit when you think a stock will go down?
- One possibility is selling the stock short – this involves selling a stock that you do not own with the obligation to buy it later (you hope at a lower price)
 - Step One – tell a broker what you want to do. Broker will borrow the shares you want to sell. Say, it is 100 shares of Amazon
 - Step Two – sell the borrowed shares. Leave the proceeds with the broker as well as additional assets
 -
 - Step three – buy the shares later, “covering the short position.” If you sold borrowed shares of Amazon at \$111 and buy later at \$81, you could make \$30 per share

Selling Short (continued)

- You can lose a lot of money shorting stocks. In fact, there is no limit to possible losses
- If you had sold short Amazon three years ago, you would have sold it for \$1,900 per share (before their 20 for 1 split)
- Two years later, Amazon was selling for about \$3000
- If you covered your short, you would have lost \$1,100 per share
- There are safer ways to bet against a stock using options. We will cover that in a couple of weeks

Another High Risk, Potentially High Reward Strategy: Buying on Margin

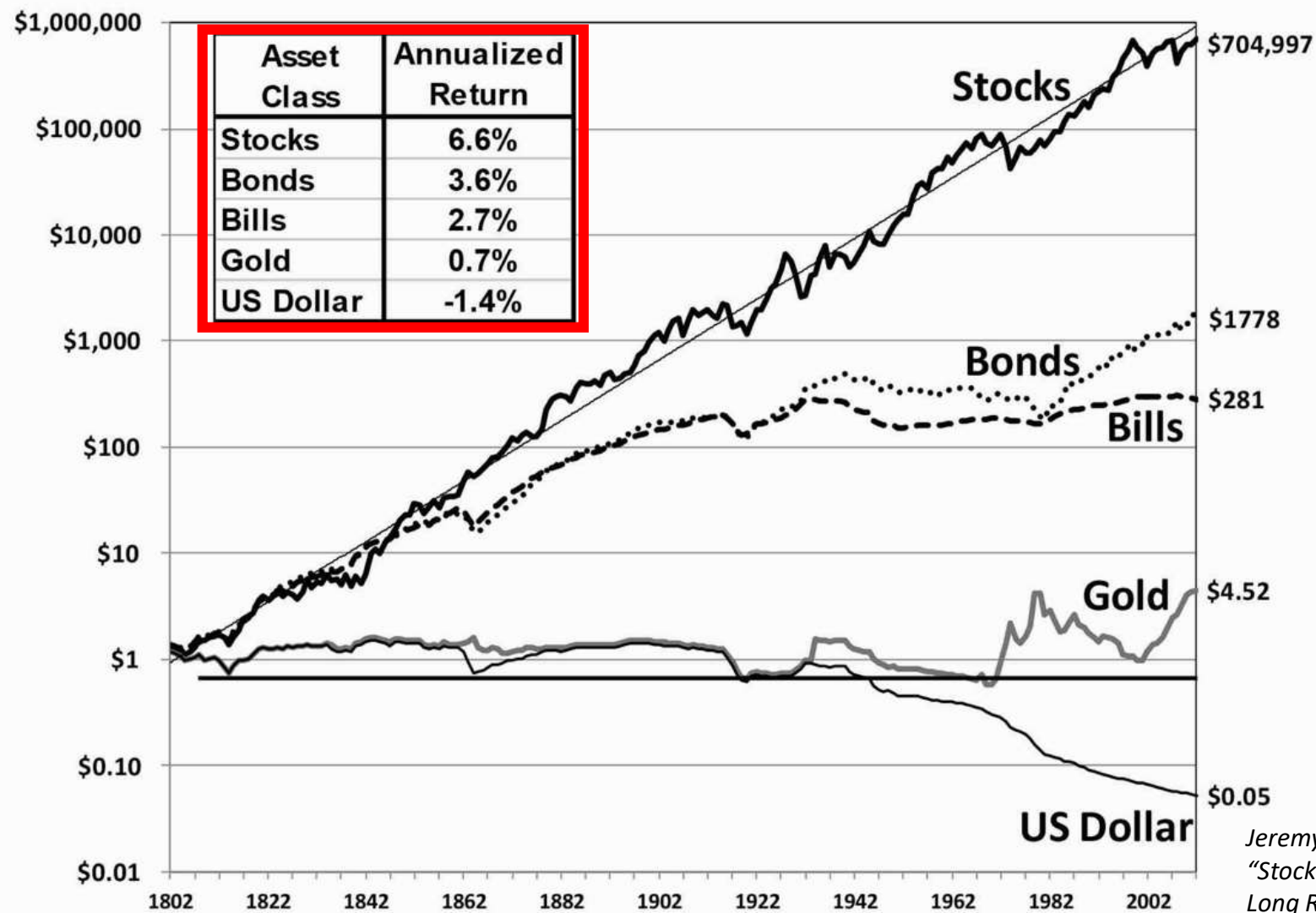
- You can borrow money from your broker to buy stock. The most you can borrow is the amount that you invest with your own money. So, if you put up \$10,000, your broker will loan you up to an additional \$10,000. So, you can buy \$20,000 worth of stock.
- Let's say the stock or stocks that you buy go up by 5% or \$1,000. That would be 5% on the \$20K, but 10% on the \$10K that you put in. Borrowing to buy an investment is called using leverage. In this case, you would be said to have 2X leverage. Your rate of profits are magnified 2X. So are your losses.

More on Buying on Margin

- Your broker will require you to keep your entire position in the stocks that you bought in your brokerage account. Those assets serve as collateral to the broker's loan. If the stock goes way down, that lowers the value of the collateral and the broker may ask you to deposit more assets into your account. That is called a "margin call."
- The loan, because it is collateralized, is fairly safe from the broker's point of view. Interest rates on margin loans today range anywhere from 1% to 9%, depending on the size of the loan and the broker.

Should You Sell Your Winners or Your Losers?

- If you actively manage your stock portfolio and you want to raise some cash, would you sell the stock with the big gain or the one with the big loss?
- Psychologists suggest that people are more likely to sell their winners on the mistaken thought that losses aren't real unless they are realized.
- The tax code may make it more advantageous to sell a stock that you have lost money on. The realized losses can offset other realized capital gains. Also, realized losses can reduce other taxable income by up to \$3,000.



Jeremy J. Siegel
 "Stocks for the
 Long Run 5th Edition"

210 Years of Real,
 Inflation Adjusted
 Cumulative Returns,
 1802-2012,
 Jeremy Siegel
 Note the geometric
 average returns in
 the table

FIGURE 5-4

Total Real Returns on U.S. Stocks, Bonds, Bills, Gold, and the Dollar, 1802–2012

Note: \$1 invested in the stock market in 1802 would have turned into \$704,997 by 2012 even after adjusting for inflation

1802 - 2012

Asset Class	Annualized Real Return
-------------	---------------------------

Stocks	6.60%
--------	-------

Bonds	3.60%
-------	-------

Bills	2.70%
-------	-------

Gold	0.70%
------	-------

U.S. Dollar	-1.40%
-------------	--------

If you think you are going to earn more than 12% per year on your stock portfolio after adjusting for inflation, history suggests otherwise

Let's check Jeremy Siegel's calculation of the geometric average rate of return on large capitalization stocks from 1802 to 2012

- Recall the simplest way to calculate the geometric average rate of return is to divide the final value of a position by its initial value, then take that to the $1/T$ power and subtract one.
- 704,997 to the $(1/210)$ power is 1.066224. Subtract 1 and the answer is .066224 or 6.66224 percent, just like the last slide and Jeremy Siegel said

Where we are going...

- How do you determine the expected return and riskiness of a multi-asset portfolio?
- How do you find the least risky way to earn a particular expected return?
- If you narrowed your investment choices to a broad stock mutual fund and an investment grade bond mutual fund, what would the safest asset allocation be between these two assets?
- Is it possible that two investors with different degrees of risk aversion would still invest in the same combination of risky assets?