Investment Basics I

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Economics 43

Investment Basics I: Table of Contents

Investment Goals

- Common Investment Goals
  - Retirement
  - Down Payment on a house
  - Paying for college education
  - Buying a car
  - Vacation home
  - Trip to Europe
  - Making a philanthropic gift that makes an impact

- All goals are legitimate and they vary greatly by person

Why have an investment program?

Net Worth = Assets less Liabilities

- Reminder: Ways to Increase Net Worth:

- Increase saving (which requires increasing income or reducing spending)

- Reduce amounts owed (i.e. pay off debts)

- Increase the value of investments and other possessions (sometimes out of your control – luck matters)

- Nothing else works!

Getting the Money Needed to Start an Investment Program

- Priority of Investment Goals
  - How badly do you want to achieve your investment goals?
  - Are you willing to sacrifice some purchases to finance your investments?
  - Many people never start an investment program, because they have only small sums of money.
    - Small sums grow over a long period of time. (Remember that Time Value of Money matters.)
  - Take advantage of employer-sponsored retirement programs.
  - Look for investments that are tax advantaged. We will learn about some in this course.
  - Make an effort to save 10 or 20% each year.

Establishing Investment Goals

To develop valid goals, ask yourself. . . (and institutions do this too)

- How much money do you need to satisfy your investment goals?
- How long will it take you to obtain the money?
- How much risk are you willing to take in an investment program?
- What possible economic or personal conditions could alter your investment goals?
- Are you willing to make the sacrifices necessary to reach your investment goals? (e.g. sacrificing some shorter-term purchases)
- What will the consequences be if you don’t reach your investment goals?
- Given your economic circumstances, are your investment goals realistic?

Considerations around Investment Choice:

Income, Growth, Liquidity, Risk, Time

- Income Generation
- Appreciation
- Liquidity
  - Ability to buy or sell an investment quickly without substantially affecting the investment’s value; e.g. real estate is not a very liquid investment.
- Risk
  - Safety in an investment means minimal risk of loss. Risk means a measure of uncertainty about the outcome.
  - Investments range from very safe to very risky.
  - Choosing higher risk investments, investors expect higher average returns.
  - The potential return on any investment should be directly related to the risk the investor assumes.
  - Evaluating your tolerance for risk
- Time Horizon

Some Investment Vehicles

- Bank or credit union account
  - Pro: very safe, usually insured by the government
  - Con: currently extremely low interest rate (often 0.01% or one basis point)
  - Alternative: Money Market Mutual Fund

- Stocks and Bonds – either held directly or through mutual funds
  - Pro: better average return than banks, good liquidity (easy to convert to cash}
  - Con: can be risky in that returns can be highly variable, not insured, requires knowledge and/or luck to be successful

- Real estate and real assets
  - Can provide consumption value, partially protected from inflation
  - Some are not so liquid in that they can take months to covert to cash
  - Property maintenance is both time consuming and costly

Basics of Equities

- A share of stock is a <u>fractional ownership</u> of a publicly traded company

- The fraction can be <u>very</u> small
  - Apple has 15.828 Billion shares outstanding (roughly twice the world's population)
    - This means if you owned 15,828 shares (worth about $2.6 million), you would own one-millionth of Apple)

  - Amazon has 10.25 Billion shares. (one-millionths of Amazon would cost about $1.05 million today)

  - Bank of America has 8.00 Billion shares outstanding (one-millionth = $230,000}

  - Cadence Design Systems has 273.21 Million shares outstanding (a one – millionths interest would cost about $56 thousand)

Market Capitalization of Stocks

- The market capitalization of a stock is simply the number of shares outstanding times the price of a share
- The largest market capitalization stock is Apple: 15.828 billion sharfes times \$163.77/share = \$2.592 Trillion! (about \$7,845 per person in theU.S.)
- The market capitalization is the market value of all of the stock
- If you wanted to know the size of the company, you would add the market value of the debt to the market value of the stock

Largest Market Cap Stocks: Then and Now

2000	2010	2020	Now
Microsoft	PetroChina	Microsoft	Apple
GE	Exxon Mobil	Apple	Microsoft
NTT Docomo	Microsoft	Amazon	Alphabet
Cisco	ICBC	Alphabet	Amazon
Walmart	Apple	Alibaba	Nvidia
Intel	BHP	Facebook	Berkshire H
NTT	Walmart	Tencent	Tesla
Exxon Mobil	Berkshire H	Berkshire H	Meta
Lucent	GE	Visa	J & J
Deutsche Tele	China Mobile	J&J	Visa

Who Sets the Price of Shares?

- Supply and Demand

- Any time the market is open, potential sellers will have offers to sell (their asking price) and potential buyers will have offers to buy (their bids). It is similar to an auction

- The bid in the market is the highest offer to buy and the ask in the market is the lowest selling offer.

- Any time the ask and the bid match, a trade will be enacted

- At a given moment, the bid is lower than the ask (that is why the trades have not happened yet). This is called the <u>bid-ask spread</u>

Problems with frequent trading (such as day trading)

- Even though trading commissions have been eliminated by many brokers, there still is a cost to trading. The major cost is dealing with the bid-ask spread

- When you buy a stock, you tend to have to match the ask, the lowest price for which there are sellers. When you sell, you tend to have to match the bid, the highest price that anyone is willing to pay.

- Right now (actually yesterday afternoon), the bid for Dexcom was 122.76 and the ask is 123.90. If you bought DXCM for 123.90 and sold it for 122.76 in a few hours, you would lose $1.14, or about .92%. You would not want to lose that much every day!

How do you determine the rate of return realized by shareholders?

- The rate of return over any period of time (an hour, a day, a week, a month, a year, etc.) is given by the <u>holding period return</u>

  - R of R = $((P_1 – P_0) + \text{Distributions})/P_O$

  - P_1 is the end of period price, P_0 is the beginning period price

  - For stocks, the most common distributions are dividends, which are typically paid once per quarter by most mature companies. Sometimes stocks distribute the shares of a subsidiary in a process called a spinout. For example, earlier this year GE spun out GEHealthcare to its shareholders.

  - Apple’s current dividend rate is $0.23 per quarter

Example of Calculating the rate of return on Apple stock

- Assume that you buy Apple on May 1 and sell it on June 30. On May 1 you pay \$162 per share and on June 30^{th} you sell for \$170.

- What was your (holding period) return for the 2 months?
  - Answer = The stock appreciated by \$8/share and you received a \$0.23 dividend, so you made a total of \$8.23 per share
  - Your rate of return was \$8.23/\$162 = 0.0508 or 5.08%
  - 5.08% is a very good return for 2 months. If you realized this every 2 months, your compound rate of return for one year would be $1.0508^6 – 1 = 34.62\%$
  - This 5.08% would be your rate of return for the 2 months even if you didn't sell the stock on June 30^{th}. It would then be an accrued return rather than a realized return.

What would the annual return be if you bought Apple at \$170, sold it one year later at \$191 and received 4 dividends of \$0.23?

Example of Calculating a 2-Year Rate of Return

- This is an actual example. You bought 100 shares of Weyerhaeuser (WY) three years ago for $18.76/share
- You sold it one year ago for $39.97/share
- While you held it you received $2.98 per share in dividends
- Your return per share was (39.97 – 18.76 + 2.98)/18.76 = 24.19/18.76 = 1.2894 or 128.94% over the two years. This is equivalent to 51.31%/year. This was better than Microsoft and many tech companies

How do you gauge whether a stock is expensive or not?

- The most common gauge is the ratio of the price of the shares to the earnings per share… termed the price-earnings ratio. By the way, earnings per share is just the company's after-tax profit divided by the number of shares outstanding. Earnings and profit are the same thing.

- Long-run average price-earnings ratio for market as a whole is between 15 & 16.

- High growth companies command a higher P-E ratio than slower growing companies, sometimes much higher

- When someone asks you what is the "multiple" of a particular stock, they are usually asking about the P-E ratio.

Which Stock is More Expensive? Apple or Cadence Design Systems

- Let’s look at the statistics as of ast week:

	Apple (AAPL)	Cadence (CDNS)
Market Capitalization	2,592 Billion	55.7 Billion
Price/Share	163.77	203.90
Consensus 2023 Earnings/Share	6.60	5.00
Price-Earnings Ratio	24.81	40.78

- The price of 1 dollar of 2023 earnings is $24.81 for Apple and $40.78 for CDNS. Cadence, with the higher P-E ratio, would be considered the more expensive stock. To justify its higher P-E ratio, it needs to have faster expected profit growth

Other financial ratios to keep track of..

- Market capitalization to Sales ratio. Sales = Revenues. This ratio would be used for young companies who are not yet profitable. Still, a stock's value is more about profit than sales

- Ratio of profit to sales. Often termed "operating margin." How much profit does the company make per dollar of sales. A particularly well managed company will often have a higher operating margin than its competitors

- Ratio of Annual dividend per share to price per share. This is called the dividend yield (Examples Apple = 0.56% Verison = 7.04%)

- Ratio of the total value of debt to the total value of equity for the company

Earnings Season

- Companies report earnings, earnings per share, and revenues quarterly, most commonly between week 3 and week 6 of the quarter.

- They report the results of the last quarter (Q1, 2023) and typically give guidance for next quarter and the rest of the year.

- Investors are looking for whether they beat expectations or not. A good earnings release might have a "beat and raise" where the company beat previous guidance and raises future guidance

- Interesting earnings release this afternoon = Meta
- Interesting earnings release tomorrow = Amazon
- Does anyone know about the Microsoft and Alphabet earnings releases yesterday? What happened?

Two Investment Philosophies: Growth vs. Value

- Some investors choose stocks with high growth potential, both in revenues and earnings. These stocks tend to have high P-E ratios and low or zero dividends. Examples would be Tesla, Moderna, Crowdstrike, Rivian, Uber.

- Cathie Woods of ARK Investing would be a leading example of an extreme growth oriented investor

- Other investors choose stocks with low P-E ratios and high dividends. They are looking for stocks that are out of favor and betting that they will rebound Examples would include a number of the bank stocks, Intel, AT&T and Verizon

- Warren Buffet of Berkshire Hatheway is, by and large, a value investor

Investment Risk: Price Volatility

- Investment risk is most often thought of in terms of price volatility.
- This is easy to quantify for many assets, like stocks and Treasury bonds because they are traded (bought and sold) many times per day.
- This constant trading results in minute-by-minute price changes, and plotting these fluctuations can give us a clear view of the average price change over time.
- The volatility of the percentage change in price (measured by standard deviation), gives us an idea of how quickly a particular investment, on average, may gain or lose value.
- Should you be concerned with the risk of the value of your portfolio or the risk of individual stocks within the portfolio?

Why Does the Price Change so Frequently?

- Traders (the people or computers doing the buying and selling) are constantly evaluating new information, interpreting it differently, and reacting by changing the price at which they are willing to buy or sell.

- The information they are evaluating could be almost anything—economic news, the launch of a new technology, interest rate changes, weather, a speech by the Chairman of the Federal Reserve or a development regarding COVID-19. It could be company specific news such as an earnings announcement or a forecast of revenues and profits for the rest of the year.

- All of these factors can have an effect on the price of an investment because all investments are exposed in some degree to a multitude of component risks.

Types of Investment Risk

- **Systematic (market) risk –** The risk that the performance of the overall stock market and economy will affect all companies and thus could lead to a decrease in the value of almost all investments.

- **Non-systematic or idiosyncratic (company-specific) risk** – The risk from company specific debelopments such as a new contract, a key departure, or an SEC investigation

- **Interest rate risk** – Risk that changes in interest rates will negatively affect the value of your investment. (This could be considered part of systematic risk)

- **Inflation risk –** Risk that your investment will decline in purchasing power because it does not grow as fast as prices are increasing (i.e., the inflation rate).

More Types of Investment Risk

- **Political (foreign) risk** – The risk of loss involved with investing in countries that are less stable, or have hostile governments that don’t respect ownership and property rights.
- **Currency risk** – The risk of loss in dollar terms caused by changes in exchange rates when investing in another currency.
- **Credit risk –** The risk that the money you lend as an investment is not paid back as agreed upon by the borrower.
- **Liquidity risk –** The risk that when you want to sell an investment, you will be unable to find a willing buyer.

What Matters? Asset Risk or Portfolio Risk?

- Investors should care about the riskiness of their total portfolio (their total net worth) and not the riskiness of individual assets
- In general, it is possible for the portfolio risk to be less than the risk of its component assets
- In some special circumstances, it is possible to combine risky assets and create a completely safe portfolio
- The mechanism for having portfolio risk less than asset risk is to choose assets whose returns are relatively uncorrelated or ideally negatively correlated
- Some assets can be added to a portfolio without increasing the portfolio's risk by much. Others add more risk.

The Building Blocks of Asset Allocation

- The statistical characteristics of assets that are of interest are the:
  - Expected Return (average future return)
  - Variance and Standard Deviation of Future Returns
  - Covariance and Correlation with other assets in your portfolio

- Nearly every asset allocation model uses these basic inputs

- The debate is over the assumptions which determine everything.

Stock Indices

- Dow Jones Industrial Average, S&P 500, Nasdaq, Russell 2000
- Dow has the longest history. But, it only includes 30 stocks and weights them in a very odd manner (by stock price). For instance, if they were both in the Dow, Cadence would have a higher weight than Apple simply because its price is 204,90 rather than 163.77.
- S&P 500 includes, not surprisingly, 500 large capitalization stocks. Uses the more appropriate market cap weights
- Russell 2000 is a small cap index, also using market cap weights
- All of these indices are stock *price* indices, not stock *return* indices. They do not factor in dividends. So if you learn that the Dow was 1,000 in 1965 and is roughly 33,500 today, do not conclude that the return on stocks in the DJIA is such that your investment grew 33.5X. Actually, much more than that including dividends. 150X would be more like it. You should be interested in your total return, not the change in the stock price. Over the long haul, dividends matter a lot.

Stock Splits or Stock Dividends

- Sometimes companies split their stock. The most common split is a 2 for, whereby the number of shares you hold is doubled. For instance, if you held 100 shares before the split, you own 200 shares afterwards.

- The fractional ownership of every shareholder is unchanged by a stock split. The P-E ratio is unchanged.

- In a 2 for 1 stock split, the per share price of the stock tends to fall by half

- Most finance economists think stock splits are "nothingburgers." They are unimportant. In 2020, Apple split 4 for 1 and Tesla split 5 for 1.

Why Do Stock Splits Occur Anyway?

- A stock split likely signals confidence by the Board of Directors about the future of the company and the stock

- Many options strategies call for an option trade and a stock trade. Options always involve multiples of 100 shares. With Amazon and Alphabet over $3,000 per share, these options strategies became too expensive for most investors. Both Amazon and Alphabet split 20 for 1 stock splits tp rectify this situation

- Some empoyees may value 1,000 shares of the newly split stock more than 500 of the pre-split stock. This is a bit irrational, but it may be true nonetheless.

Reverse Stock Splits

- Many investors shun stocks with a price below $10. Even stocks between $10 and $20 are somewhart unpopular. The “terrible teens” is an expression on Wall Street.

- As a result, companies that have fallen on hard times and whose stock has fallen below $10 or so, may resort to a reverse split.

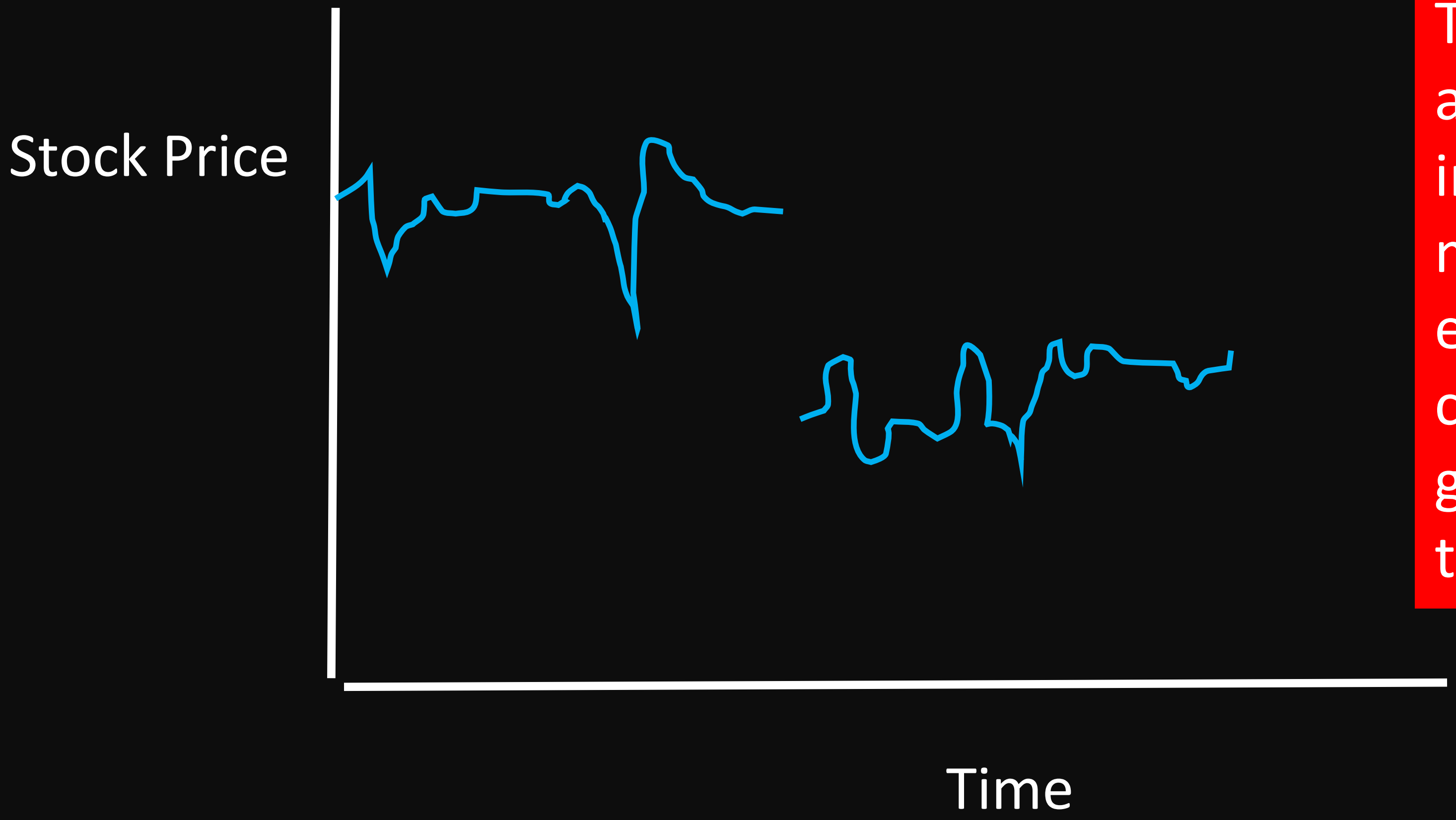
- In 2021, GE did a 1 for 8 reverse split. If you held 80 shares before the reverse split, you held 10 after the reverse split. The stock price would go up by a factor of 8. Today, GE sells for about $100 per share (equivalent to about $12.30 per share pre-reverse split

- A reverse split tends to follow extremely poor performance.

Payment of Dividends

- Most, but not all, well established firms pay quarterly dividends
- The holders of the stock on the ex-dividend date receive the dividend
- The payable date is usually a few weeks after the ex-dividend date
- If you acquire the stock after the ex-date but before the payable date, you do not 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 tend 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



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 rate 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.

Where are We Going Next?

- More Investment Basics
  - Share Repurchases
  - Sectors of the Market
  - Crypto currencies
  - International Investing
  - Selling Short
  - Buying on Margin
  - Historical Performance of Stocks, Bonds, and Inflation

- Efficient Portfolios
  - Getting the highest possible expected (average future) return for a given level of risk.
  - Alternatively, getting a given expected return with the least risk possible
  - The power of diversification