

Financial Literacy with Mr. 401(k)
[‘FinLit with Mr. 401(k)’]
Winter Term 2023-2024
February 12, 2024 & February 14, 2024

Investments Class 26 & 27: Basics of Stocks and Investment Funds

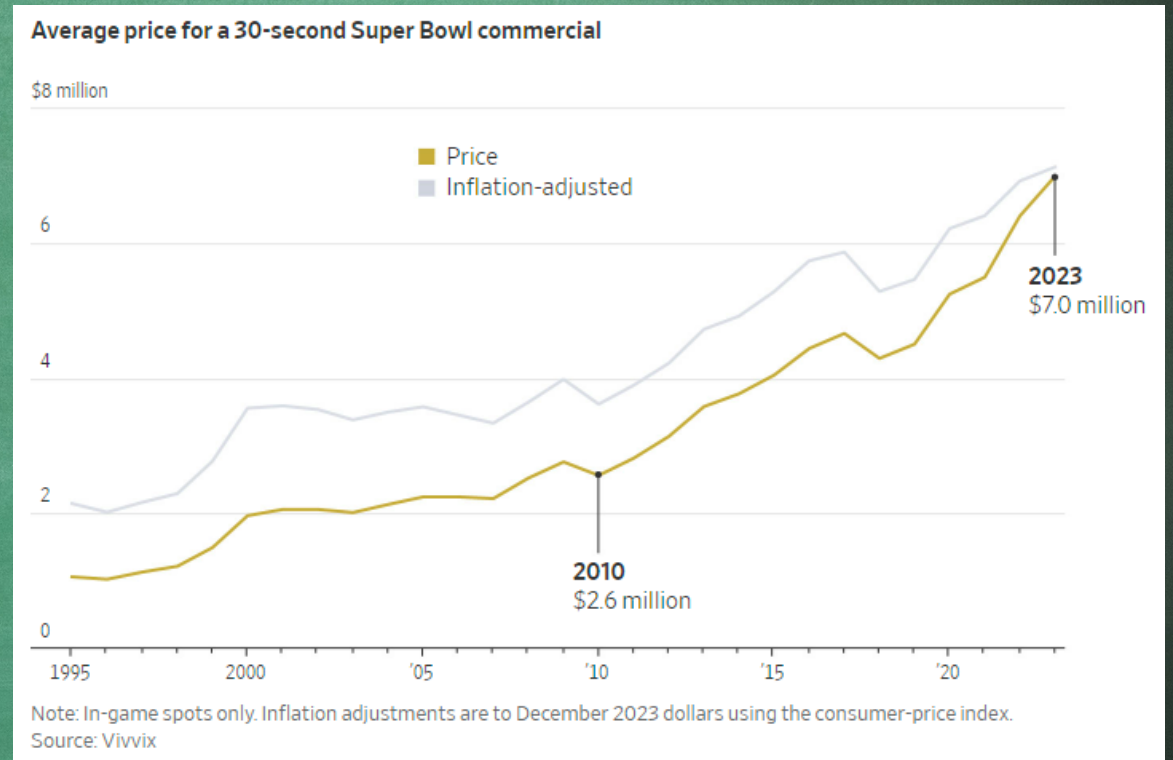


Monday Money Matter\$

Super Bowl LVIII advertisers paid \$7 Million for 30 seconds of airtime. Advertisers paid \$42K during Super Bowl I in 1967. The Super Bowl draws high viewership - last year's game reached 115.1 million people. Super Bowl LVIII is expected to break records, given the intrigue over Taylor Swift's relationship with Travis Kelce of the Kansas City Chiefs.

Reference Date: 02/11/2024

Source: <https://www.wsj.com/livecoverage/super-bowl-2024-chiefs-49ers/card/how-much-does-a-super-bowl-ad-cost-this-year--Z5758uXljO3gPQHWUCwF>



**An equity security that
represents ownership in
an issuing corporation**

Stock

How to Think About Stock Ownership

Think of the stock in a company like a pie. Each slice of pie represents shares of the company's stock. An investor may own the entire pie or slices of pie -- shares of stock. An investor's total ownership is the number of shares owned / the total shares of company stock.



Two Ways to Make Money in Stocks

1

Dividends

A **distribution of cash** to a corporation's eligible shareholders, generally the result of profits. Recap: profit (or loss) = income – expenses. Companies with losses will struggle to pay dividends to shareholders.

2

Capital Appreciation

An increase in the share price or value of a stock. When investors sell a stock for more than the invested principal, it is **portfolio income** or a capital gain. If investors sell a stock for less than the invested principal, it is a capital loss.

S&P 500 Index from 01/2022 to 12/2022

Index Starting Value

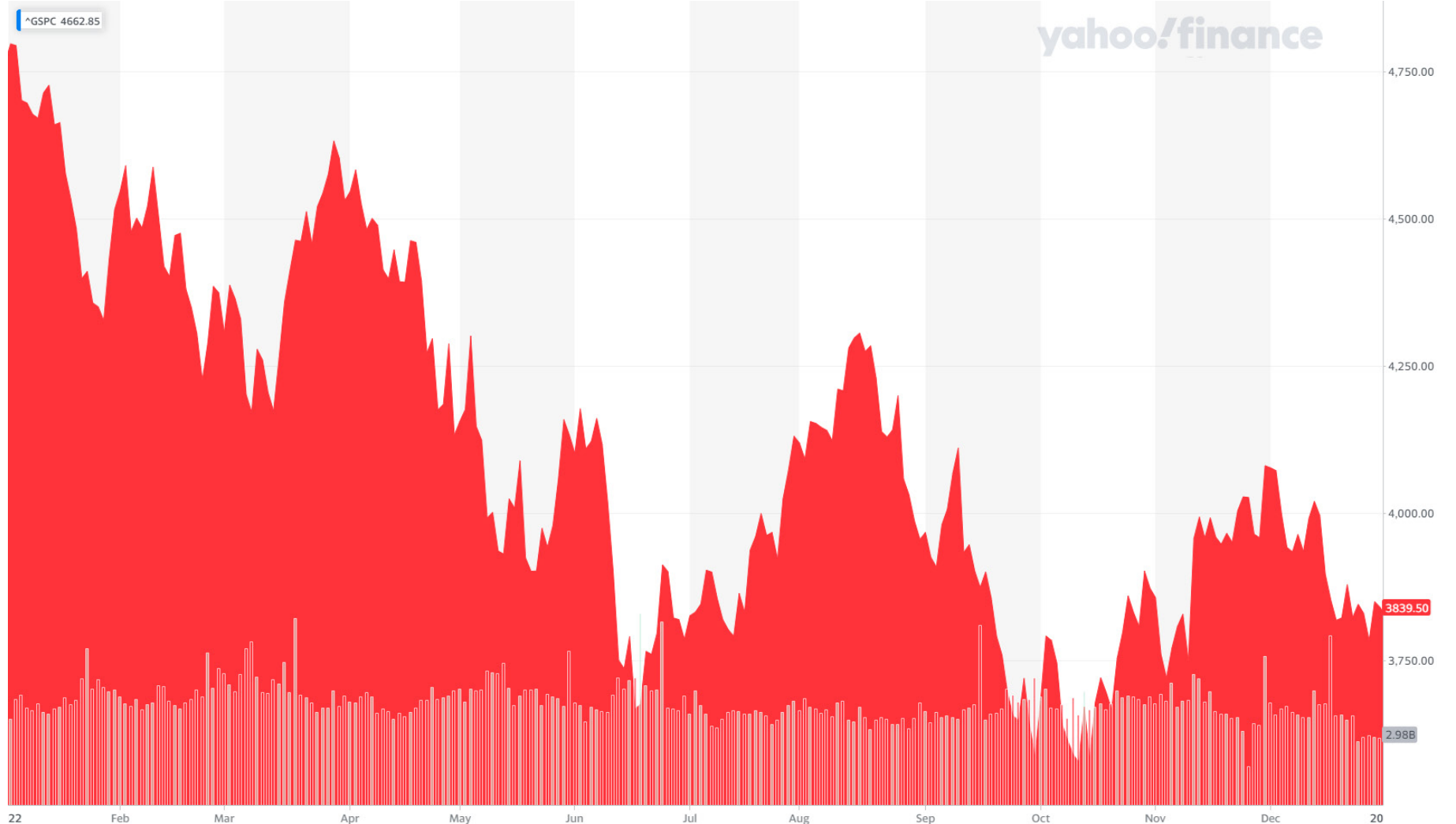
4796.56

Index Ending Value

3839.50

% Change

-20%



Drivers of Short-Term Stock Price Changes



Economic Factors

Interest rates, inflation, and economic growth forecasts can influence market sentiment and stock prices.



Investor Sentiment

The overall mood or attitude of investors towards the market or a particular stock can drive price movements, often based on news, reports, or market trends.



Company News

Profit reports, new product launches, mergers and acquisitions, or changes in leadership can directly impact the stock price of the concerned company.



Market Trends

Trends in specific sectors or the market can influence stock prices, including technological advancements or shifts in consumer behavior.



Global Events

Political instability, trade agreements, or global economic events can cause market volatility affecting stock prices.

S&P 500 Index from 01/2010 to 02/2024

Index Starting Value

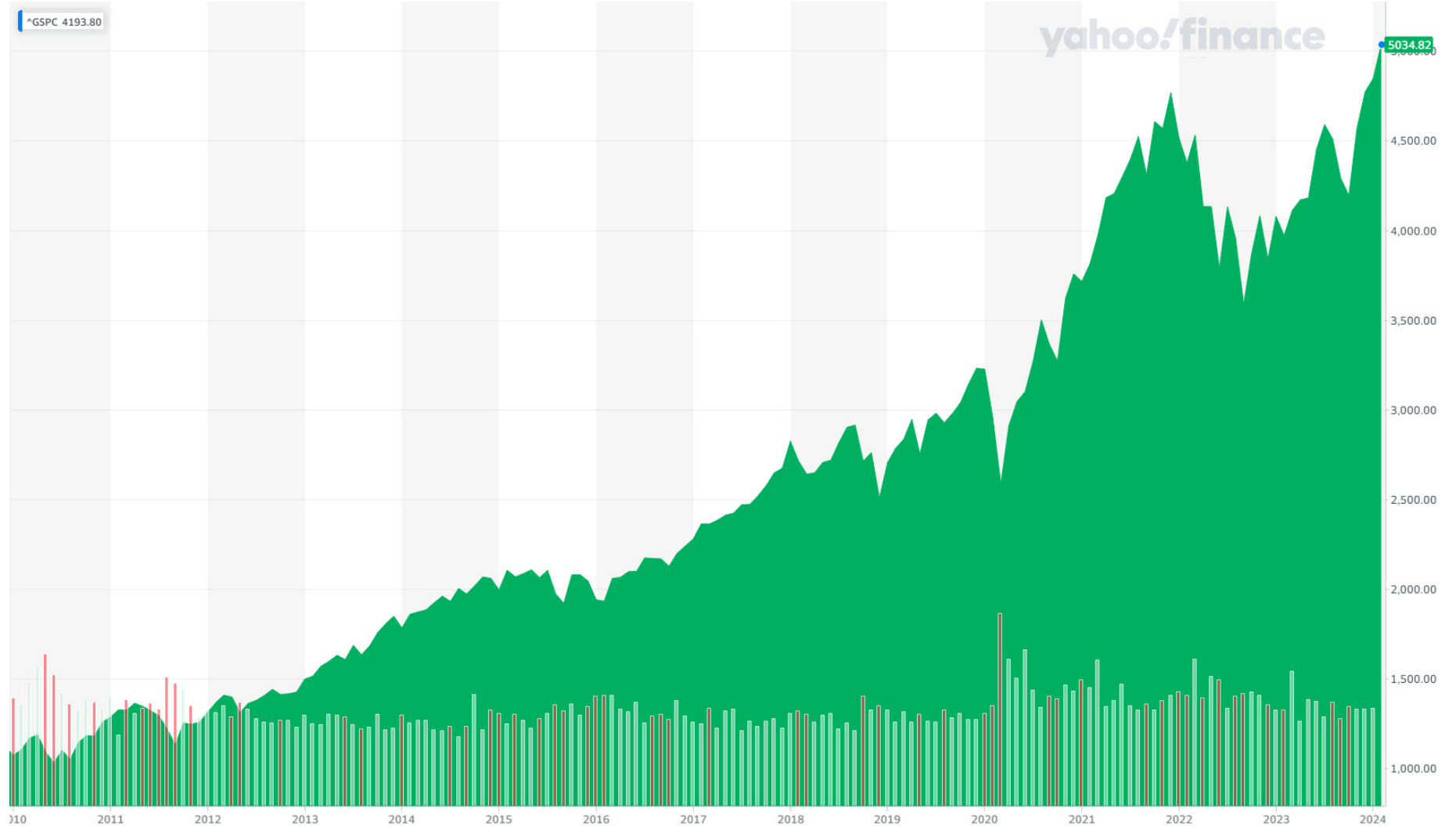
1116.56

Index Ending Value

5034.82

% Change

351%





*Why do you
think stocks
tend to
appreciate
over longer
periods?*

The Fundamental Value of Stock Prices

1. Stocks Ownership

When investors buy a stock, they buy shares in the *future stream of a company's cash flows*.

The stock price per share paid by investors pay is traded for *rights to the future stream of the company's cash flows*.

2. Recap: Time Value of Money

Money today is worth more than the same amount of money in the future because of inflation & interest rates.

Future money, like the future stream of a company's cash flows, must be *discounted back to the present*.

3. Putting These Ideas Together

The *fundamental value* of a company is the *present value of a company's discounted future cash flows*.

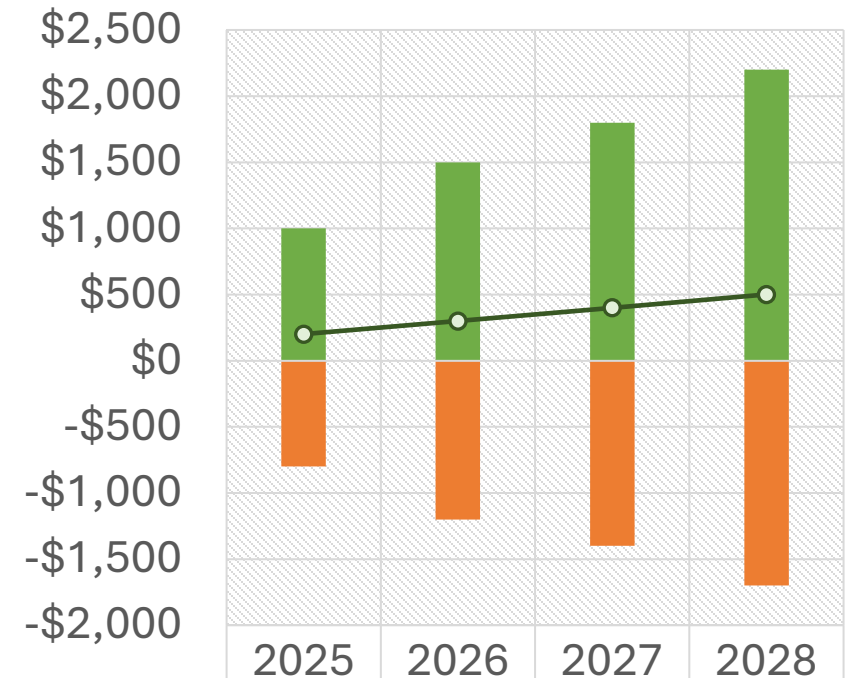
A stock's share price is a representation of the discounted future cash flows.

Practical Application

John's lemonade stand is doing well. John forecasts the lemonade stand's income, expenses, and profit for the next few years.

Jane wants to buy 100% of the stock in John's lemonade stand. Jane thinks the fair value for John's lemonade stand is 10 times its 2028 profits.

What value does Jane place on John's lemonade stand?



Expenses	-800	-1200	-1400	-1700
Income	1000	1500	1800	2200
Profit	200	300	400	500

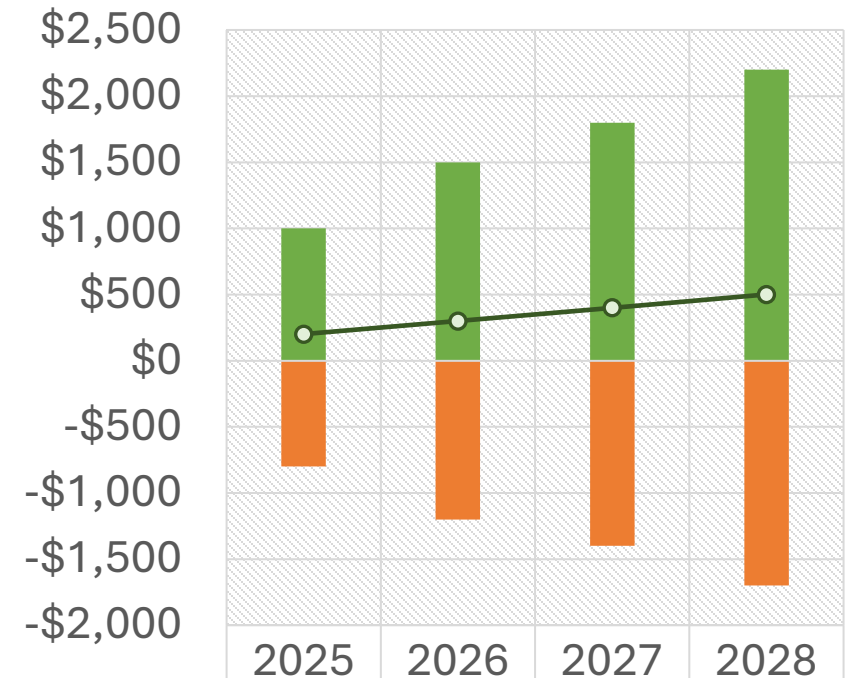
Income Expenses Profit

Practical Application

John forecasts a profit of \$500 for his lemonade stand in 2028.

However, \$500 in 2028 is not as valuable as \$500 today because of inflation and interest rates.

What can Jane do to figure out the fair value for the business?



	2025	2026	2027	2028
Expenses	-800	-1200	-1400	-1700
Income	1000	1500	1800	2200
Profit	200	300	400	500

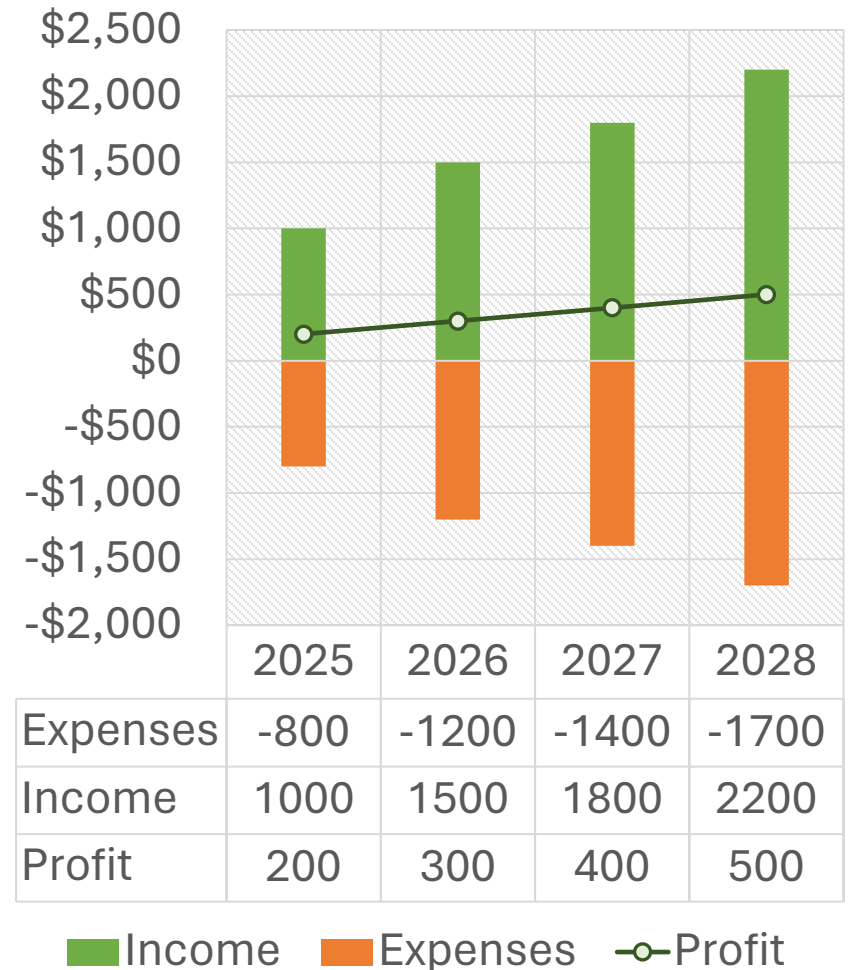
Income Expenses Profit

Practical Application

Jane uses the time value of money present value of a lump sum formula to discount the lemonade stand's 2028 profits. Jane applies a 4% annual discount rate.

$$PV = \frac{FV}{(1 + r/n)^{nt}} = \frac{500}{(1 + 4\%/1)^{1*4}} = \$427.40$$

Based on 10 times its discounted 2028 profits, Jane thinks a fair value for John's lemonade stand is \$4,274.

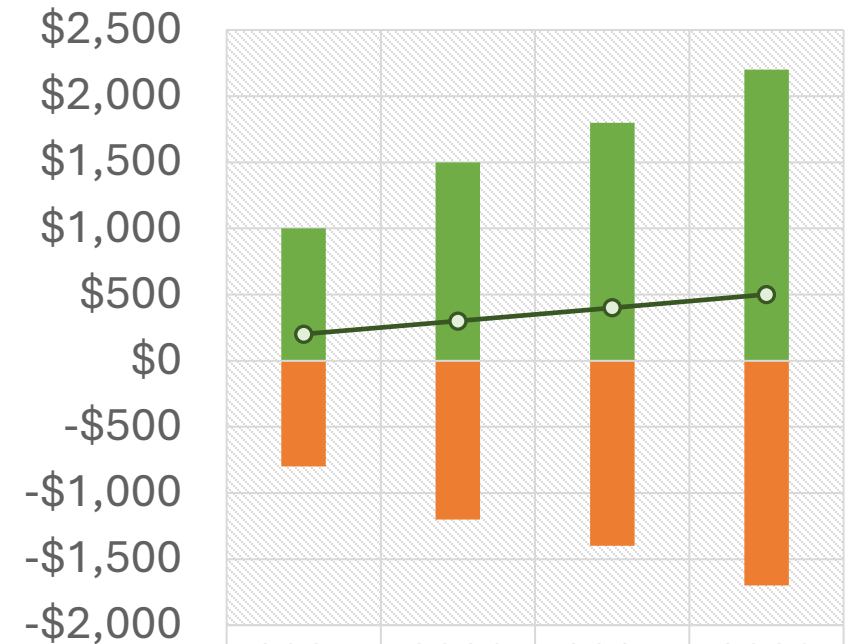


Practical Application

Now suppose Jane uses an 8% annual discount rate instead of 4%.

$$PV = \frac{FV}{(1 + r/n)^{nt}} = \frac{500}{(1 + 8\%/1)^{1*4}} = \$367.51$$

Based on 10 times its discounted 2028 profits, at an 8% annual discount rate, Jane thinks a fair value for John's lemonade stand is **\$3,675.10**.



	2025	2026	2027	2028
Expenses	-800	-1200	-1400	-1700
Income	1000	1500	1800	2200
Profit	200	300	400	500

Income Expenses Profit

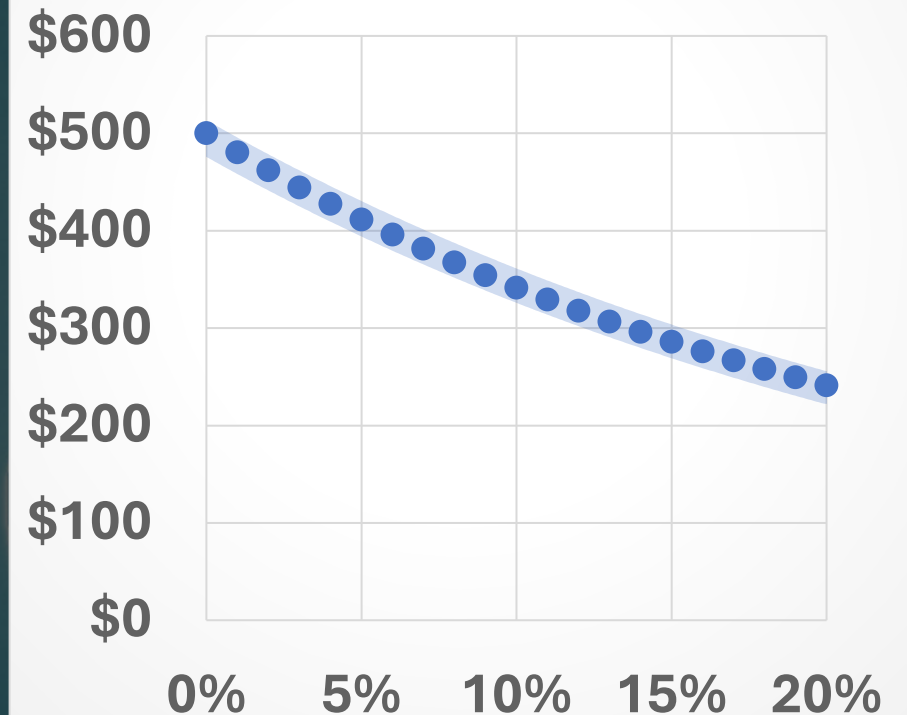
Practical Application

When the discount rate increases, the less the present value of a company's future cashflows is worth today.

Therefore, all other things being equal, the value a company decreases when interest rates rise.

Put another way, investors demand greater future cash flows from companies when interest rates increase.

Present Value of \$500
for 4-years at Select
Discount Rates



Recap: Warren Buffet at the Berkshire Hathaway Annual General Meeting in 1994

“...all you are doing in investing is transferring some money to somebody now in exchange for what you expect the stream of money to be, to come in over a period of time, and the higher interest rates are the less that present value is going to be.”



Practical Application

- A company's profits are also known as its earnings.
- A company's earnings can be divided by the total number of stock shares to calculate a company's earnings per share (EPS).
- EPS tells us the profit or earnings per share of stock.
- The price of 1 share of stock can be divided by the EPS to calculate the **Price-to-Earnings Ratio**.

Microsoft

Closing Share Price
February 9, 2024

\$420.55

12-month EPS as of
December 31, 2023

\$11.06

S&P 500

Closing Price
February 9, 2024

\$5,026.61

Earnings as of
September 30, 2023

\$183.63

The P/E ratio measures a company's share price relative to earnings. P/E ratios assess the relative value of a company's stock. A higher P/E ratio indicates a company is more expensive than others. Companies with high P/E ratios need to generate greater cashflows to warrant higher valuations.

Price-to-Earnings Ratio (P/E Ratio)

Practical Application

- The S&P 500 is an index of large U.S. publicly traded companies.
- The S&P 500 does not have earnings, but companies in the index do have earnings.
- The earnings for the S&P 500 reflect the total EPS for all companies in the S&P 500 index.
- Calculate the P/E Ratio of Microsoft and the S&P 500.

Microsoft

Closing Share Price
February 9, 2024

\$420.55

12-month EPS as of
December 31, 2023

\$11.06

P/E Ratio =

S&P 500

Closing Price
February 9, 2024

\$5,026.61

Earnings as of
September 30, 2023

\$183.63

P/E Ratio =

Practical Application

- Financial markets determine stock prices.
- The fundamental price of a stock is a company's discounted future cashflows or profits.
- What does Microsoft's P/E Ratio compared to the S&P 500 P/E Ratio tell you?
- What are the market's expectations of Microsoft's earnings compared to companies in the S&P 500?

Microsoft

Closing Share Price
February 9, 2024

\$420.55

12-month EPS as of
December 31, 2023

\$11.06

P/E Ratio =
38.02

S&P 500

Closing Price
February 9, 2024

\$5,026.61

Earnings as of
September 30, 2023

\$183.63

P/E Ratio =
27.37

PE Ratio for Companies in the S&P 500 Index

Standard and Poor's 500 index stocks categorized by sectors and industries. Size represents market cap.

Fullscreen Share map



Use mouse wheel to zoom in and out. Drag zoomed map to pan it. Double-click a ticker to display detailed information in a new window. Hover mouse cursor over a ticker to see its main competitors in a stacked view with a 3-month history graph.

Source: S&P 500 Map (finviz.com)

0 5 10 15 20 25 30

A supply of capital belonging to several investors, used to collectively purchase securities, while each investor retains ownership of their own shares.

Investment Funds

Many Different Types of Investment Funds -- Our Focus Will Be On...



Exchange Traded Funds (ETFs)

A shopping basket of investments



Mutual Funds

A jar of professionally managed money

How to Think About ETFs

An ETF is like a shopping basket that holds a little bit of different things you can invest in (ex. stocks, bonds, gold, real estate, bitcoin, etc.) Investors can buy or sell shares of this basket on a stock exchange just like they can with individual companies.



How to Think About Mutual Funds

Think of a mutual fund as a giant jar where several investors put their money. A fund manager invests the money in the jar. The value of the jar depends on the performance of its underlying investments. Mutual fund investors may redeem their shares in the jar for cash.





*Why might
people invest
in funds over
individual
stocks and
bonds?*



Principal Mutual Fund and ETF Benefits



Affordability

Low minimum investment requirements and operating expenses make it cost efficient for investors.



Convenience

Automatic investment options enable hassle-free and convenient investing over time, which makes dollar cost averaging very easy.



Diversification

A broad basket of stocks, bonds, and/or other investments within Mutual Funds and ETFs reduces the effects of single asset risks.



Professional Management

Mutual funds and ETFs are managed and operated by investment professionals who apply prudent stewardship practices over the investment funds.



Transparent

Mutual Funds and ETFs have extensive public information available. Investors can easily learn how funds are invested and how much the funds cost.

Largest 6 Mutual Funds

Source: Charles Schwab & Co., Inc. 02/09/2024

Symbol	Description	Fund Category	Morningstar Category	Fund Assets (\$)	Net Expense Ratio (%)	Total Return (YTD)
VTSAX	Vanguard Total Stock Market Index Fund Admiral Shares	US Equity	Large Blend	1.5T	0.04%	1.12%
VFFSX	Vanguard 500 Index Institutional Select Shares	US Equity	Large Blend	1.0T	0.01%	1.68%
VFIAX	Vanguard 500 Index Fund Admiral Shares	US Equity	Large Blend	1.0T	0.04%	1.68%
FXAIX	Fidelity 500 Index Fund	US Equity	Large Blend	484.4B	0.02%	1.68%
VTIAX	Vanguard Total International Stock Index Fund Admiral Shares	International Equity	Foreign Large Blend	398.1B	0.11%	-1.83%
VBTLX	Vanguard Total Bond Market Index Fund Admiral Shares	Taxable Bond	Intermediate Core Bond	316.3B	0.05%	-0.23%

Largest 6 ETFs

Source: Charles Schwab & Co., Inc. 02/09/2024

Symbol	Description	Fund Category	Morningstar Category	Total Assets (\$)	Net Expense Ratio	NAV Return (YTD) (%)
VTI	Vanguard Total Stock Market Index Fund ETF Shares	US Equity	Large Blend	1.5 T	0.03%	1.12
VOO	Vanguard S&P 500 ETF	US Equity	Large Blend	1.0 T	0.03%	1.68
SPY	SPDR® S&P 500 ETF Trust	US Equity	Large Blend	483.7 B	0.09%	1.67
IVV	iShares Core S&P 500 ETF	US Equity	Large Blend	418.4 B	0.03%	1.68
VXUS	Vanguard Total International Stock Index Fund ETF Shares	International Equity	Foreign Large Blend	398.1 B	0.07%	-1.81
BND	Vanguard Total Bond Market Index Fund ETF Shares	Taxable Bond	Intermediate Core Bond	316.3 B	0.03%	-0.20



Three Key Takeaways

1. Stocks offer a way to own a piece of a company and financially benefit from the company's future cashflows.
2. Accurately forecasting discounted future cashflows is one way to evaluate the fundamental value of a company.
3. Mutual funds and ETFs allow investors to conveniently buy diversified mixes of investments.



Where to Learn More

- [Investopedia Stock Market Simulator](#) by Investopedia
- [The Intelligent Investor: The Definitive Book on Value Investing](#) by Benjamin Graham
- [Ultimate Investment Guide and Stock Market for Teens: Money Management, Maker, Saving, Budgeting, and Investing Skills for Financial Teenager's Freedom](#) by Samantha Parker