Course background information

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GOIZUETA
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Main categories of “traditional” investments

The main categories of traditional investments are:

- Treasury securities (Treasuries).
    - Obligations of the United States government.
- Corporate bonds.
    - Senior obligations of public corporations.
- Corporate equities (the stock market).
    - Junior obligations of public corporations.

Other investment categories are “alternatives.”

- Real estate, private equity, derivatives, commodities, Bitcoin, ...

Note: This is a common classification, but it is not a universal standard. For example, some people regard real estate as a “traditional” investment.

Treasuries

Important as the “safe” component of most portfolios, because there is very little risk of outright default.

- Though, to be clear, they are only safe in nominal terms.
- Like any investment, their real return depends on inflation.

Different names correspond with different maturities:

- Treasury bill: One year maturity or less; no coupon.
- Treasury note: Two to ten years maturity.
- Treasury bond: More than ten years maturity.

Notes and bonds pay semiannual coupons.

Primary market: Auctions that happen almost every day.
Secondary market: Mainly over-the-counter.

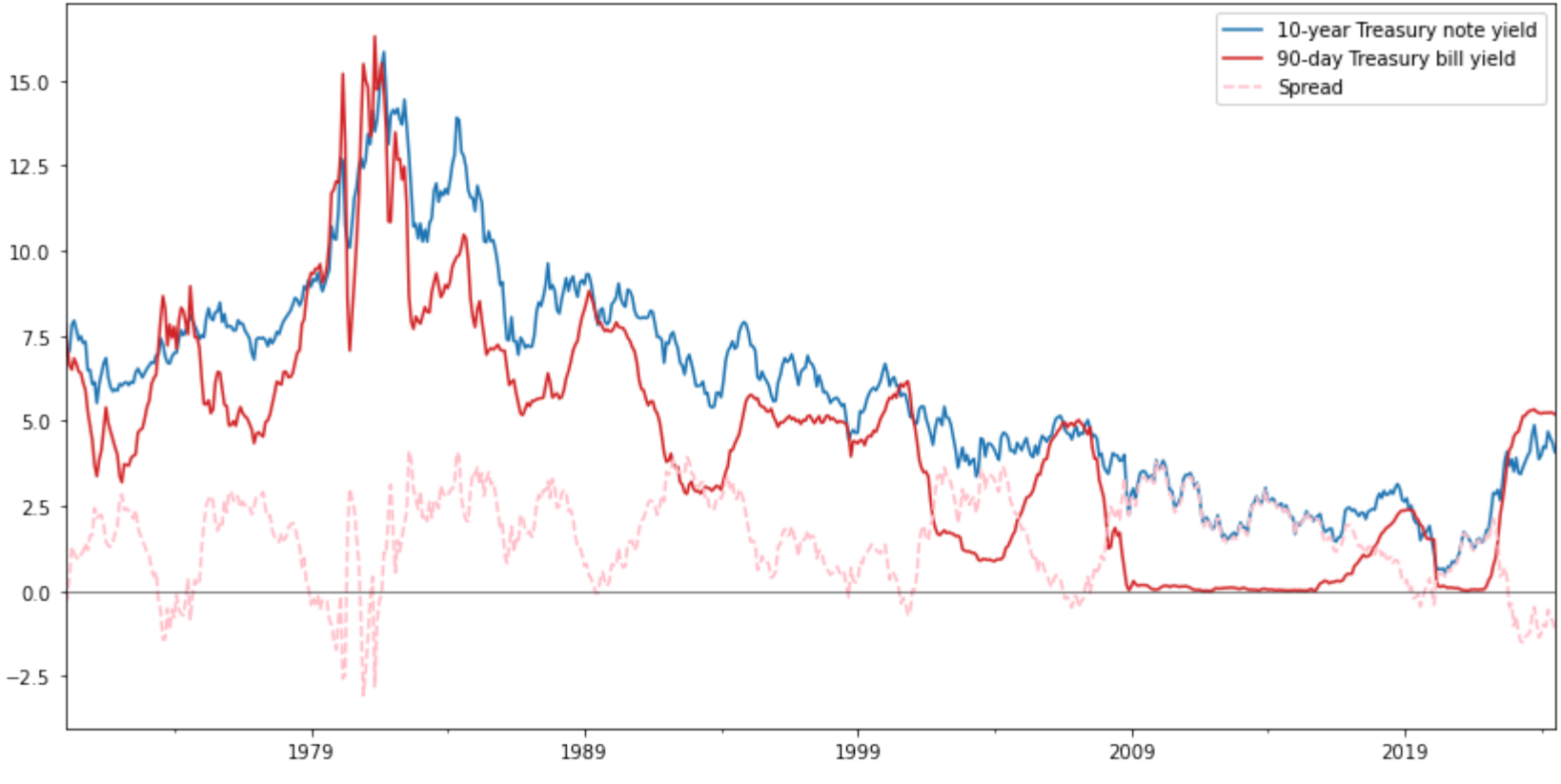
Treasury yields

Like most bonds, Treasuries are not quoted in terms of price, but rather in terms of their yield to maturity.

- This is the annualized rate of return you will get if you buy the bond at the current price and hold it to maturity.
- If you know the price, you can calculate the yield to maturity, and vice versa, using DCF formulas (see week 4).
- These yields are risk-free (nominal) rates of return, and can be used as a benchmark for all other investments.
- These risk-free rates change every day! They are much lower today than they were in the past.

History of Treasury yields and the term spread

Corresponds to textbook Figure 15.6. Click here to see the most recent version.



The yield curve

Even at one point in time, there are multiple risk-free rates, as each maturity of Treasuries sells for a different price.

Previous figure: The 3m rate has followed the same downward trend as the 10-year rate, but is much more volatile.

Next figure: Snapshot of rates set at auction during Aug 2021.

The *yield curve* is a plot of yields against maturities.

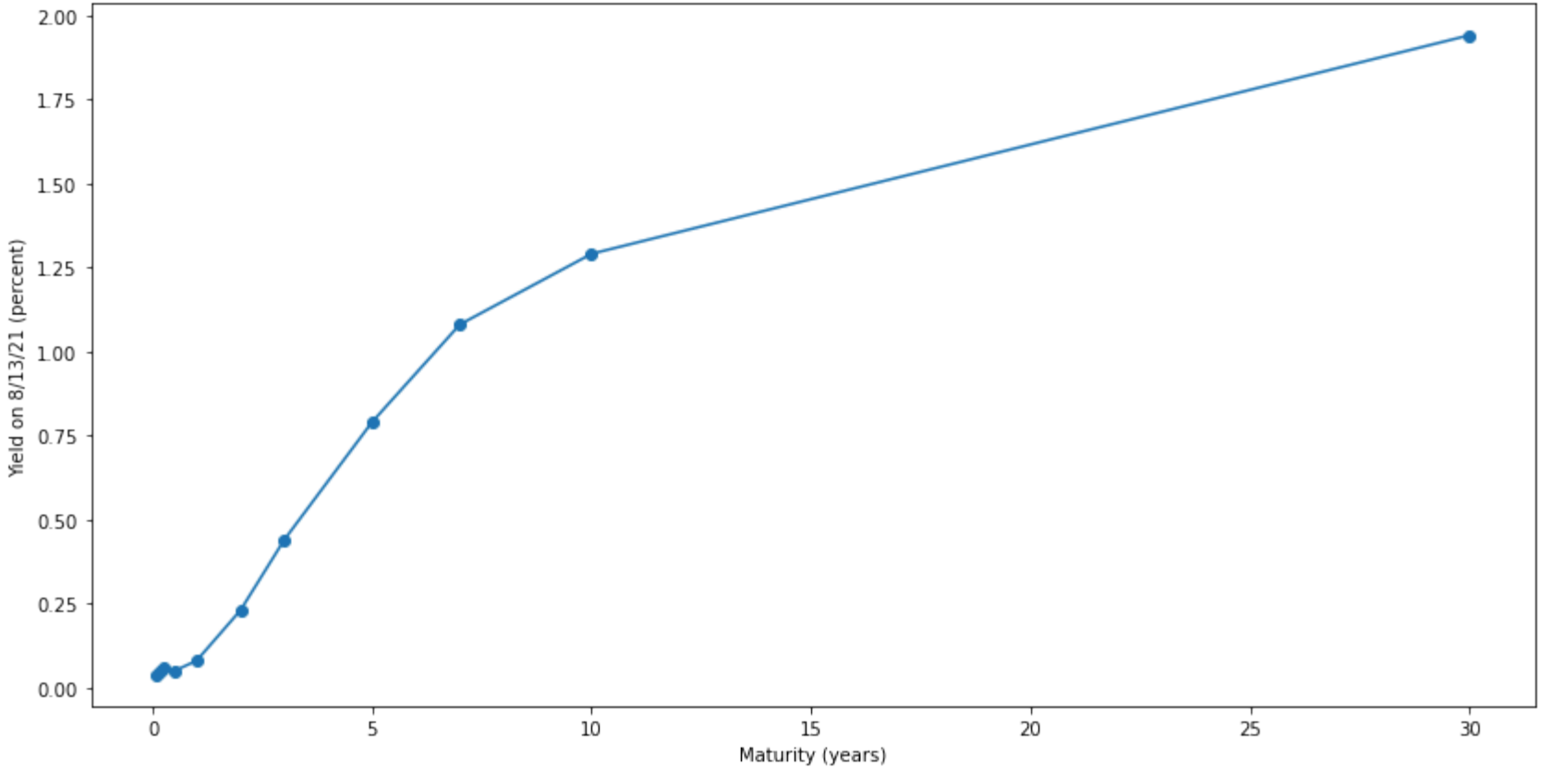
The typical pattern is that longer maturities have higher yields. When this pattern reverses, we say the yield curve is "inverted."

Treasury yields from August 2021 from treasury.gov

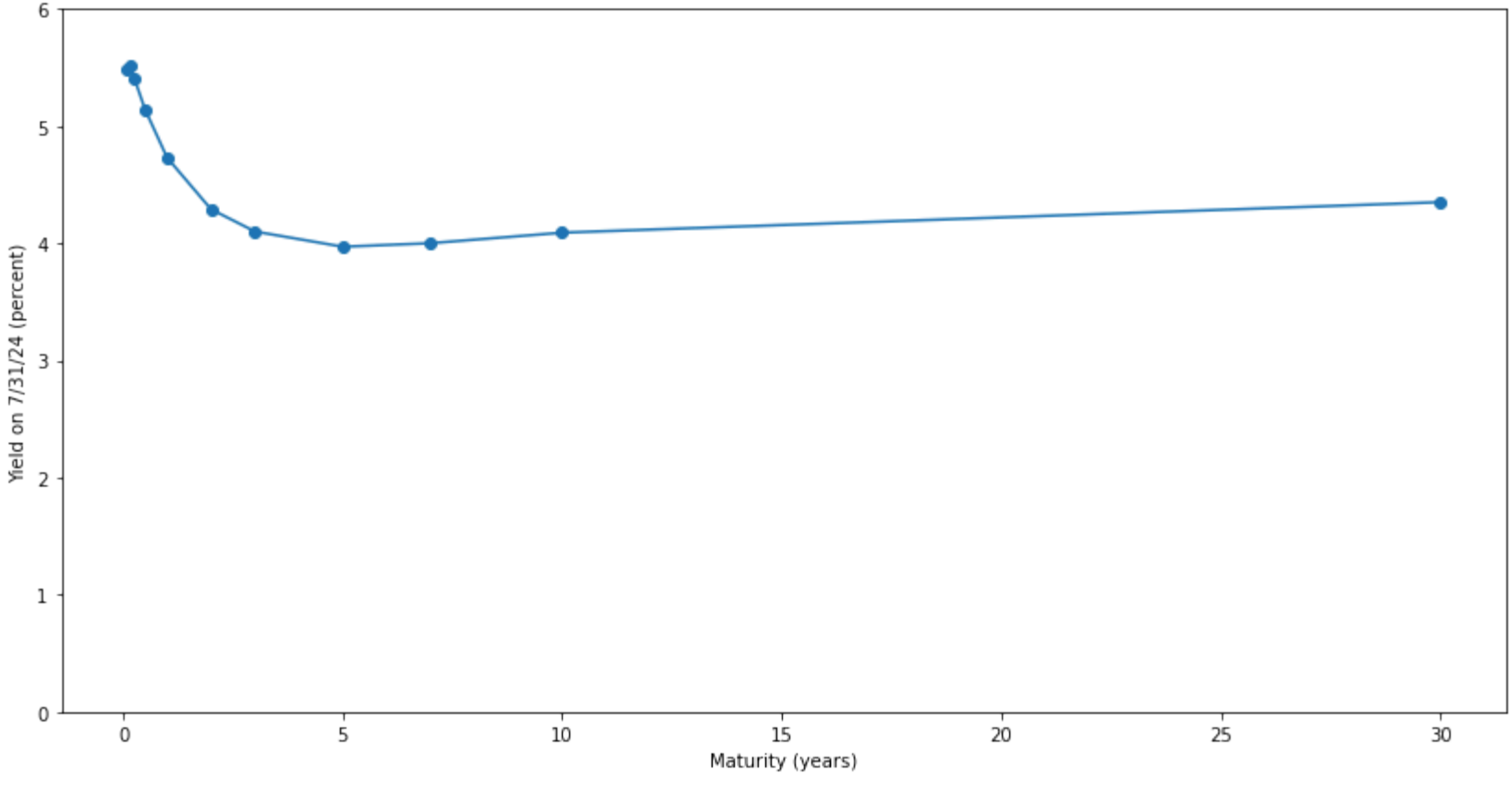
Date	1Month	2Month	3Month	6Month	1Year	2Year	3Year	5Year	7Year	10Year	30Y
2021-08-02	0.05	0.05	0.05	0.06	0.07	0.17	0.33	0.66	0.96	1.20	1
2021-08-03	0.05	0.05	0.05	0.06	0.07	0.17	0.33	0.65	0.95	1.19	1
2021-08-04	0.05	0.05	0.05	0.05	0.07	0.17	0.34	0.67	0.96	1.19	1
2021-08-05	0.05	0.05	0.05	0.06	0.08	0.21	0.38	0.72	1.01	1.23	1
2021-08-06	0.04	0.05	0.06	0.06	0.09	0.21	0.42	0.77	1.07	1.31	1

Yield curve, August 13 2021

Plotting just the numbers from the last row of the previous table



”Inverted” yield curve, July 31 2024



What does an inverted yield curve mean?

A common perspective (called the “expectations hypothesis”) is that, when the yield curve inverts, the market is predicting interest rates to fall between the short and long dates.

The argument is that otherwise, no one would hold the long-maturity bond. You would be better off buying the short-maturity bond at higher yield, then rolling it over.

Because the Fed often cuts rates sharply to fight recessions, many people further conclude that an inverted yield curve predicts recessions. But rates can also fall without a recession.

As of 2024, short rates have been unusually high for a long time as part of the Fed's response to inflation. Inflation is now falling quickly, so one could reasonably expect that the Fed will cut rates soon to return them to normal. This would be a reasonable explanation for an inverted yield curve that does not imply a recession will happen.

Corporate bonds: Basic facts

Like Treasuries:

- Semiannual coupon payments until repayment of principal.
- Quoted as yield to maturity, rather than price.

Unlike Treasuries:

- There is a risk of default!
    - This means the stated yield is greater than the expected return.
- Many issuers, and each may have a wide array of bonds.
    - For this reason, the bond market is fragmented and illiquid.

The fragmented secondary market for bonds

Corporate bonds are difficult to buy and sell after issuance:

- Unlike Treasuries, they are risky, so each one must be evaluated carefully when added to a portfolio.
- Unlike corporate equities, there is a large variety of maturities, features, and terms, even for a single issuer.

Most bonds are traded “over the counter” among dealers.

- You place an order with a dealer, who must find a counterparty to take the other side, via a network that exists between them.
- This makes bond mutual funds expensive and risky to manage.

An ongoing puzzle: How to improve liquidity in this market?

- Bond exchanges have never really taken off, but may eventually.
- Bond ETFs are another potential solution, as we will discuss.

The stock market: Basic facts

Just as bonds are a claim to interest and principal payments, stocks are a claim to dividend payments made by the issuer.

But while payments on bonds are a legal obligation, firms are not required to declare or maintain dividends.

Therefore stock is often called the “junior” or “residual” claim.

On the balance sheet, stock represents the “equity” value of the company’s assets, after all liabilities including debt are satisfied. (See further discussion below.)

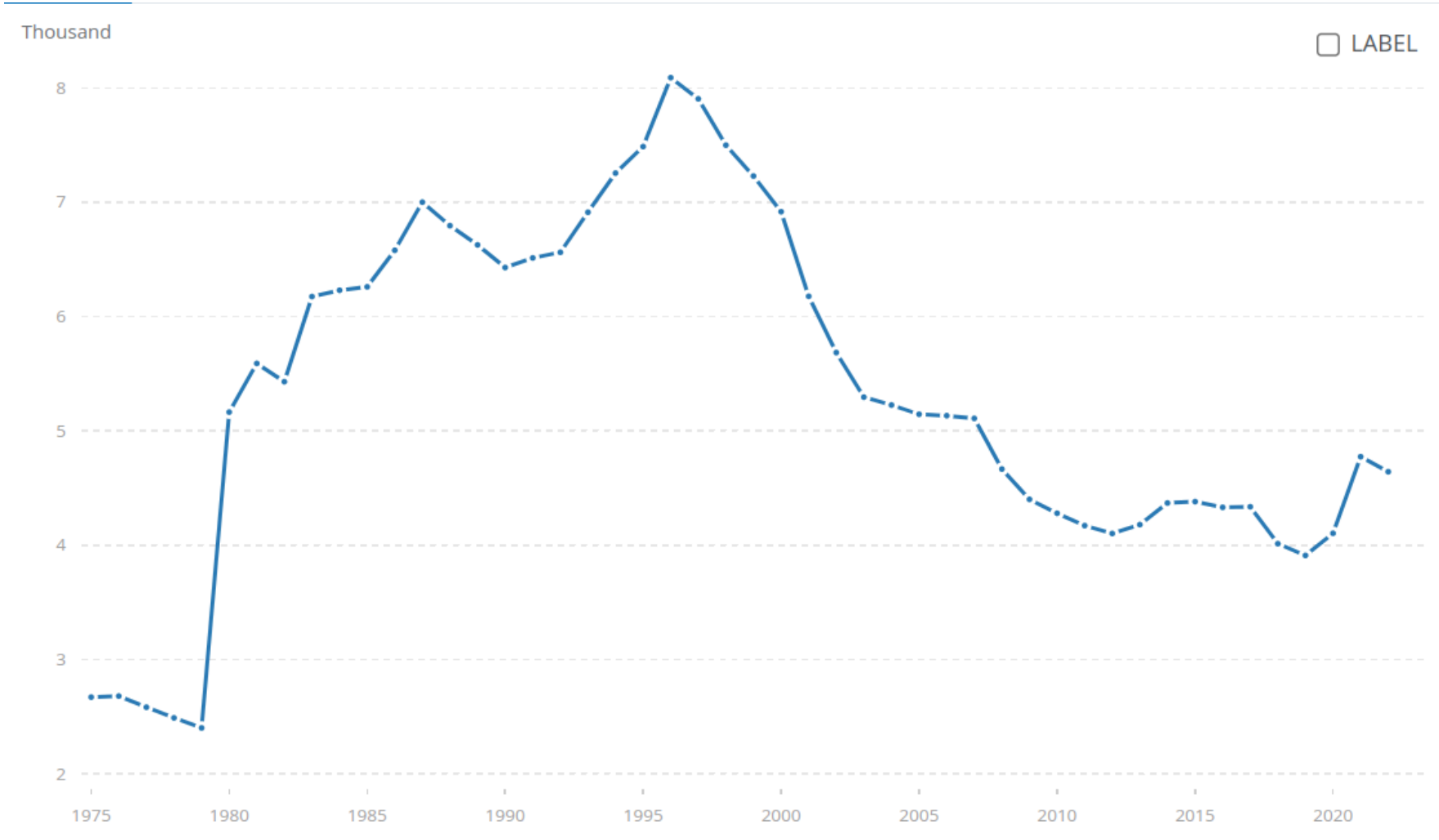
The stock market and the investor’s portfolio

The “stock market” refers to stocks listed on exchanges.

- The companies issuing these stocks must comply with strict disclosure and other requirements mandated by the SEC.
- If they comply, their stock can be sold to the general public.
- Public stocks are the largest component of most investors’ portfolios, and their biggest source of both risk and return. Therefore, this market will be the biggest focus of our class.
- Fortunately, we can also get lots of data about public stocks: Price data from exchanges, financial statements from the SEC.

Stock issued by other companies is called "private equity." This is an important category of “alternative” investment.

How many exchange-traded stocks are there in the US?



Brief overview of trading stocks on an exchange

NYSE and Nasdaq are the two major US stock exchanges. For all practical purposes, trading is electronic on both.

Orders for stocks specify desired quantities at different prices. The exchange adjusts prices to clear as many orders as possible.

The prices you see reported are the prices of recent trades: Someone was willing to buy at that price, someone else was willing to sell, and the exchange cleared both of their orders.

If the value of a stock changes, traders immediately change their orders, and the very next price will be different.

The end result is like a continuous auction throughout the day.

Most importantly, there is no opportunity to trade at old prices, and each price reflects all available information at that point.

Book value of equity

Book value is the value at which something is carried on the firm's balance sheet, following standard accounting practices.

Journal entries will always maintain the key relationship,

$$\text{Assets} = \text{Liabilities} + \text{Equity}$$

Hence, the book value of equity at all times is the book value of assets, minus the book value of liabilities.

Also called "stockholders' equity" or "shareholders' equity."

Home Depot, Inc 10-K, Jan 28 2018

THE HOME DEPOT, INC.
CONSOLIDATED BALANCE SHEETS

in millions, except per share data	January 28, 2018	January 29, 2017
Assets		
Current assets:		
Cash and cash equivalents	$ 3,595	$ 2,538
Receivables, net	1,952	2,029
Merchandise inventories	12,748	12,549
Other current assets	638	608
Total current assets	18,933	17,724
Net property and equipment	22,075	21,914
Goodwill	2,275	2,093
Other assets	1,246	1,235
Total assets	$ 44,529	$ 42,966

Home Depot, Inc 10-K, Jan 28 2018

Liabilities and Stockholders' Equity		
Current liabilities:		
Short-term debt	$ 1,559	$ 710
Accounts payable	7,244	7,000
Accrued salaries and related expenses	1,640	1,484
Sales taxes payable	520	508
Deferred revenue	1,805	1,669
Income taxes payable	54	25
Current installments of long-term debt	1,202	542
Other accrued expenses	2,170	2,195
Total current liabilities	16,194	14,133
Long-term debt, excluding current installments	24,267	22,349
Deferred income taxes	440	296
Other long-term liabilities	2,174	1,855
Total liabilities	43,075	38,633

Home Depot, Inc 10-K, Jan 28 2018

Common stock, par value $0.05; authorized: 10,000 shares; issued: 1,780 shares at January 28, 2018 and 1,776 shares at January 29, 2017	89	88
Paid-in capital	10,192	9,787
Retained earnings	39,935	35,519
Accumulated other comprehensive loss	(566)	(867)
Treasury stock, at cost, 622 shares at January 28, 2018 and 573 shares at January 29, 2017	(48,196)	(40,194)
Total stockholders' equity	1,454	4,333
Total liabilities and stockholders' equity	$ 44,529	$ 42,966

"Treasury stock" reflects shares repurchased in the past.

1.78 billion shares issued - 622 million repurchased = 1.158 billion outstanding.

Book value per share is $1.45 bn / 1.158 bn = $1.25.

Market value of equity

Market value is the price at which something would sell now.

- Equals book value on the date when the asset or liability is created, but will generally be different at any other date.

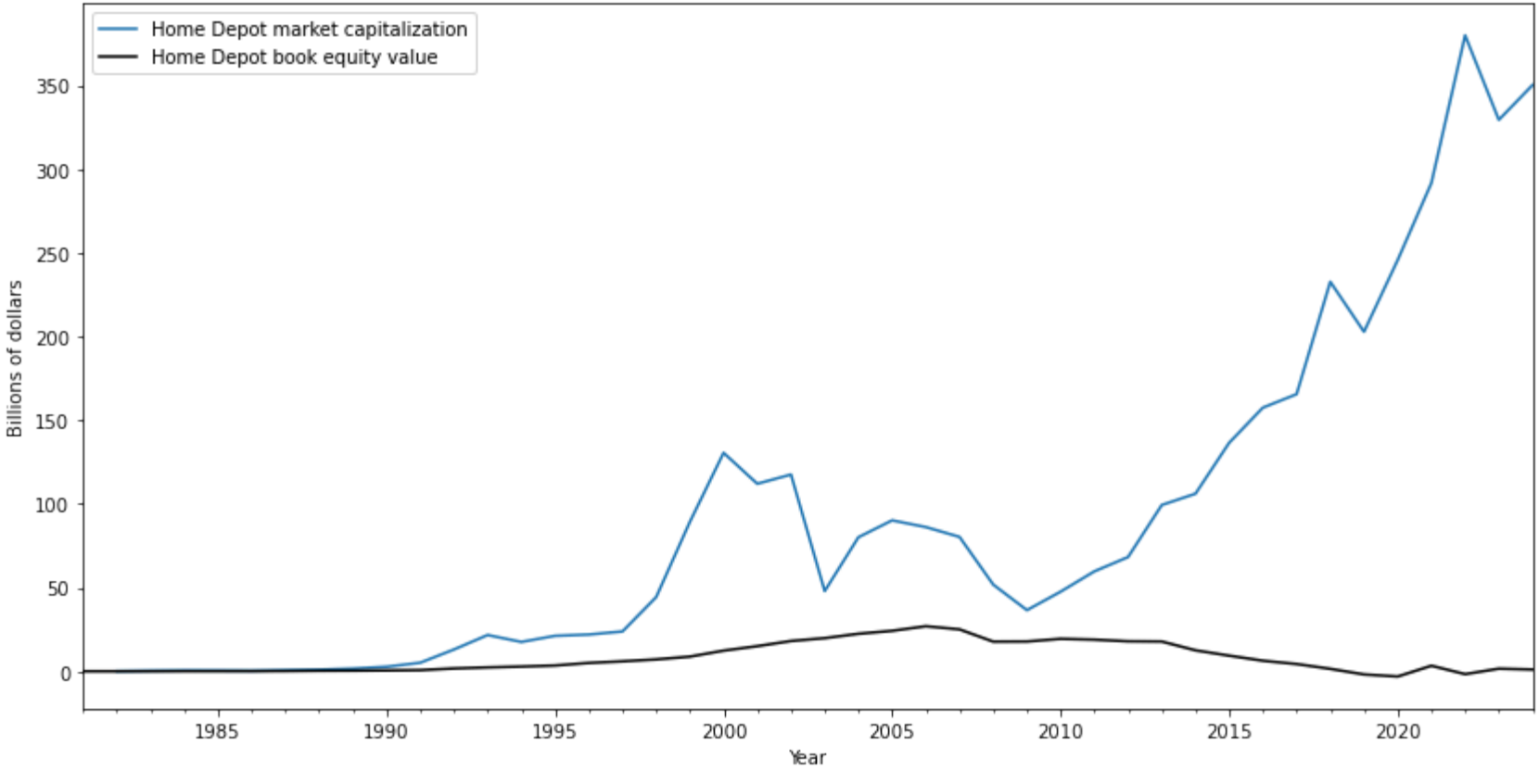
For stocks, the difference can be tremendous:

- In Jan 2018, Home Depot's stock sold for $200 per share.
- Compare with its book value per share of $1.25 that we just calculated!

Market capitalization is the total market value of a firm's stock.

- For Home Depot, this was $200 × 1.158bn = $232bn.
- Again, compare with $1.45bn of book value from earlier.

Market capitalization vs book value of equity for Home Depot



Payout and returns on a single stock

Payout comes in two types: Dividends, and share repurchases.

In either case, book equity and market cap fall by the total amount of the payout, as money moves out of the company.

But the following differences are important:

- Dividends do not change the number of shares outstanding,
  but instead shrink the book value and market price per share,
  by exactly the per-share amount of the dividend.
- Repurchases do not affect the value of an individual share,
  but instead shrink the total amount of shares outstanding.

Individual investors are no better or worse off for any of these differences, except for a tax issue that affects some of them (see next point).

One tax effect worth knowing

We will mostly ignore tax issues, and focus on before-tax returns.

- Taxes are irrelevant for investors with tax-deferred accounts.
- For taxable investors, the exact effects vary greatly depending on the person.

However, one tax issue will come up later in Module 1:

- Capital gains are taxable when realized (when you sell).
- Dividends are taxable when paid, even if you did not want them.
- Thus, dividends can be inconvenient for taxable investors, if paid in a year when the investor has a high income tax bracket.
- This is a major reason behind the trend towards repurchases, and also behind the growth of ETFs.

Measuring individual stock returns

The return on a stock between dates 1 and 2, ignoring taxes, is

$$r = \frac{P_2 + D}{P_1} - 1$$

where D represents all dividends paid between those dates.

Suppose you purchase a stock for $10 in January, the stock pays a dividend of $1 during the following year, and you sell the stock for $12 in December.

$$r = \frac{\$12 + \$1}{\$10} - 1 = 30\%$$

Capital gains and dividend yield

The return calculation from the previous slide has two pieces:

$$r = \underbrace{\frac{P_2}{P_1} - 1}_{\text{Capital gain}} + \underbrace{\frac{D}{P_1}}_{\text{Dividend yield}}$$

Capital gain is the return just from price increases.

Dividend yield is an extra percentage income from dividends.

If the company repurchases stock instead of paying a dividend, then the dividend yield is lower but the capital gain is higher.

Aside from tax effects, there is no reason for an investor to prefer one source of return over the other.

Excess returns

The **excess return** on an investment is its return minus the risk-free rate of return that was available during the same time. A return that is not an excess return is called a **raw return.**

For the risk-free rate of return, we use yields on Treasury securities (see earlier slides).

Specifically, the risk-free return between two dates is the yield *at the first date* on a zero-coupon Treasury security that matures at the second date.

This measures the risk-free return that the investor could have earned as an alternative to any risky investment between the two dates.

In practice there may not be a Treasury security with exactly this maturity, so we have to round or average between different ones.

Note that inflation cancels out of excess returns because it affects both the risky and risk-free investment.

We will frequently focus on excess returns in this course.