

STOCK VALUATION

Chapter 8

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COMMON STOCK & PREFERRED STOCK

COMMON STOCK

COMMON STOCK is a unit of ownership in a public corporation; therefore, STOCKHOLDERS or SHAREHOLDERS are owners of the firm.

These shares are units of *equity* without priority for dividends or a payout during bankruptcy.

COMMON STOCK HOLDERS' RIGHTS

As owners, stockholders are generally entitled to:

1. Voting rights at the firm's Annual Meeting
2. Dividends, *if they are paid*
3. Assets after liabilities are paid in the event of liquidation (residual claimant)
4. **PREEMPTIVE RIGHTS** in some cases to share proportionally in any new stock issuance

THE ANNUAL MEETING & VOTING

Voting for directors happens at a firm's annual meeting, where investors gather to cast their votes, ask questions, and hear management discuss the outlook of the firm.

Alphabet

Let's look at Google's parent company, Alphabet.

VOTING RIGHTS

Votes are generally *one share, one vote*, so larger shareholders can exert more influence. Some DUAL-CLASS SHARE structures offer shares with more than one vote per share, possibly to preserve power for founders.

Voting for Directors:

STRAIGHT VOTING is when a shareholder cannot cast more than one vote per share per director.

CUMULATIVE VOTING is when a shareholder may cast all their votes for a director giving smaller shareholders more power.

VOTING RIGHTS- DIRECTOR EXAMPLE

You own 500 shares and there are 4 directors up for election. With straight voting (the norm), you get can vote up to 500 times for each director. With cumulative, you could vote up to $500 \times 4 = 2000$ for one candidate (forfeiting votes for other candidates), or divide up your vote anyway you'd like.

OTHER VOTE ITEMS

Approving executive compensation (an advisory vote)

Frequency of executive compensation vote

Approving new stock issuance

Auditor approval

VOTING DEFINITIONS AND FEATURES

PROXY: granting the authority to another to vote your shares if you can't make it to the meeting (most voting done this way).

PROXY FIGHT: outside shareholders try to obtain votes via proxy to vote against management.

DUAL CLASS SHARES: Some firms offer multiple classes, with voting power concentrated to a certain class.

Alphabet's Proxy Statement

DIVIDENDS

DIVIDENDS are payments made by a corporation to shareholders, either in cash or more stock.

- 1. Not a liability (can't go bankrupt for not paying)**
- 2. Not a business expense (and thus not tax deductible)**
- 3. Taxable income to shareholders (even though taxes already paid at the corporate level)**

THE DIVIDEND DECISION

Some firms pay dividends; others don't.

1. Retaining earnings can be used to finance growth.
2. Dividends are taxable; capital gains aren't unless realized.

Why would you hold a stock that doesn't pay dividends?

PREFERRED STOCK

PREFERRED SHARES are equity shares with dividend priority over common stock, sometimes without voting rights, and commonly with CUMULATIVE DIVIDENDS.

CUMULATIVE DIVIDENDS require that unpaid dividends be carried forward and paid first to preferred stock holders before any common share dividends are paid. Not a liability.

TO SUMMARIZE

Common stock represents ownership in a firm. Rights include a residual claim to assets and voting ability at annual meetings. Dividends need not be paid and are not a liability, even for preferred shares.

STOCK VALUATION

COMMON STOCK VALUATION

Valuation for common stock can be challenging for three reasons:

1. Cash flows for stocks (the dividends) are not promised like cash flows for bonds (coupons)
2. There is no maturity
3. No easy way to determine the rate of return for discounting

Another issue: we can't always predict what the "future value" will be.

COMMON STOCK VALUATION EXAMPLE

You are considering buying one share of Nike. You forecast that you will be able to sell that share for \$70 in one year's time. Further, Nike is expected to pay a \$10 dividend at the end of the year. You think that the company is relatively risky, so you require a 25% return on this investment.

What is the value of 1 share of Nike?

COMMON STOCK VALUATION EXAMPLE

$$PV = \frac{FV}{(1 + r)^t} = \frac{10 + 70}{(1 + 0.25)^1} = 64$$

With a calculator:

$N = 1, FV = 10 + 70, I/Y = 25, CPT PV = -64$

Therefore, you should pay no more than \$64.

VALUING STOCK CASH FLOWS- 1 PERIOD

We can rewrite the calculation we've done as:

$$P_0 = \frac{(D_1 + P_1)}{(1 + R)}$$

P_0 is the price now, D_1 is the dividend in 1 year, P_1 is the price in 1 year, R is the required return.

$$P_0 = \frac{(D_1 + P_1)}{(1 + R)} = \frac{(10 + 70)}{(1 + 0.25)} = 64$$

VALUING STOCK CASH FLOWS- 2 PERIODS

What if we want to sell after 2 years?

$$P_0 = \frac{D_1 + P_1}{1 + R} = \frac{D_1 + \frac{D_2 + P_2}{1 + R}}{1 + R}$$

Because...

$$P_1 = \frac{D_2 + P_2}{1 + R}$$

VALUING STOCK CASH FLOWS- 2 PERIODS

And...

$$P_0 = \frac{D_1 + P_1}{1 + R} = \frac{D_1 + \frac{D_2 + P_2}{1 + R}}{1 + R} = \frac{D_1}{(1 + R)^1} + \frac{D_2}{(1 + R)^2} + \frac{P_2}{(1 + R)^2}$$

$$P_0 = \frac{D_1}{(1 + R)^1} + \frac{D_2}{(1 + R)^2} + \frac{P_2}{(1 + R)^2}$$

VALUING STOCK CASH FLOWS- MANY PERIODS

Continue to add dividends for each period, pushing back the predicted stock price so far that it hardly has an impact on P_0 .

$$P_0 = \frac{D_1}{(1+R)^1} + \frac{D_2}{(1+R)^2} + \dots + \frac{D_t}{(1+R)^t} + \frac{P_t}{(1+R)^t}$$

$$P_0 = \frac{D_1}{(1+R)^1} + \frac{D_2}{(1+R)^2} + \frac{D_3}{(1+R)^3} + \frac{D_4}{(1+R)^4} \dots$$

$$P_0 = \sum_{t=1}^n \frac{D_t}{(1+R)^t}$$

Therefore, the price of a stock today is equal to the present value of all future dividends.

VALUING STOCK CASH FLOWS- MANY PERIODS EXAMPLE

What is the value of one share of Adidas, given it pays an annual dividend of \$10 and the required return is 15%? Assume Adidas will (1) cease to exist in 30 years, (2) 40 years, (3) 100 years

$$P_0 = \sum_{t=1}^n \frac{D_t}{(1+R)^t}$$

- (1) PMT= 10, I/Y = 15%, N = 30, CPT PV = \$65.67
- (2) PMT= 10, I/Y = 15%, N = 40, CPT PV = \$66.42
- (3) PMT= 10, I/Y = 15%, N = 100, CPT PV = \$66.66

WHAT ABOUT COMPANIES THAT DON'T PAY DIVIDENDS?

From Ross, Westerfield, and Jordan (11th ed, pg. 241):

“When we say that the value of the stock is equal to the present value of the future dividends, we don't rule out the possibility that some number of those dividends are zero. They just can't *all* be zero.”

SPECIAL CASES OF STOCK VALUATION

We have some special cases where we can directly solve for the value of the shares (though, unfortunately, these cases are rare in practice):

1. Dividends are always the same forever (zero growth rate)
2. Dividends grow at a constant rate.
3. Dividends growth is not constant originally, but after some periods becomes constant.

CASE 1: DIVIDENDS WITH ZERO GROWTH

In this case, the dividends are the same in each period, effectively making the stock a *perpetuity*.

$$P_0 = \frac{D}{R}$$

which is analogous to...

$$PV \text{ of a Perpetuity} = \frac{C}{r}$$

CASE 1 EXAMPLE

Starrbuxx Koffee has a policy of paying a \$10 per share dividend every year. If this will continue forever, what is the value of a share assuming you require a return of 20%?

$$P_0 = \frac{D}{R} = \frac{\$10}{0.20} = \$50$$

CASE 2: CONSTANT GROWTH

In this case, the dividends are expected to grow at a constant rate forever.

Using the future value formula, we can find the dividends in each period:

$$D_1 = D_0(1 + g)^1$$

$$D_2 = D_0(1 + g)^2$$

...and so on.

CASE 2: CONSTANT GROWTH

We can plug in these values of D_1 and D_2 into:

$$P_0 = \frac{D_1}{(1+R)^1} + \frac{D_2}{(1+R)^2} + \frac{D_3}{(1+R)^3} + \frac{D_4}{(1+R)^4} \dots$$

$$P_0 = \frac{D_0(1+g)^1}{(1+R)^1} + \frac{D_0(1+g)^2}{(1+R)^2} + \frac{D_0(1+g)^3}{(1+R)^3} + \frac{D_0(1+g)^4}{(1+R)^4} \dots$$

which simplifies to...

$$P_t = \frac{D_{t+1}}{R - g}$$

CASE 2: CONSTANT GROWTH

This is called the dividend growth model.

$$P_t = \frac{D_{t+1}}{R - g}$$

Note that R must be greater than g . The rate of return you require must be greater than the rate at which the dividends grow.

CASE 2 EXAMPLE

Amuhzahn Inc. just paid a dividend of \$2.30. Management believes the company is doing well, so they announce they will pay dividends annually, growing 5% per year indefinitely. Currently, the shares sell at \$36. The required return is 13%. Would you buy these shares?

$$P_t = \frac{D_{t+1}}{R - g}$$

$$P_0 = \frac{D_1}{R - g} = \frac{2.30 \times 1.05}{0.13 - 0.05} = \$30.19$$

You would not buy these shares, because $\$30.19 < \36 .

CASE 2 EXAMPLE CONTINUED

Suppose we want to determine what the price for Amuhzahn shares will be in 5 years.

$$P_t = \frac{D_{t+1}}{R - g}$$

$$P_5 = \frac{D_6}{R - g} = \frac{2.30 \times (1.05)^6}{0.13 - 0.05} = \$38.53$$

CASE 3: NONCONSTANT GROWTH

An example of nonconstant growth would be a firm that is paying no dividends for a period then begins paying at a constant growth rate.

Here, we first calculate the value of the constant growth portion, then discount that value to the present.

CASE 3 EXAMPLE

Faysbuk is a newer company that isn't quite ready to pay dividends. However, in 5 years, you think the company will be confident enough to pay a dividend of \$0.50 per share to grow at 10% indefinitely. What should the price of that share be today? The required return is 20%.

Step 1: Constant growth formula:

$$P_4 = \frac{D_5}{R - g} = \frac{0.50}{0.20 - 0.10} = \$5$$

Step 2: Discount to present:

$$P_0 = \frac{FV}{(1 + r)^t} = \frac{\$5}{1.20^4} = \$2.41$$

CASE 3 EXAMPLE (2)

Hahrlee-Dayvidsin Moeturs will pay a dividend of \$1, then \$2, then \$2.50 for the next three years. At that point, dividends will grow at 5% per year. The required returns is 10%. What is the value of the stock today?

Step 1: Constant growth formula:

$$P_3 = \frac{D_4}{R - g} = \frac{\$2.50 \times 1.05}{0.10 - 0.05} = \$52.50$$

Step 2: Discount to present:

$$P_0 = \frac{D_1}{(1 + R)^1} + \frac{D_2}{(1 + R)^2} + \frac{D_3}{(1 + R)^3} + \frac{P_3}{(1 + R)^3}$$
$$P_0 = \frac{\$1}{(1 + 0.10)^1} + \frac{\$2}{(1 + 0.10)^2} + \frac{\$2.50}{(1 + 0.10)^3} + \frac{\$52.50}{(1 + 0.10)^3} = \$43.88$$

THE REQUIRED RETURN

What about growth in the value of the shares?

The REQUIRED RETURN is the return investors demand to receive before they will commit money to an investment given a level of risk.

A formulaic definition can be found by using the equation of P_0 and solving for the required return:

$$P_0 = \frac{D_1}{R - g} \rightarrow R = \frac{D_1}{P_0} + g$$

D_1/P_0 is the DIVIDEND YIELD

g is the CAPITAL GAINS YIELD

THE REQUIRED RETURN

Thus, the required return consists of the stock's dividend portion and the rate at which the value of the shares are expected to rise.

$$R = \frac{D_1}{P_0} + g$$

USING EPS WHEN NO DIVIDENDS

If the company doesn't pay dividends, we can also consider multiplying some BENCHMARK PE RATIO by the EARNINGS PER SHARE of the company.

$$P_t = \text{Benchmark PE Ratio} \times EPS_t$$

BENCHMARK EXAMPLE

Jinrel Elektrik doesn't pay dividends. It operates in an industry with a median PE ratio of 29x's. Last year, its net income was \$1,240,000 and there were 500,000 shares outstanding. What is your estimate price per share for this company?

$$P_t = \text{Benchmark PE Ratio} \times EPS_t$$

$$P_t = 29 \times \frac{1,240,000}{500,000} = \$71.92$$

Therefore, you may want to buy this share if it is selling in the market for less than \$71.92

TO SUMMARIZE

We consider the value of a share to be the present value of future dividends. Special cases we can calculate include when dividends stay the same, grow at a constant rate, or begin growing at a constant rate in the future. The required return for these calculations includes a dividend and capital gains portion. Finally, we can use benchmarking when dividends are not paid.

THE STOCK MARKET

BASIC TERMINOLOGY

PRIMARY MARKETS: Where companies sell equity shares to raise money.

SECONDARY MARKETS: Where shares are traded among investors.

DEALER: An agent who buys and sells securities from an inventory.

BROKER: An agent who arranges transactions between buyers and sellers and does not hold an inventory.

EXAMPLE

To understand what dealers do, think of a campus bookstore:

If they sell you a new book, this is a *primary* market transaction.

If you buy a used book, this is a *secondary* market transaction, and you pay the store's *ask* price.

If you sell a used book to them, this is a *secondary* market transaction, and you receive the store's *bid* price.

The store makes money by charging more than cost for new books and on the bid-ask spread for used books.

STOCK MARKETS: NYSE AND NASDAQ

NYSE

DESIGNATED MARKET MAKERS (dealers) hold certain stocks and remain at their post auctioning off shares to brokers and maintaining order.

FLOOR BROKERS get a call from the brokerage company (say Merrill-Lynch) to buy a certain number of shares of a company on behalf of a client.

STOCK MARKETS: NYSE AND NASDAQ

NASDAQ

National Association of Securities Dealers Automated Quotations System.

Purely electronic market with no physical location.

A dealer market, where bid and ask prices are posted.

STOCK MARKET INDICES

The Dow Jones Industrial Average and the S&P 500 are popular examples of stock market indices.

These are groups of popular companies, and the performance of the stocks in each INDEX can give us an idea of how the stock market is performing overall.

When the stock market is “up” or “down”, it usually means that the DJIA or the S&P 500 has gone “up” or “down”.

<https://markets.wsj.com/us>

TO SUMMARIZE

The NYSE and NASDAQ are secondary markets where trading of shares takes place. Dealers have an inventory of stocks whereas brokers match buyers and sellers.



TAKEAWAYS

TAKEAWAYS

1. Common stock is an ownership interest in a company that generally comes with voting rights and a residual claim.
2. Dividends don't need to be paid and are not a liability nor tax deductible as interest expense is.
3. Preferred stock has dividend priority over common stock.
4. We determine the value of a share by finding the present value of dividends.
5. The required return has both a dividend yield and capital gains component.
6. The stock market is a secondary market where owners exchange shares.

END.