**Test 2, Lecture 4 Review**

**Stock Valuation**

Determining the Price of Stock in a One-Period Holding Model

* In the one period model, the investor plans to purchase a common stock and hold it for one period

$$PV of any asset=PV of CF^{'}s asset pays investor$$

$$PV=\frac{FV}{(1+r)}$$

$$P\_{0}=\frac{E\left(P\_{1}\right)+D\_{1}}{1+r\_{e}}$$

$P\_{0}$ = Price today

$E\left(P\_{1}\right)$ = Expected selling price in one year

$D\_{1}$ = Dividend paid in one year

$r\_{e}$ = Required return

* The weakness of the one period model is we are assuming a future selling price
* $P\_{0}$ gives the investor his/her intrinsic value (what they believe the stock to be worth) as well as the maximum price he/she would buy the stock for

Determining the Price of Stock in a Multiple-Period Holding Model

* In a multiple period setting, investors will seek to estimate all the cash flows that the stock will generate
	+ The process of finding a stocks price is called fundamental analysis
		- One has to examine fundamental info on the firms operations and management to make accurate estimations of the firms earnings and ultimately its dividends, FV, and r
* Once an investor has estimated all the cash flows, they can then discount (capitalize) all the cash flows to arrive at their personal estimation of the PV of the stock, or their intrinsic value for the stock
* Within a multi-period model, an investor can hold stock for a finite or infinite amount of time

Finite Holding Periods

$$P\_{0}=\frac{D\_{1}}{1+r\_{e}}+\frac{D\_{2}}{(1+r\_{e})^{2}}+…+\frac{D\_{n}+P\_{n}}{(1+r\_{e})^{n}}$$

* This equation above represents an uneven CF stream
* Weaknesses:
	+ Predicting a future selling price
	+ Dividends are hard to predict

Infinite Holding Periods

* Assume that the stock is to be valued as a perpetual stream of dividends
	+ No future selling price is to be considered in the pricing formula
	+ Price = PV of all future dividends
		- Can be in the form of a growing perpetuity or regular perpetuity
* Having infinite holding periods is reasonable to assume because corporations have unlimited life
	+ The problem we run in to is how do we value prices and dividends?
* Since with infinite holding periods, the current price of a stock just capitalizes all future dividends payments…

$$P\_{0}=\frac{D\_{1}}{1+r\_{e}}+\frac{D\_{2}}{(1+r\_{e})^{2}}+…+\frac{D^{\infty }}{(1+r\_{e})^{\infty }}$$

* To get a simpler solution, assume that all dividends grow at a constant annual rate

$$D\_{1}=D\_{0}\*(1+g)$$

$$D\_{2}=D\_{0}\*(1+g)^{2}$$

$$D\_{n}=D\_{0}\*(1+g)^{n}$$

* The above pricing equation can be reduced to an equation known as the Gordon-Growth Model

$$P\_{0}=\frac{D\_{1}}{r\_{e}-g}$$

OR

$$P\_{0}=\frac{D\_{0}\*(1+g)}{r\_{e}-g}$$

The first equation is used when the equation states something along the lines of “gave you the dividends next year.”

The second equation is used when the equation states something along the lines of “gave you the dividend today.”

* Weaknesses:
	+ Constant growth in dividends isn’t realistic
	+ The model price is very sensitive to g

The Market for Common Stock

* There are 3 basic types of stock market transactions:
1. Primary: when an existing public company issues new shares of stock
2. Secondary: when existing shares of stock from public companies are traded
3. IPO: when a private firm issues public shares, or ownership shares
	1. The main reason companies do this is to raise money
	2. We see more IPO’s in a Bull Market (when prices go up)
		1. A Bear Market is when prices go down

The Two-Phase Gordon Growth Model

* While researching a firm, you may be able to arrive at a decent estimate of dividends for a few years into the future. After a certain point, though, your estimates can become uncertain. For this uncertain period, you may want to assume a constant growth rate in dividends.
* Solving Two-Phase:
1. Find the value of all phase 1 dividends (finite, non-constant growth in dividends)
2. Find the value of all dividends beyond phase 1 (infinite, constant growth in dividends)

$$P\_{n}=\frac{D\_{n}\*(1+g)}{r\_{e}-g}$$

1. Find the PV of phase 1 and phase 2
	1. Solve using CF on calculator

Events that can Affect a Stocks Price

* There are a few basic events that can affect a stocks price and therefore effect our basic models
	+ Increase in Net Income
		- An increase in the target net income causes dividends to increase so stock prices increase
	+ Increase in Sales
		- An increase in target sales causes net income to increase so dividends increase and stock prices increase
	+ Risk associated with Stock Increases
		- An increase in risk makes investors seek an increase in return which decreases stock prices
* Firms hold conference calls with analysts every quarter to discuss the previous quarters results and what they see happening for the future

Stock Market Equilibrium

* Required Return ($r\_{t}$) = CAPM 🡪 this is what we should get (our minimum expected return)

$$r\_{t}=r\_{f}+β[E\left(r\_{m}\right)-r\_{f}]$$

* Actual Return = based on current prices 🡪 this is what we will get
	+ Solve for $r\_{e}$ using Gordon Growth Model

$$r\_{e}=\frac{D\_{0}\*(1+g)}{P\_{0}}+g$$

Public Policy

* The Federal Reserve lowered the risk free rate
	+ This caused actual return > required return
		- Stock prices increased
			* \*\*\*People put their money in the stock market when rates go down
			* \*\*\*The Fed influences the value of stock