

WEEK 7 VALUATION THEORIES AND ISSUES-CASH FLOW	4
INTRODUCTION	4
GROWTH AND TERMINAL VALUES	4
A) GROWTH	4
TERMINAL VALUE	5
WHICH CASH FLOW TO USE?	6
MEASURING WEALTH CREATION	6
EXAMINING THE EVIDENCE	7
WEEK 8 ACCOUNTING AND VALUATION	8
P/E RATIO	8
DIVIDEND DISCOUNT MODEL	8
REPLACING EARNINGS WITH DIVIDENDS?	8
VARIATIONS IN PE RATIOS	9
USING PE RATIOS IN PRACTICE	10
DERIVING PE RATIO	10
DCF AND PE APPROACHES	11
ASSUMPTIONS IN PE APPROACH	11
ACCURACY OF PE METHOD	11
RESIDUAL INCOME APPROACH	12
APPLICATION FOR RI	13
WEEK 9 SECURITY ANALYSIS	14
WHAT IS SECURITY ANALYSIS?	14
INVESTOR OBJECTIVES	14
EQUITY SECURITY ANALYSIS AND MARKET EFFICIENCY	15
MARKET EFFICIENCY AND ROLE OF FSA	15
EVIDENCE OF MARKET EFFICIENCY	15
APPROACHES TO FUND MANAGEMENT AND SECURITIES ANALYSIS	16
THE PROCESS OF A COMPREHENSIVE SECURITY ANALYSIS	16
PERFORMANCE OF SECURITY ANALYSTS AND FUND MANAGERS	17
WEEK 10 CREDIT ANALYSIS	19
WHY IS CREDIT RISK ANALYSIS IMPORTANT?	19
RATING AGENCIES	19
WHO IS INTERESTED IN CREDIT ANALYSIS?	19
RISK ANALYSIS	20
PREDICTION OF MARKET FAILURE	22
EXAMPLE OF FAILURE PREDICTION-Z-SCORE	22
DEBT RATINGS	23
WEEK 11 CREDIT RISK AND BANKRUPTCY-AN ADVANCED MODEL	24
MULTIPLE DISCRIMINANT ANALYSIS MODEL (MDA)	24
MULTIVARATE PREDICTION MODEL	24
PROBLEM WITH MDA AND LIMITATIONS	25

LOGISTIC REGRESSION MODEL	25
FUNCTIONAL FORM OF LOGIT MODEL	26
MULTINOMIAL LOGIT DESIGNS	26
PROBIT MODELS	27
BLACK AND SCHOLES OPTION PRICE THEORY – KMV MODEL	27
LIMITATIONS OF KMV MODEL	28
NEUTRAL NETWORKS MODEL	28
CONCLUSION	29
EXAMPLE OF BANKRUPTCY MODEL: FORGE GROUP	29
WEEK 12 MERGERS AND ACQUISITIONS	31
FORMS OF M&A	31
MOTIVATION FOR M&A	32
ACQUISITION PRICING (2 OPTIONS)	33
1. ANALYZING PREMIUM OFFERED TO TARGET SHAREHOLDERS	33
2. ANALYSING VALUE OF THE TARGET TO THE ACQUIRER	34
ACQUISITION FINANCING	35
1. ESTIMATING TAKE OVER COST USING CASH FINANCING	36
2. ESTIMATING TAKEOVER COST USING SHARE FINANCING	37
INDEPENDENT EVALUATION	37
2 CONTROVERSIAL TAKEOVERS: CASE STUDY	37
PREDICTING TAKEOVERS	39
WEEK 13 FINANCIAL POLICY AND FINAL-EXAM BRIEF	40
WHAT IS FINANCIAL POLICY?	40
LINKAGES BETWEEN FSA AND FINANCIAL POLICY	40
THE DEBT/EQUITY TRADE-OFF	41
DIVIDEND POLICY	42
REVISION QUESTIONS	42
EXAM	43
FINANCIAL RATIOS	43
1. PROFITABILITY	43
A) RETURN ON EQUITY (ROE)	43
B) RETURN ON TOTAL ASSETS (ROA)	44
C) RETURN ON CAPITAL EMPLOYED (ROCE)	44
D) NET PROFIT MARGIN	44
E) GROSS PROFIT MARGIN	45
EFFICIENCY	45
A) AVERAGE INVENTORY TURNOVER PERIOD.....	45
B) AVERAGE SETTLEMENT PERIOD FOR ACCOUNTS RECEIVABLE	46
B) AVERAGE SETTLEMENT PERIOD FOR ACCOUNTS PAYABLE.....	46
C) ASSET TURNOVER PERIOD.....	46
LIQUIDITY	47
A) CURRENT RATIOS.....	47
B) ACID TEST RATIO	47
C) CASH FLOW FROM OPERATIONS RATIO	48

FINANCIAL GEARING..... 48
A) GEARING RATIO..... 48
B) INTEREST COVER RATIO..... 48
INVESTMENT RATIOS 49

Week 7 Valuation Theories and Issues-Cash Flow

Introduction

Why use Cash flows?

- Free cash flow is a trustworthy measure that cuts through much of the arbitrariness and "guesstimates" involved in reported earnings
- Cash is the medium of exchange (investors can't spend earnings)
- DCF is that it produces the closest thing to an intrinsic stock value. What we learned in finance: value = f (expected cash flows, discount rate)

Dividend Irrelevance Theory

- Neither the price of firm's stock nor its cost of capital are affected by its dividend policy. According to MM, only the firm's ability to earn money and riskiness of its activity can have an impact on the value of the company.
- MM's dividend-irrelevance theory says that investors can affect their return on a stock regardless of the stock's dividend. E.g. if investor thinks that a company's dividend is too big → buy more stock with the dividend that is over his or her expectations. If dividend is too small → sell some of the company's stock to replicate the cash flow he or she expected. As such, the dividend is irrelevant to investors since they can simulate their own.
- However, this theory is based on some unrealistic assumptions. E.g., income taxes do not exist, no stock flotation or transaction costs, managers and investors have access to same info concerning firm's future prospects, cost of equity not affected by distribution of income between dividend and RE

Firm Value

- Assume stable growth in estimating terminal value – the rate that can be sustained forever after the terminal period....so,
- Firm Value =
$$\sum_{t=1}^{t=n} \frac{\text{Expected cash flow}_t}{(1+r)^t} + \frac{\text{Terminal value}_n}{(1+r)^n}$$

N/B: Estimate **discount rate**: equity valuation => cost of equity; But for firm valuation => use **WACC** (weighted average cost of capital)

3 Components of Cash flow forecasting

1. Determine the length of extraordinary growth period
2. Estimate cash flows in the high growth period
3. Calculate terminal value

Growth and terminal values

a) Growth

3 factors in deciding whether a firm can maintain growth:

- ★ **Size of firm** – small firms are more likely to earn and maintain excess returns relative to larger firms (need to consider market cap as well as room to grow market share)
- ★ **Existing growth rates and excess returns** – momentum matters! Companies with strong earnings momentum likely to continue in next period
- ★ **Magnitude and sustainability of competitive advantages** – the most critical determinant of the high growth period.

- Significant barriers to entry and sustainable competitive advantages mean a firm can maintain high growth for longer periods. Quality of top managers and effective corporate strategies important for growth....

Some examples:

Company	Competitive Advantage	Potential threats	Period
JP Morgan Chase (ROE =11.16%)	Size of firm and range of financial services	Little pricing power; outmaneuvered by smaller and nimbler competitors	No high growth period
Goldman Sachs (ROE = 18.49%)	Investment banking brand name; market know-how and trading expertise	Markets in the US and UK are saturated and volatile	High-growth period of 5 years
Canara Bank (Small Indian Bank) (ROE = 23.22%)	Significant presence in high-growth market (India) with restrictions on new entrants	Ease of bank entry allowing foreign entrants into the market	High-growth period of 10 years
Toyota Motor Corporation (ROE = 10.18%)	Healthiest and most efficient company in a troubled sector; leader in energy-efficient hybrids	Overall growth in auto business slowing and competition increasing from Chinese and Indian automakers	High-growth period of five years
Target (ROE = 9.63%)	“Cool” retailer with good management	In a business that is subject to fads; market in United States can become saturated	High-growth period of five years
ExxonMobile (ROE = 19.73%)	Economies of scale and ownership of undeveloped oil reserve	Oil is a nonrenewable resource and alternative energy sources become more feasible	No high-growth period

Terminal Value

3 ways to find terminal value:

1. Assume liquidation in the terminal year – what can we sell the accumulated assets for at that point?
2. Assume firm is going concern: Apply a **multiple** of earnings, revenues or book value to estimate terminal value (eg. If a firm has generates revenue of 6B 10 years from now, terminal value is 18B if a value-to-sales multiple of 3 is applied.
3. Assume a **constant rate of growth** for cash flows – with stable growth, terminal value can be estimated with a perpetual growth model

The formula

$$\text{Terminal value} = \frac{\text{Cash flow}_{t+1}}{r - g_{\text{stable}}}$$

N/B: Stable growth a very important assumption that can impact on firm value significantly

- *Stable growth vs high growth*
 - Less risk for stable growth

- Stable growth uses more debt
- Stable growth have lower or zero excess returns
- Stable growth firms reinvest less than high growth firms (ie pay dividends)

Which cash flow to use?

Levered FCF

- Cash available to **shareholders** after interest on company debt has been paid out. Basis for dividend payments.
- $FCF_E = \text{Net income} + \text{Depreciation and deferred taxes} - \text{Capital expenditures} \pm \text{Increase/decrease in working capital} \pm \text{Increase/decrease in debt}$.

Unlevered FCF

- Cash available to both debt and equity providers.
- $FCF_{D+E} = \text{Earnings before interest and taxes} \times (1 - \text{tax rate}) + \text{Depreciation and deferred taxes} - \text{Capital expenditures} \pm \text{Increase/decrease in working capital}$

How will the following impact on FCFE and FCFD+E ??

- An increase in accounts receivable, inventory or prepaid expenses?
 - Will cause both FCFE and FCFD+E to decrease, since it increases the firm's cash required for working capital.
- A decrease in gross margins?
 - Will cause both FCFE and FCFD+E to decrease by lowering both EBIT $(1 - \text{tax rate})$ and NI.
- An increase in property, plant, and equipment?
 - Will decrease both FCFE and FCFD+E due to an increase in capital expenditures.
- An increase in bank debt?
 - Will increase FCFE only. The increase in debt increases FCFE by the same amount.

So which is better?

Measuring wealth creation

- Wealth (for shareholders) comes from profitable operations, but what is a "profitable" operation?
 - Can use accounting measures (see De Angelo article). However, profitability is ultimately a comparison of discounted inflows and outflows. This is just the positive NPV equation. i.e., is the realized rate of return in excess of the required rate of return.
- The answer to this question is basically what **Economic Value Added (EVA)** is about. i.e., *after tax operating profit - (WACC x Investment) > 0*

Measuring Wealth Creation: An EVA Example

- After Tax Operating Profit

Operating profit (pre interest)	1756
Tax	-617

After Tax Operating Profit =	1139
- WACC:

Equity	67%	x	14.3%
Debt	33%	x	5.2%
WACC	= 11.3%		
- Capital = 11.3% x 8,000 = 904
- » EVA = 1139 - 904 = \$235

N/B:

- If WACC is applied to (all) capital investments, then "operating profit" is pre-interest (i.e., "profit" available to all invested capital - debt plus equity)
- EVA is based on accrued income.
- EVA is an increment in value, rather than a measure of overall value.
- EVA is a way of measuring strategy, or periodic performance.
- Is EVA "over-hyped"? Contrast the application of EVA internally / externally

Simplification

$$Q \text{ Ratio} = \frac{\text{Market value}}{\text{Replacement cost (of asset)}}$$

- $Q > 1$ implies new investment is positive NPV
- Numerator = PV of business unit (real value of future cash flows).
- Does Q indicate "value" for mature (i.e., old) firms with "high" replacement cost?
- Correlation between Q and market/book is between 0.8 and 0.9.
- Market < book implies a discount relative to capital invested.
- However, market to book is widely criticized because of accounting rules. Book value doesn't "capture" the value of the firm.
 - o How does book value reflect "brands" and other intangibles? asset or expense? valuation method
 - o BUT...The same accounting rules that affect book value also affect income measurements used (?) in "shareholder value" tests (i.e., accounting-based rate of return measures).
- Thought point: What is the relationship between book value and accounting income? What does this imply about the way we should "value" income?

How it works/Example:

For example, let's say Company XYZ has \$40 million of assets, 10 million shares outstanding and a current share price of \$3. Using the formula, we can calculate that Tobin's Q is:

$$\text{Tobin's } Q = (10,000,000 \times \$3) / \$40,000,000 = 0.75$$

James Tobin, a Nobel Prize winner in economics and a professor at Yale University, developed the ratio after hypothesizing that companies should be "worth" what they cost to replace.

Why it Matters:

When the Tobin's Q ratio is between 0 and 1, it costs more to replace a firm's assets than the firm is worth. A Tobin's Q above 1 means that the firm is worth more than the cost of its assets. Because Tobin's premise is that firms should be worth what their assets are worth, anything above 1.0 theoretically indicates that a company is overvalued.

Week 8 Accounting and Valuation

- What are PE ratios?
- Using PEs
- An “Accounting View” of Valuation

P/E ratio

- To ‘value’ earnings, start from:

$$V_t = \sum_{n=1}^t \frac{DPS_t}{(1+r)^t}$$

- Widely use as an ‘ad hoc’ valuation tool
- What drives PE ratios?
 - High risks can drive PE ratio down (Low PE ratio → means company is cheap → more risks → prospects of bankruptcy)
 - Earnings growth can drive PE ratio up.
 - High PE ratio can mean a company is overvalued, but need to consider other factors. Low PE ratio not necessary a good thing (good valuation prospects)
- How is PE related to market-to-book ratio? (MB)
 - Price-to-book value is important. Low PB means book value of the assets are worth many times more what the share price is worth/indicating. Suggests that if the company fails, you might get \$3 back for every \$0.50 of share.
 - MB=all of market capitalization/all of book value of equity. PB=price of share to book value of share. Same concept.
 - High PE ratio will be driven by strong earnings growth. Investors will be willing to pay for higher price because of strong earnings prospects. BUT what drives high PB? Investors are paying premium (more than what is worth on the book). Why? Because they expect (ROE) net income to book to be high in the future.
 - PE is about growth/change of earnings. PB is about the absolute level of earnings (ROE). Not about the change, but the expectation that ROE will be high in the future.

Dividend Discount Model

- Rationale for this model is the present value rule: the value of any asset is the present value of expected future cash flows, discounted at a rate appropriate to the riskiness of the cash flows being discounted.
- **Gordon Growth model** values a firm in “steady state” with dividends growing at rate expected to be stable for the long term:
- Value of share = $\frac{DPS_1}{r-g}$
 - DPS_1 = expected dividends one year from now
 - r = discount rate
 - g = growth rate of dividends forever

Replacing earnings with dividends?

- Since dividends expected to grow forever, other measures of performance including earnings can be assumed to grow at same rate (e.g if dividends grow at 8% forever and earnings at 6%, dividends will outstrip earnings. If