2023 CFA Level 2

Equity Investment

Lecture note

유태인, CFA
yootaein.cfa@gmail.com

Contents

a. Valuation

Intrinsic Value

- Asset Value Given a Complete Understanding of an Asset's Characteristics
- "True" or "Real" Value
- Not Always Equal to Market Price

Asset Mispricing

Efficient Market Theory

- Intrinsic value = Market price

$V_E - P = (V - P) + (V_E - V)$

- Sources of perceived mispricing
  - (V – P) : True mispricing = Market error
  - (V_E – V) : Valuation error = Analyst error

b. Going Concern vs. Liquidation Value

Going concern value

-Firm will continue in its business activities

Liquidation value

-Firm will be dissolved →Firm assets will be sold separately

Going concern value > Liquidation value

-Value added from asset **synergy**

c. Fair Market Value vs Investment Value

Fair Market Value

- Well-informed, willing buyer and seller

Fair Value

- Financial reporting

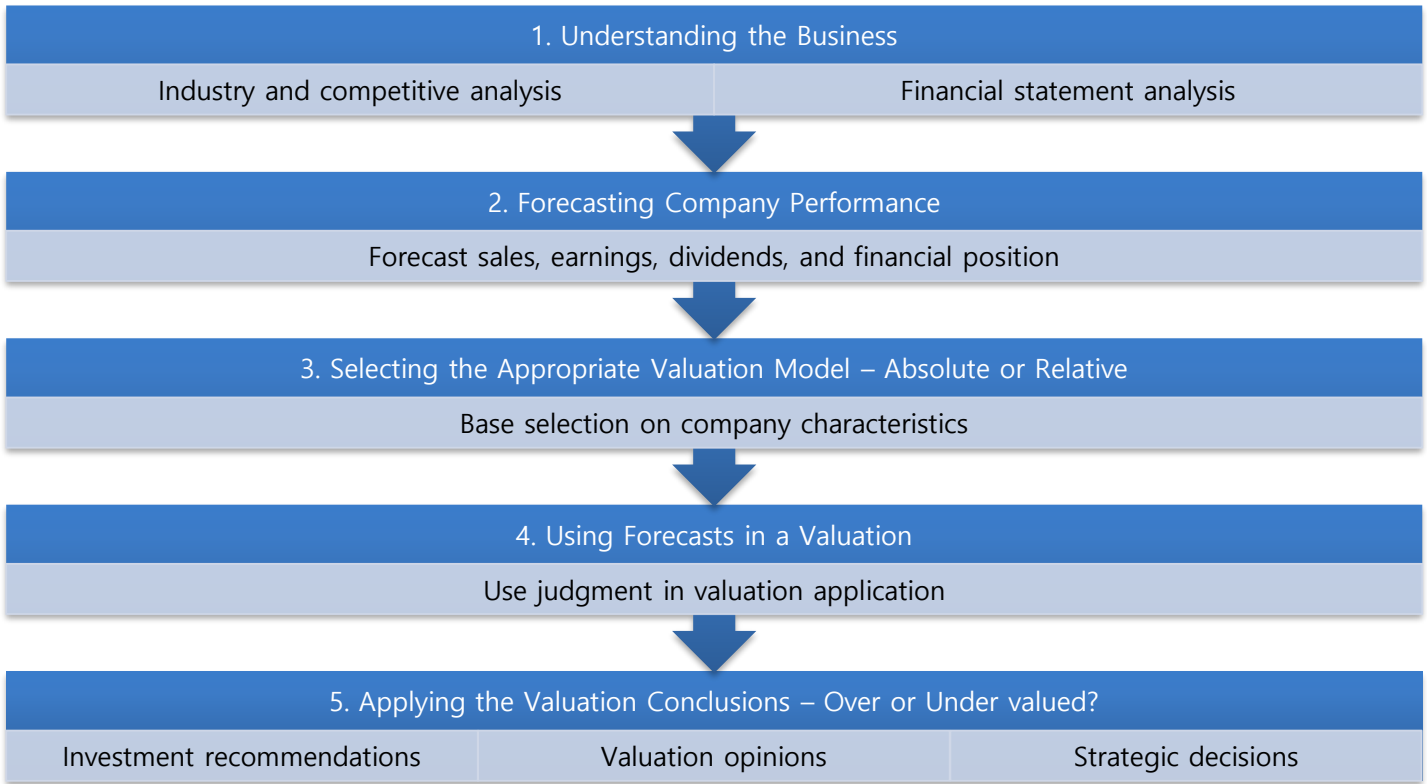
Investment Value

- Value to **specific buyer** - **synergy**

d. Uses of Equity Valuation

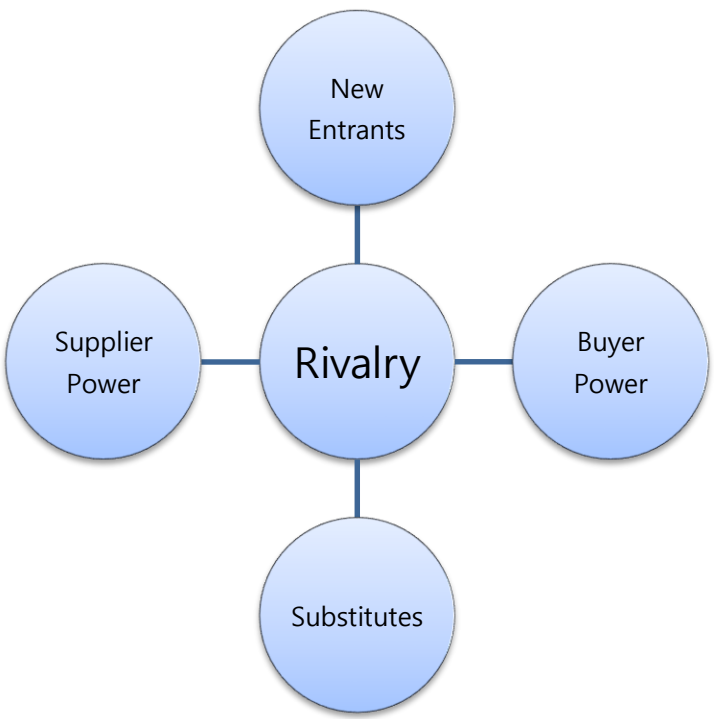
Stock Selection	•Is the stock under- or overvalued?
Inferring Market Expectations	•What does the security price say about expectations?
Evaluating Corporate Events	•What is the effect on firm value from a merger?
Fairness Opinions	•Is the value paid for the firm fair?
Evaluating Business Strategies	•What is the effect on firm value of a new strategy?
Communicating with Analysts and Shareholders	•How is firm value being affected?
Appraising Private Businesses	•What is the value of a private firm?
Compensation	•What is the value of equity compensation?

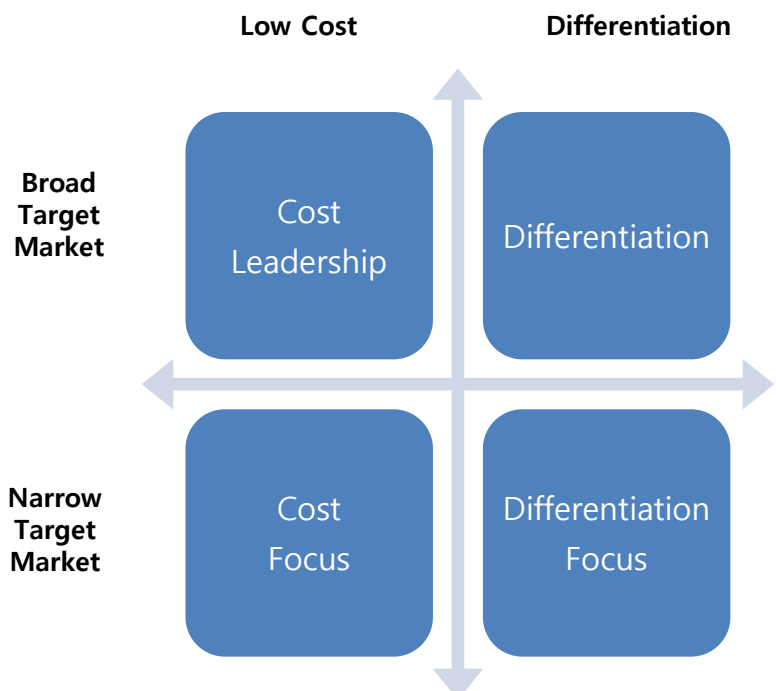
d. Uses of Equity Valuation– The Valuation Process



e. Industry Analysis

Porter's Competitive Advantage





e. Industry Analysis

Quality of Earnings Examples

Case	Example & Potential Interpretation
Rev 과다/조기 인식	- Firm A recognizes revenue early using bill-and-hold sales - Potentially poor underlying performance, reported income ⇑, and future income ⇓
Exp 과소/지연 인식	- Firm B capitalizes product development expenses - Potentially poor underlying performance, reported income ⇑, and future income ⇓
영업↔영업외 항목 변경	- Rev : Non-Operating → Operating - Exp : Operating → Non-Operating
Off-B/S	- Firm C has large amounts of off-balance-sheet financing - Liabilities are understated
회계추정의 변경	- Firm D increases its loan-loss reserves - Current income ⇓ so as to inflate future performance

f. Valuation Models

Absolute Valuation Models	Relative Valuation Models
•**Present value models : V = PV of future CFs**	•**Price** multiples
•Dividend discount models	•Price-to-earnings ratio
•Free cash flow to equity	•Price-to-book-value ratio
•Free cash flow to the firm	•Price-to-cash-flow ratio
•Residual income	•**Enterprise value** multiples
•**Asset-based models : Liquidation, Natural Resources**	

g. Sum-of-the-parts Valuation

- value a firm as the sum of its individual operating segments
- conglomerate discount : conglomerates can be inefficient and poorly managed
  - Internal Capital Inefficiency
  - Endogenous factors
  - Research measurement error

h. Selecting appropriate model

What are the characteristics of the company?

What is the availability and quality of data?

What is the purpose of the valuation?

a. Compare Dividend / FCF/ Residual Income

	Strengths	Weakness
Dividend discount model	이론적으로 우수 Less volatile	배당 없는 회사 적용 불가 소액주주 관점
Free cash flow model	배당정책/자본구조와 무관하게 사용 가능 지배주주 관점	CAPEX↑→ (-)FCF면 적용 어려움
Residual income model	배당 없거나 (-)FCF 상황에도 적용 가능	투명한 회계처리 전제

Choice of Discounted Cash Flow Models

Dividend discount model	History of dividend payments
	Dividends related to earnings
	Noncontrolling perspective
Free cash flow model	Small or zero dividends
	Positive cash flow related to earning
	Controlling perspective
Residual income model	Small or zero dividends
	Negative free cash flow
	High quality accounting disclosures

b. DDM → c. GGM

GGM : $V_0 = \frac{D_1}{r - g}$

d. preferred stock

$$V_0 = \frac{D_p}{r_p}$$

e. GGM strengths & limitations

Strengths	Simple and applicable to stable, mature firms
	Can be applied to entire markets
	g can be estimated using macro data
	Can be applied to firms that repurchase stock
Limitations	Not applicable to non-dividend-paying firms
	g must be constant
	Stock value is very sensitive to $r - g$
	Most firms have nonconstant growth in dividends

f. Implied growth rate

- Price, r, D_0가 주어졌을 때 투자자들이 생각하는 "g"

$$V_0 = P = \frac{D_0(1+g)}{r-g}$$

3가지 변수를 알면 g 역산

g. PVGO

Stock value
- (1) No growth value
- (2) PVGO

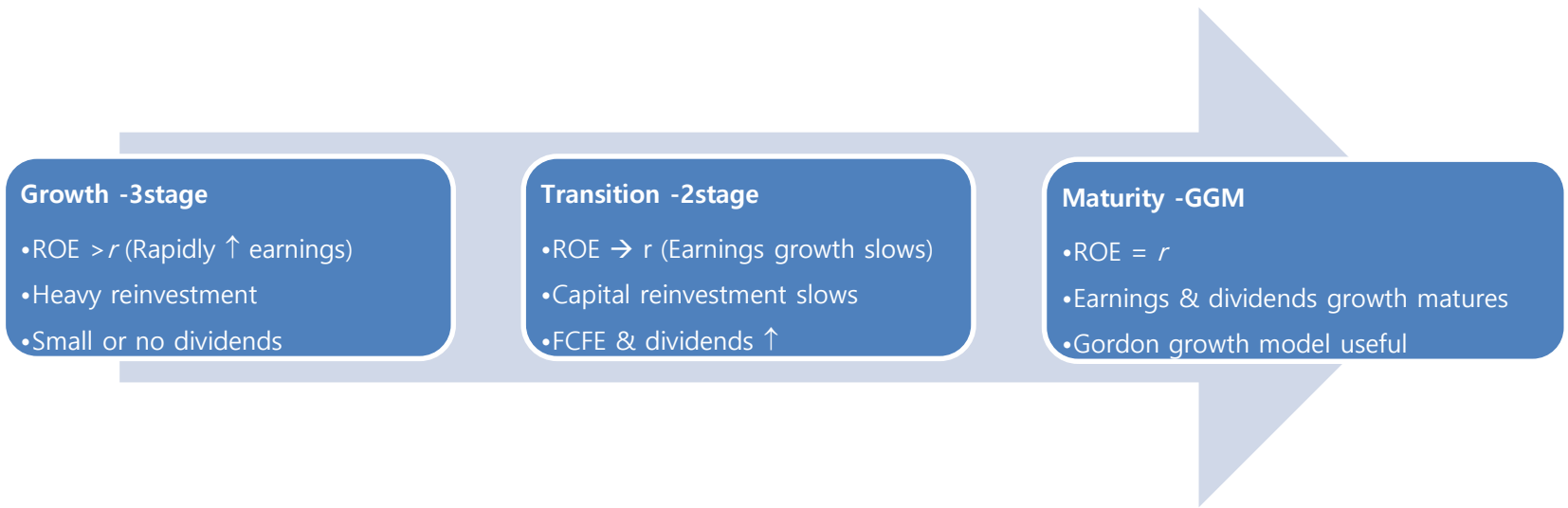
$$V_0 = \frac{E_1}{r} + PVGO \Rightarrow PVGO = P_0 - \frac{E_1}{r}$$

h. Justified P/E

$$* \text{Justified leading } P_0/E_1 = \frac{D_1/E_1}{r-g} = \frac{1-b}{r-g}$$

$$* \text{Justified trailing } P_0/E_0 = \frac{D_0(1+g)/E_0}{r-g} = \frac{(D_0/E_0)(1+g)}{r-g} = \frac{(1-b)(1+g)}{r-g}$$

k. Growth / transition / mature phase



l. 2stage / H-model / 3Stage DDM

m. Terminal Value

- DCF(GGM) : $TV_{10} = \frac{D_{11}}{r-g}$
- Multiple : $TV_{10} = \frac{P}{E_{10}} \times E_{10}$

n. Calculate Value

H-Model : $V_0 = \dfrac{[D_0 \times (1+g_L)]+[D_0 \times H(g_S - g_L)]}{r - g_L}$

o. Spreadsheet modeling

i. Required return using DDM

$* r = \dfrac{D_1}{P_0} + g$

$* r = \dfrac{D_0}{P_0}[(1+g_L)+H(g_S - g_L)] + g_L$

p. Sustainable growth rate

- g = b × ROE

$$ROE = \left(\frac{\text{Net Income}}{\text{Sales}}\right) \times \left(\frac{\text{Sales}}{\text{Total Asset}}\right) \times \left(\frac{\text{Total Asset}}{\text{Equity}}\right)$$

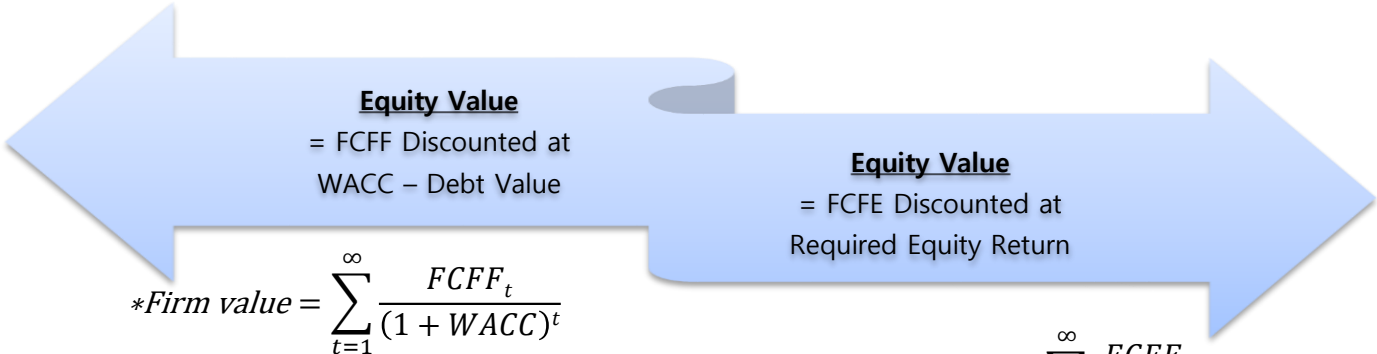
- PRAT model

$$g = \left(\frac{\text{Net Income} - \text{Dividends}}{\text{Net Income}}\right) \times \left(\frac{\text{Net Income}}{\text{Sales}}\right) \times \left(\frac{\text{Sales}}{\text{Total Asset}}\right) \times \left(\frac{\text{Total Asset}}{\text{Equity}}\right)$$

j. Decision making

- Market price > Model(DDM) Price ➔ Overvalued
- Market price = Model(DDM) Price ➔ Fairly valued
- Market price < Model(DDM) Price ➔ Undervalued

a. FCFF vs FCFE



- If capital structure is stable, Use FCFE
- If negative FCFE or high/changing debt levels, Use FCFF

b. FCF – Ownership perspective

- FCF : Control perspective
- DDM : Minority owner

c. FCFF/FCFE formula

$$*FCFF = NI + NCC + Int(1-t) - WCIn_v - FCIn_v$$
$$*FCFE = FCFF - Int(1-t) + Net\ Borrowings$$

- NCC

Non Cash Items	Adjustment to NI	Note
Dep & Amor	Add	
Restructuring charge provisioning(reversal)	Add(Substract)	Include Other non cash items – impairment…
Gains(Losses) on Asset sale	Substract(Add)	
Amortization of bond discount(premium)	Add(Substract)	
Tax - DTL↑ (DTA↑)	Add(Substract)	Only unlikely to reverse

- Int(1-t)
  - Treat Preferred stock dividend just like interest exp, except Dp is not tax deductible

c. FCFF/FCFE formula

- WC investment
  - WC = operating asset – operating liabilities
  - Exclued cash, interest bearing asset/lia
  - Increase(decrease) in assets is an outflow of cash. Increase(decrease) in liabilities is a source of cash.

- FC investment
  - **고정자산매각 없을 경우** : FCI = CAPEX = ΔGross PPE = ΔNet fixed asset(End net PPE – Beg net PPE) + dep
  - **고정자산매각 있을 경우** : FCI = CAPEX – proceeds from assets sale = ΔNet fixed asset + dep – gain on sale(+loss on sale)

- Net Borrowings
  - Treat Preferred stock just like debt

c. FCFF/FCFE formula

$$
\begin{aligned}
*FCFF &= NI + NCC + Int(1-t) - WC_{Inv} - FC_{Inv} \\
&= EBIT(1-t) + dep - WC_{Inv} - FC_{Inv} \\
&= EBITDA(1-t) + t \cdot dep - WC_{Inv} - FC_{Inv} \\
&= CFO + Int(1-t) - FC_{Inv}
\end{aligned}
$$

$$
\begin{aligned}
*FCFE &= FCFF - Int(1-t) + Net\ Borrowings \\
&= NI + NCC - WC_{Inv} - FC_{Inv} + Net\ Borrowings \\
&= CFO - FC_{Inv} + Net\ Borrowings \\
&= NI - (1-DR)(FC_{Inv} - dep) - (1-DR)(WC_{Inv})
\end{aligned}
$$

d. FCFF/FCFE calculation

e. Forecasting FCFF/FCFE

- Historical FCF → calculate growth rate → apply growth rate : $FCF_n = FCF_0(1+g)^n$
- Forecast component of FCF : forecast each component of FCF – NI, WC_I, FC_I, NCC
- Assuming constant capital structure
  - Debt ratio = D/(D+E)
  - FCFE = NI - (FC_I -dep) – WC_I + NB = NI – (1-DR)(FC_I -dep) – (1-DR)WC_I

f. Effect of financing decisions on FCF

- Dividend : no effect on FCFF/FCFE
- Share repurchase : no effect on FCFF/FCFE
- Share issue : no effect on FCFF/FCFE
- Leverage change : no effect on FCFF. But, minor effect on FCFE
  - If debt↑ → current year NB ↑ → FCFE ↑. Future NB ↓ / int exp ↑ → FCFE ↓

g. NI → FCFE(control) → Div(minority)

h. NI/EBITDA as proxies for FCFE/FCFF

- NI is poor proxy for FCFE
- EBITDA is poor proxy for FCFF

i. Sensitivity analysis in FCFE/FCFF valuation

- 2 major sources : growth, base year

j. FCF models

- Single stage FCF model

$$*Firm\ value_0 = \frac{FCFF_1}{WACC-g} = \frac{FCFF_0(1+g)}{WACC-g}, \qquad Equity\ value = Firm\ value - MV\ of\ debt$$

$$*Equity\ value_0 = \frac{FCFE_1}{r-g} = \frac{FCFE_0(1+g)}{r-g}$$

- Multi-stage FCF model
  - Base case : 2stage FCF with the GGM for terminal value

k. Estimate value using FCF model

l. Terminal value

- GGM

$$*Termanal\ valuen = \frac{FCFE_{n+1}}{r-g}$$

- Multiple approach

$$*Termanal\ valuen = trailing\frac{P}{E} \times EPS_n,\quad leading\frac{P}{E} \times EPS_{n+1}$$

m. Decision making

- Market price > Model(FCF Model) Price ➔ Overvalued
- Market price = Model(FCF Model) Price ➔ Fairly valued
- Market price < Model(FCF Model) Price ➔ Undervalued

a. Method of comparables vs method of forecasted fundamentals

- Method of comparables : actual P/E vs benchmark(peer group) P/E
- Method of fundamentals : actual P/E vs justified P/E

  - Actual price multiple(P/E...) > Benchmark multiple or Justified multiple ➔ Overvalued
  - Actual price multiple(P/E...) = Benchmark multiple or Justified multiple ➔ Properly valued
  - Actual price multiple(P/E...) < Benchmark multiple or Justified multiple ➔ Undervalued

b. Justified price multiple

- Justified price multiple : What the price multiple should be if the stock is fairly valued

c. Price multiple – rationales & drawbacks → d. calculate & interpret

	Rationales	Drawbacks
P/E	-Earnings is primary determinant -Popular -Empirical research	-Earnings can be negative -Earning : volatile, non-recurring items 포함 -Accounting method – management discretion

$$*Trailing\ P_0/E_0 = \frac{market\ price}{EPS\ last\ 12\ months}, \qquad *Leading\ P_0/E_1 = \frac{market\ price}{Forecast\ EPS\ next\ 12\ months}$$

	Rationales	Drawbacks
P/B	-BV is generally positive -BV is more stable than EPS -Good for firms with Liquid assets(financial firm) -청산회사 평가 시 유용 -Empirical research	-Does not reflect value of intangible, off-BS assets -Asset level/Business model 다른 회사간 비교 어려움 -BV와 MV 괴리 큰 기업간 비교 어려움 (Inflation, technological change 등에 기인) -Different accounting conventions obscure comparability (particularly international)

*BV = (TA–TL–PS)/# of shares

*Adjustment

- 1)Tangible BV, 2)Accounting method 조정, 3)off-BS 항목 고려, 4)BV와 MV 차이 조정

c. Price multiple – rationales & drawbacks → d. calculate & interpret

	Rationales	Drawbacks
P/S	-Sales is always positive -Manipulation 가능성 ↓ -Useful for mature, cyclical and start-up firm -Sales are more stable than EPS -Empirical research	-Sales는 earnings, CF와 관련 ↓ -Cost structure 반영 X -Manipulation 가능성 낮지만 다소 존재
P/CF	-Manipulation 가능성 가장 낮음 -Stable -회계 영향↓ -Empirical research	-NI+dep+amor : noncash revenue와 WC변화 반영X -FCFE : 이론적으로 우수하나, volatile & (-) 가능성 ↑
D/P	-Dividend yield는 total return의 구성요소 -DY가 capital appreciation 보다 risk 적은 항목	-DY는 total return의 일부일 뿐 -현재 배당은 미래 이익의 희생(trade-off)

e. Underlying earnings / Normalized earnings

- Underlying earnings : non-recurring items 제거한 earnings

- Normalized earnings : 경기변동(cyclical components) 영향 제거한 mid-cycle earnings – 2가지 방법
  - Historical Avg.EPS : full business cycle 기간 동안의 평균 EPS
  - Avg.ROE × current BVPS : full business cycle 기간 동안의 평균 ROE에 현재 BV 대응 – net assets size를 감안한 EPS

f. Earnings yield – E/P

- High E/P is cheap, low E/P is expensive

g. Justified multiples ➔ i. calculate

- **Justified P/E**

$$*Leading\ \ P_0/E_1 = \frac{D_1/E_1}{r-g} = \frac{\mathbf{1-b}}{\mathbf{r-g}}$$

$$*Trailing\ P_0/E_0 = \frac{D_0(1+g)/E_0}{r-g} = \frac{(D_0/E_0)(1+g)}{r-g} = \frac{\mathbf{(1-b)\,(1+g)}}{\mathbf{r-g}}$$

- r↑ → P/E↓
- g↑ → P/E↑

g. Justified multiples ➔ i. calculate

- **Justified P/B**

$$V=P=\frac{E_1(1-b)}{r-g}=\frac{B_0\times ROE(1-b)}{r-g}\text{, → 양변 ÷ } B_0 \rightarrow P_0/B_0=\frac{ROE(1-b)}{r-g}=\frac{ROE-ROE*b}{r-g}=\boldsymbol{\frac{ROE-g}{r-g}}$$

- ROE↑ → P/B↑
- (ROE-r)↑ → P/B↑

- **Justified P/S**

$$V=P=\frac{E_0(1-b)(1+g)}{r-g}\text{, → 양변 ÷ } S_0 \rightarrow P_0/S_0=\boldsymbol{\frac{(E_0/S_0)(1-b)(1+g)}{r-g}}=\textbf{profit margin}\times\textbf{trailing P/E}$$

- P.M↑ → P/S↑
- g↑ → P/S↑

- **Justified P/CF**

$$P/CF=\frac{[\frac{FCFE_0\times(1+g)}{r-g}]}{CF}$$

- r↑ → P/CF↓
- g↑ → P/CF↑

- **Justified EV/EBITDA**

$$EV/EBITDA=\frac{[\frac{FCFF_0\times(1+g)}{WACC-g}]}{EBITDA}$$

- g↑ → EV/EBITDA↑
- FCFF↑ → EV/EBITDA↑
- WACC↑ → EV/EBITDA ↓

- **Justified D/P**

$$V=P=\frac{D_0(1+g)}{r-g},\ P_0/D_0=\frac{1+g}{r-g}\text{, → 역수 → } D_0/P_0=\boldsymbol{\frac{r-g}{1+g}}$$

- r↑ → D/P↑
- g↑ → D/P↓

h. Predicted P/E

- Peer그룹의 regression 분석을 통해 적정 P/E 추정
- P/E 결정요소 : payout, volatility(β), growth

I. Valuaton using comparables & m. Decision making

- Target P/E vs Benchmark P/E → watch the fundamentals!
- IF "Target P/E < Benchmark P/E" → 3가지 가능성 : 1)undervalued, 2)Target g↓, 3)Target r↑

- Fed model
  - E/P < 10yr T-bond → overvalued
  - E/P > 10yr T-bond → undervalued

- Yardeni model
  - CEY = CBY – k×LTEG + ε_i,

    where, CEY(current earnings yield), CBY(A rated corp bond yield), k(weighting factor), LTEG(5yr earnings growth rate)

$$*P/E = \frac{1}{CBY - k \times LTEG}$$

- r↑ → P/E↓
- g↑ → P/E↑

j. PEG ratio

$$*PEG\ ratio\ = \frac{P/E}{growth\ rate}$$

k. Terminal value

- Fundamental approach $*TV_n = Justified\ \frac{P}{E_n} \times EPS_n,\ TV_n = Justified\ \frac{P}{E_{n+1}} \times EPS_{n+1}$
- Comparable approach $*TV_n = Benchmark\ \frac{P}{E_n} \times EPS_n,\ TV_n = Benchmark\ \frac{P}{E_{n+1}} \times EPS_{n+1}$

n. Types of cashflow

- NI + dep + amor
- Adjusted CFO
- FCFE = CFO – FC_{inv} + NB
- EBITDA = EBIT + dep + amor

o. EV/EBITDA

- EV = MV of (common stock + preferred stock + debt) + minority interest – cash/Investment
- EBITDA is an earnings flow to both debt and equity holders
- EV/EBITDA ratio provide an indication of total company value, not equity value

Rationales	Drawbacks
-Leverage 다른 회사간 비교에 적합(EBITDA is pre-interest) -Capital intensive business valuation에 적합(control for dep/amor differences) -EBITDA is usually positive when EPS is negative	-Ignore changes in WC investment -Ignore changes in FC investment → FCFF is more closely linked with valuation theory

- Alternatives
  - EV ≈ TIC(= MV of "debt+equity")
  - EBITDA ≈ EBIT / Sales / FCFF

p. International Considerations

- In an international context, using relative valuation based on comps is challenging due to differences in "accounting mehod, cultures, risk, and growth opportunities"
- 다른 국가간 기업 비교 시 P/adjusted CFO, P/FCFF 는 상대적으로 회계기준 영향 ↓, 반면 P/E, P/B 등은 영향↑

q. Momentum indicators

- Unexpected earnings(earnings surprise) = reported EPS – expected EPS
- Standardized Unexpected earnings(SUE) = surprise/σ(surprise)
- Relative strength indicators

r. Measures of central tendency

- Arithmetic mean - outlier 영향↑
- Harmonic mean - small value 영향↑
- Weighed harmonic mean - 가장 ideal

LOS 23 Residual Income Valuation

a. Residual income, EVA/MVA

- RI = NI - $r(cost of equity) $= BV_{t-1} \times \frac{NI}{BV_{t-1}} - BV_{t-1} \times r = BV_{t-1} \times (ROE - r)$
  - ROE>r → +RI → V>BV
  - ROE=r → RI=0 → V=BV
  - ROE<r → -RI → V<BV

- EVA = NOPAT - (WACC×IC) = EBIT(1-t) - $WACC
- MVA = MV of firm – BV of firm

b. Use of RIM

- Managerial effective 측정
- Goodwill impairment 평가
- Equity valuation

c. Calculate value

- RI $= E_t - (r \times B_{t-1}) = B_{t-1} \times (ROE - r)$
- Clean surplus relationship : $B_t = B_{t-1} + E_t - D_t$
- RI approach : Value = BV + PV of all future RI → 주주자본비용 지급 후의 "순액" 개념(주주자본비용 해당분이 BV_0)
- B_0 represents a large portions of value, RIM is less sensitive to TV

$$*Value = B_0 + \frac{RI_1}{(1+r)} + \frac{RI_2}{(1+r)^2} + \cdots = \boldsymbol{B_0} + \sum_{t=1}^{\infty} \frac{\boldsymbol{RI_t}}{(\boldsymbol{1+r})^{\boldsymbol{t}}} \quad \Longleftrightarrow \quad *Value = \frac{FCFE_{1\ or}\ Div_1}{(1+r)} + \frac{FCFE_{2\ or}\ Div_2}{(1+r)^2} + \cdots = \sum_{t=1}^{\infty} \frac{FCFE_{t\ or}\ Div_t}{(\boldsymbol{1+r})^{\boldsymbol{t}}}$$

$$= \sum_{t=1}^{n} \frac{FCFE_{n\ or}\ Div_n}{(1+r)^n} + TV$$

d. Fundamental determinants of RI

- Single stage RIM

$$*V = B_0 + \frac{(ROE - r) \times B_0}{(r-g)} = B_0 + \frac{RI_1}{(r-g)}$$

- Tobin's Q $= \dfrac{MV\ 0f\ (debt + equity)}{(Replacement\ cost\ of\ total\ assets)}$

e. RIM & Justified P/B

$$Justified\ P/B = \frac{ROE-g}{r-g} \rightarrow \text{분자에 } +r-r \rightarrow P/B = 1 + \frac{ROE-r}{r-g} \Longrightarrow V=P = B_0 + \frac{B_0 \times (ROE-r)}{r-g}$$

f. Calculate value using RIM

g. Implied growth rate

h. Continuing RI

- Single stage RIM $*V = B_0 + \frac{(ROE - r) \times B_0}{(r - g)} = B_0 + \frac{RI_1}{(r - g)}$

- Multi stage RIM : V = B0 + PV of high growth RI + PV of CRI(TV) $*V = B_0 + \sum_{t=1}^{T-1} \frac{RI_t}{(1+r)^t} + \frac{RI_T}{(1+r-\omega)(1+r)^{T-1}}$

- Persistence factor ω ($0 \leq \omega \leq 1$)
  - Higher ω factors : 1)low dividend payout(RR↑ →g↑ →ω↑), 2)high RI persistence industry
  - Lower ω factors : 1)high ROE, 2)large nonrecurring items, 3)high accruals

- CRI assumptions

Current level forever(ω=1)	$CRI_{T-1} = \frac{RI_T}{r}$
Drop to zero(ω=0)	$CRI_{T-1} = \frac{RI_T}{(1+r)}$
Decline over time to zero($0 < \omega < 1$)	$CRI_{T-1} = \frac{RI_T}{(1+r-\omega)}$
Decline to a long-run level	$CRI_{T-1} = \frac{RI_T + (PT - B_T)}{(1+r)}$, $PT = P/B_T \times B_T$

i. RIM vs FCF/DDM

j. Strengths & weaknesses

- Strengths
  - Terminal value does not dominate intrinsic value
  - Accounting data usually easy to find
  - Applicable even when cash flows are volatile or without "Div / positive FCF"
  - Focus on economic profitability
- Weaknesses
  - Accounting data can be manipulated
  - Reliance on accounting data requires many adjustments
  - Assumes clean surplus relation holds

k. Accounting Issues

- Clean surplus violations
- Off BS items
- Intangible assets
- Nonrecurring items & aggressive accounting practices
- International considerations

k. Accounting Issues

- Clean surplus violations(OCI items) – BV is correct, NI is not correct
  - F/X translation gain/loss
  - Minimum pension liabilities
  - Unrealized gain/loss for AFS
  - Deferred gain/loss on cash flow hedges
  - Revaluation of PP&E

- Off BS items
  - Operating lease → capitalize
  - Off-BS SPEs → consolidate
  - LIFO→FIFO
  - DTA/DTL → eliminate(only if not expected to reverse)

- Intangible assets
  - Intangible(goodwill) → capitalize. Amortization should be removed prior to computing ROE
  - R&D cost → capitalize(only if productive)

k. Accounting Issues

- Nonrecurring items & aggressive accounting practices
  - Discontinued operation, Accounting changes, Restructuring charges, Unusual & extraordinary items → RI 계산 시 제외
  - Aggressive한 회계처리 조정

- International considerations
  - Reliable earnings forecast?
  - Clean surplus relationship?
  - Poor earnings quality?

a. Public vs Private

Company-Specific Differences

	Private Firms	Public Firms
Life Cycle Stage	Less mature	Later in life cycle
Size	Smaller size → ↑ risk → ↑ risk premiums	Larger and have access to public financing
Ownership Overlap	Managers often have substantial ownership position	Greater external shareholder ownership
Short Term Investor	Long term perspective	Short term View
Quality of Financial Statement	Lower quality of information disclosure → risk ↑ & valuations ↓	↑ pressure to make timely, detailed disclosures
Tax Concern	High	Low
Quality & depth of management	Potentially ↓ quality & depth of management	Greater quality & depth of management

Stock-Specific Differences

	Private Firms	Public Firms
Liquidity	Shares are less liquid → liquidity discount	Greater number of shareholders
Concentration of control	Concentration of control	Share ownership and control are more diffuse
Restriction on marketability	Potential restrictions on sale of shares	Public market for shares

b. Reasons for Private Equity Valuations

Transaction Related

- Private financing
- IPOs
- Acquisitions
- Bankruptcy
- Share-based Compensation

Compliance Related

- Financial reporting
- Tax Purpose

Litigation Related

- Damages
- Lost profits
- Shareholder disputes

d. Private Company Valuation

Income Approach	•DCF : Present value of expected future cash flows or income
Market Approach	•Multiples : Relative valuation
Asset-Based Approach	•Assets minus liabilities

- Non-operating asset : valuation에 포함
- Firm size : Small 비상장사 평가 시 Large cap multiple 사용은 부적절

c. Cash flow estimation issues

- **Normalized Earnings = Reported Earnings + Adjustments**(For nonrecurring, unusual items)
  - Discretionary/tax-motivaed expense : Compensation expense, Personal expense, Use of company asset
  - Real estate : 부동산 nonoperating asset으로 처리, 감가상각 대신 rental expense로 조정, 특수관계인으로부터 리스료는 시가로 조정
  - Others : 회계처리 방법의 차이 조정. 감사(audit) vs 검토(review)
- **Strategic buyer(Synergy 고려) vs Non-strategic buyer**
- **Estimating Cash flow**
  - Cash flow의 불확실성 높다면 → scenario 분석
  - 지배주주 vs 소액주주 : 각각 다른 cash flow 추정
  - Management 추정 vs Analyst 추정 : management의 과다추정 가능성
  - FCFF vs FCFE : FCFF는 재무구조 변화 많을 때 적절(WACC가 r 보다 leverage 변화에 덜 민감)

g. Income Approach: Three Method

1. Free Cash Flow method : 2stage FCF

2. Capitalized Cash Flow method : single stage FCF

3. Excess earnings(Residual Income) method

- Based on an estimate of the value of intangible assets, working capital, and fixed assets
- Intangible asset value : 1)Excess earnings=[earnings-$r on (WC+FC)] → 2)Capitalize
- Firm Value = Tangible(value of WC/FC) + Intangible(PV of future excess earning)

e. Discount Rate adjustment

- Size Premiums : small size → cost ↑
- Higher Cost Debt : Limited availability / Higher operating risk → increased cost of debt
- Discount Rates in an Acquisition Context : Should be consistent with cash flows, not buyer's "lower" cost of capital
- Projection Risk : 추정오류의 가능성(information availability ↓, less experienced manager)→ cost ↑
- Life Cycle stage : early stage, unsystematic(company-specific) risk ↑ → CAPM 적절치 않음

f. Required Rate of Return Models

CAPM-Private에 사용 어려움

- R_f
- B_i×(equity risk premium)

Expanded CAPM

- R_f
- B_i×(equity risk premium)
- Size(Small stock) premium
- Company-specific risk premium

Build-Up Approach

- R_f
- equity risk premium
- Size(Small stock) premium
- Company-specific risk premium
- Industry risk premium

h. Market Approach: Three Methods

- Large private firm : EBIT or EBITDA multiple ex> MVIC/EBITDA
- Small private firm : NI multiple ex>P/E (자산규모 작아 EV multiple 실익 ↓)
- Extremely small private firm : Revenue multiple ex>P/S (아주 작은 회사는 이익 X, 비용도 경영자 discretion)

GPCM(Guideline Public Company)

•상장사 date – 기본적으로 minority 입장→Control Premium이 포함 X

•Control Premium 관련 고려사항 : Strategic vs financial, Cash vs Stock, Industry condition, Reasonableness

GTM(Guideline Transactions)

•최근 M&A data - Based on pricing multiples from the sale of entire companies → Control Premium이 포함

•Control Premium 관련 고려사항 : Strategic vs financial, Cash vs Stock, Contingent consideration, data availability, date of data

PTM(Prior Transaction Method)

•해당 회사 스스로의 과거 거래 data – 소액주주 평가 시 적합

i. Asset based Approach

- The value of ownership is equivalent to the fair value of its assets less the fair value of its liabilities
- **Rarely Used for Going Concerns :** Difficulty in valuing intangible assets
- **Most Appropriate for**
  - Resource firms
  - Financial services firms, Investment companies (real estate investment trusts, closed-end investment companies)
  - Small businesses with limited intangible assets or early stage companies

j. Valuation Discounts/Premiums – Control / Marketability

Lack of Control Discount (DLOC)	•DLOC = 1 – [1/(1 + Control premium)]
Lack of Marketability Discount (DLOM)	•Pre IPO price/Post IPO price 등의 대안 → 실행 어려움
Total Discount	•Total discount= 1-[(1-DLOC)(1-DLOM)]

- **GTM – typically Control → Minority 평가 시 Discount**
- **GPCM - typically Minority → Control 평가 시 Premium**
- **FCF/CCM – control/minority → depends on "cash flow"**