

Equity Securities

TOPIC 1: EQUITY VALUATION PROCESS
(ALL LECTURE SLIDES WITH SOLUTIONS)



Student learning outcomes

- 1.1 Explain how the classic works on stock valuation of Graham and Dodd, and John Burr Williams, as well as Markowitz's and Sharpe's work on portfolio theory, are reflected in equity valuation models.
- 1.2 Define valuation and intrinsic value and explain two possible sources of perceived mispricing.
- 1.3 Explain the going concern assumption, contrast a going concern to a liquidation value concept of value, and identify the definition of value most relevant to public company valuation.
- 1.4 List and discuss the uses of equity valuation.

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Student learning outcomes

- 1.5 Explain the elements of industry and competitive analysis and the importance of evaluating the quality of financial statement information.
- 1.6 Contrast the absolute and relative valuation models and describe examples of each type of model.
- 1.7 Illustrate the broad criteria for choosing an appropriate approach for valuing a particular company.

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References

- CFA Level 2. Vol 4. Reading 32.
- Pinto J.E., E. Henry, T.R. Robinson and D.D. Stowe. (2010). Equity Asset Valuation. (2nd edition) John Wiley & Sons: New Jersey. Chapter 1.



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Outcome 1.2

Definition of valuation

- "... the value of an asset is the present value of its expected return."
[Reilly et al 2003]
- Valuation is the estimation of an asset's value based either on:
 - variables perceived to be related to future investment returns, or,
 - a comparison with similar assets
 [Stowe et al 2007]

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Outcome 1.2

Classic works of valuation

- **Dodd and Graham (1962)** concept of "intrinsic value", which is to be determined independently of the "market price" of the stock
- The most important factor in determining a stock's "intrinsic value" is a forecast of its "earning power"
- Investment opportunities were defined by the identification of a stock with an "intrinsic value" which provides a "margin of safety", i.e. its "market price" is significantly below its "intrinsic value"

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Outcome 1.2

Classic works of valuation

- **John Burr Williams (1938)** introduced a valuation technique called discounting
- Williams proposed that an ordinary share had an "intrinsic value" that could be estimated by calculating the present value of all future dividends per share

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Outcome 1.2

Market value and Intrinsic value

- **Market value:** the value at which a company is priced in the market
- **Intrinsic value:** the value of a company given a hypothetically complete understanding of the company's investment characteristics

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Outcome 1.2

Going concern and liquidation values

- Several valuation perspectives serve as the foundation for the variety of valuation models available to the equity analyst
 - **Going-concern value:** the value of a company based on the assumption that it will maintain its business activities into the foreseeable future
 - **Liquidation value:** the value of a company if it were to be immediately dissolved and its assets were to be sold off individually
 - **Fair market value:** the price at which an asset would change hands between a willing buyer and a willing seller when neither are under any compulsion to trade

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Outcome 1.2

Uses of valuation

- Selecting stocks to buy, hold and sell
- Inferring market expectations based on the current market price of the stock
- Evaluating impact of corporate events on the price of the stock
- Rendering fairness opinions on mergers
- Evaluating impact of business strategies and models on the price of the stock
- Facilitating communications and discussion among company management, shareholders and analysts
- Appraising private companies, such as IPOs

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Outcome 1.2

Alpha

- Alpha is an excess risk-adjusted return or abnormal return
- Managers of active portfolios aim to produce positive alphas
- The role of valuation in achieving this aim is to estimate the intrinsic value of a stock
- If the market price of a stock moves from its current price to equal its intrinsic value within a specified holding period, it will generate a holding period return equal to the difference between the intrinsic value and the current market price, its expected holding period return
- If the expected holding period return is greater than the return an investor requires for this stock with its given risk profile, its required return, then the stock is said to exhibit positive alpha

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Outcome 1.2

Alpha

- Alpha can be estimated ex ante or calculated ex post:

$$\text{Ex Ante Alpha} = \text{Expected Holding Period Return} - \text{Required Return}$$

$$\text{Ex Post Alpha} = \text{Actual Holding Period Return} - \text{Required Return}$$

- Although an analyst may estimate a positive alpha for a stock there is a high degree of uncertainty associated with realising a positive ex ante alpha, no matter how accurate the forecasts and whichever valuation model is selected
- Convergence of the market price to perceived intrinsic value may not happen within the investor's investment horizon, if at all

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Outcome 1.2

Alpha



- As an automotive analyst you are researching Fiat S.p.A. (FIA), a leading Italian-headquartered automotive manufacturer. You have the following data:
 - FIA's current share price is EUR15.895 (closing 22/3/02)
 - Your estimate of FIA's intrinsic value is EUR17.26
 - You expect the mispricing of FIA's shares to be fully corrected over the next 12 months and the price to appreciate a further EUR1.22 per share
 - FIA's dividends are estimated to equal EUR0.61 over the next 12 months
 - You estimate the required rate of return for FIA shares to be 10.6% pa
- Are FIA's shares overvalued, fairly valued or undervalued?
- Calculate FIA's expected 1-year holding period return and alpha.

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Outcome 1.2

Alpha



- As FIA's intrinsic value at EUR17.26 is greater than its market price at EUR15.895, it appears undervalued
- Add the convergence value to the additional price appreciation and the dividend forecast to be paid in the period and divide by the current market price of the stock

$$(EUR1.365 + 1.22 + 0.61) / 15.895 = 0.201 \text{ or } 20.1\%$$
- The expected holding period return less the required rate of return gives an estimate of the stock's alpha

$$20.1 - 10.6 = 9.5\%$$

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Outcome 1.2

Alpha



- As an active investor you have developed forecasts of returns for 3 securities and translated those returns into expected rates of return estimates. You have also estimated the securities' expected return based on both CAPM and Fama-French 3-factor model, as follows:

Security	Exp. Return	CAPM Req. Return	FF Req. Return
Security 1	0.15	0.10	0.12
Security 2	0.07	0.05	0.07
Security 3	0.09	0.12	0.10

- Calculate the ex ante alpha of each security.
- Rank securities by attractiveness using the CAPM.

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Outcome 1.2

Alpha



Security	Exp. Return	CAPM Req. Return	FF Req. Return	Ex Ante Alpha CAPM	Ranking
Security 1	0.15	0.10	0.12	0.15 - 0.10 = 5%	1
Security 2	0.07	0.05	0.07	0.07 - 0.05 = 2%	2
Security 3	0.09	0.12	0.10	0.09 - 0.12 = -3%	3

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Outcome 1.2

Valuation process

- The valuation process can be characterised as a five step process:
 - Understanding the business
 - Forecasting company performance
 - Selecting the appropriate valuation model
 - Converting forecasts to a valuation
 - Making the investment decision to buy, sell or hold

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Understanding the business

- This involves evaluating industry prospects, competitive position and corporate strategies
- Analysts use this information together with financial statement analysis to forecast performance
- Questions asked in this step:
 - How attractive are the industries in which the company operates, in terms of offering prospects for sustained profitability?
 - What is the company's relative competitive position within its industry?
 - What is the company's competitive strategy?
 - How well is the company executing its strategy?

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Outcome 1.2

Forecasting company performance

- Forecasts of sales earnings and financial position are primary inputs to the valuation
- Forecasts are generated via a three step process:
 - Macroeconomic analysis
 - Industry analysis
 - Company analysis

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Outcome 1.2

Selecting appropriate valuation model

- Due to the complexity of valuing equity securities, various techniques have been devised, which may be categorised either as:
 - Absolute valuation
 - Relative valuation models
- The criteria for selecting a valuation model are that the model be:
 - Consistent with the characteristics of the company being valued
 - Appropriate given the availability and quality of data
 - Consistent with the purpose of valuation, including the analyst's ownership perspective

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Outcome 1.2

Absolute valuation models

- Absolute valuation models are models that specify an asset's intrinsic value
- Present value models of equity valuation view the value of common stock as being the present or discounted value of its expected future cash flows
 - Dividend discount models
 - Free cash flow models
 - Residual income models
- The application of present value models to equity valuation involves greater uncertainty than it does for bond valuation

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Relative valuation models

- Relative valuation models specify an asset's value relative to that of another asset, based on the idea that similar assets should sell at similar prices
- Relative valuation is typically implemented using price multiples
 - Price to earnings multiple
 - Price to book multiple
 - Price to sales multiple
 - Price to cash flow multiple
 - Price to EBITDA multiple
 - Dividend yield

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Outcome 1.2

Quality of inputs

- In generating quantitative forecasts, analysts must attempt to use the most appropriate and reliable information
- A key source of financial information is a company's financial statements, the accuracy and degree of detail of which can vary considerably between companies
- Equity analysts will benefit by developing their ability to assess a company's quality of earnings
- Selected quality of earnings indicators include:
 - Recognising revenue early, classifying non-operating as operating income
 - Deferring expense by capitalising expenditures as an asset
 - Use of non-conservative estimates and assumptions
 - Use of special purpose vehicles and off-balance sheet financing

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Outcome 1.2

Quality of inputs

- A selection of risk factors, which if evident in the financial statements might lead an analyst to reduce his/her assessment of the firm's quality of earnings:
 - Poor quality of accounting disclosures, such as segment information, acquisitions, accounting policies and assumptions
 - Existence of related-party transactions
 - Existence of excessive officer, employee or director loans
 - High management or director turnover
 - Material non-audit services performed by audit firm
 - A history of securities law violations or late filings
 - Management pressure to meet debt covenants or earnings expectations

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Outcome 1.2

Quality of inputs

- Livent Inc. (LIV) was a publicly traded theatrical production company that staged a number of smash hits such as Tony-award winning productions of Showboat and Fosse.
- Livent capitalised pre-production costs including expenses for pre-opening advertising, publicity and promotion, set construction, props, costumes and salaries and fees paid to cast and crew during rehearsals.
- The company then amortised these capitalised costs over the expected life of the theatrical production based on anticipated revenues

Does Livent's accounting treatment fairly reflect its position?

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Quality of inputs

- LIV's capitalising of its preproduction costs increased reported earnings and asset values. This is very aggressive accounting due to the uncertainty of revenues from theatrical productions
- EBITDA based on reported earnings would not reflect in any way the preproduction costs. EBITDA is calculated by taking reported earnings and *adding back* items such as amortisation. As a result, debt/EBITDA would be presented as lower, hence less of a concern, when in fact less cash would be available to repay debt

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Outcome 1.2

Converting forecasts to valuations

- Once the appropriate valuation model has been selected and the required variables of the model forecast the model is used to convert the forecast variables into a valuation
- A number of different valuations based on different models might be combined, weighted by the predictive abilities of the respective valuation models, to calculate a composite valuation

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Quantitative and qualitative factors

- Quantitative factors in valuations
 - Factors such as sales volumes, trend growth rate, sales prices, inflation rate, gross margin, depreciation rate, interest rate, tax rate are all quantitative factors in a forecast on which a valuation might be based
- Qualitative factors in valuations
 - A valuation and subsequent decision to buy or sell a stock may also incorporate qualitative factors, such as the analyst's view on the acumen and integrity of the management of the company, as well as the transparency and quality of the company's accounting practices
 - Qualitative factors may be incorporated into the estimation of quantitative factors via adjusting financial statements, forecast financial ratios, risk premiums and the like; however no formal valuation expression can fully capture these factors

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Issues in the interpretation of valuation models

- Estimating a control premium where control of a stock is likely to pass hands to offer holders an extra return for passing control
- Estimating a marketability discount to offer holders an extra return for compensation for the lack of a public market for the shares in the case of a private or unlisted company
- Estimating a liquidity discount to offer holders an extra return for compensation for the lack of liquidity in a low liquidity publicly traded stock

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Making the investment decision

- The valuation you have estimated based on your forecast of company performance and your selected valuation model comprises your estimate of the intrinsic value of the company concerned
- A comparison of the intrinsic value per share of the company with the market price at which the company's shares are trading will allow you to determine whether you buy, sell or hold the shares
 - Buy, if intrinsic value > market value
 - Sell or do not buy, if intrinsic value < market value

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