CHARTA LEARNING · LESSON NOTES

Introduction to equity valuation

CFA Level I · Equity Investments

You will learn: Tell a share's price from its intrinsic value, name the three families of valuation model and what each gains and gives up, value a company from its assets, and explain price to book using return on equity and the cost of equity.

Running example: Examples follow a made-up packaged-food company, Marlow Mills: price $45, expected earnings per share (EPS) $3.20, 20 million shares, book assets $1,000m and liabilities $400m. All figures are teaching numbers, not real data.

1. Price, intrinsic value and mispricing

- Market value is the price at which an asset currently trades; it is observable. Intrinsic value is what the asset is really worth given a complete understanding of its cash flows, risks and future. It can never be seen, only estimated.
- Mispricing = intrinsic value − market value. Price below value: undervalued. Above: overvalued. Equal: fairly valued. A gain if the price meets value is measured on the price paid.
- In a perfectly efficient market the price always equals intrinsic value, so searching adds nothing. An active manager claims gaps exist and can be found. But value is an estimate, so when a model disagrees with the market, either the market is wrong or the model is.
- A gap only means something when it is larger than the typical error of the estimate.

Mispricing = intrinsic value − market value

MARLOW MILLS (EXAMPLES 1 AND 2)

Market price; analyst's intrinsic value		**$45; $56**
Mispricing	56 − 45	**+$11 (undervalued)**
Gain if price meets value	11 ÷ 45	**24.4%**
Three analysts, same day		**$38, $50, $62 (24 dollars apart)**
Analyst B: $50, usually off by $8	50 ± 8	**$42 to $58, so $45 is inside: no signal**

Watch out: Treating intrinsic value as observable; calling a share a bargain when the gap is smaller than the model's typical error.

2. Three families of model: present value

- Present value models (absolute valuation) forecast the cash flows a share gives its owner, such as dividends or free cash flow, and discount them at the required return (also the cost of equity). Multiplier models (relative valuation) apply a peer ratio.
- Asset-based models take the fair value of what the company owns minus what it owes.
- The simplest present value model, the dividend discount model: value = next year's dividend D1 ÷ (r − g), where g is steady dividend growth and r the required return.
- It works only when r is bigger than g, and is very sensitive: a small change in either swings the answer.
- Present value models rest on fundamentals but are sensitive to growth and discount rate and need hard forecasts.

Value today = D1 ÷ (r − g)

MARLOW BY DIVIDENDS (EXAMPLE 3: D1 = $2.00, R = 9%, G = 4%)

Required return minus growth	9% − 4%	**5%**
Intrinsic value	2.00 ÷ 0.05	**$40**
Price minus value	45 − 40	**$5: overvalued**
Sensitivity to growth	g = 5%; g = 6%	**$50; $66.67**

3. Multiplier models

- The price to earnings ratio (P/E) is price ÷ EPS, the price paid per dollar of yearly earnings. A multiplier model multiplies the peers' P/E by this company's EPS to get the price it would have if valued like its peers.
- It is quick, market-based, and compares many companies at once, but it only says whether a share is cheap relative to peers, and the peers may themselves be mispriced.
- Careful analysts use several methods and study where the answers disagree.

P/E = price ÷ EPS; Value = peer P/E × EPS

MARLOW BY ITS PEERS (EXAMPLE 4: EPS $3.20)

Marlow's own P/E	45 ÷ 3.20	**14.1**
Value at the peer median P/E of 15	15 × 3.20	**$48**
If the peers' fair P/E is 12	12 × 3.20	**$38.40**

Watch out: Reading a multiplier valuation as absolute.

4. Asset-based valuation

- Net asset value (NAV) = fair value of assets − fair value of liabilities; divide by shares for NAV per share. Fair value is what an item could be sold for, or a debt settled for, in an ordinary deal between willing parties, not the cost-less-wear figure in the accounts.
- The hard part is finding trustworthy fair values.
- It suits natural resource, property and investment holding companies, financial firms with fair-valued books, companies whose earnings are too uncertain or negative for other methods, and liquidations (a floor under value).
- It is weak where value lies in internally built brands, research, networks and staff: the answer is reliably far below a sensible value, which is information about the method.
- Value sits more on the books for a timber firm or land company (market value only 1.04 times net assets in the lesson's example) than for an app company (36 times).

Net asset value = FV of assets − FV of liabilities; Per share = NAV ÷ shares

MARLOW ($ MILLIONS; EXAMPLES 5 TO 7)

Assets at fair value	1,000 − 120 goodwill − 110 plant + 30 land	**800**
Liabilities at fair value	close to book	**400**
Net asset value; per share	800 − 400; 400 ÷ 20	**400; $20**
Liquidation: sold at 85% of fair value	800 × 85%	**680**
After wind-up costs of 20, then debts	680 − 20 = 660; 660 − 400	**260, or $13 a share**

5. Book value, ROE and price to book

- Book value of equity = assets − liabilities as recorded, mostly at original cost. Market value (market capitalisation) = share price × shares and reflects expectations. They differ because accounting records the past, and self-built intangibles such as brands never enter the books.
- Return on equity (ROE) = net income ÷ book equity (here, opening book equity). Price to book (P/B) = price ÷ book value per share. A ratio of one means the market values the company at book.
- Reinvested profit earns more than the cost of equity (r) gives P/B above one; less gives below one. With steady growth g, justified P/B = (ROE − g) ÷ (r − g); it is exactly one when ROE = r.
- A low P/B is the market's verdict on expected returns, not a bargain by itself. Book misses self-built brands, so P/B misleads for software firms; it is most informative for banks, whose assets are mostly financial and near fair value.

ROE = net income ÷ book equity; P/B = price ÷ book value per share; Justified P/B = (ROE − g) ÷ (r − g)

MARLOW (EXAMPLES 8 AND 9: R = 9%, G = 4%)

Book value per share; P/B	600 ÷ 20; 45 ÷ 30	**$30; 1.50**
Net income; ROE	3.20 × 20 = 64; 64 ÷ 600	**$64m; 10.67%**
Justified P/B	(10.67% − 4%) ÷ (9% − 4%)	**1.33**
Value per share	1.33 × 30	**$40 (the dividend model value)**
Firm A ROE 14% / Firm B ROE 7% (r 10%, g 4%)	10 ÷ 6; 3 ÷ 6	**P/B 1.67 / 0.50**

Key takeaways

- Market value is seen; intrinsic value is estimated. Mispricing = intrinsic value − market value.
- A gap smaller than the model's typical error is not a signal.
- Three families: present value (cash flows), multiplier (peer prices), asset-based (net assets).
- Dividend model: value = D1 ÷ (r − g); r must beat g and inputs swing the value.
- Net asset value is a floor in a liquidation and fails for firms whose value is off the books.
- Justified P/B = (ROE − g) ÷ (r − g); P/B above one means the market expects ROE above the cost of equity.

Quick check

1. Price $60, estimated intrinsic value $72. Verdict and gap as % of price?
   Answer: Undervalued by $12 = 20% of the price.
2. FV assets 500, FV liabilities 300, 10m shares. NAV per share?
   Answer: (500 − 300) ÷ 10 = $20.
3. ROE 12%, cost of equity 10%, growth 4%. Justified P/B?
   Answer: (12 − 4) ÷ (10 − 4) = 1.33, above book.