

CHAPTER 22
**MARKET-BASED VALUA...
ENTERPRISE VALUE MULTIPLES**

1. (A) 11.54.

Explanation

The weighted harmonic mean of the two PE ratios is a harmonic mean which is weighted by the portfolio weights.

$$1/[(0.60 \times 1/10) + (0.40 \times 1/15)] = 11.54$$

(Module 22.4, LOS 22.r)

Related Material

[SchweserNotes - Book 3](#)

2. (B) average ROE over the most recent cycle.

Explanation

The average return on equity normalization method normalizes EPS as the average ROE over the most recent full cycle multiplied by book value per share.

(Module 22.4, LOS 22.e)

Related Material

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At the end of 2x09, Dustin Pedroia, CFA, is writing a report to help advise on a potential corporate takeover. Iliot Inc. is up for sale, and Pedroia's client is considering buying 100% of the share capital.

Pedroia has decided to include two free cash flow valuations in his report for the client. An extract of the most recent cash flow statement, which he intends to use as a base for his first FCF calculation, appears below:

Cash Flow Statement (extract) for the Year Ended 31st December 2x09

	U.S. \$ millions
Cash flow from operating activities	130

Extracts from the Financial Statements for 2x09 also show the following:

Financial Statement Extracts	2x08 \$m	2x09 \$m
Fixed assets (at cost)	270.0	320.0
Less: Accumulated depreciation	112.0	138.0
Inventory	65.2	71.0
Accounts receivable	94.2	96.7
Accounts payable	74.0	79.0

There have been no sales or impairments of fixed assets during the year and net borrowing for 2X09 raised \$14 million.

For his first valuation, Pedroia will make a simple assumption that free cash flow to equity will grow at 5% per annum indefinitely in order to reach his valuation. The resulting value will be labelled "Best Case Scenario" in the report.

In addition, the client has passed Pedroia their own forecasts for the performance of Iliot over the next five years, and he also intends to use these forecasts to come up with an alternative valuation, which he will label "FCF Valuation Using Forecasted Cash Flows." Details of the forecasted flows are as follows:

Free Cash Flow to Equity Forecasts: Iliot Inc.

2x10	\$65 million
2x11	\$68 million
2x12	\$72 million
2x13	\$75 million

Pedroia will discount the flows at a cost of equity of 12%, and that the 2x10 free cash flow will occur in one year from now. In order to calculate a terminal value at the end of 2x13, Pedroia intends to use an estimate of Iliot's P/E ratio and earnings. He estimates Iliot's trailing P/E ratio at the end of 2x13 to be 28 using a linear regression model based on risk, growth, and dividend payout, and forecasts 2x13 earnings to be \$70 million.

Pedroia also wishes to include a note on Iliot's normalized earnings in his final report. He intends to initially calculate normalized EPS figure for 2X09. To do this he will use the method of average return on equity method. In order to assist with this task he notes down various information for Iliot from the last three years:

Iliot Historical Data	2x07	2x08	2x09
Earnings per share	\$2.80	\$2.50	\$2.85
Book value per share	\$16.20	\$15.80	\$16.40
Return on equity	14.8%	15.4%	18.0%

Pedroia intends to conclude his report with a note to the client that he himself owns a small number of Iliot shares. He purchased the shares after implementing a stock screen system of selection, whereby he decided to only purchase shares if they passed the following criteria:

- P/E less than 10
- Market Cap greater than \$0.5 billion
- EBITDA-to-free cash flow ratio less than 12
- PEG ratio greater than 1.2

He implemented his stock screen system in mid 2x06. Before implementing the system, Pedroia back tested it using 2x05 year-end ratios published by his favorite analyst's journal in April 2x06. Using those ratios, results showed that if he had bought stocks at the end of 2x05, which passed his screen, he would have made abnormal positive profits.

3. (B) **\$94.0 million.**

Explanation

$$\begin{aligned} \text{FCFE} &= \text{CFO} - \text{FC Inv} + \text{net borrowing} \\ &= 130 - 50 + 14 \\ &= \$94 \text{ million} \end{aligned}$$

(Module 21.4, LOS 21.d)

Related Material

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4. (B) **a stable firm in a mature industry with a required return on equity of 14%.**

Explanation

The assumption of constant perpetual growth is suited to stable firms in a mature industry. If Iliot has a cost of equity of 4%, this would be less than the growth rate (5%) assumed and hence the model would not be appropriate.

(Module 20.3, LOS 20.1)

Related Material

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5. (A) **\$1,457 million.**

Explanation

PV of initial cash flows discounted at 12%:

CFO	nil
C01	65
C02	68
C03	72
C04	75

$$I = 12\%$$

$$PV = 211.16$$

$$\text{Terminal value at 2013} = 28 \times 70 = 1,960$$

$$PV = 1,960 / (1.12)^4 = 1,245.62$$

$$\text{Value} = 1,245.62 + 211.16 = \mathbf{1,456.78}$$

(Module 21.5, LOS 21.1)

Related Material

[SchweserNotes - Book 3](#)

6. (A) **\$2.63.**

Explanation

Using the average return on equity method, normalized EPS is calculated as the average return on equity multiplied by the current book value per share.

$$\text{Average ROE} = (14.8 + 15.4 + 18.0) / 3 = 16.07\%$$

$$\text{Normalized EPS} = 0.1607 \times 16.40 = \mathbf{\$2.63}$$

(Module 22.4, LOS 22.e)

Related Material

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7. (B) **The relationship between P/E and the fundamental variables examined will be static.**

Explanation

A common limitation is that the relationships may change over time rather than remain static

(Module 22.4, LOS 22.h)

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8. (C) **His results are likely to suffer from look ahead bias.**

Explanation

Pedroia should have assumed that he could purchase the stocks on the day the ratios were published, not the year-end. As a result of this mistake, he is exposed to the potential effects of look-ahead bias.

(Module 22.4, LOS 22.r)

Related Material

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9. (C) **0.278.**

Explanation

Recall that profit margin is measured as E_0 / S_0 . In this example, the profit margin is $(5.25 / 245.54) = 0.0214$. Thus:

$$\begin{aligned} P_0 / S_0 &= [(E_0 / S_0)(1-b)(1+g)] / (r-g) \\ &= [0.0214(0.55)(1.065)] / (0.11 - 0.065) \\ &= 0.278 \end{aligned}$$

(Module 22.4, LOS 22.i)

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10. (C) **increase.**

Explanation

An increase in ROE should increase the price to book (P/B) ratio:

$$P_0 / B_0 = (ROE - g) / (r - g)$$

(Module 22.2, LOS 22.g)

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11. (C) **earnings can be negative.**

Explanation

Negative earnings render the P/E ratio useless. Both remaining factors increase the usefulness of the P/E approach.

(Module 22.1, LOS 22.c)

Related Material

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12. (B) **1.73.**

Explanation

Return on equity (ROE) = $g / (1 - \text{payout ratio}) = 0.067 / 0.40 = 0.1675$ or 16.75%.

Based on fundamentals:

$$PBV = (0.1675 - 0.067) / (0.125 - 0.067) = 1.73.$$

(Module 22.4, LOS 22.i)

Related Material

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13. (B) **Weighted harmonic mean of the P/E's.**

Explanation

The weighted harmonic mean of the 10 and 15 will give the result closest to the portfolio earnings divided by the portfolio value.

(Module 22.4, LOS 22.r)

Related Material

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14. (A) **31.86.**

Explanation

Using an underlying earnings concept, an analyst would add back the temporary charges against earnings: $\$1.75 + \$0.19 + \$0.10 = \2.04 . The resulting trailing P/E = $65.00 / 2.04 = 31.86$.

(Module 22.4, LOS 22.e)

Related Material

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15. (B) **cyclical elements.**

Explanation

The goal of normalizing earnings is to adjust for cyclical elements.

(Module 22.4, LOS 22.e)

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An analyst has gathered the following fundamental data:

	Firm A	Firm A	Firm B	Firm B
Strategy	High Margin	Low Margin	High Margin	Low Margin
	Low Volume	High Volume	Low Volume	High Volume
Payout Ratio	40%	40%	40%	40%
Required Rate of Return	11%	11%	11%	11 %
Growth Rate in Dividends	9%	5%	5%	7%
Sales/Book Value of Equity	1.5	4.5	1.0	3
Profit Margin	10%	2%	9%	4%
Book Value	\$150	\$150	\$125	\$125

16. (C) **2.18.**

Explanation

$$\begin{aligned} \text{The P/S multiple} &= [\text{Profit Margin} \times \text{Payout Ratio} \times (1 + g)] / (r - g) \\ &= (0.10 \times 0.4 \times 1.09) / (0.11 - 0.09) = 2.18. \end{aligned}$$

(Module 22.3, LOS 22.i)

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17. (C) **0.43.**

Explanation

$$\begin{aligned} \text{The P/S multiple} &= [\text{Profit Margin} \times \text{Payout Ratio} \times (1 + g)] / (r - g) \\ &= (0.04 \times 0.4 \times 1.07) / (0.11 - 0.07) \\ &= 0.428 \text{ or } 0.43. \end{aligned}$$

(Module 22.3, LOS 22.i)

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18. (C) Required rate of return

Explanation

The PBV ratio decreases as the required rate of return increases.

(Module 22.4, LOS 22.g)

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19. (A) stocks with higher PEGs are more attractive than stocks with lower PEGs.

Explanation

The PEG valuation approach implicitly assumes there is a linear relationship between price to earnings (P/E) and growth, even though there is not a "real world" linear relationship. The analyst must be cautious when using the PEG ratio for valuation or comparison purposes especially if the growth rate is very small or very large. If earnings or the growth rate is negative the PEG ratio is meaningless. The PEG ratio does not adjust for varying levels of risk among stocks and views stocks with lower PEG ratios to be more attractive than stocks with higher PEG ratios.

(Module 22.4, LOS 22.j)

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20. (C) look-ahead bias.

Explanation

A common pitfall is look-ahead bias, wherein the analyst uses information that was not available to the investor when calculating the earnings yield.

(Module 22.4, LOS 22.f)

Related Material

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21. (B) 4.00.

Explanation

$$\begin{aligned} \text{Justified Leading P/E} &= P_0/E_1 \\ &= 1 - b / r - g \\ &= \text{Payout ratio} / r - g \\ &= 0.40 / (0.16 - 0.06) = 4.00 \end{aligned}$$

(Module 22.4, LOS 22.i)

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22. (A) No, because the PEG ratio generates highly questionable results for low-growth companies.

Explanation

The PEG ratio measures the tradeoff between P/E and expected earnings growth (g). The formula for the PEG ratio is: $PEG = (P/E) / g$. PEG ratios generate questionable results for low-growth companies. Also, the PEG ratio is undefined for companies with zero expected growth (division by zero) or meaningless for companies with negative expected earnings growth.

(Module 22.4, LOS 22.j)

Related Material

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23. (B) adding (net interest outflow) x (1 – tax rate).

Explanation

Cash flow from operations CFO should be adjusted to $CFO + (\text{net cash interest outflow}) \times (1 - \text{tax rate})$, if CFO embeds financing-related flows.

(Module 22.4, LOS 22.n)

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24. (B) negative earnings render P/E ratios meaningless and prices are never negative.

Explanation

Negative earnings render P/E ratios meaningless. In such cases, it is common to use normalized earnings per share (EPS) and/or restate the ratio as the earnings yield or E/P because price is never negative. Price to earnings (P/E) ranking can then proceed as usual.

(Module 22.4, LOS 22.f)

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Analysts and portfolio managers at Big Picture Investments are having their weekly investment meeting. CEO Bob Powell, CFA, believes the firm's portfolios are too heavily weighted toward growth stocks. "I expect value to make a comeback over the next 12 months. We need to get more value stocks in the Big Picture portfolios." Four of Powell's analysts, all of whom hold the CFA charter, were at the meeting — Laura Barnes, Chester Lincoln, Zelda Marks, and Thaddeus Bosley. Powell suggested Big Picture should start selecting stocks with the lowest price-to-earnings (P/E) multiples. Here are the analysts' comments:

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- Barnes said numerous academic studies have shown that low P/E stocks tend to outperform those with high P/Es. She uses the P/E ratio as the basis of most of her valuation analysis.
- Lincoln warned against using P/E ratios to evaluate technology stocks. He suggests using price-to-book (P/B) ratios instead, because they are useful for explaining long-term stock returns)
- Bosley prefers the price/sales (P/S) ratio and the earnings yield.
- Marks acknowledges that the P/E ratio is a useful valuation measurement. However, she prefers using the price/free-cash-flow ratio.

Powell has provided Barnes with a group of small-cap stocks to analyze. The stocks come from a variety of different sectors and have widely different financial structures and growth profiles. She has been asked to determine which of these stocks represent attractive values. She is considering four possible methods for the job:

- The PEG ratio, because it corrects for risk if the stocks have similar expected returns.
- Comparing P/E ratios to the average stock in the Russell 2000 Index, because the benchmark should serve as a good proxy for the average small-cap stock valuation.
- Comparing P/E ratios to the median stock in the Russell 2000 Index, because outliers can skew the average P/E upward.
- The P/S ratio, because it works well for companies in different stages of the business cycle.

25. (B) The company is likely to be unprofitable.

Explanation

Earnings are the chief determinant of value for most companies, including med-tech. P/E is the most common valuation method and the best known by lay investors. Comparability of P/E ratios across industries is always problematic, but not as much so for within the med-tech industry. A start-up company is very likely to have negative earnings, which renders the P/E ratio useless.

(Module 22.4, LOS 22.c)

Related Material

[SchweserNotes - Book 3](#)

26. (A) Lincoln.

Explanation

Book value tends to be more stable than earnings. Therefore, Lincoln's favorite valuation tool, the P/B ratio, is less volatile than the P/E. The P/S ratio tends to be less volatile than the P/E as well, but Bosley's other favorite, earnings yield, is just as volatile. The method preferred by Barnes is likely to be more volatile than the P/B ratio.

(Module 22.4, LOS 22.c)

Related Material

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CFA[®]**27. (A) pays a dividend, and is likely to deliver little earnings growth.****Explanation**

For companies that report a lot of depreciation expense or must be compared to companies with different levels of financial leverage, the EV/EBITDA ratio may be more useful than the P/E. For companies that pay a dividend and have little profit growth, both should work fine. Given Barnes' stated preference for the P/E ratio, she is least likely to use the EV/EBITDA ratio with the dividend-paying firm.

(Module 22.4, LOS 22.c)

Related Material[SchweserNotes - Book 3](#)**28. (C) The PEG ratio.****Explanation**

No valuation method will work dependably across all types of stocks. The four Barnes proposed are probably as good as any. But the PEG ratio does not correct for risk — it works as a comparison tool only if the companies have similar expected risks and returns. The other justifications are reasonable.

(Module 22.4, LOS 22.c)

Related Material[SchweserNotes - Book 3](#)**29. (C) price-to-earnings (P/E) / earnings per share (EPS) growth rate.****Explanation**

The PEG ratio is equal to the price-to-earnings ratio divided by the EPS growth rate.

(Module 22.4, LOS 22.j)

Related Material[SchweserNotes - Book 3](#)**30. (B) Price/sales.****Explanation**

Book value is usually positive, but not always. Cash flow is often negative. If the reason Cunningham wants to stop using the P/E ratio is that it does not work for unprofitable companies, her best option is a ratio based on sales, which are positive in all but the rarest of instances.

(Module 22.3, LOS 22.c)

Related Material[SchweserNotes - Book 3](#)**31. (C) divided by the expected earnings growth rate.****Explanation**

The PEG ratio is P/E divided by the expected earnings growth rate.

(Module 22.4, LOS 22.j)

Related Material[SchweserNotes - Book 3](#)

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32. (C) viewed as a properly valued stock.

Explanation

The price per dollar of book value is the same as that for the median of the peer group, which implies that it is likely properly valued.

(Module 22.4, LOS 22.m)

Related Material

[SchweserNotes - Book 3](#)

33. (A) Since FCFF captures the amount of capital expenditures, it is more strongly linked with valuation theory than EBITDA.

Explanation

Since FCFF captures the amount of capital expenditures, it is more strongly linked with valuation theory than EBITDA. The other statements are advantages.

(Module 22.4, LOS 22.o)

Related Material

[SchweserNotes - Book 3](#)

34. (A) The problems encountered when using the price-to-earnings (P/E) multiples of cyclical firms can be completely eliminated by using average or normalized earnings.

Explanation

The P/E multiples for cyclical firms are not very useful for valuation. Earnings will follow the economy, and prices will reflect expectations about the future. Thus, most of the time, the P/E multiple of a cyclical firm will peak at the depths of recession and bottom out at the peak of an economic boom. This problem can be minimized to some extent by using average or normalized earnings but will not be eliminated completely.

(Module 22.4, LOS 22.e)

Related Material

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35. (B) increase.

Explanation

A decrease in the earnings retention rate will increase the following expression for P/S due to the implied increase in the payout ratio, which is $(1 - b)$:

$$P_0 / S_0 = [(E_0 / S_0)(1 - b)(1 + g)] / (r - g)$$

Note that the topic review does not allow for any interactive relationship between retention and growth. Thus, no explicit consideration is given to whether the increase in the payout ratio will cause an offsetting decrease in growth.

(Module 22.3, LOS 22.g)

Related Material

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CFA[®]**36. (C) 6.00.****Explanation**

$$P_5/E_5 = (0.40 \times 1.05) / (0.12 - 0.05) = 6.00$$

(Module 22.4, LOS 22.k)

Related Material[SchweserNotes - Book 3](#)**37. (A) Enterprise value to earnings before interest, taxes, depreciation, and amortization (EV/EBITDA).****Explanation**

EV/EBITDA is the most seriously affect because it is most closely tied to accounting conventions.

(Module 22.4, LOS 22.p)

Related Material[SchweserNotes - Book 3](#)**38. (B) historical average earnings per share (EPS)****Explanation**

A common method in normalizing earnings uses the historical average EPS.

(Module 22.4, LOS 22.e)

Related Material[SchweserNotes - Book 3](#)**39. (A) 2.67.****Explanation**

$$EV \text{ uses market values for debt and equity. } (110 + 90) / 75 = 2.67.$$

(Module 22.4, LOS 22.o)

Related Material[SchweserNotes - Book 3](#)**40. (A) No, because the PEG ratio generates meaningless results for negative earnings-growth companies.****Explanation**The PEG ratio is: $PEG = (P/E) / \text{earnings growth}$. As such, firms with negative expected earnings growth will have a negative PEG ratio, which is meaningless.

(Module 22.4, LOS 22.j)

Related Material[SchweserNotes - Book 3](#)

CFA[®]**41. (B) \$60.00.****Explanation**

Using the method of comparables, TKR should be priced as $(15 \times 4) = \$60.00$.
(Module 22.1, LOS 22.a)

Related Material

[SchweserNotes - Book 3](#)

42. (A) overvalued.**Explanation**

Justified Leading P/E = payout ratio / $(r - g)$. When the expected dividend growth is 5.5%, the justified leading P/E = $0.40 / (0.12 - 0.055) = 6.15$. This is less than the actual (based on current market price) P/E of 8.0.

(Module 22.4, LOS 22.i)

Related Material

[SchweserNotes - Book 3](#)

43. (A) 4.24.**Explanation**

$$P_0 / E_0 = (0.40 \times 1.06) / (0.16 - 0.06) = 4.24$$

(Module 22.4, LOS 22.i)

Related Material

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44. (A) 0.20.**Explanation**

$$g = \text{Retention Rate} \times \text{Profit Margin} \times \text{SBV of equity} = 0.40 \times 0.01 \times 20.0 = 0.08.$$

If profit margin is based on the expected earnings next period,

$$P/S = (\text{profit margin} \times \text{payout ratio}) / (r - g) = (0.01 \times 0.60) / (0.11 - 0.08) = 0.20.$$

(Module 22.4, LOS 22.i)

Related Material

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45. (C) more meaningful the smaller the historical size of forecast errors.**Explanation**

A given size forecast error is more (less) meaningful the smaller (larger) the historical size of forecast errors.

(Module 22.4, LOS 22.q)

Related Material

[SchweserNotes - Book 3](#)

46. (A) undervalued.

Explanation

Justified P/B = $(ROE - g) / (r - g)$. When the expected dividend growth is 4.0%, the justified

$$P/B = (0.14 - 0.04) / (0.10 - 0.04) = 1.67.$$

This is greater than the P/B (at market) of 1.55.

(Module 22.4, LOS 22.1)

Related Material

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Beyan Bautista, CFA, is a sell-side research analyst for a boutique UK investment house. One of the companies she is currently covering is Yantra Plc, a manufacturer of mid-range motorboats, primarily for river use. The company's shares closed at £44.56 on 15 January 20x4. Beyan uses the Treasury bond yield of 2.5% and an assumed market risk premium of 5% when calculating justified ratios based on forecasted fundamentals.

She would first like to calculate Yantra's normalized price-to-earnings ratio over the period 20x0 to 20x3 via the following two methods:

- Method 1 - historical average EPS
- Method 2 - average return on equity

The following table summarizes selected historical data for Yantra Plc. All GBP figures are quoted on a per-share basis:

	20x0	20x1	20x2	20x3
Sales				£32.44
Earnings	£1.57	£2.16	£3.24	£1.89
Dividends				£0.76
FCFE				£1.05
Book value	£10.56	£11.88	£14.21	£15.69
ROE	14.9%	18.2%	22.8%	12.0%
Beta				1.40

Beyan would like to value Yantra using justified trailing price-to-sales and price-to-book ratios based on forecasted fundamentals. She bases the inputs on the most recent data (i.e., 20x3).

Finally, she would like to conclude her valuation by analyzing the justified trailing price- to-cash flow and justified trailing dividend yield metrics. As above, where needed, 20x3 data is used to develop the inputs. Beyan assumes cash flows are growing at a constant rate.

Given the recent lukewarm reception of a new product line at Yantra geared at ocean use, Beyan is considering increasing the cost of equity and reducing the growth rate in her models. She is considering what impact this might have on justified ratios based on forecasted fundamentals such as P/E, P/B, P/S, P/CF, D/P.

Beyan would also like to apply multiples analysis to three of Yantra's closest competitors—Arda, Struma, and Tundzha.

Having read the MD&A of the annual reports of each company, she has highlighted the following points:

Arda : "is in financial hardship due to a recent downturn in its sector"

Struma : "operates in extremely cyclical industry"

Tundzha : "has very different cost structure to the rest of its peers"

Based on the highlighted points, she is deciding on the most appropriate candidate ratio for each of the above companies:

Arda : price-to-earnings or price-to-book

Struma : normalized price-to-earnings or trailing price-to-sales

Tundzha : price-to-earnings or price-to-sales

Beyan has also been recently tasked with covering Nanuk Plc and Nunca Plc, two close competitors developing innovative solutions for marine navigation. She has collected the following information on the two companies (the trailing cash flow per share is calculated as net income per share plus non-cash charges per share):

	Nanuk	Nunca
Share price	38.00	64.00
Trailing CF per share	4.52	9.11
P/CF	8.41	7.03
Trailing FCFE per share	3.11	3.85
P/FCFE	12.22	16.62
5-year growth rate	14%	19%
Beta	1.4	1.4

47. (B) Method 2.

Explanation

Method 1:

Calculate average EPS over the stated period.

$$(1.57 + 2.16 + 3.24 + 1.89) / 4 = \text{£}2.22.$$

Based on a price of £44.56, the P/E multiple is $44.56 / 2.22 = 20.12$

Method 2:

First, calculate average ROE over the period.

$$(14.9\% + 18.2\% + 22.8\% + 12\%)/4 = 17\%.$$

To get the normalized earnings multiply the average ROE by the most recent book value of £15.69 — $17\% \times 15.69 = £2.66$. Thus, the resulting P/E multiple for Method 2 is $44.56 / 2.66 = 16.73$.

Comparing the two multiples, Method 2 results in higher normalized earnings and, therefore, lower P/E ratio and hence a lower (more attractive) valuation.

(Module 22.4, LOS 22.e)

Related Material

[SchweserNotes - Book 3](#)

48. (B) overvalued.

Explanation

The price-to-sales multiple based on market data is $44.56 / 32.44 = 1.37$

The price-to-book multiple based on market data is $44.56 / 15.69 = 2.84$.

The formula for justified price-to-sales ratio based on forecasted fundamentals is:

$$\frac{P_0}{S_0} = \frac{PM \times (1 - b) \times (1 + g)}{(r - g)}$$

The profit margin (PM) is $20X3 \text{ EPS} / \text{sales per share} = 1.89 / 32.44 = 5.8\%$

The dividend-payout-ratio ($1 - b$) is $0.76 / 1.89 = 40\%$.

The retention rate (b) is 60% .

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The sustainable growth rate is $ROE \times b = 12\% \times 60\% = 7.2\%$

The cost of equity from CAPM is $2.5\% + 1.4 \times 5\% = 9.5\%$

Thus, the justified price-to-sales ratio is:

$$\frac{P_0}{S_0} = \frac{0.058 \times 0.40 \times 1.072}{(0.095 - 0.072)} = 1.08$$

Comparing the justified multiple of 1.09 to the market based multiple of 1.37 the company appears **overvalued**.

The formula for justified price-to-book ratio based on forecasted fundamentals is:

$$\frac{P_0}{B_0} = \frac{(ROE - g)}{(r - g)} = \frac{(0.12 - 0.072)}{(0.095 - 0.072)} = 2.11$$

Comparing the justified multiple of 2.11 to the market based multiple of 2.84 the company, again, appears **overvalued**.

Please, note that the value of each ratio is not required in the solution. Therefore, realizing that justified ratios are derivable from the Gordon Growth Model (GGM), one could simply proceed and value the company as follow:

$$P_0 = \frac{D_0 \times (1+g)}{(r-g)} = \frac{0.76 \times (1+0.072)}{(0.095-0.072)} = 35.42$$

The company is overvalued as its market price of £44.56 exceeds its intrinsic value of £35.42. As a result, any ratio that divides this intrinsic value by a value driver (e.g., P/B, P/S, etc.) will also be higher than the market multiple resulting in the same conclusion.

(Module 22.4, LOS 22.i)

Related Material

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49. (C) the results are mixed.

Explanation

The price-to-cash flow multiple based on market data is $44.56 / 1.05 = 42.44$. The dividend yield flow multiple based on market data is $0.76 / 44.56 = 1.7\%$. The intrinsic value of a company based on FCFE and the Gordon Growth Model is:

$$V_0 = \frac{FCFE_0 \times (1+g)}{(r-g)}$$

To obtain the trailing justified price-to-cash flow; divide both sides of the equation by FCFE₀.

We already have g and r inputs from prior computations:

$$\frac{P}{CF} = \frac{(1+g)}{(r-g)} = \frac{1.072}{(0.095-0.072)} = 46.65$$

Thus, the company appears **undervalued** based on this criterion as its market multiple of 42.44 is below the justified multiple of 46.65.

Reciprocating the Gordon Growth Model, we obtain the formula for justified trailing dividend yield:

$$\frac{D_0}{P_0} = \frac{(r-g)}{(1+g)}$$

This is the reciprocal of the above P/CF ratio, so a shortcut computation would be: justified D/P = $1 / 46.65 = 2.1\%$

The current dividend yield of 1.7% is below the justified dividend yield of 2.1% so, based on this criterion, the company appears **overvalued** (note that when price is on the numerator high multiple = undervalued).

(Module 22.4, LOS 22.i)

Related Material

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50. (B) four ratios will decline.

Explanation

Generally, most justified ratios suffer when the discount rate is increased and/or assumed growth rate decreased. However, the notable exception to this rule is justified dividend yield. Lower growth implies more earnings available for dividend payments. Higher cost of equity reduces share price, thus (maintaining a constant dollar dividend) the dividend yield increases.

(Module 22.4, LOS 22.g)

Related Material

[SchweserNotes - Book 3](#)

51.

	Arda	Struma	Tundzha
(A)	P/B	norm P/E	P/E

Explanation

Arda is in financial hardship, which probably means the company has very low or even negative earnings rendering the P/E ratio meaningless.

Struma operates in a very cyclical industry so earnings normalization is necessary to take into account the full impact of the business cycle. Taking the trailing price-to-sales ratio, (i.e., most recent twelve-month sales) would either inflate or deflate the ratio for a cyclical company depending on the stage of the cycle.

Tundzha has a very different cost structure relative to its peer group. This indicates that the use of the price-to-sales ratio is not a good idea as that ratio completely ignores items below the sales line (i.e., ignores cross-sectional differences in profitability).

(Module 22.4, LOS 22.c)

Related Material

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52. (C) trading at premium due to its superior fundamentals.

Explanation

First, note that computing "cash flow" as net income plus non-cash charges is suboptimal and should not be trusted; especially if a superior metric such as price-to-FCFE is present.

Therefore, despite the fact, Nunca has a lower price-to-cash flow ratio; this is unlikely to be reason to invest, especially as it is in contradiction to the superior price-to-FCFE ratio.

Controlling for risk (i.e., companies have the same beta), we note that Nunca has a higher five-year estimated growth rate but also higher P/FCFE multiple. The company is therefore not necessarily either under or overvalued relative to its competitor (based on the limited information presented in the table), but it is certainly trading at a premium (i.e., trading at a higher multiple) due to its higher growth forecast.

(Module 22.1, LOS 22.c)

Related Material

[SchweserNotes - Book 3](#)

53. (C) **should be purchased because it is an undervalued stock.**

Explanation

The price per dollar of book value of ESI is considerably lower than that for the median of the peer group, which implies that it may well be undervalued. For the method of comparables, we most appropriately select as comparison assets companies operating in the same industry as the subject company.

(Module 22.4, LOS 22.m)

Related Material

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54. (A) **the method of comparables.**

Explanation

The analysis is comparing ratios of three companies in the same industry. The Law of One Price states that similar assets should have comparable prices.

(Module 22.1, LOS 22.a)

Related Material

[SchweserNotes - Book 3](#)

55. (B) **19.69.**

Explanation

Using an underlying earnings concept, an analyst would add back the temporary charges against earnings: $\$2.25 + \$0.17 + \$0.12 = \2.54 . The resulting trailing $P/E = 50.00 / 2.54 = 19.69$.

(Module 22.4, LOS 22.e)

Related Material

[SchweserNotes - Book 3](#)

56. (A) **Accounting methods.**

Explanation

Different accounting conventions make cross-border comparisons for valuation purposes challenging.

(Module 22.4, LOS 22.p)

Related Material

[SchweserNotes - Book 3](#)

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57. (B) Book values are very meaningful for firms in service industries.

Explanation

Book values are NOT very meaningful for firms in service industries.

(Module 22.2, LOS 22.c)

Related Material

[SchweserNotes - Book 3](#)

58. (A) 1.73.

Explanation

The estimated growth rate is 6.7% $[0.1675 \times (1 - 0.60)]$ and PBV ratio based on rate differential will be:

$$P_0 / BV_0 = (ROE_1 - g) / (r - g) = (0.1675 - 0.067) / (0.125 - 0.067) = 1.73.$$

(Module 22.2, LOS 22.i)

Related Material

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59. (B) No, ZEI's P/E ratio will increase by approximately 14.32%.

Explanation

Caza is not correct. $P/E_{ZEI} = \text{payout ratio} / (k - g)$

When the expected dividend growth is 6%, $P/E = 0.50 / (0.10 - 0.06) = 12.50$

When the expected dividend growth is 6.5%, $P/E = 0.50 / (0.10 - 0.065) = 14.29$

The percentage change is $(14.29/12.50) - 1 = 14.32\%$ representing a 14.32% increase.

(Module 22.1, LOS 22.d)

Related Material

[SchweserNotes - Book 3](#)

60. (A) increase.

Explanation

An increase in growth increases the price to cash flow ratio (CF), as indicated by the following expression:

$$P_0 / CF_0 = (1 + g) / (r - g)$$

(Module 22.3, LOS 22.g)

Related Material

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61. (A) It relates multiples to company fundamentals using a discounted cash flow (DCF) model.

Explanation

The method of forecasted fundamentals relates multiples to company fundamentals using a DCF method. It does not explicitly rely on the Law of One Price. Further, it does not typically focus on benchmarks.

(Module 22.1, LOS 22.a)

Related Material

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62. (B) 10.35.

Explanation

Predicted P/E = $7.65 + (3.75 \times 0.65) + (15.35 \times 0.05) - (0.70 \times 0.72) = 10.35$

(Module 22.4, LOS 22.h)

Related Material

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63. (A) undervalued.

Explanation

Justified P/B = $(ROE - g) / (r - g)$.

When the expected dividend growth is 5.0%, the justified

P/B = $(0.14 - 0.05) / (0.10 - 0.05) = 1.80$. This is greater than the market P/B of 1.60.

(Module 22.4, LOS 22.i)

Related Material

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64. (B) the growth rate in sales does not decrease proportionately.

Explanation

An increase (decrease) in the profit margin increases (decreases) the growth rate if sales do not decrease (increase) proportionately. Increases in the required rate of return would decrease the P/S ratio. This is clear in the expression for trailing P/S:

$P_0 / S_0 = [(E_0 / S_0)(1 - b)(1 + g)] / (r - g)$

(Module 22.4, LOS 22.g)

Related Material

[SchweserNotes - Book 3](#)

65. (A) 9

Explanation

The weighted harmonic mean is $1/[(12/27)(1/12) + (15/27)(2/15)]$
 $= 27/3 = 9.00$

The weighted harmonic mean of the individual stocks P/Es is the best measure of the P/E for a portfolio of stocks.

(Module 22.4, LOS 22.r)

Related Material

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Victoria Banks is a senior analyst working for a large firm of portfolio managers. Her manager, David Alan, has asked her to report on a company called Retro Inc. as he believes it might offer a potentially good investment. The accounts for Retro Inc. are given below.

Retro prepares its accounts using U.S. GAAP.

Exhibit 1: Retro Inc. Balance Sheet as at 31 December

	20x9 \$m	20x8 \$m
Assets		
Cash	150	100
Accounts receivable	1,700	1,620
Inventory	1,810	1,800
Total current assets	3,660	3,520
Property, plant, and equipment	1,430	1,000
Intangibles	100	150
Total assets	5,190	4,670
Liabilities and Capital		
Notes payable to banks	200	220
Accounts payable	1,330	1,200
Interest payable	130	100
Total current liabilities	1,660	1,520
Long-term debt	770	680
Deferred tax	820	820
Common stock	1,300	1,300
Retained earnings	640	380
Total liabilities and capital	5,190	4,670

Exhibit 2: Retro Inc. Income Statement for the Year Ended 31 December 20x9

	\$m
Sales	3,000
Cost of goods sold	(1,800)
Gross profit	1,200
Depreciation	(150)
Amortization	(50)
SG&A	(280)
Gain on disposal	(30)
Restructuring charge reversal	(20)
Interest expense	(190)
Income tax expense	(223)
Net income	(357)

Retro disposed of PPE in the year that had a cost of \$150m and accumulated depreciation at the time of disposal of \$90m. No intangibles were disposed of during the year. Deferred tax liabilities are not expected to reverse for the foreseeable future.

Banks is also concerned that the net income looks relatively high when compared to previous years and therefore wants to measure the quality of earnings. She has heard that the lower the accruals ratio the higher the quality of earnings.

Banks calculates that Retro Inc. has a leading P/E ratio of 4.29 and a five-year consensus growth rate forecast at 14.85%. The median PEG, based on leading P/E, for a group of companies comparable in risk to Retro Inc. is 0.82. Based on this Banks wants to determine whether the stock is correctly priced.

One of Banks's colleagues, Jennifer Cery, comments that P/E multiples are not always that useful and that sometimes enterprise value multiples are better. She makes the following comments:

Comment 1:	Enterprise value multiples are useful when comparing firms with different degrees of financial leverage and when EPS is negative
Comment 2:	As EBITDA can be used as a proxy for free cash flow to the firm providing depreciation is close to capital expenditure and the firms levels of working capital is relatively constant.

66. (B) 127.

Explanation

Calculation of CFO:

$$\text{CFO} = \text{NI} + \text{NCC} - \text{WC}_{\text{INV}}$$

$$\text{CFO} = \$357 + \$180 + \$70 = \$607$$

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Depreciation	150		2010	2009
Amortization	50	Current assets	3,660	3,520
Gain on asset disposal	(30)	Cash	(150)	(100)
Reversal of provision	(20)		3,510	3,420
↑DTL	30			
Total non cash charges	180	Current liabilities	1,660	1,520
		Notes payable	(200)	(220)
			1,460	1,300
		Working capital	2,050	2,120
		WC _{INV}	-70	

Note that the change in the DTL liability is only included as a non-cash charge (NCC) as it is not expected to reverse in the foreseeable future. If the DTL is expected to reverse in the short O run it should be ignored when adding back NCCs.

Calculation of CFI:

$FC_{INV} = \text{change in NBV (net PP\&E)} + \text{depreciation and amortization expense} - \text{gain on disposal}$

$$FC_{INV} = \$380 + \$200 - \$30 = \$550m$$

Alternative using reconciliation approach:

Opening PPE were \$1,000m, these were depreciated by \$150m and the closing PPE were \$1,430. Since the disposal had a NBV of \$60m the company must have spent:

PPE:	
NBV 2009 b/fwd	1,000
NBV of disposal	(60)
Depreciation expense	(150)
Balancing figure 'Additions'	640
NBV 2010 c/fwd	1,430
On the disposal:	
Proceeds (Balancing figure)	90
NBV of disposal	60
Gain on disposal	30
Intangibles:	
NBV 2009 b/f	150
Disposals	(0)
Amortization expense	(50)

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Balancing figure 'Additions'	0
NBV 2010 c/fwd	100
Additions	(640)
Proceeds on disposal	90
CFI	(550)
Change in debt	70
Free cash flow for equity	
CFO	607
CFI	(550)
Change in debt	70
FCFE	127

(Module 21.3, LOS 21.c)

Related Material
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67. (A) 11.5%.
Explanation

$$\text{Aggregate accruals} = \text{NI} - \text{CFO} - \text{CFI}$$

$$\text{Aggregate accruals} = \$357 - \$607 + 550 = \$300$$

$$\text{Accruals ratio} = \$300 / (\$2,760 - \$607 + \$2,480) / 2 = 11.5\%$$

	2010	2009
Total assets	5,190	4,670
Cash and investments	(150)	(100)
Operating assets	5,040	4,570
Total liabilities	3,250	2,990
Notes payable	(200)	(200)
Long term debt	(770)	(680)
Operating liabilities	2,280	2,090
Net operating assets	2,760	2,480

(Module 13.5, LOS 13.d)

Related Material
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68. (B) Undervalued because its PEG ratio is 0.29.
Explanation

The firm's PEG is $4.29 / 14.85 = 0.29$. Given the comparable group median, PEG of 0.82, it appears that Retro Inc. may be undervalued.

(Module 22.4, LOS 22.j)

Related Material
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69.

	Comment 1	Comment 2
(A)	Correct	Correct

Explanation

Since FCFF captures the amount of capital expenditures, it is more strongly linked with valuation theory than EBITDA. EBITDA will be an adequate measure if capital expenses equal depreciation expenses and working capital remains relatively constant.

(Module 21.5, LOS 21.h)

Related Material

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70. (A) 0.77.

Explanation

$$\frac{P}{S} = \frac{\text{payout} \times \text{profit margin} \times (1 + g)}{(r - g)}$$

$$= \frac{0.40 \times 0.07 \times 1.10}{0.14 - 0.10} = 0.77$$

(Module 22.4, LOS 22.i)

Related Material

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71. (A) warranted or intrinsic price multiple.

Explanation

A justified price multiple is the warranted or intrinsic price multiple. It is the estimated fair value of that multiple.

(Module 22.1, LOS 22.b)

Related Material

[SchweserNotes - Book 3](#)

72. (C) No, Xanadu's justified leading P/E ratio will decrease by approximately 7.8%.

Explanation

Chan is not correct. $P/E_{\text{Xanadu}} = \text{payout ratio} / (r - g)$

When the expected dividend growth is 6%, $P/E = 0.40 / (0.12 - 0.06) = 6.67$

When the expected dividend growth is 5.5%, $P/E = 0.40 / (0.12 - 0.055) = 6.15$

The percentage change is $(6.15 / 6.67) - 1 = -7.80\%$, representing a 7.80% decrease.

(Module 22.4, LOS 22.d)

Related Material

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73. (A) 0.114.

Explanation

Profit Margin = $EPS / \text{Sales per share} = 1.75 / 150 = 0.01167$ or 1.167%.

Payout ratio = $1 - (g / ROE) = 1 - (0.04 / 0.16) = 0.75$ or 75%.

$P_0 / S_0 = [\text{profit margin} \times \text{payout ratio} \times (1 + g)] / (r - g)$
 $= [0.01167 \times 0.75 \times 1.04] / (0.12 - 0.04) = 0.11375$.

(Module 22.3, LOS 22.i)

Related Material

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74. (B) price to most recent earnings.

Explanation

The trailing P/E ratio is price to most recent realized earnings.

(Module 22.1, LOS 22.d)

Related Material

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75. (B) the method of forecasted fundamentals.

Explanation

This analysis is comparing forecasted discounted cash flows (DCF) to a fundamental variable (shares). This suggests the method for forecasted fundamentals.

(Module 22.1, LOS 22.a)

Related Material

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76. (A) increase as the growth rate in either the high-growth or stable-growth period increases.

Explanation

The PBV ratio for a high-growth firm will be determined by growth rates in earnings in both the high-growth and stable-growth periods. The PBV ratio increases as the growth rate increases in either period.

(Module 22.2, LOS 22.g)

Related Material

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77. (A) sold or sold short as an overvalued stock.

Explanation

The price per dollar of earnings is considerably higher than that for the median of the peer group, which implies that it may well be overvalued.

(Module 22.4, LOS 22.m)

Related Material

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78. (A) price/book ratio.

Explanation

The price/book ratio is a preferred tool for valuing financial stocks.

(Module 22.2, LOS 22.c)

Related Material

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79. (B) Method of forecasted fundamentals.

Explanation

The method of forecasted fundamentals is based on the rationale that stock values differ due to differences in the expected values of fundamentals such as sales, earnings, or related growth rates.

(Module 22.1, LOS 22.a)

Related Material

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80. (C) 0.19.

Explanation

Profit Margin = EPS / Sales per share = 4.50 / 300 = 0.015 or 1.5%.

Expected growth in dividends and earnings = ROE x (1 – payout ratio)
= 0.20 x 0.40 = 0.08 or 8%.

$P_0S_0 = [\text{profit margin} \times \text{payout ratio} \times (1 + g)] / (r - g) = [0.015 \times 0.60 \times (1.08)] / (0.13 - 0.08) = 0.1944.$

(Module 22.4, LOS 22.i)

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81. (C) earnings per share are negative.

Explanation

P/E multiples are not meaningful when the earnings per share are negative. While this problem can be partially offset by using normalized or average earnings per share, the problem cannot be eliminated.

(Module 22.1, LOS 22.c)

Related Material

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CFA[®]**82. (B) Earnings yield.****Explanation**

The observation is used to justify the earnings yield approach. Negative P/E ratios are meaningless. In such cases, it is common to use normalized earnings per share (EPS) and/or restate the ratio as the earnings yield or E/P because price is never negative. Price to earnings (P/E) ranking can then proceed as usual.

(Module 22.4, LOS 22.f)

Related Material

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83. (C) decrease expected growth.**Explanation**

If payout increases, the growth of the firm may slow down, because internally generated funds are not being invested in new, profitable projects. Hence, the net impact on the PBV ratio from change in payout ratio cannot be determined.

(Module 22.2, LOS 22.g)

Related Material

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84. (B) fundamental data.**Explanation**

In the DCF valuation method, an analyst makes specific assumptions about each variable, such as growth, risk, payout, etc. The valuation using P/E multiples will be closest to the one obtained using the DCF approach when fundamental data -- for growth, risk, payout, etc. -- is used to estimate P/E multiples.

(Module 22.1, LOS 22.a)

Related Material

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85. (A) fundamentals approach.**Explanation**

It is common to restate the Gordon growth model price as a multiple of expected future book value per share or earnings per share (EPS).

(Module 22.4, LOS 22.k)

Related Material

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86. (C) EBITDA is useful for valuing capital-intensive businesses with high levels of depreciation and amortization.

Explanation

EBITDA is useful for valuing capital-intensive businesses with high levels of depreciation and amortization. The other statements are disadvantages to using EV/EBITDA.

(Module 22.4, LOS 22.o)

Related Material

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87. (B) viewed as a properly valued stock.

Explanation

The price per dollar of earnings is the same as that for the median of the peer group, which implies that it is likely properly valued.

(Module 22.4, LOS 22.m)

Related Material

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88. (C) It values an asset relative to a benchmark value of the multiple.

Explanation

The method of comparables involves using a price multiple to evaluate whether an asset is valued properly relative to a benchmark value of the multiple. It makes no explicit assumptions about fundamentals and does not rely on a DCF model.

(Module 22.1, LOS 22.a)

Related Material

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89. (A) 4.20.

Explanation

$$P_0/E_0 = (0.40 \times 1.05) / (0.15 - 0.05) = 4.20$$

(Module 22.4, LOS 22.i)

Related Material

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90. (A) 9.18.

Explanation

$$\text{Predicted P/E} = 7.65 + (3.75 \times 0.35) + (15.35 \times 0.08) - (0.70 \times 1.45) = 9.1755$$

(Module 22.4, LOS 22.h)

Related Material

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CFA[®]**91. (A) Intra-country market indicators.****Explanation**

Intra-country market indicators are not, by definition, cross-border.

(Module 22.4, LOS 22.p)

Related Material

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92. (B) undervalued.**Explanation**

Justified trailing P/E = payout ratio * (1 + g) / (r - g). When the expected dividend growth is 5.0%, the justified trailing P/E = $0.45 * (1 + 0.05) / (0.10 - 0.05) = 9.45$. This is greater than the market P/E of 9.0.

(Module 22.4, LOS 22.l)

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93. (A) research shows that P/E differences are significantly related to long-run average stock returns.**Explanation**

Research shows that P/E differences are significantly related to long-run average stock returns. Both remaining factors reduce the usefulness of the P/E approach.

(Module 22.1, LOS 22.c)

Related Material

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94. (A) justified price multiple.**Explanation**

A justified price multiple is the warranted or intrinsic price multiple. It is the estimated fair value of that multiple. The question is limited to an individual firm and does not necessarily apply to the market or an industry.

(Module 22.1, LOS 22.b)

Related Material

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95. (B) 10.14.**Explanation**

Predicted P/E = $7.65 + (3.75 * 0.55) + (15.35 * 0.07) - (0.70 * 0.92) = 10.14$

(Module 22.4, LOS 22.h)

Related Material

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96. (A) that exclude non-recurring components.

Explanation

Underlying earnings are earnings that exclude non-recurring items. They are also known as persistent, continuing, or core earnings.

(Module 22.4, LOS 22.e)

Related Material

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Carol Jenkins, CFA, works as a stock for Cape Cod Partners, a money-management firm that handles private accounts for high net worth clients. Jenkins' assignment is to find attractively valued stocks for client portfolios.

Jenkins believes that recent weakness in the technology sector presents an attractive opportunity. She is looking at Massive Tech, the market leader in chipsets for laptop computers, and Mouse & Associates, a tiny software developer specializing in data-storage programs. Jenkins is considering the companies' relative values in a number of ways. Statistics for Massive and Mouse are provided below:

	Massive Tech	Mouse & Associates
Stock price	\$65	\$12
Trailing earnings	\$4,300	\$3.15
Market capitalization	\$130,000	\$84
Assets	\$16,250	\$7.00
Equity	\$12,000	\$5.5
Operating margin	49%	54%
Net margin	12%	22%
Depreciation	\$3,500	\$6
Amortization	\$5,675	\$1.5
Fixed investment plus borrowing	\$4,200	\$0.3
Dividends	\$3	\$0.02
Shares outstanding	2,000	7

* All figures except stock price, dividends, and percentages are in millions.

In most cases, Jenkins values her stocks relative to an equally-weighted basket of stocks in the same industry in order to avoid significant fundamental differences between companies of different types. However, her picks made based on price/earnings ratios are not doing well against the market. She fears the stocks she selects are not as cheap as she originally thought, relative to her benchmark.

Jenkins also wants to improve Cape Cod's selection of software stocks. To widen the field beyond the companies she currently follows, Jenkins wants to include Canadian software stocks in Cape Cod's research universe. Differences in accounting methodologies are not a concern, but Jenkins is still concerned about the difficulty of valuing the different stocks.

Jenkins has assembled the following data about Canadian software companies:

- Most are very small.
- Most carry little debt, but about 20% are heavily leveraged.
- These companies are more likely to be unprofitable compared to U.S. companies.
- Few pay dividends, as is the case in the U.S.
- Many of the companies are government-subsidized, which leads to drastic differences in the level of operating expenses.

97. (A) Large stocks have an outsized effect on the benchmark data.

Explanation

Capitalization weights are not an issue unless the benchmark is a cap-weighted index. Jenkins is using an equally-weighted basket of stocks in the same industry (or simple average). Average valuations reflect outliers; medians do not. P/Es can get very high, but can never fall below zero. As such, the outliers are going to trend high, and the median is likely to be considerably lower than the mean. A stock that looks cheap relative to the mean may look expensive relative to the median. Stocks of different sizes often have different average or median valuations. Mispricing of stocks in the benchmark is always a risk.

(Module 22.4, LOS 22.m)

Related Material

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98. (B) Price/book because Massive is larger than Mouse.

Explanation

The P/B ratios can be misleading when used to compare companies with vastly different asset bases. A large semiconductor company is likely to have lots of fixed assets, while a tiny software company may have very few assets. The P/CF ratio tends to be more stable than the P/E ratio. The P/E ratio is useless for considering companies that lose money, but that does not mean the measure has no value when earnings are positive. The EV/EBITDA ratio is effective at comparing stocks with different degrees of financial leverage.

(Module 22.4, LOS 22.m)

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99. (B) the earnings yield but not the price/book.

Explanation

To calculate the P/E, divide the market capitalization by the earnings. Lower is cheaper.

To calculate the P/B, divide the market capitalization by the equity. Lower is cheaper.

To calculate the P/S, determine sales by dividing the earnings by the net margin. Then divide the market capitalization by the sales. Lower is cheaper.

To calculate the earnings yield, divide the earnings by the market capitalization. Higher is cheaper.

To calculate the dividend yield, divide the dividends by the price. Higher is cheaper.

	Massive Tech	Mouse & Associates
P/E	30.23	26.67
P/B	10.83	15.27
P/S	3.63	5.87
Earnings yield	3.31%	3.75%
Dividend yield	4.62%	0.17%

(Module 22.4, LOS 22.m)

Related Material

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100. (B) 9.65.

Explanation

Cash flow = net income plus depreciation plus amortization
 = (\$4,300 + 3,500 + 5,675) = \$13,475 million.

$P/CF = \text{market capitalization} / \text{cash flow} = (\$130,000 / 13,475) = 9.65.$

(Module 22.4, LOS 22.m)

Related Material

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101. (B) Dividend yield.

Explanation

Dividend yield is not generally considered a momentum valuation indicator.
 (Module 22.4, LOS 22.q)

Related Material

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102. (B) **increase.**

Explanation

An increase in growth will decrease the denominator and increase the numerator in the trailing P/E expression, both of which should increase the P/E ratio:

$$P_o/E_o = [(1 - b)(1 + g)] / (r - g)$$

Note that the topic review does not allow for any interactive relationship between retention and growth. Thus, no explicit consideration is given to how the growth increase was generated.

(Module 22.4, LOS 22.g)

Related Material

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103. (B) **total company value.**

Explanation

EBITDA is a pre-tax, pre-interest measure, which represents a flow to both equity and debt. Thus, it is better suited as an indicator of total company value than just equity value.

(Module 22.4, LOS 22.n)

Related Material

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104. (A) **Free cash flow to equity (FCFE).**

Explanation

FCFE is most strongly linked to valuation theory. Both remaining proxies are in need of significant adjustment to accurately measure cash flow in valuation.

(Module 22.4, LOS 22.n)

Related Material

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105. (C) **1.60.**

Explanation

$$P_o/B_o = (ROE - g)/(r - g) = (0.15 - 0.07)/(0.12 - 0.07) = 1.60$$

(Module 22.4, LOS 22.i)

Related Material

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106. (B) **it is conceptually very straightforward.**

Explanation

The use of comparable firms is quite common, because it is conceptually very straightforward. Also, it does not require the analyst to make specific assumptions regarding growth, risk, and other variables. However, it is often difficult to find comparable firms, since even within the same industry different firms can have different business mixes and risk and growth profiles.

(Module 22.1, LOS 22.a)

Related Material

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CFA[®]**107. (B) 3.12x.****Explanation**

EBITDA = (net income + interest + taxes + depreciation / amortization)

EV = (market value of common stock + market value of debt — cash and investments)

EBITDA = 140 + 7 + 10 + 56 = Sf 213 million

EV = (22 x 40) + 140 – 55 – 300 = Sf 665 million

EV / EBITDA = 3.12

(Module 22.4, LOS 22.o)

Related Material

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108. (A) 4.00.**Explanation**

Justified leading P/E = $P_0/E_1 = (1 - b) / (r - g) = 0.40 / (0.15 - 0.05) = 4.00$

Note that the leading P/E omits $(1 + g)$ in the numerator, which is present in the formula for the trailing P/E.

(Module 22.4, LOS 22.i)

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109. (B) expected growth rate.**Explanation**

All other variables held constant, a decrease in expected growth rate will result in a decrease in the justified price-to-book multiple.

(Module 22.2, LOS 22.g)

Related Material

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110. (A) justified price multiple.**Explanation**

A justified price multiple is the warranted or intrinsic price multiple. It is the estimated fair value of that multiple.

(Module 22.1, LOS 22.b)

Related Material

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111. (A) Book values are affected by accounting standards, which may vary across firms and countries.

Explanation

The disadvantages of using PBV ratios are:

1. Book values are affected by accounting standards, which may vary across firms and countries.
2. Book value may not mean much for service firms without significant fixed costs.
3. Book value of equity can be made negative by a series of negative earnings, which limits the usefulness of the variable.

(Module 22.2, LOS 22.c)

Related Material

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112. (C) 2.14.

Explanation

The growth rate in dividends (g) = $ROE(1 - \text{payout ratio}) = 0.20 \times (1 - 0.75) = 0.05$ or 5%. The PBV ratio = $(ROE - g) / (r - g) = (0.20 - 0.05) / (0.12 - 0.05) = 2.14$.

(Module 22.4, LOS 22.i)

Related Material

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113. (C) earnings power is the primary determinant of investment value.

Explanation

Earnings power is the primary determinant of investment value. Both remaining factors reduce the usefulness of the P/E approach.

(Module 22.1, LOS 22.c)

Related Material

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114. (B) No, because the PEG ratio is undefined for zero-growth companies.

Explanation

The PEG ratio measures the tradeoff between P/E and expected earnings growth (g). The formula for the PEG ratio is: $PEG = (P/E) / g$. Firms with zero expected earnings growth will have an infinite (or undefined) PEG ratio due to division by zero.

(Module 22.4, LOS 22.j)

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115. (A) 3.00.

Explanation

The firm's justified price-to-book value = $(ROE - g) / (r - g)$
 $= (0.14 - 0.08) / (0.10 - 0.08) = 3.00$

(Module 22.4, LOS 22.i)

Related Material

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116. (C) Firm A.

Explanation

The formula for the PEG ratio is: $PEG = (P/E) / g$. It measures the tradeoff between P/E and expected dividend growth (g). For traditional growth firms, PEG ratios fall between 1 and 2. The general rule is that PEG ratios above 2 are indicative of overvalued firms (expensive), and PEG ratios below 1 are indicative of firms that are undervalued (cheap).

Firm A:	PEG= 2, indicating a stock that is appropriately priced.
Firm B:	The PEG ratio of firms with negative expected dividend growth is negative, which is meaningless. For Firm B, PEG = -2
Firm C:	Firms with very low expected dividend growth are likely to have PEG ratios that unrealistically indicate overvalued stocks. For Firm C, PEG = 12.

(Module 22.4, LOS 22.j)

Related Material

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117. (A) P/S ratios do not express differences in cost structures across companies.

Explanation

P/S ratios do not express differences in cost structures across companies. Both remaining responses are advantages of the P/S ratios, not disadvantages.

(Module 22.3, LOS 22.c)

Related Material

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118. (B) 1.25.

Explanation

$$\frac{P}{BV} = \frac{ROE - g}{r - g} = \frac{0.18 - 0.13}{0.17 - 0.13} = 1.25$$

(Module 22.4, LOS 22.i)

Related Material

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CFA[®]**119. (C) 1.50.****Explanation**

The firm's PEG is $12.75/8.50 = 1.50$.

(Module 22.4, LOS 22. j)

Related Material

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120. (B) sold or sold short as an overvalued stock.**Explanation**

The price per dollar of sales is considerably higher than that for the median of the peer group, which implies that it may well be overvalued.

(Module 22.4, LOS 22.m)

Related Material

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121. (A) sales are relatively stable and might not change even though earnings and value might change significantly.**Explanation**

The stability of sales (relative to earnings and book value) can be a disadvantage. For example, revenues may remain stable but earnings and book values can drop significantly due to a sharp increase in expenses.

(Module 22.3, LOS 22.c)

Related Material

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122. (A) 17.23.**Explanation**

$P_0/E_0 = (0.65 \times 1.06) / (0.10 - 0.06) = 17.225$

(Module 22.4, LOS 22.i)

Related Material

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123. (C) bought as an undervalued stock.**Explanation**

The price per dollar of earnings is considerably lower than that for the median of the peer group, which implies that it may well be undervalued.

(Module 22.4, LOS 22.m)

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124. (B) 7.50.

Explanation

$$PE = \frac{(1 - b) \times (1 + g)}{r - g}$$

$$1 - b = 1 - (2.50/5.00) = 0.50$$

$$P_5 / E_5 = (0.50 \times 1.05) / (0.12 - 0.05) = 7.50$$

(Module 22.4, LOS 22.i)

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125. (C) The use of P/S multiples can miss problems associated with cost control.

Explanation

Due to the stability of using sales relative to earnings in the P/S multiple, an analyst may miss problems of troubled firms concerning its cost control. P/S multiples are actually less volatile than P/E ratios, which is an advantage in using the P/S multiple. Also, P/S ratios provide a useful framework for evaluating effects of pricing changes on firm value.

(Module 22.3, LOS 22.c)

Related Material

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126. (A) 0.80.

Explanation

$$g = \text{Retention Rate} \times \text{Profit Margin} \times \text{Sales/book value of equity}$$

$$= 0.20 \times 0.08 \times 1.25 = 0.02.$$

If profit margin is based on the expected earnings next period,

$$\text{Leading P/S} = (\text{profit margin} \times \text{payout ratio}) / (r - g)$$

$$= (0.08 \times 0.80) / (0.10 - 0.02) = 0.80.$$

(Module 22.4, LOS 22.i)

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127.

	Whelan	Delft
(A)	Price/sales	Price/cash flow

Explanation

The price/sales ratio is not very volatile, and it is of particular value when dealing with cyclical companies. The price/cash flow ratio considers the stock price relative to cash flows, ignoring the noncash gains and losses that can skew earnings. A major weakness of the price/cash flow ratio is the fact that there are different ways of calculating it, making comparisons difficult at times.

(Module 22.3, LOS 22.c)

Related Material

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CFA[®]**128. (B) 3.69x.****Explanation**

EBITDA = (net income + interest + taxes + depreciation/amortization)

EV = (market value of common stock + market value of debt – cash and investments)

EBITDA = 150 + 8 + 11 + 52 = Sf 221 million

EV = (25 x 40) + 130 – 65 – 250 = Sf 815 million

EV / EBITDA = 3.69

(Module 22.4, LOS 22.0)

Related Material[SchweserNotes - Book 3](#)**129. (A) Relative strength.****Explanation**

Relative strength is generally considered a momentum valuation indicator.

(Module 22.4, LOS 22.q)

Related Material[SchweserNotes - Book 3](#)**130. (B) 1.44.****Explanation**

Based on fundamentals:

 $P/BV = (0.14 - 0.042) / (0.11 - 0.042) = 1.44.$

(Module 22.2, LOS 22.i)

Related Material[SchweserNotes - Book 3](#)**131. (C) 1.41.****Explanation**

Based on return differential:

 $P_0 / BV_0 = (ROE_1 - g) / (r - g) = (0.16 - 0.056) / (0.13 - 0.056) = 1.41.$

(Module 22.4, LOS 22.i)

Related Material[SchweserNotes - Book 3](#)

CFA[®]**132. (B) 4.56x.****Explanation**

EBITDA = (net income + interest + taxes + depreciation/amortization)

EV = (market value of common stock + market value of debt – cash and investments)

EBITDA = 160 + 9 + 12 + 48 = Sf 229 million

EV = (30 x 40) + 120 – 75 – 200 = Sf 1045 million

EV / EBITDA = 4.56

(Module 22.4, LOS 22.o)

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