Overview for Questions #1-4 of 88

Question ID: 1512436

TOPIC: QUANTITATIVE METHODS

THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS

William Shears, CFA, has been assigned the task of predicting sales for the specialty retail industry. Shears finds that sales have been increasing at a fairly constant rate over time and decides to estimate the linear trend in sales for the industry using quarterly data over the past 15 years, starting with Quarter 1 of 2004 and ending with Quarter 4 of 2018. On January 1, 2019, Shears estimates the following model:

$$sales_t = b_0 + b_1 t + e_t \quad (1)$$

where:

sales = quarterly sales (measured in $ millions) for the specialty retail industry

b_0 = intercept term

b_1 = slope

t = time variable (quarter number)

e = random error

Exhibit 1 provides the results of the linear trend regression.

Exhibit 1: Linear Trend Regression

	Coefficient	Standard Error
Intercept	10.0	3.50
Trend	16.0	6.55

Shears also estimates an autoregressive model of order one, AR(1), using the changes in quarterly sales data for the industry from the first quarter of 2004 through the fourth quarter of 2018. He obtains the following results for his AR(1) model:

$$\Delta sales_t = b_0 + b_1 \Delta sales_{t-1} + e_t$$

Exhibit 2: AR(1) Model for Changes in Industry Sales

	Coefficient	Standard Error
Intercept	20.00	2.15
Lag 1	0.10	0.04

The autocorrelations for the first four lags from Shears's AR(1) model are provided in Exhibit 3:

Exhibit 3: Autocorrelations From the AR(1) Model

Lag	Autocorrelation	p-Value
1	–0.032	0.38
2	–0.200	0.16
3	–0.065	0.23
4	0.470	0.02

Shears also derives a regression using the residuals from the AR(1) model. He regresses the squared residuals (or estimated errors) against the lagged squared residuals. The results of this regression are reported in Exhibit 4.

Quarterly sales for the Specialty Retail Industry during 2018 were:

Exhibit 4: 2018 Quarterly Industry Sales

Quarter	Sales (in millions)
Quarter 1, 2018	900
Quarter 2, 2018	925
Quarter 3, 2018	950
Quarter 4, 2018	1,000

Question #1 of 88

Question ID: 1512437

Shears's supervisor, Sam Kite, expresses concern that equation (1) might be misspecified. Specifically, Kite refers to the finding that "sales have been increasing at a fairly constant rate over time."

Which of the following data transformations should be applied to the dependent variable in equation (1) to best address Kite's concern?

A) Lagged transformation. ✗

B) Logarithmic transformation. ✓

C) First difference transformation. ✗

Explanation

A logarithmic transformation of the dependent variable is the most appropriate transformation to apply when the variable grows at a constant rate over time:

$$\ln(\text{sales}) = b_0 + b_1 t + e_t$$

The slope of this equation (b_1) equals the nominal constant rate. (Module 2.1, LOS 2.b)

Question #2 of 88

Question ID: 1507266

Using the results for the linear trend equation in Exhibit 1, the specialty retail industry sales forecast for Quarter 1 of 2019 is *closest* to:

A) $26 million. ✗

B) $976 million. ✗

C) $986 million. ✓

Explanation

Quarter 1 of 2019 is the 61st quarter (starting with Quarter 1 of 2004): sales = 10 + 16(61) = $986 million. (Module 2.1, LOS 2.b)

Question #3 of 88

Question ID: 1507267

Assuming the AR(1) model in Exhibit 2 is appropriate, Shears should conclude that the Quarter 1, 2019, change in sales is *most likely* to:

A) fall from Quarter 4, 2018, change in sales. ✓

B) rise from Quarter 4, 2018, change in sales. ✗

C) remain unchanged from Quarter 4, 2018, change in sales. ✗

Explanation

The mean reverting value equals the intercept divided by 1 minus slope = 20 / (1 − 0.10) = 20 / 0.90 = $22.22 million. The last change was $50 million as shown in Exhibit 5 (1000 − 950). Therefore, the AR(1) model predicts that the series will fall anytime the current value (the last quarter in 2018) is above the mean reverting value. The change in sales for the last quarter in 2018 was $50 million, which exceeds the mean reverting value. We could also have computed the forecasted change in sales for Quarter 1, 2019 as 20 + (0.1) × 50 = 25 (which is lower than the previous change of 50). (Module 2.2, LOS 2.f)

Question #4 of 88

Question ID: 1507268

Regarding seasonality, given a 5% level of significance, Shears should use Exhibit 3 to conclude he should add the following lag to his autoregressive model:

A) no lag. ✗

B) the 3rd lag. ✗

C) the 4th lag. ✓

Explanation

Seasonality refers to repeating patterns each year. Using quarterly data, tests of seasonality focus on the 4th lag (i.e., "same time last year"). The autocorrelation for the 4th lag is statistically significant. This can be observed by comparing the reported *p*-value (0.02), which is less than the level of significance (0.05). (Module 2.4, LOS 2.l)

Overview for Questions #5-8 of 88

Question ID: 1507274

TOPIC: ECONOMICS

THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS

Tristanya is a developed country with three states, West Tristanya (West), Central Tristanya (Central), and East Tristanya (East). Tristanya is a stable democracy with elected representatives, appointed judges, and an elected prime minister. All three states have approximately the same population and geographical area. Tristanya's savings rates are above the global average, and economic development has been mostly financed with domestic savings. The currency in Tristanya is the Tristanya dollar with a symbol of T$. The financial markets are highly liquid and function efficiently. Tristanya's foreign trade is a significant part of the economy, and because of this, Tristanya has continued to push for lower trade barriers. Similar to other developed nations, population growth rate in Tristanya is low and capital stock is high.

The three states adhere to all federal regulations but differ significantly on some policies that are not covered by federal laws. The states also have their own agencies for regional administration of state-specific regulations. Any jurisdictional issue is resolved in federal courts.

The government of Tristanya is increasing its efforts to boost labor productivity. Some of the proposals under consideration include:

1. Increased education funding for elementary and middle schools.
2. Increased tax credits for private research and development expenditures.
3. Increased depreciation allowances for tax purposes.

Fuel costs have become an issue in Tristanya as demand for gasoline is expected to increase. Mandated fuel additives, specifically corn ethanol, are used to increase supply, and minimum fuel economy standards have been imposed to curtail demand.

East has the highest obesity rates among the three states. To control the state government's health care expenditure, East's government is implementing an additional tax on all sweet snack foods manufactured in the state. The tax is also known as the "sweet tax." Another regulation, the "supersize drinks ban," will prohibit restaurants in East from selling large portion sizes of carbonated beverages.

The most common form of sweetener in Tristanya is corn syrup. The agricultural industry has benefited from excess demand for corn to produce corn syrup and ethanol. Even after implementation of the "sweet tax," the demand for corn is expected to remain high.

West has the highest gasoline usage per capita, and reducing gasoline consumption is a policy goal for that state's government. West also has the most stringent environmental regulations and has recently raised their standards for minimum fuel economy for automobiles.

Juanita Estrada, an analyst, is assigned to assess the impact of all the regulatory changes on economic growth. Estrada lists the following findings from her analysis:

Finding 1:	The snack food industry is in the process of relocating manufacturing of sweet snack foods to West and Central and relocating manufacturing of salty snack foods to East.
Finding 2:	After West raised that state's fuel economy standards, the average miles driven per capita increased.

Question #5 of 88

Question ID: 1507275

The government proposal that would *most likely* lead to the highest increase in labor productivity is:

A) Proposal 1. ✗

B) Proposal 2. ✓

C) Proposal 3. ✗

Explanation

In order for developed countries to grow, technological development is critical. Proposal 2 most clearly addresses this need. Proposal 1 would be more effective if the focus was on post-secondary education, as developed nations benefit more from innovation and less from applying technology. Proposal 3 is unlikely to have a major impact on labor productivity, as developed nations have high capital-to-labor ratios, and incentives to further increase capital will have relatively little effect on labor productivity. (Module 6.2, LOS 6.h)

Question #6 of 88

Question ID: 1507276

Which Tristanyan industry is *most likely* to shrink due to the regulatory changes in the East?

A) Snacks. ✗

B) Agriculture. ✗

C) Carbonated beverages. ✓

Explanation

The carbonated beverages industry is likely to be hurt by the elimination of bigger sizes of drinks. The snack industry can avoid the new manufacturing tax in East by moving manufacture of sweet snacks to the other two states. The demand for corn is expected to remain fairly high so the regulatory changes in East are unlikely to have a major impact on the Tristanyan agricultural industry. (Module 7.1, LOS 7.i)

Question #7 of 88

Question ID: 1507277

Based on finding 1, the snack food industry is engaging in regulatory:

A) capture.

B) arbitrage.

C) competition.

Explanation

The snack foods industry, a regulated entity, has found a way to exploit the differences in regulations among the three states and is engaging in regulatory arbitrage. Regulatory competition is a result of actions taken by regulators to attract certain entities. Regulatory capture is the idea that regulatory bodies are influenced or controlled by the regulated industry. (Module 7.1, LOS 7.f)

Question #8 of 88

Question ID: 1507278

The cost associated with finding 2 is:

A) a component of the regulatory burden.

B) a component of the implementation cost.

C) a justification for sunset provisions.

Explanation

The increase in driving miles was not the intended effect of the regulation. Unintended effects are not a component of implementation cost. Regulatory burden refers to the cost of regulation for the entity being regulated. If sunset clause provisions were included in the regulation, West's regulators would be required to revisit the cost-benefit analysis and consider the cost of unintended consequences before renewing the regulation. (Module 7.1, LOS 7.h)

Overview for Questions #9-12 of 88

Question ID: 1508352

TOPIC: ECONOMICS

THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS

Bella Stone, CFA, is analyzing investment opportunities in Astair, an emerging market. She notes that at a recent congressional hearing, Mr. Adel Mahi, the chief economic advisor to the prime minister, stated that Astair's capital accumulation affects the size of the Astair's GDP but not its growth rate.

All commercial and financial market regulations are the domain of federal agencies and government recognized self-regulatory organizations (SROs). In this regard, the federal government tends to set minimum standards and allows each state to create agencies to enforce their regulations.

While discussing international parity conditions with an intern, Stone makes the following statements.

Statement 1:	Absolute purchasing power parity extends the law of one price and states that a basket of goods should have the same price throughout the world. Absolute purchasing power parity is not widely used in practice to forecast exchange rates.
Statement 2:	Although relative purchasing power parity is useful as an input for long-run exchange rate forecasts, it is not useful for predicting short-run currency values.
Statement 3:	For uncovered interest rate parity to hold, the forward rate must be an unbiased predictor of the future spot rate.

Question #9 of 88

Question ID: 1508353

Mahi's statement is consistent with:

A) classical growth theory. ✗

B) endogenous growth theory. ✗

C) neoclassical growth theory. ✓

Explanation

Neoclassical growth theory concludes that capital accumulation affects the level of output but not the long-run growth rate.

(Module 6.3, LOS 6.i)

Question #10 of 88

Question ID: 1508354

The objectives of regulators in financial markets is *least likely* to include:

A) low inflation. ✓

B) prudential supervision. ✗

C) promotion of economic growth. ✗

Explanation

The objectives of regulators in financial markets include prudential supervision, financial stability, market integrity, and economic growth. Low inflation is likely to be an objective of the central bank.

(Module 7.1, LOS 7.b)

Question #11 of 88

Question ID: 1508355

Regarding statements 1 and 2 made by Stone, are both statements correct?

A) Yes. ✓

B) No, only Statement 2 is correct. ✗

C) No, both statements are incorrect. ✗

Explanation

Statement 1: Stone is correct regarding absolute purchasing power parity. It is based on the law of one price, which states that the price of goods (after currency conversion) should not differ internationally. Absolute purchasing power parity is not used to predict exchange rates.

Statement 2: Stone is correct regarding relative purchasing power parity. It does not hold in the short-run and therefore is not useful for predicting short-run currency values. It does tend to hold in the long- run, however, and is therefore useful for long-run exchange rate forecasts.

(Module 5.2, LOS 5.e)

Question #12 of 88

Question ID: 1508356

Stone's statement 3 is *most likely*:

A) correct. ✓

B) incorrect as uncovered interest rate parity holds only if real interest rate parity holds. ✗

C) incorrect as uncovered interest rate parity holds only if covered interest rate parity holds. ✗

Explanation

When the expected future spot rate is equal to the forward rate (and given that covered interest parity always holds—by arbitrage), uncovered interest rate parity should hold as well. The international Fisher relationship links relative purchasing power parity to uncovered interest rate parity. Real interest rate parity links the Fisher effect to the international Fisher relationship.

(Module 5.2, LOS 5.f)

Overview for Questions #13-16 of 88

Question ID: 1512441

TOPIC: FINANCIAL STATEMENT ANALYSIS

THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS

Delicious Candy Company (Delicious) is a leading manufacturer and distributor of quality confectionery products throughout Europe and Mexico. Delicious is a publicly traded firm located in Italy and has been in business over 60 years. Delicious complies with International Financial Reporting Standards (IFRS).

Caleb Scott, an equity analyst with a large pension fund, has been asked to complete a comprehensive analysis of Delicious in order to evaluate the possibility of a future investment.

Scott compiles the selected financial data found in Exhibit 1 and learns that Delicious owns a 30% equity interest in a supplier located in the United States. Delicious uses the equity method to account for its investment in the U.S. associate. The associate prepares its financial statements in accordance with U.S. Generally Accepted Accounting Principles (GAAP).

Exhibit 1: Selected Financial Data—Delicious Candy Company

In millions	2017	2016
Income Statement		
Revenue	€60,229	€55,137
Earnings before interest and tax	7,990	7,077
Earnings before tax	7,570	6,779
Income from associate[a]	354	270
Net income	6,501	5,625
Balance sheet		
Total assets[b]	€56,396	€53,111
Investment in associate	5,504	5,193
Stockholders' equity[c]	30,371	29,595

[a] Not included in EBIT or EBT.

[b] Total assets were €45,597 at the end of 2015.

[c] Stockholders' equity was €27,881 at the end of 2015.

Scott reads the Delicious's revenue recognition footnote found in Exhibit 2.

Exhibit 2: Revenue Recognition Footnote

In millions
Revenue is recognized, net of returns and allowances, when the goods are shipped to customers and collectibility is assured. Several customers remit payment before delivery in order to receive additional discounts. Delicious reports these amounts as unearned revenue until the goods are shipped. Unearned revenue was €9,701 at the end of 2017, €2,514 at the end of 2016, and €2,511 at the end of 2015.

Scott wants to determine whether the cash flow is of high quality.

Scott gathers the information in Exhibit 3 to determine the implied "stand-alone" value of Delicious without regard to the value of its U.S. associate.

Exhibit 3: Selected 2017 Market Capitalization Data

In millions except exchange rates	Delicious	Associate
Market capitalization	€97,525	$32,330
Current exchange rate (€ per $)	€0.70	
Average exchange rate (€ per $)	€0.73	

Delicious financial statements include an investment of €60 million in debt securities, which are reported as fair value through profit or loss securities.

Question #13 of 88

Question ID: 1507290

When applying the financial analysis framework to Delicious, which of the following is the *best* example of an input Scott should use when establishing the purpose and context of the analysis?

A) The audited financial statements of Delicious prepared in conformance with either U.S. GAAP or IFRS. ✗

B) Ratio analysis adjusted for differences between U.S. accounting standards and international accounting standards. ✗

C) Review of the pension fund's guidelines related to developing the specific work product. ✓

Explanation

The institutional guidelines related to developing the specific work product is an input source in the first phase (defining the purpose and context of the analysis). Audited financial statements are an example of an input in the data collection phase. Ratio analysis is an example of the output from the data processing phase. (Module 13.1, LOS 13.a)

Question #14 of 88

Question ID: 1507291

If Delicious reported the investment in debt securities as fair value through OCI securities instead of as fair value through profit or loss securities, the impact on Delicious's financial statement would be:

A) to decrease total assets. ✗

B) to increase total assets. ✗

C) no change to total assets. ✓

Explanation

If Delicious reported the investment in debt securities as fair value through OCI instead of fair value through profit or loss, its total assets would be unchanged, because both methods report the bonds at fair value on the balance sheet. Net income would, however, differ with unrealized gains or loss reported in income statement under fair value through profit or loss classification while being reported in OCI under fair value through OCI classification. (Module 8.1, LOS 8.a)

Question #15 of 88

Question ID: 1512442

Using the data found in Exhibit 1 and Exhibit 2, which of the following *best* describes the impact on Delicious's financial leverage in 2017 as compared to 2016?

A) Financial leverage increased, but the true nature of the leverage decreased. ✓

B) Financial leverage increased, and the true nature of the leverage increased. ✗

C) Financial leverage and the true nature of the leverage were unchanged. ✗

Explanation

Delicious's financial leverage ratio was 1.8 (54,753 average assets / 29,983 average equity) for 2017 and was 1.7 for 2016 (49,354 average assets / 28,738 average equity). Although leverage was higher, the nature of the true leverage was lower. This is because the increasing customer advances (unearned revenue) will not require an outflow of cash in the future and are, thus, less onerous than Delicious's other liabilities.

Average unearned revenue during 2017 = [€9,701 + €2,514] / 2 = 6,107.5

Average unearned revenue during 2016 = [2,514 + 2,511] / 2 = 2512.5

Average assets – average unearned revenue for 2017 = 54,753 – 6,107.5 = 48,645.5

Average assets – average unearned revenue for 2016 = 49,354 – 2,512.5 = 46,841.5

Leverage (2017) = 48,645.50 / 29,983 = 1.62

Leverage (2016) = 46841.5 / 28,738 = 1.63

(Module 13.2, LOS 13.b)

Question #16 of 88

Question ID: 1507293

Using the data found in Exhibit 1 and Exhibit 3, Delicious's implied P/E multiple without regard to its U.S. associate is *closest* to:

A) 14.0. ✗

B) 14.8. ✓

C) 15.1. ✗

Explanation

Delicious's implied value without its U.S. associate is €90,736 [€97,525 Delicious market cap − €6,789 share of associate's market cap ($32,330 × 30% × €0.70 / $ current exchange rate)].

Delicious's net income without associate is €6,147 (€6,501 net income − €354 pro-rata share of income from associate).

Implied P/E = 14.8 (€90,736 Delicious implied value without associate / €6,147 Delicious net income without associate). (Module 13.5, LOS 13.e)

Overview for Questions #17-20 of 88

Question ID: 1508379

TOPIC: EQUITY VALUATION

THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS

Brightscore Investments is a boutique wealth management firm. One of Brightscore's equity analysts, Marie Swift, CFA, recently held a meeting with the senior partners to discuss a relatively new model the firm is implementing to determine the P/E ratios of companies that Brightscore researches.

Swift explains that the model utilizes a cross-sectional regression using the previous year-end data of a group of comparable companies' P/E ratios against their dividend payout ratios (payout ratio), sustainable growth rates (*g*), and returns on equity (ROE). The resulting regression equation is used to determine a predicted P/E ratio for the subject company using the subject company's most recent year-end data. Swift has developed the following model, which has an R-squared of 81%, for the semiconductor industry (16 companies):

predicted P/E =	2.74 +	8.21(payout ratio) +	14.21(g) +	2.81(ROE)
(STD error)	(2.11)	(6.52)	(9.24)	(2.10)

Swift collects data on three companies as shown in Exhibit 1.

Exhibit 1: Selected Financial Information

	A	B	C
EPS	$2.00	$4.00	$3.00
DPS	$0.50	$1.60	$1.50
ROE	20%	15%	13%
Required rate of return	20%	12%	10%

Swift is following Sigma, Inc., a chipmaker for wearable devices. Sigma has invested significantly in R&D since its inception and that expenditure is finally bearing fruit: the company is now profitable. Sigma correctly expenses the R&D expenditure when incurred. Relative to its competitors, Sigma pays a lower share of gross revenue to its

independent contractors. However, Sigma does pay contractors annual bonuses based on their number of years of affiliation with the company.

Swift is also analyzing Safe Bank, a regional bank holding company. Safe Bank is expected to have an earnings growth rate of 3% going forward and its ROE is 12%. Current BVPS is $50.

Question #17 of 88

Question ID: 1508380

Based on Exhibit 1, which company has the lowest predicted P/E utilizing the model presented by Swift?

A) A. ✓

B) B. ✗

C) C. ✗

Explanation

First calculate the growth rates = ROE × retention rate

A: 0.20 × 0.75 = 15%

B: 0.15 × 0.6 = 9%

C: 0.13 × 0.5 = 6.50%

Based on the model presented, the predicted P/E ratios can be calculated as:

A: 2.74 + 8.21(0.50 / 2.00) + 14.21(0.15) + 2.81(0.20) = 7.49

B: 2.74 + 8.21(1.60 / 4.00) + 14.21(0.09) + 2.81(0.15) = 7.72

C: 2.74 + 8.21(1.50 / 3.00) + 14.21(0.065) + 2.81(0.13) = 8.13

(Module 22.4, LOS 22.e)

Question #18 of 88

Question ID: 1508381

Which relative valuation multiple would Swift *most appropriately* use to value Sigma, Inc.?

A) Price-to-cash-flow ratio. ✓

B) Price-to-book ratio. ✗

C) Price-to-sales ratio. ✗

Explanation

We are told that the firm has significant investment in R&D, suggesting the existence of intangible assets that are not reflected in Sigma's book value; hence, the price-to-book value ratio may be misleading. Sigma's cost structure is different from that of its peers, so use of price-to-sales ratio may not be directly comparable. The price-to-cash-flow ratio is most appropriate here because cash flow is less prone to manipulation and less likely to be distorted by differences in accounting practices.

(Module 22.1, LOS 22.c)

Question #19 of 88

Question ID: 1508382

Which of the following is *least appropriate* regarding the use of standardized unexpected earnings?

A) A given size forecast error is more meaningful the lower the size of historical forecast errors. ✗

B) SUE divides earnings surprise by the standard deviation of earnings. ✓

C) The economic rationale for examining earnings surprises is that positive surprises may lead to persistent positive abnormal returns. ✗

Explanation

SUE divides earnings surprise by the standard deviation of earnings surprise. Other statements are accurate.

(Module 22.4, LOS 22.q)

Question #20 of 88

Question ID: 1508383

Assuming a 9% required rate of return and using the residual income model, the value of Safe Bank's equity is *closest* to:

A) $75 per share. ✓

B) $95 per share. ✗

C) $115 per share. ✗

Explanation

$$V_0 = B_0 + \frac{(ROE - r) \times B_0}{(r - g)} = \$50 + \frac{(0.12 - 0.09)50}{0.09 - 0.03} = \$75$$

(Module 23.2, LOS 23.d)

Overview for Questions #21-24 of 88

Question ID: 1508369

TOPIC: EQUITY VALUATION

THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS

George Armor, CFA, is a new stock analyst for Pedad Investments. One tool that Pedad uses to compare stock valuations is the dividend discount model (DDM). In particular, the firm evaluates stocks in terms of "justified" multiples of sales and book value. These multiples are based on algebraic manipulation of the DDM. Over time, these multiples seem to provide a good check on the market valuation of a stock relative to the company's fundamentals. Any stock that is currently priced below its value based on a justified multiple of sales or book value is considered attractive for purchase by Pedad portfolio managers. Exhibit 1 contains financial information from the year just ended for three stable companies in the meatpacking industry: Able Corporation, Baker, Inc., and Charles Company, from which Armor will derive his valuation estimates.

Exhibit 1: Selected Financial Information

	Able Corporation	Baker, Inc.	Charles Company
Revenue/share	$115.00	$52.80	$25.75
EPS	$2.50	$4.80	$4.00
DPS	$1.00	$1.60	$2.50
ROE	25%	15%	8%
Book value per share	$10.00	$32.00	$50.00
Stock price per share (current)	$60.00	$70.00	$35.50
Required return	20%	12%	10%

Question #21 of 88

Question ID: 1508370

Based on Exhibit 1, which stock is the *most* undervalued by applying the justified price-to-book value method?

A) Able Corporation. ✗

B) Baker, Inc. ✓

C) Charles Company. ✗

Explanation