



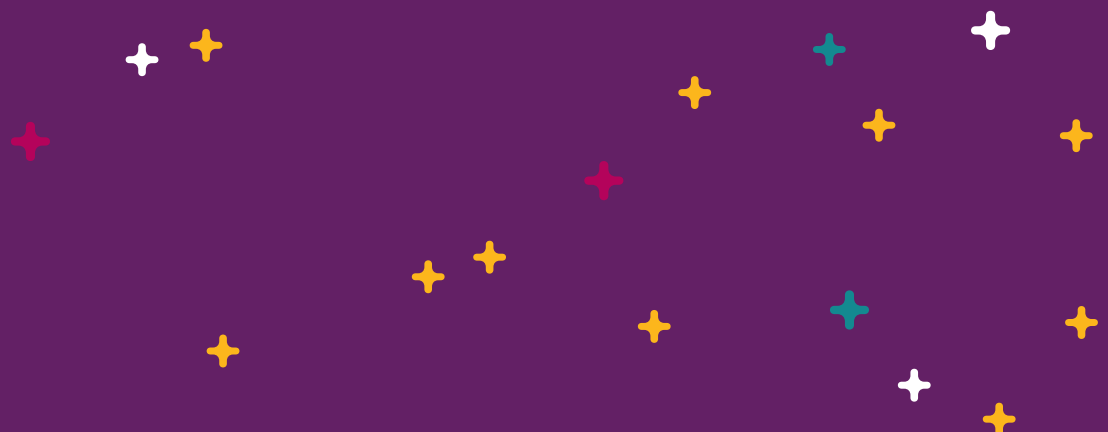
CMA Exam Review

Part 2

Strategic Financial Management

For Exams Scheduled
After July 31, 2020

V1.0



PART 2

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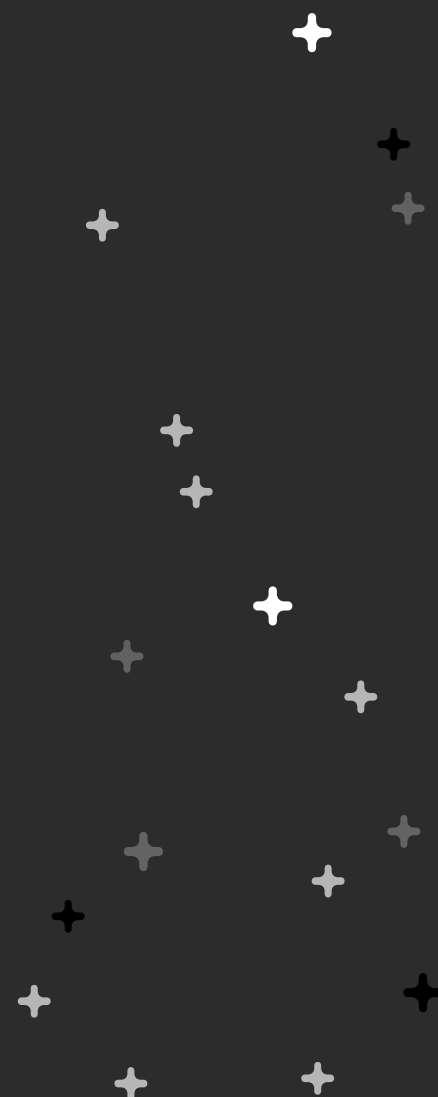
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2A. Financial Statement Analysis

Module

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NOTES

This module covers the following content from the IMA *Learning Outcome Statements*.

CMA LOS Reference: Part 2—Section A.1. Financial Statement Analysis

The candidate should be able to:

- a. for the balance sheet and income statement, prepare and analyze common-size financial statements; i.e., calculate percentage of assets and sales, respectively; also called vertical analysis
- b. for the balance sheet and income statement, prepare a comparative financial statement horizontal analysis; i.e., calculate trend year over year for every item on the financial statement compared to the base year
- c. calculate the growth rate of individual line items on the balance sheet and income statement

1 Vertical and Horizontal Analysis

1.1 Vertical Analysis

LOS 2A1a

Common-size financial statements, also called vertical analysis, show each item in the financial statements as a percentage of a base account within each statement.

1.1.1 Income Statement: Vertical Analysis

All line items in the income statement are expressed as a percentage of net sales revenue allowing comparison of operating performance between two differently sized entities, especially those in the same industry. Entities in the same industry generally have similar percentages during a period. Understanding the composition of costs enables users to identify significant items that influence profitability.

$$\text{Common-size income statement} = \left[\frac{\text{Income statement line item}}{\text{Net sales revenue}} \right] \times 100$$

Vertical analysis can also be used by applying a different denominator within an income statement account. For example, if general and administrative (G&A) costs are the focus, then total G&A expense could be used as the denominator (base) for all expense line items that are included in that total.

The benefit of this is that it may make differences in some expense accounts more obvious by using a smaller base, as opposed to being less obvious when using revenue as the sole base.

Illustration 1 Income Statement Analysis

Taylen Inc. has an opportunity to invest either in an established restaurant in Big City (BC) or in a locally owned restaurant in Taylen's hometown. To determine which investment is better, Taylen reviews the income statement for each company for the most recent quarter:

Big City Restaurant		Local Restaurant	
Sales	\$1,000,000	Sales	\$40,000
Cost of goods sold	<u>500,000</u>	Cost of goods sold	<u>10,000</u>
Gross profit	500,000	Gross profit	30,000
Operating expenses	<u>450,000</u>	Operating expenses	<u>24,000</u>
Net income	<u>\$ 50,000</u>	Net income	<u>\$ 6,000</u>

While the numbers for the restaurant located in Big City are much larger and show a greater profit than the numbers and profit for the local restaurant, a comparison using vertical analysis, with each line item as a percentage of sales revenues, reveals that the local restaurant had a higher operating margin:

Big City Restaurant			Local Restaurant		
Sales	\$1,000,000	100%	Sales	\$40,000	100%
Cost of goods sold	<u>500,000</u>	<u>50%</u>	Cost of goods sold	<u>10,000</u>	<u>25%</u>
Gross profit	500,000	50%	Gross profit	30,000	75%
Operating expenses	<u>450,000</u>	<u>45%</u>	Operating expenses	<u>24,000</u>	<u>60%</u>
Net income	<u>\$ 50,000</u>	<u>5%</u>	Net income	<u>\$ 6,000</u>	<u>15%</u>

Based upon the vertical analysis, Taylen determines that the BC restaurant was less profitable per sales dollar than the local restaurant. The BC restaurant's cost of goods sold as a percentage of sales was double the rate for the local restaurant and therefore diminished the profit potential for the BC restaurant. Although the local restaurant's operating expenses as a percentage of sales were higher, the local restaurant generated a 15 percent return for every dollar of sales revenue earned by the local restaurant, compared to a 5 percent return for the BC restaurant.

1.1.2 Balance Sheet: Vertical Analysis

All line items in the balance sheet are expressed as a percentage of total assets (or the sum of total liabilities and stockholders' equity, which equals total assets).

$$\text{Common-size balance sheet} = \left[\frac{\text{Balance sheet line item}}{\text{Total assets}} \right] \times 100$$

Different accounts can be used as the base in order to make comparisons. Depending on the size of the company, the base could be total fixed assets, total current assets, total current liabilities, or total long-term debt.

Example 1 Balance Sheet Analysis

Facts: Apex Corp.'s management has set targets for specific balance sheet accounts as a percentage of total assets, as set forth below:

	% of Total Assets
Cash	5%
Property, plant, and equipment	50%
Current liabilities	10%

The balance sheet for the current year reflects the following balances:

Apex Corp. Balance Sheet December 31, Year 1	
Current assets:	
Cash	\$ 50,000
Accounts receivable, net	80,000
Inventory	<u>160,000</u>
Total current assets	290,000
Property, plant, and equipment, net	<u>120,000</u>
Total assets	<u><u>\$410,000</u></u>
Liabilities and stockholders' equity:	
Current liabilities:	
Accounts payable	\$110,000
Notes payable	<u>50,000</u>
Total current liabilities	160,000
Stockholders' equity:	
Common stock	190,000
Retained earnings	<u>60,000</u>
Total liabilities and stockholders' equity	<u><u>\$410,000</u></u>

Required: To determine if Apex is meeting its goals, prepare a common-size balance sheet based on total assets.

(continued)

(continued)

Solution: To determine individual percentages (rounded to one decimal place), divide each line item amount by \$410,000, the amount of total assets:

Apex Corp. Common-Size Balance Sheet December 31, Year 1	
Current assets:	
Cash	12.2%
Accounts receivable, net	19.5%
Inventory	<u>39.0%</u>
Total current assets	70.7%
Property, plant, and equipment, net	<u>29.3%</u>
Total assets	<u>100.00%</u>
Liabilities and stockholders' equity:	
Current liabilities:	
Accounts payable	26.8%
Notes payable	<u>12.2%</u>
Total current liabilities	39.0%
Stockholders' equity:	
Common stock	46.4%
Retained earnings	<u>14.6%</u>
Total liabilities and stockholders' equity	<u>100.00%</u>

Apex currently has 12.2 percent of total assets in cash—more than double the percentage desired by management. Property, plant, and equipment represent only 29.3 percent of total assets—significantly below the 50 percent target. Apex's management should consider investing excess cash in property, plant, and equipment (capital expenditures) to reach its targets.

Current liabilities are 39.0 percent of total assets, exceeding Apex's 10 percent target. By obtaining an understanding of the relationship of each balance sheet account to total assets, management can better direct the activities of the company. An alternative to spending Apex's excess cash on capital expenditures would be to pay off current liabilities, minimizing the ratios for cash and current liabilities. Apex could then issue more equity to fund investments in property, plant, and equipment, achieving its target of 50 percent.

1.2 Horizontal Analysis

LOS 2A1b

Management can use horizontal analysis (base-year trend analysis) in combination with common-size statements to examine the changes in accounts over time. Horizontal analysis helps focus on account balance increases or decreases in relation to a specific base year in order to identify notable trends. The base year is the earliest year reported, and all successive years are expressed in proportion to that base-year amount. This method provides a constant base against which multiple years may be analyzed.

A horizontal analysis of the income statement may review growth in targeted line items over time. This type of analysis can be performed for any income statement account for which management desires to identify possible trends. A horizontal analysis of the balance sheet allows management to review growth over time in targeted individual balance sheet accounts as well as broader changes to total assets, total liabilities, and total equity.

$$\text{Common base-year statements} = \left[\frac{\text{Current year line item amount}}{\text{Base year line item amount}} \right] \times 100$$

Example 2 Horizontal Analysis

Facts: Apex Corp.'s management is analyzing the income statement for Year 2 and Year 3 to evaluate trends in the financial statement results. Below are the income statements for the past three years.

Apex Corp. Income Statement for the Years Ended December 31			
	Year 3	Year 2	Year 1
Net sales	\$2,100,000	\$1,800,000	\$1,300,000
Cost of goods sold	<u>(1,390,000)</u>	<u>(1,200,000)</u>	<u>(880,000)</u>
Gross profit	\$ 710,000	\$ 600,000	\$ 420,000
Total operating expenses	(380,000)	(300,000)	(200,000)
Income taxes	<u>(28,000)</u>	<u>(30,000)</u>	<u>(12,000)</u>
Net income	<u>\$ 302,000</u>	<u>\$ 270,000</u>	<u>\$ 208,000</u>

Required: Prepare a horizontal analysis for Apex's Year 2 and Year 3 income statements using Year 1 as the base year and discuss any notable trends.

(continued)

(continued)

Solution:

Apex Corp. Income Statement for the Years Ended December 31				
	Year 3	Year 2	Year 3	Year 2
Net sales	\$2,100,000	\$1,800,000	161.54%	138.46%
Cost of goods sold	<u>(1,390,000)</u>	<u>(1,200,000)</u>	157.95%	136.36%
Gross profit	\$ 710,000	\$ 600,000	169.05%	142.86%
Total operating expenses	(380,000)	(300,000)	190.00%	150.00%
Income taxes	<u>(28,000)</u>	<u>(30,000)</u>	233.33%	250.00%
Net income	<u>\$ 302,000</u>	<u>\$ 270,000</u>	145.19%	129.81%

This analysis shows that all income statement line items increase in Years 2 and 3 when compared to Year 1. Note that the common base-year amount for each line item reveals the percentage change for that line item from Year 1. For example, Year 2 net sales expressed in terms of Year 1 are 138.46 percent, which means that Year 2 net sales are 38.46 percent higher than Year 1 net sales.

LOS 2A1b

1.3. Financial Statement Growth Rates

LOS 2A1c

To determine positive or negative growth from year to year, management should frequently review financial statement accounts. Unlike horizontal analysis where a single base year is used for all calculations, measuring growth rates using annual dollar amounts involves shifting the base year forward by one year.

$$\text{Annual growth rate} = \left[\frac{(\text{Current year amount} - \text{Prior year amount})}{\text{Prior year amount}} \right] \times 100$$

Example 3 Growth Rate Analysis

Facts: Apex Corp.'s management is reviewing the income statement and balance sheet for Years 1 through 3:

Apex Corp. Income Statement for the Years Ended December 31			
	Year 3	Year 2	Year 1
Net sales	\$2,100,000	\$1,800,000	\$1,300,000
Cost of goods sold	<u>(1,390,000)</u>	<u>(1,200,000)</u>	<u>(880,000)</u>
Gross profit	\$ 710,000	\$ 600,000	\$ 420,000
Total operating expenses	(380,000)	(300,000)	(200,000)
Income taxes	<u>(28,000)</u>	<u>(30,000)</u>	<u>(12,000)</u>
Net income	<u>\$ 302,000</u>	<u>\$ 270,000</u>	<u>\$ 208,000</u>

Apex Corp. Balance Sheet December 31			
	Year 3	Year 2	Year 1
Current assets:			
Cash	\$100,000	\$ 80,000	\$ 50,000
Accounts receivable	135,000	100,000	80,000
Inventory	160,000	120,000	160,000
Property, plant, and equipment, net	<u>310,000</u>	<u>250,000</u>	<u>120,000</u>
Total assets	<u>\$705,000</u>	<u>\$550,000</u>	<u>410,000</u>
Liabilities and stockholders' equity:			
Accounts payable	\$125,000	\$100,000	\$110,000
Notes payable	90,000	70,000	50,000
Common stock	280,000	280,000	190,000
Retained earnings	<u>210,000</u>	<u>100,000</u>	<u>60,000</u>
Total liabilities and stockholders' equity	<u>\$705,000</u>	<u>\$550,000</u>	<u>\$410,000</u>

Required: Prepare a growth rate analysis of Apex's income statement and balance sheet for Years 1 through 3.

(continued)

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Solution:

Apex Corp. Income Statement for the Years Ended December 31					
	Year 3	Year 2	Year 1	% Chg. Y2-Y3	% Chg. Y1-Y2
Net sales	\$2,100,000	\$1,800,000	\$1,300,000	16.67%	38.46%
Cost of goods sold	<u>(1,390,000)</u>	<u>(1,200,000)</u>	<u>(880,000)</u>	15.83%	36.36%
Gross profit	\$ 710,000	\$ 600,000	\$ 420,000	18.33%	42.86%
Total operating expenses	(380,000)	(300,000)	(200,000)	26.67%	50.00%
Income taxes	<u>(28,000)</u>	<u>(30,000)</u>	<u>(12,000)</u>	(6.67%)	150.00%
Net income	<u>\$ 302,000</u>	<u>\$ 270,000</u>	<u>\$ 208,000</u>	11.85%	29.81%

Apex Corp. Balance Sheet Years 1, 2, and 3					
	Year 3	Year 2	Year 1	% Chg. Y2-Y3	% Chg. Y1-Y2
Current assets:					
Cash	\$100,000	\$ 80,000	\$ 50,000	25.00%	60.00%
Accounts receivable	135,000	100,000	80,000	35.00%	25.00%
Inventory	160,000	120,000	160,000	33.33%	(25.00%)
Property, plant, and equipment, net	<u>310,000</u>	<u>250,000</u>	<u>120,000</u>	24.00%	108.33%
Total assets	<u>\$705,000</u>	<u>\$550,000</u>	<u>410,000</u>	28.18%	34.15%
Liabilities and stockholders' equity:					
Accounts payable	\$125,000	\$100,000	\$110,000	25.00%	(9.09%)
Notes payable	90,000	70,000	50,000	28.57%	40.00%
Common stock	280,000	280,000	190,000	0.00%	47.37%
Retained earnings	<u>210,000</u>	<u>100,000</u>	<u>60,000</u>	110.00%	66.67%
Total liabilities and stockholders' equity	<u>\$705,000</u>	<u>\$550,000</u>	<u>\$410,000</u>	28.18%	34.15%

(continued)

(continued)

Evaluating the growth rate in this way reveals nuances that otherwise might be missed by only looking at a horizontal or vertical analysis. Calculating the percentage change year-over-year reveals that profits grew but at a slower rate in Year 3 than in Year 2 (11.85% vs. 29.81%).

The balance sheet supports the slowdown in sales as inventory increased 33.33 percent in Year 3 compared to a decline of 25 percent in Year 2. Apex issued no equity in Year 3 but did have an increase in both long-term debt (notes payable) and short-term debt (accounts payable), possibly to cushion operations as a result of slower growth than expected.

Question 1

MCQ-12701

A useful analysis to compare a large accounting firm's operating results with a small, local accounting firm is:

- Horizontal analysis.
- Vertical analysis.
- Growth rate analysis.
- Sensitivity analysis.

Question 2

MCQ-12702

Sweetwater Corp.'s accountant has been asked to recreate financial statement information that was destroyed when a disgruntled manager deleted files and destroyed paper documents. A partial growth rate analysis of an income statement was recovered:

	Percentage of Base Year			Growth Rate Analysis Increase (Decrease) From Previous Year	
	<i>Year 3</i>	<i>Year 2</i>	<i>Year 1</i>	<i>Year 3</i>	<i>Year 2</i>
Net sales	?	105.42%		4.82%	?
Cost of goods sold	?	95.74%		3.45%	?
Gross profit	?	99.63%		5.14%	?
Operating expenses	?	110.28%		(12.95%)	?
Income taxes	?	102.12%		3.34%	?
Net income	?	114.18%		?	?

Using growth rate analysis, what is the percentage change for Year 3 over the base year?

- 124.56%
- 96.00%
- 87.05%
- 97.63%

Question 3**MCQ-12703**

Sweetwater Corp.'s accountant has been asked to recreate financial statement information that was destroyed when a disgruntled manager deleted files and destroyed paper documents. A partial growth rate analysis of an income statement was recovered:

	Percentage of Base Year			Growth Rate Analysis Increase (Decrease) From Previous Year	
	<u>Year 3</u>	<u>Year 2</u>	<u>Year 1</u>	<u>Year 3</u>	<u>Year 2</u>
Net sales	?	105.42%		4.82%	?
Cost of goods sold	?	95.74%		3.45%	?
Gross profit	?	99.63%		5.14%	?
Operating expenses	?	110.28%		(12.95%)	?
Income taxes	?	102.12%		3.34%	?
Net income	?	114.18%		?	?

If Year 2 cost of goods sold is \$344,644, what is the dollar amount for cost of goods sold in Year 1?

- a. \$361,255
- b. \$359,979
- c. \$356,534
- d. \$344,644