FINANCIAL STATEMENT ANALYSIS

Lecture 5

COMPARATIVE FINANCIAL STATEMENT ANALYSIS

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Individuals conduct **comparative financial statement analysis** by reviewing consecutive balance sheets, income statements, or statements of cash flows from period to period.

This usually involves a review of changes in individual account balances on a year-to-year or multiyear basis. The most important information often revealed from comparative financial statement analysis is trend. A comparison of statements over several periods can reveal the direction, speed, and extent of a trend. Comparative analysis also compares trends in related items. For example, a year-to-year 10% sales increase accompanied by a 20% increase in carriage outward costs requires investigation and explanation. Similarly, a 15% increase in accounts receivable along with a sales increase of only 5% calls for investigation.

In both cases we look for reasons behind differences in these interrelated rates and any implications for our analysis. Comparative financial statement analysis also is referred to as *horizontal analysis* given the left-right (or right-left) analysis of account balances as we review comparative statements. Two techniques of comparative analysis are especially popular: year-to-year change analysis and index-number trend analysis.

Year-to-Year Change Analysis

Comparing financial statements over relatively short time periods—two to three years—is usually performed with analysis of year-to-year changes in individual accounts. A year-to-year change analysis for short time periods is manageable and understandable. It has the advantage of presenting changes in absolute dollars amounts as well as in percentages. Change analyses in both amounts and percentages are relevant since different dollars bases in computing percentage changes can yield large changes inconsistent with their actual importance. For example, a 50% change from a base amount of $ 1,000 is usually less significant than the same percentage change from a base of $ 100,000. Reference to dollars amounts is necessary to retain a proper perspective and to make valid inferences on the relative importance of changes.

Computation of year-to-year changes is straightforward. Still, a few rules should be noted. When a negative amount appears in the base and a positive amount in the next period (or vice versa), we cannot compute a meaningful percentage change. Also, when there is no amount for the base period, no percentage change is computable. Similarly, when the base period amount is small, a percentage change can be computed but the number must be interpreted with caution. This is because it can signal a large change merely because of the small base amount used in computing the change. Also, when an item has a value in the base period and none in the next period, the decrease is 100%.

Comparative financial statement analysis typically reports both the cumulative total for the period under analysis and the average (or median) for the period. Comparing yearly amounts with an average, or median, computed over a number of periods helps highlight unusual fluctuations.

Example one

Grace & Blessed Inc management wants to evaluate the business as they consider bringing a strategic partner on board. The financial statements of the company are presented below;

Income statements

	2019	2020
	(000)	(000)
Sales	7,000	9,000
Less: Cost of goods sold	5,000	6,400
Gross profit	2,000	2,600
Less: Operating expenses		
General & administrative expenses	200	300
Selling & distribution expenses	400	500
Other operating expenses	100	150
Operating profit	1,300	1,650
Less: Interest expenses	300	400
Net income before taxes	1,000	1,250
Less: Taxes at 30%	300	375
Net Income after taxes	**700**	**875**

Balance Sheets

	2019	2020
	(000)	(000)
Current Assets:		
Cash	500	600
Accounts Receivables	2,000	3,000
Inventory	1,500	2,500
Total Current Assets	4,000	6,100
Fixed Assets:		
Buildings	3,000	4,000

Furniture's & office equipment	1,000	1,500
Total Fixed Assets	4,000	5,500
Total Assets	**8,000**	**11,600**
Liabilities:		
Current Liabilities:		
Accounts Payable	1,000	1,200
Notes Payable	500	500
Interest Payable	100	120
Total Current Liabilities	1,600	1,820
Shareholder's Equity:		
Common Stock	5,000	7,500
Retained earnings	1,400	2,280
Total Stockholder's equity	6,400	9,780
Total Liabilities & Stockholder's equity	**8,000**	**11,600**

Required

1. Prepare the following comparative financial statements showing the percentage increase or decrease in the various items.

    i. Statement of financial performance.
    ii. Statement of financial position.

2. Comment on the performance of the business over the two years.

SOLUTION

e.g.

For sales, the workings are as below;

Sales 9,000 – 7,000 = 2,000 (increase)

% increase = 2,000/7,000 x 100

= 28.75%

For cost of goods sold, the workings are as below;

6,400 – 5,000 = 1,400

% increase = 1,400/5,000 x 100

= 28%

Income statements

	2019 (000)	2020 (000)	Increase/ (Decrease)	% of increase / (decrease)
Sales	7,000	9,000	2,000	28.57%
Less: Cost of goods sold	5,000	6,400	1,400	28.00%
Gross profit	2,000	2,600	600	30.00%
Less: Operating expenses				
General & administrative expenses	200	300	100	50.00%
Selling & distribution expenses	400	500	100	25.00%
Other operating expenses	100	150	50	50.00%
Operating profit	1,300	1,650	350	26.92%
Less: Interest expenses	300	400	100	33.33%
Net income before taxes	1,000	1,250	250	25.00%
Less: Taxes at 30%	300	375	75	25.00%
Net Income after taxes	**700**	**875**	**175**	**25.00%**

Balance Sheets

	2019 (000)	2020 (000)	Increase / (Decrease)	% of increase / (decrease)
Current Assets:				
Cash	500	600	100	20.00%
Accounts Receivables	2,000	3,000	1,000	50.00%
Inventory	1,500	2,500	1,000	66.67%
Total Current Assets	4,000	6,100	2,100	52.50%
Fixed Assets:				
Buildings	3,000	4,000	1,000	33.33%
Furniture's & office equipments	1,000	1,500	500	50.00%
Total Fixed Assets	4,000	5,500	1,500	37.50%
Total Assets	**8,000**	**11,600**	**3,600**	**45.00%**
Liabilities:				
Current Liabilities:				
Accounts Payable	1,000	1,200	200	20.00%
Notes Payable	500	500	0	0.00%
Interest Payable	100	120	20	20.00%
Total Current Liabilities	1,600	1,820	220	13.75%
Shareholder's Equity:				
Common Stock	5,000	7,500	2,500	50.00%
Retained earnings	1,400	2,280	880	62.86%
Total Stockholder's equity	6,400	9,780	3,380	52.81%
Total Liabilities & Stockholder's equity	**8,000**	**11,600**	**3,600**	**45.00%**

There has been a general increase in all the items in the financial statements

Example two

Pop up industries income statements for two years are presented below;

Income Statements

	($ MILLION)	
	2020	2019
Net sales	12,238	11,397
Cost of sales	5,536	5,192
Gross profit	6,702	6,205
Selling, general, and administrative expenses	4,355	3,921
Other expense, net	186	69
Operating profit	2,161	2,215
Interest expense, net	159	136
Income before income taxes	2,002	2,079
Provision for income taxes	648	728
Net income	1,354	1,351

Required
Prepare comparative statements showing the percentage increase or decrease in the various items.

Example three
XTP Company has been in operation for four years. Its most current financial statements are as below;

Income statements

	2019 (000)	2020 (000)
Sales	7,000	9,000
Less: Cost of goods sold	5,000	6,400
Gross profit	2,000	2,600
Less: Operating expenses		
General & administrative expenses	200	300
Selling & distribution expenses	400	500
Other operating expenses	100	150
Operating profit	1,300	1,650
Less: Interest expenses	300	400
Net income before taxes	1,000	1,250
Less: Taxes at 30%	300	375
Net Income after taxes	**700**	**875**

Balance Sheets

	2019 (000)	2020 (000)
Fixed Assets:		
Buildings	3,000	4,000
Furniture & office equipment	1,000	1,500
Total Fixed Assets	4,000	5,500
Current Assets:		
Cash	500	600
Accounts Receivables	2,000	3,000

Inventory	1,500	2,500
Total Current Assets	4,000	6,100
Total Assets	**8,000**	**11,600**
Liabilities:		
Current Liabilities:		
Accounts Payable	1,000	1,200
Notes Payable	500	500
Interest Payable	100	120
Total Current Liabilities	1,600	1,820
Shareholder's Equity:		
Common Stock	5,000	7,500
Retained earnings	1,400	2,280
Total Stockholder's equity	6,400	9,780
Total Liabilities & Stockholder's equity	**8,000**	**11,600**

Required
Prepare comparative statements showing the percentage increase or decrease in the various items.

Index-Number Trend Analysis

Using year-to-year change analysis to compare financial statements that cover more than two or three periods is sometimes cumbersome. A useful tool for long-term trend comparisons is *index-number trend analysis.* Analyzing data using index-number trend analysis requires choosing a base period, for all items, with a preselected index number usually set to 100. Because the base period is a frame of reference for all comparisons, it is best to choose a normal year with regard to business conditions. As with computing year-to-year percentage changes, certain changes, like those from negative amounts to positive amounts, cannot be expressed by means of index numbers. When using index numbers, we compute percentage changes by reference to the base period as shown below;

$$\text{Percentage change} = \frac{\text{Current year balance}}{\text{Base year balance}} \times 100$$

For index-number trend analysis, we need not analyze every item in financial statements.

Instead, we focus on significant items. We also must exercise care in using index-number trend comparisons where changes might be due to economy or industry factors. Moreover, interpretation of percentage changes, including those using index-number trend series, must be made with an awareness of potentially inconsistent applications of accounting principles over time. When possible, we adjust for these inconsistencies.

Also, the longer the time period for comparison, the more distortive are effects of any price-level changes. One outcome of trend analysis is its power to convey insight into managers' philosophies, policies, and motivations. The more diverse the environments constituting the period of analysis, the better is the picture of how managers deal with adversity and take advantage of opportunities.

Example one

The table below provides information relating to Kim Kim INC over an eleven year period. (Amounts are in billions)

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Net sales	16.75	15.90	15.08	14.35	13.57	14.52	13.98	13.01	12.30	12.55	13.15
Gross profit	6.36	6.12	5.91	5.66	5.55	6.71	6.38	6.00	5.25	5.30	5.47
Operating income (after tax)	1.65	1.70	1.91	1.81	1.80	1.75	1.96	1.82	1.24	1.02	1.53
Net income	1.50	1.57	1.80	1.69	1.67	1.61	1.80	1.67	1.10	0.90	1.40
Restructuring charge (after tax)	0.35	0.17	-	-	-	-	-	-	-	-	-
Net income before restructuring	1.84	1.74	1.80	1.69	1.67	1.61	1.80	1.67	1.10	0.90	1.40
Operating income before restructuring	2.00	1.86	1.91	1.81	1.80	1.75	1.96	1.82	1.24	1.02	1.53
Total assets	17.07	16.30	17.02	16.78	15.59	15.01	14.48	12.82	11.69	11.27	11.85
Total liabilities	10.97	10.75	10.39	10.01	9.94	9.36	8.71	7.72	7.66	7.14	7.36
Long-term debt	2.28	2.59	2.30	2.73	2.84	2.42	2.00	1.93	2.07	1.80	1.74
Shareholders' equity	6.10	5.56	6.63	6.77	5.65	5.65	5.77	5.09	4.03	4.13	4.48
Treasury stock at cost	1.39	6.38	5.05	3.82	3.35	2.75	1.97	1.42	1.45	0.62	0.21

Required

Conduct an index-number trend analysis separately for every item reported in the table (e.g., net sales, gross profit, etc.). Use 2009 as the base year.

SOLUTION

Use the formula below for the calculations

$$\text{Percentage change} = \frac{\text{Current year balance}}{\text{Base year balance}} \times 100$$

e.g.net sales 2019 $= \frac{16.75}{13.15} \times 100$

$= 127.4\%$

Net sales 2018 = $\frac{15.90}{13.15} \times 100$

= 120.9%

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Net sales	127.4	120.9	114.7	109.1	103.2	110.4	106.3	98.9	93.5	95.4	100.0
Gross profit	116.3	111.9	108.0	103.5	101.5	122.7	116.6	109.7	96.0	96.9	100.0
Operating income	107.8	111.1	124.8	118.3	117.6	114.4	128.1	119.0	81.0	66.7	100.0
Net income	107.1	112.1	128.6	120.7	119.3	115.0	128.6	119.3	78.6	64.3	100.0
Restructuring charge	-	-	-	-	-	-	-	-	-	-	-
Net income before restructuring	131.4	124.3	128.6	120.7	119.3	115.0	128.6	119.3	78.6	64.3	100.0
Operating income before restructuring	130.7	121.6	124.8	118.3	117.6	114.4	128.1	119.0	81.0	66.7	100.0
Total assets	144.1	137.6	143.6	141.6	131.6	126.7	122.2	108.2	98.6	95.1	100.0
Total liabilities	149.0	146.1	141.2	136.0	135.1	127.2	118.3	104.9	104.1	97.0	100.0
Long-term debt	131.0	148.9	132.2	156.9	163.2	139.1	114.9	110.9	119.0	103.4	100.0
Shareholders' equity	136.2	124.1	148.0	151.1	126.1	126.1	128.8	113.6	90.0	92.2	100.0
Treasury stock at cost	661.9	3038.1	2404.8	1819.0	1595.2	1309.5	938.1	676.2	690.5	295.2	100.0

Example two

Calculate the trend percentages from the following figures of a company, assuming 2016 as the base year.

Year	Sales	Net Income
2016	100,000	10,000
2017	120,000	12,500
2018	160,000	20,000
2019	90,000	8,000
2020	150,000	18,000

Example three

Following is an extract taken from the Annual Reports of Infosys Inc.:

Particulars	2016 (000)	2017 (000)	2018 (000)	2019 (000)	2020 (000)
Sales	3623	4761	6860	9028	13,149
Other income	100	121	119	144	375
Operating expenses	407	476	961	739	1091
Employee expenses	1677	2366	3182	4801	7114
Selling and marketing expenses	267	335	392	499	719
Depreciation expenses	189	231	268	409	469
Operating profit	1,272	1,584	2,325	2,989	4,225
Profit after tax	958	1243	1859	2421	3777
PBDIT as a % of sales	35.11	33.26	33.90	33.12	32.13

Required

Calculate the trend percentages of the company, by taking 2016 as base year.

References

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