FINANCIAL STATEMENT ANALYSIS

Lecture 7

COMMON-SIZE FINANCIAL STATEMENTS ANALYSIS

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Financial statement analysis can benefit from knowing what proportion of a group or subgroup is made up of a particular account. Specifically, in analyzing a balance sheet, it is common to express total assets (or liabilities plus equity) as 100%. Then, accounts within these groupings are expressed as a percentage of their respective total.

In analyzing an income statement, sales are often set at 100% with the remaining income statement accounts expressed as a percentage of sales. Because the sum of individual accounts within groups is 100%, this analysis is said to yield **common-size financial statements.**

This procedure also is called vertical analysis given the up-down (or down-up) evaluation of accounts in common-size statements. Common-size financial statement analysis is useful in understanding the internal makeup of financial statements.

For example, in analyzing a balance sheet, a common-size analysis stresses two factors:

1. Sources of financing including the distribution of financing across current liabilities, noncurrent liabilities, and equity.
2. Composition of assets including amounts for individual current and noncurrent assets.

Common-size analysis of a balance sheet is often extended to examine the accounts that make up specific subgroups. For example, in assessing liquidity of current assets, it is often important to know what proportion of current assets is composed of inventories, and not simply what proportion inventories are of total assets. Common-size analysis of an income statement is equally important. An income statement readily lends itself to common-size analysis, where each item is related to a key amount such as sales.

To varying degrees, sales impact nearly all expenses, and it is useful to know what percentage of sales is represented by each expense item. An exception is income taxes, which is related to pre-tax income and not sales.

Temporal (time) comparisons of a company's common-size statements are useful in revealing any proportionate changes in accounts within groups of assets, liabilities, expenses, and other categories.

Common-size statements are especially useful for intercompany comparisons because financial statements of different companies are recast in common-size format. Comparisons of a company's common-size statements with those of competitors, or with industry averages, can highlight differences in account makeup and distribution. Reasons for such differences should be explored and understood. One key limitation of common-size statements for intercompany analysis is their failure to reflect the relative sizes of the companies under analysis.

Common size ratios are used to compare financial statements of different-size companies, or of the same company over different periods. By expressing the items in proportion to some size-related measure, standardized financial statements can be created, revealing trends and providing insight into how the different companies compare.

The common size ratio for each line on the financial statement is calculated as follows:

$$\text{Common Size Ratio} = \frac{\text{Item of Interest}}{\text{Reference Item}}$$

For example, if the item of interest is inventory and it is referenced to total assets (as it normally would be), the common size ratio would be:

$$\text{Common Size Ratio for Inventory} = \frac{\text{Inventory}}{\text{Total Assets}}$$

The ratios often are expressed as percentages of the reference amount. Common size statements usually are prepared for the income statement and balance sheet, expressing information as follows:

- Income statement items - expressed as a percentage of total revenue/sales
- Balance sheet items - expressed as a percentage of total assets

COMMON SIZE ANALYSIS OF THE INCOME STATEMENT

In analyzing the income statement, the objective is to assess a business entity performance over a period of time — compared with its own historical performance or to the performance of another company. Common - size analysis of the income statement can be performed by stating each line item on the

income statement as a percentage of revenue. This approach can be distinguished as vertical common-size analysis given that there is another type of common-size analysis, known as horizontal common-size analysis that states items in relation to a selected base year value. Unless otherwise indicated, references made allude to common-size analysis involving vertical analysis. Common - size statements facilitate comparison across time periods (time - series analysis) and across companies of different sizes (cross - sectional analysis).

Sample question

Three companies X, Y and Z operate within the same industry, economy and are exposed to similar conditions. You have been provided with their income statements as below:

Income Statements for Company X, Company Y, and Company Z

	X ($)	Y ($)	Z ($)
Sales	10,000,000	10,000,000	2,000,000
Cost of sales	3,000,000	7,500,000	600,000
Gross profit	7,000,000	2,500,000	1,400,000
Selling, general, and administrative expenses	1,000,000	1,000,000	200,000
Research and development	2,000,000	–	400,000
Advertising	2,000,000	–	400,000
Operating profit	2,000,000	1,500,000	400,000

Company X and Company Y, each with $10 million in sales, are larger (as measured by sales) than Company Z, which has only $2 million in sales. In addition, Companies X and Y both have higher operating profit: $2 million and $1.5 million, respectively, compared with Company Z 's operating profit of only $400,000.

Required

Using common size analysis, compare the performance of the three companies.

Solution

The common size ratio for each line on the financial statement is calculated as follows:

$$\text{Common Size Ratio} = \frac{\text{Item of Interest}}{\text{. Reference Item}}$$

	X (%)	Y (%)	Z (%)
Sales	100	100	100
Cost of sales	30	75	30
Gross profit	70	25	70
Selling, general, and administrative expenses	10	10	10
Research and development	20	0	20
Advertising	20	0	20
Operating profit	20	15	2

Analysis

By preparing a common - size income statement, as illustrated above, an analyst can readily see that the percentages of Company Z ' s expenses and profit relative to its sales are exactly the same as for Company X. Furthermore, although Company Z's operating profit is lower than Company Y's in absolute dollars, it is higher in percentage terms (20 percent for Company Z compared with only 15 percent for Company Y). For each $100 of sales, Company Z generates $5 more operating profit than Company Y. In other words, Company Z is more profitable than Company Y based on this measure.

The common- size income statement also highlights differences in companies' strategies. Comparing the two larger companies, Company X reports significantly higher gross profit as a percentage of sales than does Company Y (70 percent compared with 25 percent). Given that both companies operate in the same industry, why can Company X generate so much higher gross profit? One possible explanation is found by comparing the operating expenses of the two companies. Company X spends significantly more on research and development and on advertising than Company Y. Expenditures on research and development likely result in products with superior technology. Expenditures on advertising likely result in greater brand awareness. So, based on these differences, it is likely that Company X is selling

technologically superior products with a better brand image. Company Y may be selling its products more cheaply (with a lower gross profit as a percentage of sales) but saving money by not investing in research and development or advertising.

In practice, differences across companies are more subtle, but the concept is similar. An analyst, noting significant differences, would seek to understand the underlying reasons for the differences and their implications for the future performance of the companies. For most expenses, comparison to the amount of sales is appropriate. However, in the case of taxes, it is more meaningful to compare the amount of taxes with the amount of pretax income. Using financial footnote disclosure, an analyst can then examine the causes for differences in effective tax rates. To project the companies' future net income, an analyst would project the companies' pretax income and apply an estimated effective tax rate determined in part by the historical tax rates.

Vertical common - size analysis of the income statement is particularly useful in cross - sectional analysis — comparing companies with each other for a particular time period or comparing a company with industry or sector data. The analyst could select individual peer companies for comparison, use industry data from published sources, or compile data from databases based on a selection of peer companies or broader industry data.

Common - Size Analysis of the Balance Sheet

A vertical common - size balance sheet, prepared by dividing each item on the balance sheet by the same period's total assets and expressing the results as percentages, highlights the composition of the balance sheet. The critical questions answered are:

1. What is the mix of assets being used?
2. How is the company financing itself?
3. How does one company's balance sheet composition compare with that of peer companies?
4. What is behind any differences?

A horizontal common - size balance sheet, prepared by computing the increase or decrease in percentage terms of each balance sheet item from the prior year, highlights items that have changed unexpectedly or have unexpectedly remained unchanged.

Sample question

The balance sheets below were extracted from the financial report of XXX Co. for the years 2020 and 2019:

	2020	2019
Current assets		
Cash	1,200	$900
Accounts receivable	4,800	3,600
Inventory	3,600	2,700
Total current assets	9,600	7,200
Total fixed assets	6,200	5,500
Total Assets	15,800	12,700
Current liabilities		
Accounts payable	2,400	1,800
Accrued expenses	480	360
Short-term debt	800	600
Total current liabilities	3,680	2,760
Long-term debt	9,020	7,740
Total liabilities	12,700	10,500
Shareholders' equity	3,100	2,200
Total liabilities and equity	15,800	12,700

Required

Using common size analysis, evaluate the financial position of the company for the two years.

Solution

	2020	2019	2020%	2019%
Current assets				
Cash	1,200	$900	7.6%	7.1%

Accounts receivable	4,800	3,600	30.4%	28.3%
Inventory	3,600	2,700	22.8%	21.3%
Total current assets	9,600	$7,200	60.8%	56.7%
Total fixed assets	6,200	5,500	39.2%	43.3%
Total Assets	15,800	$12,700	100.0%	100.0%
Current liabilities				
Accounts payable	2,400	$1,800	15.2%	14.2%
Accrued expenses	480	360	3.0%	2.8%
Short-term debt	800	600	5.1%	4.7%
Total current liabilities	3,680	$2,760	23.3%	21.7%
Long-term debt	9,020	7,740	57.1%	60.9%
Total liabilities	12,700	10,500	80.4%	82.7%
Shareholders' equity	3,100	2,200	19.6%	17.3%
Total liabilities and equity	15,800	$12,700	100.0%	100.0%

Cash constitutes 7.6% and 7.1% of the total assets. Accounts receivables constitute 30.4% and 28.3% of the total assets. Inventory constitutes 22.8% and 21.3% of the total assets while fixed assets constitute 39.2% and 43.3% of the total assets for 2020 and 2019 respectively. This distribution of assets seems satisfactory as the business has not over invested in one category of assets.

Accounts payables constitutes 15.2% and 14.2% of the total liabilities and equity. Accrued expenses form 3% and 2.8% of the total liabilities and equity while shot term debts constitutes 5.1% and 4.7% of the total liabilities and equity for 2020 and 2019 respectively. Long term debt forms a significant component of total liabilities and equity at 57.1% and 60.9% in comparison to shareholders equity which constitutes 19.6% and 17.3% of the total liabilities and capital for 2020 and 2019 respectively. The company should aim at reducing debt financing as it is beyond the recommended limit of 50%.

Common - Size Analysis of the Statement of Cash Flows

In common - size analysis of a company's income statement, each income and expense line item is expressed as a percentage of net revenues (net sales). For the common - size balance sheet, each asset,

liability, and equity line item is expressed as a percentage of total assets. For the common - size cash flow statement, there are two alternative approaches. The first approach is to express each line item of cash inflow (outflow) as a percentage of total inflows (outflows) of cash, and the second approach is to express each line item as a percentage of net revenue.

Sample question one

PPP Company prepares its statement of cash flows using the direct method. Below is such a statement of cash flow for the year 2020.

Direct Format for Operating Cash Flow

Inflows

Receipts from customers	23,543
Sale of equipment	762
Total	24,305

Outflows

Payments to suppliers	11,900
Payments to employees	4,113
Payments for other operating expenses	3,532
Payments for interest	258
Payments for income tax	1,134
Purchase of equipment	1,300
Retirement of long-term debt	500
Retirement of common stock	600
Dividend payments	1,120
Total	24,457

Required

Prepare a common size statement of cash flow for PPP Company for the period ended December 2020.

Solution

Inflows		Percentage of Total Inflows
Receipts from customers	23,543	96.86%
Sale of equipment	762	3.14%
Total	24,305	100.00%
Outflows		**Percentage of Total Outflows**
Payments to suppliers	11,900	48.66%
Payments to employees	4,113	16.82%
Payments for other operating expenses	3,532	14.44%
Payments for interest	258	1.05%
Payments for income tax	1,134	4.64%
Purchase of equipment	1,300	5.32%
Retirement of long-term debt	500	2.04%
Retirement of common stock	600	2.45%
Dividend payments	1,120	4.58%
Total	24,457	100.00%

Sample question two

ZZZ Company prepares its statement of cash flows using the indirect method. Below is such a statement of cash flow for the year 2020.

Indirect Format for Operating Cash Flow

Inflows	
Operations	2,606
Sale of equipment	762
Total	3,368
Outflows	

Purchase of equipment	1,300
Retirement of long-term debt	500
Retirement of common stock	600
Dividend payments	1,120
Total	3,520

Required

Prepare a common size statement of cash flow for ZZZ Company for the period ended December 2020.

Solution

Indirect Format for Operating Cash Flow

Inflows		Percentage of Total Inflows
Operations	2,606	77.38%
Sale of equipment	762	22.62%
Total	3,368	100.00%
Outflows		**Percentage of Total Outflows**
Purchase of equipment	1,300	36.93%
Retirement of long-term debt	500	14.20%
Retirement of common stock	600	17.05%
Dividend payments	1,120	31.82%
Total	3,520	100.00%

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