

## Unit 30

### Ratio Analysis: Analyzing Assets

#### ILO1. Analyzing Liquidity

#### ILO2. Analyzing Asset Efficiency

#### ILO1. Analyzing liquidity

To help our analysis of ratios used to measure company performance, we will use financial data of a fictional company Brix, with an extract of their corporate balance sheet below.

BRIX CORPORATION Balance Sheets December 31		
	This Year	Last Year
<b>Assets</b>		
<b>Current assets:</b>		
Cash	\$ 30,000	\$ 20,000
Accounts receivable, net	20,000	17,000
Inventory	12,000	10,000
Prepaid expenses	3,000	2,000
<b>Total current assets</b>	<b>65,000</b>	<b>49,000</b>
<b>Property and equipment:</b>		
Land	165,000	123,000
Buildings and equipment, net	116,390	128,000
<b>Total property and equipment</b>	<b>281,390</b>	<b>251,000</b>
<b>Total assets</b>	<b>\$ 346,390</b>	<b>\$ 300,000</b>

Fig 30.1 Balance Sheet – Assets

We also require the liabilities, and equity of the balance sheet along with the income.

BRIX CORPORATION Balance Sheets December 31		
	This Year	Last Year
<b>Liabilities and Stockholders' Equity</b>		
<b>Current liabilities:</b>		
Accounts payable	\$ 39,000	\$ 40,000
Notes payable, short-term	3,000	2,000
<b>Total current liabilities</b>	<b>42,000</b>	<b>42,000</b>
<b>Long-term liabilities:</b>		
Notes payable, long-term	70,000	78,000
<b>Total liabilities</b>	<b>112,000</b>	<b>120,000</b>
<b>Stockholders' equity:</b>		
Common stock, \$1 par value	27,400	17,000
Additional paid-in capital	158,100	113,000
<b>Total paid-in capital</b>	<b>185,500</b>	<b>130,000</b>
Retained earnings	48,890	50,000
<b>Total stockholders' equity</b>	<b>234,390</b>	<b>180,000</b>
<b>Total liabilities and stockholders' equity</b>	<b>\$ 346,390</b>	<b>\$ 300,000</b>

Fig 30.2 Balance Sheet – Liabilities and Equity

<b>BRIX CORPORATION</b> <b>Income Statements</b> <b>For the Years Ended December 31</b>		
	<b>This Year</b>	<b>Last Year</b>
<b>Sales</b>	<b>\$ 494,000</b>	<b>\$ 450,000</b>
<b>Cost of goods sold</b>	<b>140,000</b>	<b>127,000</b>
<b>Gross margin</b>	<b>354,000</b>	<b>323,000</b>
<b>Operating expenses</b>	<b>270,000</b>	<b>249,000</b>
<b>Net operating income</b>	<b>84,000</b>	<b>74,000</b>
<b>Interest expense</b>	<b>7,300</b>	<b>8,000</b>
<b>Net income before taxes</b>	<b>76,700</b>	<b>66,000</b>
<b>Less income taxes (30%)</b>	<b>23,010</b>	<b>19,800</b>
<b>Net income</b>	<b>\$ 53,690</b>	<b>\$ 46,200</b>

Fig 30.3 Income Statement

The ratios most often used include to determine liquidity, are working capital, current ratio, and the acid test ratio. We will begin with the working capital measurement.

Working capital is the surplus of current assets over current liabilities. This form of capital is financed through debt, namely long term debt such as long term notes payable, and equity. If managers see their working capital growing, this can be a negative sign, indicating unnecessary growth in supplies, equipment or inventory. We use the data from Brix company to make the calculation as follows.

	<b>December 31 This Year</b>
<b>Current assets</b>	<b>\$ 65,000</b>
<b>Current liabilities</b>	<b>(42,000)</b>
<b>Working capital</b>	<b>\$ 23,000</b>

Fig 30.4 Working Capital

For current ratio, we use the equation that's included;

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Fig 30.5 Current Ratio

This measures a company's ability to pay its short term debt, like interest from loans etc. Having a good knowledge of this measure is crucial as its result can be interpreted in opposing degrees. For example, a decreasing ratio may be considered an indication of a failing financial status, however, it could also be resultant from discarding inventory or outdated current assets. The calculations for Brix current ratio is found below.

$$\text{Current Ratio} = \frac{\$65,000}{\$42,000} = 1.55$$

Fig 30.6 Current Ratio Calculation

The acid test ratio is a variation of the current ratio; it represents a more strict measure of debt paying function, as it replaces current assets with quick assets. The differences between these two classifications is that quick assets represents those can be turned into cash readily, such as accounts receivable, short term notes receivable, securities and cash itself. This ratio is used to determine debt paying ability without having to reduces its inventory or supplies stockpile. For our example, we have included the acid test ratio of Brix company below.

$$\text{Acid-Test Ratio} = \frac{\$50,000}{\$42,000} = 1.19$$

Fig 30.7 Acid Test Ratio

In our analysis of Brix, using these measures, a manager would be looking to see if the ratio meets the minimum requirement of 1. Which indicates a positive financial position of Brix to satisfy its short term debt.

## ILO2. Analyzing Asset Efficiency

As we have seen, there's a number of measures used for liquidity purposes. Likewise, managers have tools available to test for asset management and efficiency. We will begin with further financial data of our example company Brix.

BRIX CORPORATION	
This Year	
Accounts receivable, net	
Beginning of year	17,000
End of year	20,000
Inventory	
Beginning of year	10,000
End of year	12,000
Total assets	
Beginning of year	300,000
End of year	346,390
Sales on account	494,000
Cost of goods sold	140,000

Fig 30.8 Asset Information

For our asset management measures, we will consider 6 calculation. These include the accounts receivable turnover, average collection period, inventory turnover, average sale period, operating cycle, and the total asset turnover. We will start with the accounts receivable turnover which determines how quickly a sale on credit is converted to cash. We use our data from Brix to show the results.

$$\text{Accounts Receivable Turnover} = \frac{\text{Sales on Account}}{\text{Average Accounts Receivable}}$$

Fig 30.9 Accounts Receivable Turnover

$$\text{Accounts Receivable Turnover} = \frac{\$494,000}{(\$17,000 + \$20,000) \div 2} = 26.7 \text{ times}$$

Fig 30.10 Accounts Receivable Turnover Calculation

Our second measure is to calculate the average collection period. This tells how many days on average for an account receivable to be collected. However, this needs to be considered in context to the credit terms that were entered with the consumers.

$$\text{Average Collection Period} = \frac{365 \text{ Days}}{\text{Accounts Receivable Turnover}}$$

Fig 30.11 Average Collection Period

$$\text{Average Collection Period} = \frac{365 \text{ Days}}{26.7 \text{ Times}} = 13.67 \text{ days}$$

Fig 30.12 Average Collection Period Calculation

The third measure is the inventory turnover, which measures the frequency in which inventory is sold and then replaced during a period of time, typically a year. Keep in mind, that as technology improves and internal processes become more efficient company's will increase their inventory turnover. But it also dependent on industry and the frequency their products/services are consumed. For example, a supermarket will sell and replace its stock very quickly in comparison to a jewelry store that would very slowly sell their items, and even then more frequently close to holiday dates.

$$\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

Fig 30.13 Inventory Turnover

$$\text{Inventory Turnover} = \frac{\$140,000}{(\$10,000 + \$12,000) \div 2} = 12.73 \text{ times}$$

Fig 30.14 Inventory Turnover Calculation

The fourth asset management measure is called the average sale period, which examines the number of days it takes to sell the inventory. The calculation for Brix is included.

$$\text{Average Sale Period} = \frac{365 \text{ Days}}{\text{Inventory Turnover}}$$

Fig 30.15 Average Sale Period

$$\text{Average Sale Period} = \frac{365 \text{ Days}}{12.73 \text{ Times}} = 28.67 \text{ days}$$

Fig 30.16 Average Sale Period Calculation

We turn our attention now to the operating cycle. This fifth measure looks at the duration of time from when inventory is received from suppliers to the point where cash is received from consumers. For our calculation using Brix, we must use the previous measure of average sales period.

$$\text{Average Sale Period} + \text{Average Collection Period} = \text{Operating Cycle}$$

Fig 30.17 Operating Cycle

$$28.67 \text{ days} + 13.67 \text{ days} = 42.34 \text{ days}$$

Fig 30.18 Operating Cycle Calculation

The final calculation is the total asset turnover. This measures the asset efficiency to generate sales, and is generally viewed as a higher level ratio than the current ratio as it includes both current and noncurrent assets. Find the details of Brix data below.

$$\text{Total Asset Turnover} = \frac{\text{Sales}}{\text{Average Total Assets}}$$

Fig 30.19 Total Asset Turnover

$$\text{Total Asset Turnover} = \frac{\$494,000}{(\$300,000 + \$346,390) \div 2} = 1.53$$

Fig 30.20 Total Asset Turnover Calculation

**References:**

1. Managerial accounting, Ray Garrison-Eric Noreen-Peter Brewer - McGraw-Hill Education, 16 ed., 2018
2. Managerial accounting, John Wild-Ken Shaw - McGraw-Hill Education, 7ed, 2019
3. Management accounting, Will Seal-Carsten Rohde-Ray Garrison-Eric Noreen - McGraw-Hill Education, 6ed. - 2019

