**1.** To calculate the internal growth rate, we first need to find the ROA and the retention ratio, so:

ROA = NI / TA

ROA = $2,029,766 / $19,986,170

ROA = .1016, or 10.16%

*b* = Addition to RE / NI

*b* = $1,419,766 / $2,029,766

*b* = .70

Now we can use the internal growth rate equation to get:

Internal growth rate = (ROA × *b*) / [1 – (ROA × *b*)]

Internal growth rate = [.1016(.70)] / [1 – .1016(.70)]

Internal growth rate = .0765, or 7.65%

To find the sustainable growth rate, we need the ROE, which is:

ROE = NI / TE

ROE = $2,029,766 / $11,435,815

ROE = .1775, or 17.75%

Using the retention ratio we previously calculated, the sustainable growth rate is:

Sustainable growth rate = (ROE × *b*) / [1 – (ROE × *b*)]

Sustainable growth rate = [.1775(.70)] / [1 – .1775(.70)]

Sustainable growth rate = .1417, or 14.17%

The internal growth rate is the growth rate the company can achieve with no outside financing of any sort. The sustainable growth rate is the growth rate the company can achieve by raising outside debt based on its retained earnings and current capital structure.

**2.** Pro forma financial statements for next year at a 12 percent growth rate are:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | *Income Statement* | |  |  |  |
|  | Sales | $ 45,090,338 |  |  |  |
|  | COGS | 32,856,820 |  |  |  |
|  | Other expenses | 5,717,712 |  |  |  |
|  | Depreciation | 1,804,220 |  |  |  |
|  | EBIT | $ 4,711,586 |  |  |  |
|  | Interest | 630,520 |  |  |  |
|  | Taxable income | $ 4,081,066 |  |  |  |
|  | Taxes (40%) | 1,632,426 |  |  |  |
|  | Net income | $ 2,448,640 |  |  |  |
|  |  |  |  |  |  |
|  | Dividends | $ 735,883 |  |  |  |
|  | Add to RE | 1,712,757 |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | *Balance Sheet* | | | | |
|  | Assets | |  | Liabilities and Equity | |
|  | Current assets |  |  | Current liabilities |  |
|  | Cash | $ 511,207 |  | Accounts payable | $ 1,040,486 |
|  | Accounts rec. | 821,100 |  | Notes payable | 2,121,350 |
|  | Inventory | 1,201,962 |  | Total CL | $ 3,161,836 |
|  | Total CA | $ 2,534,269 |  |  |  |
|  |  |  |  | Long-term debt | $ 5,500,000 |
|  | Fixed assets |  |  |  |  |
|  | Net PP&E | $ 19,850,242 |  | Shareholder equity |  |
|  |  |  |  | Common stock | $ 400,000 |
|  |  |  |  | Retained earnings | 12,748,572 |
|  |  |  |  | Total equity | $ 13,148,572 |
|  |  |  |  |  |  |
|  | Total Assets | $ 22,384,510 |  | Total L&E | $ 21,810,407 |

So, the EFN is:

EFN = Total assets – Total liabilities and equity

EFN = $22,384,510 – 21,810,407

EFN = $574,103

The company can grow at this rate by changing the way it operates. For example, if profit margin increases, say by reducing costs, the ROE increases, thereby increasing the sustainable growth rate. In general, as long as the company increases the profit margin, total asset turnover, or equity multiplier, the higher growth rate is possible. Note however, that changing any one of these will have the effect of changing the pro forma financial statements.

**3.** Now we are assuming the company can only build in amounts of $5 million. We will assume that the company will go ahead with the fixed asset acquisition. To estimate the new depreciation charge, we will find the current depreciation as a percentage of fixed assets, then, apply this percentage to the new fixed assets. The depreciation as a percentage of assets this year was:

Depreciation percentage = $1,804,220 / $17,723,430

Depreciation percentage = .1018, or 10.18%

The new level of fixed assets with the $5 million purchase will be:

New fixed assets = $17,723,430 + 5,000,000 = $22,723,430

So, the pro forma depreciation will be:

Pro forma depreciation = .1018($22,723,430)

Pro forma depreciation = $2,313,213

We will use this amount in the pro forma income statement. So, the pro forma income statement will be:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | *Income Statement* | |  |  |  |
|  | Sales | $ 45,090,338 |  |  |  |
|  | COGS | 32,856,820 |  |  |  |
|  | Other expenses | 5,717,712 |  |  |  |
|  | Depreciation | 2,313,213 |  |  |  |
|  | EBIT | $ 4,202,593 |  |  |  |
|  | Interest | 630,520 |  |  |  |
|  | Taxable income | $ 3,572,073 |  |  |  |
|  | Taxes (40%) | 1,428,829 |  |  |  |
|  | Net income | $ 2,143,244 |  |  |  |
|  |  |  |  |  |  |
|  | Dividends | $ 644,103 |  |  |  |
|  | Add to RE | 1,499,141 |  |  |  |

The pro forma balance sheet will remain the same except for the fixed asset and equity accounts. The fixed asset account will increase by $5 million, rather than the growth rate of sales.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | *Balance Sheet* | | | | |
|  | Assets | |  | Liabilities and Equity | |
|  | Current assets |  |  | Current liabilities |  |
|  | Cash | $ 511,207 |  | Accounts payable | $ 1,040,486 |
|  | Accounts rec. | 821,100 |  | Notes payable | 2,121,350 |
|  | Inventory | 1,201,962 |  | Total CL | $ 3,161,836 |
|  | Total CA | $ 2,534,269 |  |  |  |
|  |  |  |  | Long-term debt | $ 5,500,000 |
|  | Fixed assets |  |  |  |  |
|  | Net PP&E | $ 22,723,430 |  | Shareholder equity |  |
|  |  |  |  | Common stock | $ 400,000 |
|  |  |  |  | Retained earnings | 12,534,956 |
|  |  |  |  | Total equity | $ 12,934,956 |
|  |  |  |  |  |  |
|  | Total Assets | $ 25,257,699 |  | Total L&E | $ 21,596,791 |

So, the EFN is:

EFN = Total assets – Total liabilities and equity

EFN = $25,257,699 – 21,596,791

EFN = $3,660,907

Since the fixed assets have increased at a faster percentage than sales, the capacity utilization for next year will decrease.