

HEALTHCARE FINANCE: AN INTRODUCTION TO ACCOUNTING AND FINANCIAL MANAGEMENT

Online Appendix A

Financial Ratios

INTRODUCTION

In Chapter 17, we indicated that ratio analysis is a technique commonly used to help assess a business's financial condition. Although we discussed 15 financial ratios and 6 operating indicator ratios in the chapter, because of space limitations we were unable to include a more complete list. The purpose of the online appendixes is to provide students with a listing of most of the commonly used financial and operating indicator ratios.

Of course, it would be impossible to list every ratio that one might ever encounter in healthcare finance. Furthermore, some ratios have variants or multiple definitions, so there is no guarantee that the definitions provided here are an exact match to the ones used elsewhere. Still, this appendix provides a single source that will meet many ratio analysis needs. At a minimum, it provides a starting point for further analysis. Note, however, that this list stems primarily from analyses performed on hospitals, so there are ratios that are unique to other types of providers that may not appear in this appendix.

Note that the ratios used in financial condition analyses and their definitions are driven primarily by the availability of comparative data, including both at the industry and specific competitor levels. Thus, the comparative data set establishes the ratios and definitions used in any analysis. Perhaps the most complete set of comparative data for hospitals is the "Almanac of Hospital Financial and Operating Indicators," published annually by *Ingenix*.

This appendix (Online Appendix A) contains financial ratios, while Online Appendix B contains operating indicator ratios. Financial ratios are created using data contained in a business's financial statements (income statement and balance sheet). The primary purpose of financial ratio analysis is to help make judgments about an organization's financial condition. To help in interpretation, financial ratios are placed into five categories that focus on specific aspects of financial condition: profitability, liquidity, capital structure, asset efficiency (management), and other.

To make this appendix easier to use, all ratios are presented in the same way. First, the ratio is defined verbally. Then, the formula for the ratio is presented. Finally, the interpretation and use of the ratio are described.

PROFITABILITY RATIOS

Profitability ratios measure the overall impact of operating decisions on a business's financial condition. Because businesses require profits to remain viable in the long run, profitability ratios are perhaps the most important measures of financial condition. All profitability ratios require some definition of profit, such as profit per dollar of assets or profit per dollar of revenue. At first blush, it might appear that there would be only a few profitability ratios. However, in the healthcare sector, especially in not-for-profit hospitals, there are many (perhaps too many) ways to measure "profit." For example, profit can be measured on a total basis, which includes income, such as contributions, from sources other than operations. Or profit can be defined as stemming solely from the organization's healthcare operations. Furthermore, profit can be defined either before or after taxes (for investor-owned providers) and either before or after financial costs (interest expense). Finally, profit can be defined on the basis of accounting rules (like net income), or it can be defined as cash flow (net income plus noncash expenses). It would be much easier if one or two profitability ratios gave analysts all the information needed in a financial condition analysis. Unfortunately, that is not the case, so we have to include many profitability ratios in this section. Still, the list here is not exhaustive, and the definitions of many ratios that we present here can be modified further to create yet more ratios.

Total margin

Net income (excess of revenues over expenses) divided by total revenues.

$$\text{Total margin} = \frac{\text{Net income}}{\text{Total revenues}} \times 100.$$

Measures *total profitability* as a percentage of *total revenues*, so it measures the ability of a business to control expenses. For example, a total margin of 5.0 percent means that each dollar of total revenues generates 5 cents in profits. The higher the total margin the better. Note that total margin includes *both operating and nonoperating revenue*, so a provider could be operating at a loss and, if nonoperating revenue were large enough, still show a positive total margin. Also, note that net income (and hence the total margin) includes deductions for interest expense and taxes. Finally, note that this ratio is commonly expressed as a percentage, and hence the "x 100" term in the above equation. (Profitability ratios are generally expressed in percentage rather than decimal form.)

Operating margin

Net operating income divided by total operating revenues.

$$\text{Operating margin} = \frac{\text{Net operating income}}{\text{Operating revenue}} \times 100 = \frac{\text{Operating revenue} - \text{Operating expense}}{\text{Operating revenue}} \times 100.$$

Measures *operating profitability* as a percentage of *operating revenue*. For example, an operating margin of 2.0 percent means that each dollar of operating revenues generates 2 cents in profits. This ratio is similar to the total margin, but it focuses on core operations by removing the influence of nonoperating (nonpatient service) revenues. The operating margin typically is a better measure of the sustainable profitability of a provider because it focuses on business income as opposed to income from other (presumably less dependable) sources.

Cash flow (CF) margin (EBIDA to revenue)

Earnings before interest, depreciation, and amortization (EBIDA) divided by total revenues.

$$\text{CF margin} = \frac{\text{EBIDA}}{\text{Total revenues}} \times 100 = \frac{\text{Net income} + \text{Interest} + \text{Depreciation} + \text{Amortization (if any)}}{\text{Total revenues}} \times 100.$$

Measures *total cash flow before financial costs* (interest) as a percentage of total revenues. For example, an EBIDA to revenue ratio of 7.0 percent means that each dollar of total revenues generates roughly 7 cents in cash flow before any interest expense is paid. This ratio is similar to the total margin, but it will always be greater because it excludes interest and focuses on cash flow rather than accounting income (the numerator adds back interest and noncash expenses). Note that taxes are not added back to net income in the numerator, so this cash flow margin measure recognizes taxes as a cash cost.

Free cash flow (FCF) margin (EBIDA less capital expenditures to revenue)

Earnings before interest, depreciation, and amortization (EBIDA) less capital expenditures divided by total revenues.

$$\text{FCF margin} = \frac{\text{EBIDA} - \text{Capital expenditures}}{\text{Total revenues}} \times 100.$$

The FCF margin is similar to the cash flow margin (just above) except the FCF margin strips out the number of dollars spent on new plant and equipment. The rationale is that capital expenditures are a necessary expense for the operation of the business, just as are wages and supplies, so the cash flow net of such expenditures is the amount that is truly available to pay financial costs (interest) and for discretionary purposes.

Operating cash flow margin

Operating income before interest, depreciation, and amortization divided by operating revenue.

$$\text{Operating cash flow margin} = \frac{\text{Operating income} + \text{Interest} + \text{Depreciation} + \text{Amortization (if any)}}{\text{Operating revenue}} \times 100.$$

Measures the *operating cash flow* before financial costs (interest) as a percentage of operating revenue. This ratio is similar to the cash flow margin, but with a focus on operating cash flow as opposed to total cash flow (which includes nonoperating cash flow).

Free operating cash flow (FOCF) margin

Operating income before interest, depreciation, and amortization less capital expenditures divided by operating revenue.

$$\text{FOCF margin} = \frac{\text{Operating income} + \text{Interest} + \text{Dep.} + \text{Amortization (if any)} - \text{Capital expenditures}}{\text{Operating revenue}} \times 100.$$

Measures the *free operating cash flow* before financial costs (interest) as a percentage of operating revenue. This ratio is similar to the free cash flow margin, but with a focus on operating cash flow as opposed to total cash flow (which includes nonoperating cash flow).

Return on assets (ROA) or return on total assets (ROTA)

Net income (excess of revenues over expenses) divided by total assets.

$$\text{Return on assets} = \frac{\text{Net income}}{\text{Total assets}} \times 100.$$

Measures *total profitability* as a percentage of *total assets*, so it measures the ability of a business to use its assets to generate income. For example, a return on assets of 10.0 percent means that each dollar invested in total assets produces 10 cents in profits. The higher the ROA, the more productive (financially) the business's assets. Note that ROA includes *both operating and nonoperating revenue*, so a provider could be operating at a loss and, if nonoperating income were large enough, still show a positive ROA.

Cash flow to assets (EBIDA to assets)

Earnings before interest, depreciation, and amortization (EBIDA) divided by total assets.

$$\text{EBIDA to assets} = \frac{\text{EBIDA}}{\text{Total assets}} = \frac{\text{Net income} + \text{Interest} + \text{Depreciation} + \text{Amortization (if any)}}{\text{Total assets}} \times 100.$$

Measures *cash flow before financial costs* (interest) as a percentage of total assets. For example, an EBIDA to assets ratio of 12.0 percent means that each dollar of total assets generates roughly 12 cents in cash flow before any interest expense is paid. This ratio is similar to ROA, but it will always be greater because it excludes interest and focuses on cash flow rather than accounting income (the numerator adds back interest and noncash expenses). Note that taxes are not added back to net income in the numerator, so this profitability measure recognizes taxes as a cash cost.

Return on equity (ROE)

Net income (excess of revenues over expenses) divided by total equity (net assets or fund balance).

$$\text{Return on equity} = \frac{\text{Net income}}{\text{Total equity}} \times 100.$$

Measures *total profitability* as a percentage of *total equity*, so it measures the ability of a business to use its equity financing to generate profits. For example, an ROE of 15.0 percent means that each dollar of equity financing produces 15 cents in profits. The higher the ROE, the more productive (financially) the business's equity. Note that ROE includes *both operating and nonoperating revenue*, so a provider could be operating at a loss and, if nonoperating income were large enough, still show a positive ROE.

Cash flow to equity (EBIDA to equity)

Earnings before interest, depreciation, and amortization (EBIDA) divided by total equity (net assets).

$$\text{EBIDA to equity} = \frac{\text{EBIDA}}{\text{Total equity}} = \frac{\text{Net income} + \text{Interest} + \text{Depreciation} + \text{Amortization (if any)}}{\text{Total equity}} \times 100.$$

Measures *cash flow before financial costs* (interest) as a percentage of total equity. For example, an EBIDA to equity ratio of 18.0 percent means that each dollar of total equity generates roughly 18 cents in cash flow before any interest expense is paid. This ratio is similar to ROE, but it will always be greater because it excludes interest and focuses on cash flow rather than accounting income (the numerator adds back interest and noncash expenses). Note that taxes are not added back to net income in the numerator, so this profitability measure recognizes taxes as a cash cost.

Basic earning power (BEP) ratio

Earnings before interest and taxes (EBIT) divided by total assets.

$$\text{BEP ratio} = \frac{\text{EBIT}}{\text{Total assets}} \times 100.$$

Measures the ability of a business's assets to generate profits before financial expenses (interest) and taxes. This ratio is often used when comparing the profitability across both for-profit and not-for-profit hospitals because it removes the influence of capital structure (differences in debt usage) and taxes. Note that the BEP ratio includes *both operating and nonoperating revenue*, so a provider could be operating at a loss and, if nonoperating income were large enough, still show a positive ratio. (This ratio could be modified to focus on operating income or cash flow.)

Return on investment (price-level adjusted)

Earnings before interest, depreciation, and amortization (EBIDA) divided by adjusted total assets.

$$\text{ROI to adj. assets} = \frac{\text{EBIDA}}{\text{Adj. total assets}} = \frac{\text{Net income} + \text{Interest} + \text{Depreciation} + \text{Amortization (if any)}}{\text{Price-level adjusted total assets}} \times 100.$$

Measures *cash flow before financial costs* (interest) as a percentage of *price-level adjusted* total assets. This ratio is similar to cash flow to assets (EBIDA to assets), but it removes differences in age of assets by restating assets from historical dollars to current dollars to provide a measure of return roughly based on replacement cost.

Growth rate in equity

Increase in equity (net assets) divided by beginning equity (net assets).

$$\text{Growth rate in equity} = \frac{\text{End of year equity} - \text{Beginning of year equity}}{\text{Beginning of year equity}} \times 100.$$

Measures the ability of a business to grow its equity (net assets or fund capital) over time. Equity growth must be at least as high as asset growth to ensure that a business can meet future patient volumes without resorting to an ever increasing debt burden.

Economic value added (EVA)

Net operating profit after taxes (NOPAT) less the dollar cost of the capital employed.

$$\text{EVA} = (\text{EBIT})(1 - T) - (\text{Long-term debt} + \text{Equity})(\text{Corporate cost of capital}).$$

Measures the *dollar amount* of profit in excess of the amount required by a business's capital suppliers. A positive EVA indicates that the business is earning a return in excess of that required by its capital suppliers, and hence is economically profitable and viable. A negative EVA indicates the opposite situation. Although a useful ratio for an individual business, it is not useful in a comparative analysis because it is a dollar value and hence must be evaluated in relationship to the scale (size) of the business. (See the following ratio.)

Economic value added (EVA) to capital

EVA divided by long-term capital (long-term debt plus equity plus capitalized leases).

$$\text{EVA to capital} = \frac{\text{EVA}}{\text{Long-term} + \text{Equity} + \text{Capitalized leases}} \times 100.$$

Measures the *dollar amount* of profit in excess of the amount required by a business's capital suppliers per dollar of long-term capital. This measure removes the size bias present in EVA—a small business may have a smaller EVA than a large business, but its EVA in relationship to its size may indicate a more productive use of its assets.

LIQUIDITY RATIOS

Liquidity ratios measure the ability of a business to meet its cash obligations as they become due. Failure to meet these obligations can lead to financial distress and eventual bankruptcy. In general, creditors prefer a business to be highly liquid. However, maintaining liquidity (say, a large amount of cash and short-term investments) has its costs. So, businesses must balance the need for liquidity with the costs associated with maintaining liquidity.

Current ratio

Current assets divided by current liabilities.

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}} .$$

Measures the dollars of current assets per dollar of current liabilities. For example, a current ratio of 2.5 indicates that there is \$2.50 of current assets available to pay each dollar of current liabilities. The theory is that current liabilities will have to be paid off in the coming accounting period and current assets will be converted into cash (or are already cash) during the same time period, so the higher the current ratio, the greater a business's liquidity. However, this interpretation requires that receivables and inventories are properly valued on the balance sheet.

Quick (Acid test) ratio

Current assets less inventories divided by current liabilities.

$$\text{Current ratio} = \frac{\text{Current assets} - \text{Inventories}}{\text{Current liabilities}} .$$

Measures the dollars of current assets other than inventories per dollar of current liabilities. For example, a quick ratio of 2.0 indicates that there is \$2.00 of current assets other than inventories available to pay each dollar of current liabilities. The quick ratio is similar to the current ratio but is a more stringent measure of liquidity because it removes inventories (the least liquid of current assets) from the measure.

Days in patient accounts receivable (Average collection period) (Days premiums receivable)

Net patient accounts receivable divided by daily net patient service revenue.

$$\text{Days in patient accounts receivable} = \frac{\text{Net patient accounts receivable}}{\text{Net patient service revenue} / 365} .$$

Measures the average time that it takes an organization to collect its receivables. All else the same, the shorter the average collection period, the lower the dollar amount of receivables and hence the lower the carrying cost. In addition, the quicker that receivables are converted into cash, the more liquid the organization in the sense that these dollars are now available for paying bills as opposed to "sitting" in the receivables account. Note that insurers typically call this ratio "days premiums receivable."

Average payment period

Current liabilities divided by daily cash expenses.

$$\text{Average payment period} = \frac{\text{Current liabilities}}{(\text{Total expenses} - \text{Depreciation}) / 365} .$$

The average payment period can be thought of as the counterpart to days in patient accounts receivable. It measures that average amount of time that elapses before the organization meets its current liabilities. In other words, the number of days of cash expenses that are outstanding (not currently paid). High values for the average payment period often indicate a lack of liquidity.

Days cash on hand

Cash and near-cash divided by daily cash expenses.

$$\text{Days cash on hand} = \frac{\text{Cash} + \text{Short-term Investments}}{(\text{Total expenses} - \text{Depreciation}) / 365} .$$

Measures the number of days that the organization could continue to pay its average daily cash obligations with no new cash resources becoming available. High values imply higher liquidity and hence are viewed favorably by creditors. However, organizations should not hold excess amounts of cash and short-term investments because these typically provide a lower return than do long-term investments.

CAPITAL STRUCTURE RATIOS

Capital structure ratios assess the amount of debt financing used by a business. Such measures are important because the use of financial leverage affects both the risk and profitability of a business. There are two major classifications of capital structure ratios: capitalization ratios and coverage ratios.

Capitalization Ratios

Capitalization ratios focus on the proportions of a business's capital structure (debt versus equity financing) as reported on the balance sheet.

Debt ratio

Total debt divided by total assets.

$$\text{Debt ratio} = \frac{\text{Total debt}}{\text{Total assets}} \times 100.$$

Measures the proportion of debt financing in a business's overall (debt plus equity) capital structure. For example, a debt ratio of 50 percent indicates that half of the business's assets is financed with debt. (By implication, the other half is financed with equity.) The higher the debt ratio, the greater the amount of debt financing. Note that the debt ratio defines debt as *all liabilities*, including both interest bearing and noninterest bearing (such as accruals), so this ratio is the most inclusive of the capitalization ratios. Also, note that capitalization ratios typically are expressed as percentages.

Equity ratio (Equity financing ratio)

Total equity divided by total assets.

$$\text{Equity ratio} = \frac{\text{Total equity (net assets)}}{\text{Total assets}} \times 100.$$

Measures the proportion of equity financing in a business's capital structure. For example, an equity ratio of 50 percent indicates that half of the business's assets is financed with equity and, by implication, the other half is financed with debt. The higher the equity ratio, the greater the amount of equity financing. Note that the Equity ratio = 1 – Debt ratio, so the Debt ratio = 1 – Equity ratio. Also, note that the inverse of the equity ratio, total assets divided by total equity, is the *equity multiplier*, which is used in Du Pont analysis.

Debt-to-equity (D/E) ratio

Total debt divided by total equity.

$$\text{Debt-to-equity ratio} = \frac{\text{Total debt}}{\text{Total equity (net assets)}} .$$

Measures the dollar amount of debt financing per dollar of equity financing. For example, a D/E ratio of 0.6 indicates that creditors have supplied \$0.60 for each \$1.00 of capital supplied by equityholders (or the community). The debt-to-equity ratio is similar to the debt ratio, except that the debt ratio increases linearly

to 1.0 as more and more debt financing is used, while the debt-to-equity ratio increases exponentially to infinity.

Capitalization (long-term debt to capitalization) ratio

Long-term debt divided by long-term (permanent) financing.

$$\text{Capitalization ratio} = \frac{\text{Long-term debt}}{\text{Long-term debt} + \text{Total equity (net assets)}} \times 100.$$

Measures the proportion of debt financing in a business's permanent (long-term) financing mix. This ratio is similar to the debt ratio, but with a focus on long-term (permanent) capital. Because the focus is on long-term capital, this ratio best measures a business's true capital structure because it is not affected by short-term financing decisions.

Fixed asset financing ratio

Long-term debt divided by net fixed assets.

$$\text{Fixed asset financing ratio} = \frac{\text{Long-term debt}}{\text{Net fixed assets}} \times 100.$$

Measures the proportion of net fixed assets financed by long-term debt. It is similar to the debt and capitalization ratios, but with a focus on fixed assets rather than total assets or permanent assets. Creditors view this ratio as an important determinant of the amount of risk that they face.

Coverage Ratios

Coverage ratios use data from both the income statement and the balance sheet to examine how well a business can meet its debt-related expenses.

Times interest earned (TIE) ratio

Earnings before interest and taxes (EBIT) divided by interest expense.

$$\text{TIE ratio} = \frac{\text{Earnings before interest and taxes (EBIT)}}{\text{Interest expense}}.$$

Measures the number of dollars of earnings available to pay each dollar of interest expense. Alternatively, the multiple by which interest expense is being met from current *accounting income*. For example, a TIE ratio of 3.5 means that the business has \$3.50 of earnings available to pay each dollar of interest expense. The greater the TIE ratio, the greater the amount of "cushion" available should the business's earnings fall in the future.

Cash flow to total debt

Cash flow divided by total debt (current liabilities plus long-term debt).

$$\text{Cash flow to total debt ratio} = \frac{\text{Net income} + \text{Depreciation} + \text{Amortization (if any)}}{\text{Current liabilities} + \text{Long-term debt}} \times 100.$$

Measures the percentage of total debt covered by the business's cash flow. Roughly, the numerator gives the amount of cash flow available to make debt payments and the denominator is the total amount of debt that will require debt payments, including both interest and repayment of principal. The greater this ratio, the better the ability of the business to meet its debt obligations.

Debt service coverage

Preinterest cash flow divided by total debt obligations.

$$\text{Debt service coverage} = \frac{\text{Net income} + \text{Interest} + \text{Depreciation} + \text{Amortization (if any)}}{\text{Debt principal payments} + \text{Interest expense}} .$$

Measures the number of dollars of cash flow available to make *debt payments per dollar of debt expense* (including both principal repayments and interest expense). This ratio is similar to the TIE ratio, but (1) recognizes that cash flow (rather than accounting income) pays the bills and (2) debt expense includes principal repayments as well as interest expense. Note that the numerator in this ratio is *after-tax cash flow*, so the debt principal payments in the denominator do not have to be "grossed up."

Cash flow (fixed charge) coverage

Preinterest pretax cash flow divided by total fixed charge obligations.

$$\text{Cash flow coverage} = \frac{\text{EBIT} + \text{Lease payments} + \text{Depreciation} + \text{Amortization (if any)}}{\text{Interest expense} + \text{Lease expense} + \text{Principal repayments} / (1 - T)} .$$

Measures the number of dollars of *preinterest pretax cash flow* per dollar of fixed charge payment. This ratio is similar to the debt service coverage ratio, but (1) recognizes that pretax cash flow is available to pay fixed charges and (2) lease expense is as much a fixed charge as is debt expense. Note that the numerator is pre-tax cash flow, so the denominator must reflect pretax payment obligations. Thus, the principal repayment in this ratio is "grossed up," or divided by one minus the tax rate, to convert it to pretax dollars.

Cushion (cash cushion) ratio

Cash available to make debt payments divided by debt expense.

$$\text{Cushion ratio} = \frac{\text{Cash} + \text{Short-term investments}}{\text{Debt principal payments} + \text{Interest expense}} .$$

Measures the ability of current cash and near-cash holdings to cover (meet) a business's debt obligations. A cushion ratio of 5 means that the organization has five times its debt payment obligations available in cash and near-cash to meet those obligations.

Capital expense ratio

Capital expense divided by total expenses.

$$\text{Capital expense ratio} = \frac{\text{Interest expense} + \text{Depreciation} + \text{Amortization (if any)}}{\text{Total expenses}} \times 100.$$

Measures capital expense as a percentage of total expenses. Roughly, capital expenses consist of the cost of fixed assets (as measured by depreciation) and the interest expense required to finance those assets. The greater the capital expense ratio, the greater the proportion of capital expenses in the business's expense structure. To some degree, this ratio measures a business's operating leverage—the greater the ratio, the greater the proportion of fixed costs in the business's cost structure.

ASSET EFFICIENCY (MANAGEMENT) RATIOS

Asset efficiency ratios measure how efficiently a business is utilizing its assets. A business that has too many assets for its level of activity (volume) is bearing unnecessary costs, while a business that has too few assets is running the risks of business disruptions and not being able to respond to increasing demand should it occur.

Total asset turnover (utilization) ratio

Total revenue divided by total assets.

$$\text{Total asset turnover} = \frac{\text{Total revenue}}{\text{Total assets}} .$$

Measures the dollars of *total revenue* per dollar of *total assets*. For example, a total asset turnover of 2.0 indicates that each dollar invested in total assets generates \$2.50 in total revenues. The higher the total asset turnover, the more efficient (in the financial sense) a business's investment in total assets. Note that different industries within the healthcare sector have different *capital intensities*, which is the amount of fixed assets required to do business. For example, hospitals require a large amount of fixed, and hence total, assets, while home health businesses do not. Thus, home health businesses will have much higher total asset turnover ratios than will hospitals.

Fixed asset turnover (utilization) ratio

Total revenue divided by net fixed assets.

$$\text{Fixed asset turnover} = \frac{\text{Total revenue}}{\text{Net fixed assets}} .$$

Measures the dollars of total revenue per dollar of *net fixed assets*. For example, a fixed asset turnover of 3.0 indicates that each dollar invested in fixed assets generates \$3.00 in total revenues. The higher the fixed asset turnover, the more efficient a business's investment in fixed assets (land, facilities, and equipment). Note that fixed asset turnover is very similar to total asset turnover, except that fixed asset turnover focuses on one subset of a business's total assets.

Current asset turnover (utilization) ratio

Total revenue divided by current assets.

$$\text{Current asset turnover} = \frac{\text{Total revenue}}{\text{Current assets}} .$$

Measures the dollars of total revenue per dollar of *current assets*. For example, a total asset turnover of 5.0 indicates that each dollar invested in current assets generates \$5.00 in total revenues. The higher the current asset turnover, the more efficient a business's investment in current assets. Like the fixed asset turnover, current asset turnover is similar to total asset turnover, except that it focuses on a different subset of a business's assets. A business may be highly efficient in its management of fixed assets, but poor in its management of current assets. Well-run businesses manage both asset types efficiently.

Inventory turnover ratio

Total revenue divided by inventory.

$$\text{Inventory turnover} = \frac{\text{Total revenue}}{\text{Inventory}} .$$

Measures the dollars of total revenue generated by each dollar of *inventory*. The higher the inventory turnover, the more efficient a business's investment in inventory. Similar to all turnover ratios, but with a focus on inventory utilization (efficiency).

OTHER FINANCIAL RATIOS

Other financial ratios focus on areas of financial condition outside of those in the four primary categories. Note that some of the ratios listed here are applicable only to for-profit businesses.

Average age of plant

Accumulated depreciation divided by depreciation expense.

$$\text{Average age of plant} = \frac{\text{Accumulated depreciation}}{\text{Depreciation expense}} .$$

Measures the average age (in years) of an organization's fixed assets—for example, 5.7 years. The lower the value, the newer a business's buildings and equipment. A low average age typically means that the organization is using current technology and that it will not require large capital expenditures in the near future.

Depreciation rate

Depreciation expense divided by gross fixed assets (gross plant and equipment).

$$\text{Depreciation rate} = \frac{\text{Depreciation expense}}{\text{Gross fixed assets}} \times 100.$$

Measures the annual rate at which an organization is depreciating its fixed assets. For example, a rate of 20 percent signifies that the average age of the business's depreciable assets is $100 / 20 = 5$ years. The depreciation rate expresses the same information as does average age of plant, but in a different way.

Capital expenditure growth rate

Capital expenditures divided by gross fixed assets (gross plant and equipment).

$$\text{Capital expenditure growth rate} = \frac{\text{Capital expenditures}}{\text{Gross fixed assets}} \times 100.$$

Measures the annual rate at which an organization is adding new fixed assets. Because this ratio can be highly variable from year to year, it might be best to look at the average over three to five years. Businesses with high capital expenditure growth rates are expanding rapidly and potentially keeping up with technology, while those with low rates may be lagging the competition. Conversely, rates that are too high may indicate overinvestment.

Replacement viability ratio

Long-term investments (unrestricted) divided by accumulated depreciation.

$$\text{Replacement viability ratio rate} = \frac{\text{Long-term investments (unrestricted)}}{\text{Accumulated depreciation}} \times 100.$$

Attempts to measure the adequacy of funds on hand to meet future fixed asset investment needs. The theory here is that unrestricted long-term investments represent the funds available for capital investment and accumulated depreciation represents the dollar amount of assets that will require replacement. Of course, depreciation does not account for volume growth or inflation or cost increases due to new technology. The ratio can be improved by adjusting the denominator (accumulated depreciation) by inflation (price level). The higher the ratio, the better the ability of the business to internally fund future fixed asset additions.

Financial flexibility index

The financial flexibility index is a composite index that attempts to measure the overall financial condition of the business. It focuses on seven financial ratios that measure a business's source of funds and use of funds. The theory is the greater the (positive) difference between fund sources and fund uses, the better the financial condition of the business. For more on this ratio, see William O. Cleverley, "Predicting Financial Flexibility: A Key to Hospital Survival," *Healthcare Financial Management* (May 1985): 28–38.

Market to book ratio (investor-owned businesses only)

Market value of equity divided by book value of equity.

$$\text{Market to book ratio} = \frac{\text{Market value of equity}}{\text{Book value of equity}} .$$

Measures the number of dollars that investors are willing to pay for a firm's stock per dollar of book value. Note that this ratio can be calculated using either total values or per share values for both the numerator and denominator. In general, this ratio is greater than 1.0, often several times greater (or more). Companies with high rates of return on equity generally have high market to book ratios. Book value is a historical measure of value—how much equity investors have put into the business in the past—while market value reflects investor's expectations regarding future financial performance. The higher the ratio, the higher the expectations.

Price / earnings (P/E) ratio (investor-owned businesses only)

Price per share divided by earnings per share.

$$\text{P/E ratio} = \frac{\text{Price per share}}{\text{Earnings per share}} .$$

Measures how much investors are willing to pay per dollar of reported profits. P/E ratios are higher for firms with high growth prospects and lower for firms with greater risk, other things held constant.

Price / cash flow ratio (investor-owned businesses only)

Price per share divided by cash flow per share.

$$\text{Price / cash flow ratio} = \frac{\text{Price per share}}{\text{Net income} + \text{depreciation} + \text{amortization (if any)}} .$$

Measures how much investors are willing to pay per dollar of reported *cash flow*. This ratio is similar to the P/E ratio, but with a focus on cash flow, because, in general, stock price is related more to cash flow than to reported (net) income. Note that there are many other variations of this ratio, such as price/sales (revenues), price/EBITDA per share, and so on.

Du Pont analysis

Du Pont analysis recognizes that return on equity is a function of three other ratios: profit margin, total assets utilization, and the equity multiplier (total assets/total equity). In essence, profitability is a function of expense control, asset financial productivity, and financing mix. For more information on Du Pont analysis, refer to the textbook.