

# Financial ratios and related tools

Michel Blanchette, 2012



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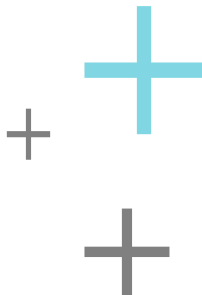
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# Foreword

This document provides a quick reference on basic financial analysis tools for bankers (credit analysis) and investors (equity analysis). A five-step approach is presented along with an overview of selected financial ratios and related tools based on financial statements.

A ratio by itself is an incomplete figure that could be misleading if analyzed in isolation. To perform an analysis, inter-related ratios should be examined and calculated over a period of time to see the trends, and then compared to ratios of industry or peers. Ratio calculations should be accompanied and supported by qualitative analysis about the company and its environment (e.g. quality of management, projects in progress or upcoming, staff movements, industry trends, competition, risk factors).

The ratios presented are frequently used in practice, plus two innovative ones based on the new feature of comprehensive income introduced recently in accounting standards. These latter ratios are adaptations of return-on-asset (ROA) and return-on-equity (ROE) with proposed names of comprehensive-ROA and comprehensive-ROE. Ratios reflecting a financial position at one specific date are described as snapshot ratios and those covering a period of time are called period ratios (the period is assumed to be one year). Many ratios can be calculated in several ways. The suggested formulas are one of the typical forms currently used, apart from the comprehensive-ROA/ROE which are innovations.

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# I) A FIVE-STEP APPROACH TO FINANCIAL ANALYSIS



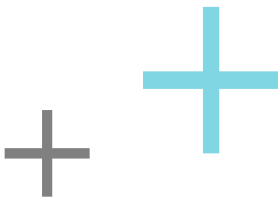
This summarized approach is a check-list suggesting five basic steps to perform a financial analysis. It is not an exhaustive list but a framework or guide to organize the work. Each step does not need to be completed before doing the next one: they can be done concurrently.

## Step 1 : Collect information


- Acknowledge the objective or decision to make (lending, investing, other)
- Obtain financial statements, audited or not, individual and consolidated (current + previous years + interim statements)
- Find out information on company (operating segments and business + strategy + projects + forecasts + reason for borrowing when applicable)
- Check out credit ratings
- Look for information on industry (success and risk factors + data base with comparative ratios + economic context)

## Step 2 : Make an overview of financial statements

- Liquidity = calculate current ratio + look at the asset distribution (especially inventory and receivables)
- Leverage = calculate debt ratio + look at the components of liabilities (short-term vs long-term vs equity)
- Profitability = calculate ROA/ ROE + gross profit margin + look at comprehensive income
- Cash flow = look at the cash flow statement + the net cash flow of each of the three categories (operating, investing, financing)



### Step 3 : Investigate where needed

- Make sure you know the major accounting policies and their impact on financial statements, including the utilization (or not) of “fair value accounting” + adjust figures if necessary
  - Liquidity = calculate quick ratio + turnover ratios + consider seasonality (with interim statements) + find justifications
  - Leverage = calculate interest coverage ratio + fixed-charge coverage ratio + analyze repayment schedule + find justifications
  - Profitability = analyze revenue streams + trends in detailed expenses + profit<sup>1</sup> per segment (operating and geographic) + consider to exclude abnormal items (e.g. special charges or gains/losses on discontinued operations) + find justifications
  - Cash flow = look at the detailed components of the cash flow statement + find justifications + forecast future cash flows (monthly or quarterly for liquidity concerns; five-year debt repayments for long-term repayment; annual net cash flow for equity analysis)
  - Other = assess the quality of fixed assets (asset turnover, need for replacement) + major threats on the business + find justifications
- 

*1. In this document, the terms “profit” and “income” refer to profits, but also to losses when applicable.*

## Step 4 : Deepen, breakdown and compare

- Look at trends
  - Compare with industry data
  - Evaluate in consideration of internal situation (strengths and weaknesses)
    - + industry success and risk factors
    - + general economic conditions
  - Prepare forecasts/projections
- 
- 
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## Step 5 : Conclusion

- Banker:  
grant credit (with conditions of loan and covenants), or identify default or breach of covenant
- Investor:  
buy, sell or hold

# II) LIQUIDITY



The objective of *liquidity analysis* is to evaluate the availability of cash and current assets as a source of repayment for short-term obligations.

## Current ratio

$$= \text{Current assets} \div \text{Current liabilities}$$

This is a snapshot ratio. It gives the proportion of **current assets** in relation to **current liabilities**. For example, a ratio of 1.2 means that the company has 1.2 dollar of current asset to cover each dollar of short-term liability. A higher ratio is better. Although the comparison to industry is essential, a general rule of thumb is that a ratio of 1.5 is good, a ratio below 1 means that the company may have severe difficulties to meet its short-term obligations, and a ratio of 2 or above suggests that the company is in a very good position to meet its short-term obligations. When current liabilities are subtracted from current assets, the dollar value obtained is named **working capital** or **net working capital**.

## Quick ratio

$$= \text{Quick assets} \div \text{Current liabilities}$$

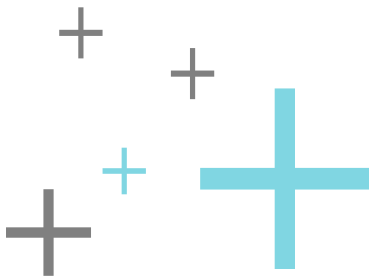
-where  $\text{Quick assets} = \text{Current assets} - \text{Inventory}$

This is a snapshot ratio similar to the **current ratio** except that it relies on **quick assets** as opposed to total **current assets** at the numerator. **Quick assets** are calculated by deducting **inventory** from **current assets**. A ratio of 1.2 means that the company has 1.2 dollar of **quick assets** to cover each dollar of **short-term liability**. A higher ratio is better. A ratio above 1 means that the company is in very good position to face its short-term obligations as its **quick assets** are sufficient to cover its **short-term liabilities**. A ratio below 1 is not necessarily a bad news, but it means that the company relies on other sources (in addition to **quick assets**) to cover its **short-term liabilities**, and in particular on **inventory**.

## Inventory reliance ratio

$$= (\text{Current liabilities} - \text{Quick assets}) \div \text{Inventory}$$

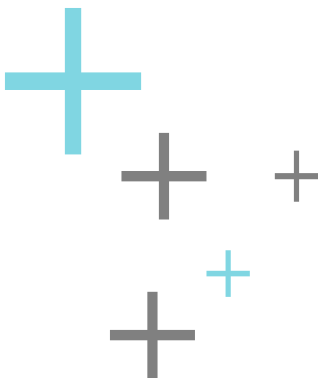
This is a snapshot ratio. It is the proportion in the value of **inventory** that would need to be converted to cash (or sold at book value) to cover the **current liabilities** assuming that the **quick assets** have been used first to repay them. The lower the ratio, the better as it means that less inventory is required to cover the **current liabilities**. Take note that this ratio is useless if the **quick assets** are larger than the **current liabilities** because there is no need to rely on the value of inventory in that situation as **quick assets** are sufficient to cover **current liabilities**.



## Defensive interval

$$= \text{Quick assets} \div \text{Daily expenses to pay}$$

This is not a ratio but a number of days. The **quick assets** at numerator represent the amount of cash that could be available quickly to pay for the regular operating expenses. The denominator (daily expenses to pay) corresponds to all **operating expenses**, except noncash such as depreciation, divided by 365. The daily expenses to pay can be calculated from the expenses figures of the **income statement** (e.g. cost of goods sold, selling expenses, administrative expenses, interest expense and tax expense) or from the negative operating cash flow figures of the **cash flow statement**. The result is the average number of days for which **quick assets** are sufficient to pay for **operating expenses**. The higher the result, the better, because it means that the company benefits from a longer period during which it does not need to rely on sources of cash other than **quick assets** to pay for **operating expenses**.





## Receivables turnover

$$= \text{Net sales} \div \text{Receivables}$$

and

## Collection period

$$= 365 \div \text{Receivables turnover} = (\text{Receivables} \div \text{Sales}) \times 365$$

The **receivables turnover** is a period ratio. The numerator comes from the **income statement**: the **net sales**. The denominator is ideally a weighted average of the item **receivables** over the period considered (e.g. one year) but the yearend balance is often used in practice to facilitate calculations. In that case, seasonality may be an important issue to consider (see "Seasonality" in "Other considerations" below). Another issue may appear at numerator when other revenues are combined with or presented within the sales in the **income statement**. The net sales at numerator should only include those from operating activities, not from other sources. A high turnover is better as it means that the receivables are collected more quickly.

The ratio can be converted to a number of days, called the **collection period**. The **collection period** is the average number of days that it takes to collect **receivables**. For example, a **receivables turnover** of 12 means that the receivables roll over 12 times per year which, in turn, means that it takes 30 days (365 divided by 12) on average to collect them. The lower the number of days, the better. One interesting thing to do with the **collection period** is to compare it with the selling terms of the company (or of the industry) to see if customers pay faster or slower. However, it should be noted that receivables can be quickly converted to cash when sold to a factoring company or transferred to a credit card agency. In these cases, the transfer of risk associated with the collection (transfer with recourse or not) should be verified.

## Inventory turnover

$$= \text{Cost of goods sold} \div \text{Inventory}$$

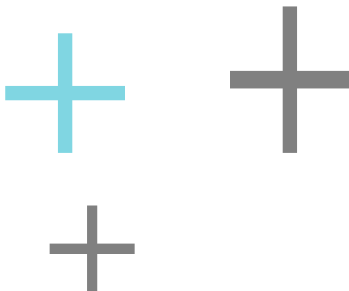
and

## Inventory turnover in days

$$= 365 \div \text{Inventory turnover} = (\text{Inventory} \div \text{COGS}) \times 365$$

The **inventory turnover** is a period ratio. The numerator comes from the **income statement**: the **cost of goods sold**. The denominator is ideally a weighted average of the item inventory over the period considered (e.g. one year) but the yearend balance is often used in practice to facilitate calculations (beware of the seasonality issue). A higher ratio is better as it means that the inventory is sold quickly after being purchased or manufactured. A low turnover may signal a problem with obsolescence.

The ratio can be converted to a number of days. The **inventory turnover** in days is the average number of days that inventory is on hand before being sold (or delivered). For example, a ratio of 8 means that the **inventory** rolls over 8 times per year or every 46 days on average (365 divided by 8). The lower the number of days, the better.



## Payables turnover

$$= \text{Purchases} \div \text{Payables} \quad \text{or sometimes} \quad \text{COGS} \div \text{Payables}$$

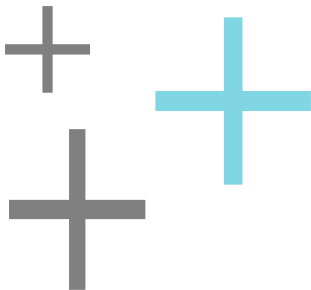
and

## Payables turnover in days

$$= 365 \div \text{Payables turnover} = (\text{Payables} \div \text{Purchases}) \times 365$$

The **payables turnover** is a period ratio. The numerator comes from a component of the cost of goods sold in the **income statement**: the **purchases**. The denominator is ideally a weighted average of the **payables** over the period considered (e.g. one year) but the yearend balance is often used in practice to facilitate calculations (beware of the seasonality issue). In theory, the **payables** at denominator should reflect only those attributable to the purchases (i.e. payables to suppliers) but they often incorporate other accrued items (such as salaries payable and taxes payable). Therefore, the ratio is slightly biased. Moreover, the **cost of goods sold** is often used at numerator, in replacement of **purchases**. In that case, the ratio is also biased because many items other than the purchases are considered (e.g. labor and overhead expenses). However, the ratio may still be used as long as the figures to compare with are calculated the same way. A low turnover is better in terms of liquidity as it means that the company keeps its cash longer before paying its suppliers, but it may also be a consequence of liquidity problems with the operating cash inflows.

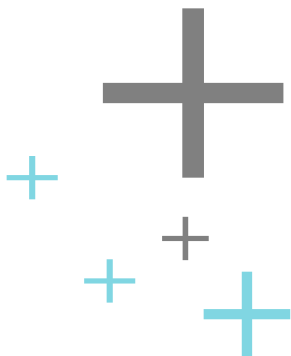
The ratio can be converted to a number of days. The **payables turnover in days** is the average number of days that it takes to pay the suppliers. For example, a ratio of 6 means that the payables roll over 6 times per year which, in turn, means that it takes 61 days (365 divided by 6) on average to pay the suppliers. One interesting thing to do with the payables turnover in days is to compare it with the repayment terms of the company's purchases (or of the industry) to see if the company pays its bills faster or slower. The higher the number of days, the better in terms of liquidity, unless the reason for it is a lack of cash inflows.



## Cash conversion cycle

$$= \text{Collection period} + \text{Inventory turnover in days} - \text{Payables turnover in days}$$

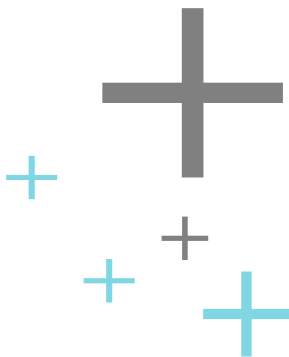
This is not a ratio but a number of days. It is the average number of days that it takes for cash being injected in operations to get back in the company. First, **inventory** is purchased on credit (or manufactured) and payment is made after a period equal to the **payables turnover in days**. At the payment date, cash is injected. In parallel, **inventory** is being received/manufactured and offered for sale (**inventory turnover in days**), and then sold to customers (**collection period**). So the average waiting period before getting cash back in the company (**cash conversion cycle**) starts from the date it is injected until the date it is collected. The lower the result, the better, because it means that the company does not have to freeze cash too long to support operations.



## Operating cash flow to current liabilities

$$= \text{Operating cash flow} \div \text{Current liabilities}$$

This is a period ratio. It calculates how many times the **current liabilities** are covered by **operating cash flows**. The numerator is the **net operating cash flow** from the **cash flow statement** and the denominator is **current liabilities** from the **balance sheet**. A higher ratio is better as it means that the **current liabilities** are better covered by **operating cash flows**.



# III) LEVERAGE



The objective of *leverage analysis* is to evaluate the financial structure of liabilities versus equity and to see the coverage of interest, fixed charges and dividends.

## Debt ratio

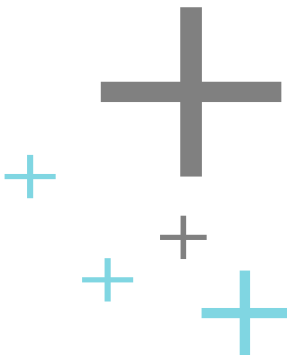
$$= \text{Total liabilities} \div \text{Total assets}$$

and

## Debt to worth

$$= \text{Total liabilities} \div \text{Shareholders' equity}$$

These are snapshot ratios. They give an idea of the importance of leverage, measured by **total liabilities**, in relation to **total assets** or **shareholders' equity**. In credit analysis, a lower ratio is better because it means less risk. In equity analysis, the interpretation of the ratio depends on the risk-aversion of investors. A higher ratio means more risk, but potentially more return (see "Dupont analysis" in "Other considerations" below). A further analysis is to look at the breakdown of liabilities between short-term and long-term, and to weight them against short-term and long-term assets. Adjustments of numerator for off balance sheet financing may be made (see "Off balance sheet items" in "Other considerations" below). The denominator should also be adjusted for fair value if possible.





## Debt to tangible assets

$$= \text{Total liabilities} \div \text{Tangible assets}$$

and

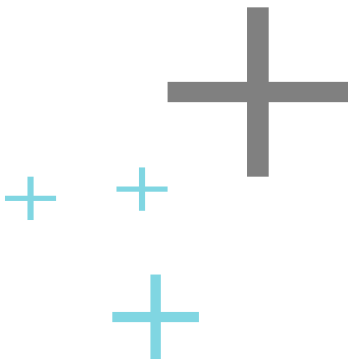
## Debt to tangible net worth

$$= \text{Total liabilities} \div \text{Tangible net worth}$$

-where  $\text{Tangible assets} = \text{Total assets} - \text{Intangible assets}$

- $\text{Tangible net worth} = \text{Shareholders' equity} - \text{Intangible assets}$

This is a similar ratio to the **debt ratio**, except that the denominator is based on the **tangible items** of the **balance sheet**. This ratio is of interest to creditors as it shows the level of leverage excluding **intangibles** which convey much more uncertainty than **tangible assets**. A higher ratio means more risk. Alike the **debt ratio**, numerator and denominator should be adjusted for off balance sheet financing and fair value if possible.



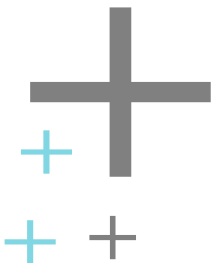
## Interest coverage ratio

$$= \text{EBIT} \div \text{Interest expense}$$

-where EBIT = Earnings before interest and tax

$$= \text{Net profit} + \text{Tax expense} + \text{Interest expense}$$

This is a period ratio. It calculates how many times the **interest expense** is covered by profit. The **interest expense** is at denominator and the profit available to repay it at numerator. A higher ratio is better as it means that the interest expense is better covered by profit.



## Fixed-charge coverage

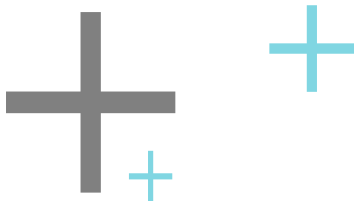
$$= \text{Profit before fixed charges} \div \text{Fixed charges}$$

-where Profit before fixed charges = EBIT + Lease expense

-Fixed charges = Interest expense + CMLTD + Lease payments +  
Dividends on preferred shares

-CMLTD or current maturity of long-term debt = Debt capital repayment  
due within one year

This is a period ratio similar to the **interest coverage ratio**. It calculates how many times some selected **fixed charges** are covered by the profit available to repay them. **Fixed charges** are financing payments to be done regularly: interest expense, short-term repayment of debt (sometimes called current maturity of long-term debt or CMLTD), lease payments (including payments on finance or capital leases), dividends on preferred shares (included if they are considered as a regular payment, otherwise excluded). The profit available is the profit before fixed charges (EBIT + lease expense; CMLTD and dividends are not added back because they are not included in the expenses of the **income statement**). A higher ratio is better as it means that the fixed charges are better covered by profit.



## Dividend payout

$$= \text{Dividends paid or declared} \div \text{Net profit}$$

This is a period ratio. It gives the percentage of dividends paid or declared in relation to profit. In credit analysis, a lower ratio is better because it means that more profit is retained in the company, providing more ability for debt repayment. In equity analysis, it depends on the investors' objectives: a higher ratio means more dividend revenue but less potential for capital gains; a lower ratio means less dividend revenue but more potential for capital gains.



# IV)

# PROFITABILITY



The objective of *profitability analysis* is to evaluate the ability to generate sales or profit from the resources of the company. Different measures of profit can be used such as gross profit, operating profit, net profit, profit before abnormal items such as discontinued operations. Efficiency in the utilization of assets and market-based return are also included in this category.

## Return on asset (ROA)

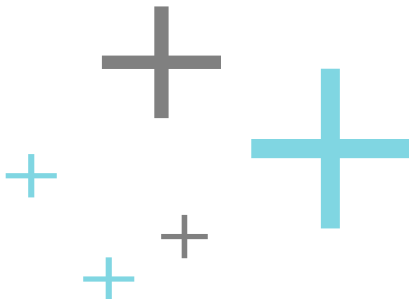
$$= \text{Net profit} \div \text{Total assets}$$

and

## Return on equity (ROE)

$$= \text{Net profit} \div \text{Shareholders' equity}$$

These are period ratios. The numerator is the **bottom line** of the **income statement**: the **net profit** or **net income**. The denominator is ideally a weighted average of the **total assets** (in ROA) or **shareholders' equity** (in ROE) over the period considered (e.g. one year); but the yearend balance is often used in practice to facilitate calculations. A higher ratio is better as it means that total assets (or net assets) generate higher profit. It should be noted that the ratios can be improved by using fair values at the denominator when available.



## Comprehensive ROA

$$= \text{Comprehensive income} \div \text{Total assets}$$

and

## Comprehensive ROE

$$= \text{Comprehensive income} \div \text{Shareholders' equity}$$

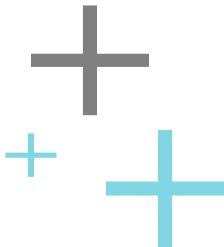
The separate reporting of **comprehensive income** was introduced in the US accounting standards in 1997 (SFAS No. 130 Reporting Comprehensive Income) and in Canadian accounting standards in 2005 (CICA Handbook: Section 1530 Comprehensive Income). It is also required in **International Financial Reporting Standards** or IFRS (IAS 1 Presentation of Financial Statements, revised in 2007). The new proposed ratios are adapted from the traditional ROA and ROE. They are similar to ROA/ROE except that the **comprehensive income** (disclosed in the **statement of comprehensive income**) replaces the **net profit** at numerator.

The **comprehensive income** is the sum of the **net income** from **income statement** and the annual unrealized gains and losses recognized directly in **shareholders' equity** under **other comprehensive income** (OCI). The OCI adjustments are mainly revaluations coming from the new fair-value orientation of accounting standards. A higher ratio is better as it means that **comprehensive profitability** is higher as a percentage of **assets/equity**. A significant difference between **ROA/ROE** and **comprehensive ROA/ROE** implies that there is a significant amount of unrealized gains/losses which, in turn, may reveal important risk exposures of the company in currencies, interest rates, pension liabilities, derivatives or other.

## Gross profit margin

=  $\text{Gross profit} \div \text{Net sales}$

This is a period ratio. The numerator is generally the very first sub-total in the **income statement**: the **gross profit (net sales – cost of goods sold)**. The denominator is net sales. The **gross profit** margin is usually the most important margin ratio to compare with industry peers because it focusses on the direct costs of purchasing (or producing/manufacturing) the goods being sold. But it should be noted that the sub-total **gross profit** is not always indicated separately on the face of the income statement. Also, there is no uniformity in the components classified as **cost of goods sold** in practice. For example, some **depreciation** is sometimes included in **cost of goods sold** and sometimes presented on a separate line. A higher ratio is better as it means that more profits are left after considering the direct costs.

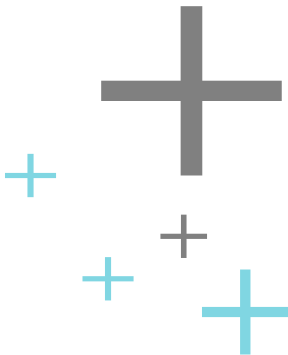




## Operating profit margin

$$= \text{Operating profit} \div \text{Net sales}$$

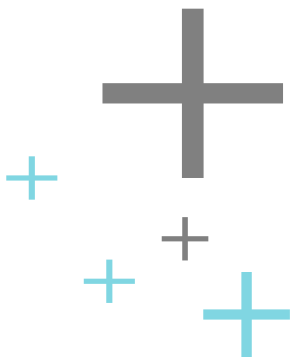
This is a period ratio. The numerator is a sub-total in the **income statement**: the **operating profit**. The denominator is **net sales**. The **operating profit margin** is based on the specific revenues and expenses related to the core business of the company: sales, cost of goods sold, selling and administrative expenses. It does not take into consideration other revenues and expenses such as the interest expense, gains and losses on disposal, other revenues, income tax, extraordinary items. But it should be noted that the sub-total **operating profit**, alike the **gross profit**, is not always indicated separately on the face of the income statement. Also, the **operating profit** is not necessarily calculated the same way by different companies; caution should be exercised when comparing the ratio across companies. A higher ratio is better as it means that more profits are earned after considering operating revenues and expenses.



## Net profit margin

$$= \text{Net profit} \div \text{Net sales}$$

This is a period ratio. The numerator is the **bottom line** of the **income statement**: the **net profit** or **net income**. The denominator is **net sales**. The **net profit margin** incorporates all revenues and expenses in the calculation. For that reason, it is subject to a lot of discretionary adjustments based on accrual accounting and matching (capitalisation, depreciation, provision for bad debts, etc.). A higher ratio is better as it means that more profits are left after considering all revenues and expenses.



## EPS (or Basic EPS)

= Profit of CS ÷ Weighted average number of CS

and

## Diluted EPS

= Same as the basic EPS, but adjusted for dilutive instruments

-where EPS = Earnings per share

-CS = common shares

These are period ratios normally disclosed at the bottom of the **income statement**. In the **basic EPS**, the numerator is the **bottom line** of the **income statement**, the **net income**, adjusted to exclude the share of profits that belongs to preferred shareholders; and the denominator is the weighted average number of common shares outstanding during the period. In the **diluted EPS**, the formula is adjusted to take into consideration instruments that have a potentially dilutive effect on EPS such as stock options and convertible bonds. The reason is that these instruments will increase the number of shares outstanding if exercised and therefore dilute the EPS. A higher ratio is better as it means that more profit is realized per common share. When the **diluted EPS** is significantly lower than the **basic EPS**, it means that there are significant dilutive instruments outstanding, which may reduce the return for common shareholders in the future.



## Price-earnings ratio

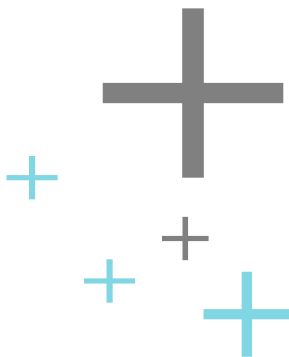
= Stock price  $\div$  Basic EPS

and

## Price-to-diluted-earnings ratio

= Stock price  $\div$  Diluted EPS

These ratios are period ratios. The numerator is the stock price at yearend. The denominator is the **basic** or **diluted earnings per share**. It is a market-based measure showing the number of times that the current stock price covers the profit (or the diluted profit). A higher ratio is better for actual shareholders as it means that their investment is worth more. A lower ratio is not good for actual shareholders but represents a buying opportunity for investors. The price-earnings ratio is easy to calculate when there is one category of common shares, but it may be difficult when there are many.



## Asset turnover

$$= \text{Net sales} \div \text{Total assets}$$

and

## Fixed asset turnover

$$= \text{Net sales} \div \text{Fixed assets}$$

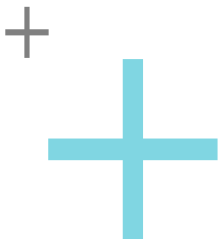
These are period ratios. The numerator is **net sales** from the **income statement**. The denominator is ideally a weighted average of the **total assets** (in the **asset turnover**) or **fixed assets** (in the **fixed asset turnover**) over the period considered (e.g. one year); but the yearend balance is often used in practice to facilitate calculations. These ratios give the amount of sales that is generated by each dollar of asset/ fixed asset. A higher ratio is better as it means that more sales are generated by the same amount of assets/ fixed assets. But it should be kept in mind that the ratios have major limitations, especially in the recognition and measurement of assets (see “Limitations” and “Off balance sheet items” in “Other considerations” below).



## Free cash flow

$$= \text{Operating cash flow} - \text{Capital expenditures}$$

This is not a ratio but an amount. It represents the cash flow generated by operations after payments for **capital expenditures**. The values come from the **cash flow statement**: the **net operating cash flow** in the operating section and the **capital expenditures** (purchases of fixed assets) in the investing section. A higher **free cash flow** is better as it means that there is more cash available from operations after the payments for maintaining and expanding the production capacity. **Free cash flow** can be used to analyze profitability (evaluating cash flows from operations), liquidity (evaluating current cash flows) and leverage (assessing the financing needs in relation to capital expenditures).



# V) OTHER CONSIDERA- TIONS







## Trend analysis and industry comparison

Trend analysis is useful to identify and forecast variations of accounting figures and ratios over time. Industry comparisons are necessary to judge if ratios of one company are favourable or unfavourable in relation to industry standards.

## Common size financial statements

Financial statements may be changed to a common size format: every item as a percentage of total assets in the **balance sheet**; every item as a percentage of sales in the **income statement**. This is useful to analyze trends and identify abnormal variations in the relative weight of items (compare to total assets or sales) over time.



## Segment analysis

Consolidated figures should be broken down by segment for ratio analysis. There is normally a footnote attached to financial statements providing selected accounting figures by segment.



## Adjusting for abnormal items

Ratios can be adjusted to reflect ongoing business by excluding items considered not representative of normal operations, such as abnormal or special gains/losses and items relating to discontinued operations. But it should be kept in mind that the measurement of these items is based on estimates made by management, therefore potentially biased within the acceptable range allowed by accounting standards.

## Seasonality

The quality of ratios depends on the quality of the inputs used in calculating them. For instance, liquidity ratios are useless (and possibly misleading) if current assets and current liabilities at the **balance sheet** date are not representative of the normal level throughout the year. If a company operates in a business subject to seasonal fluctuations, then it is important to consider the pattern of seasonality in performing a financial analysis. Interim financial statements can be used to improve liquidity ratios by allowing to calculate the weighted average of items such as receivables, inventory and payables. Projections of sales and cash flows may also be improved by looking at interim statements.

## Auditing

Financial statements are primarily under the responsibility of management. Therefore, their reliability depends on the capability and intention of management to apply good financial reporting practices. Auditing can add reliability to financial statements by providing an independent opinion testifying that accounting standards have been followed. In practice, annual financial statements of listed companies are audited and interim statements are not. Financial statements of unlisted companies are sometimes audited but generally not. The decision of a banker to require audited financial statements from borrowers depends on the cost of auditing vs the value-added of having more reliable financial statements. However, it should be noted that auditing is not perfect as it only provides reasonable assurance whether the financial statements are free of material misstatement



## Dupont analysis

$$\text{ROE} = \text{ROA} \times \text{leverage}$$

or

$$\frac{\text{Profit}}{\text{Equity}} = \frac{\text{Profit}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}}$$

The Dupont analysis is a method of breaking down ratios into several components, highlighting relationships between them. The breakdown of ROE into two components reveals the conflicting interests of investors/shareholders vs creditors regarding leverage. The first component, the ROA, is not a problem as both investors and creditors prefer higher profit in relation to total assets. But the second component, the leverage, is troublesome for creditors as a higher level of debts is boosting the ROE, which is what investors want, while increasing the risk of debt repayment, which is what creditors wish to avoid.

Other breakdown can be done in a Dupont analysis, for example:

- $\text{ROA} = \text{Net profit margin} \times \text{Asset turnover}$ , or
- $\text{Profit/Assets} = \text{Profit/Sales} \times \text{Sales /Assets}$



## Forecasts/Projections

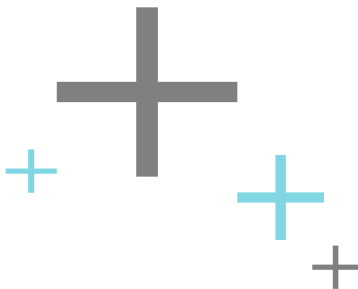
Projections are important to see how the financial condition of a company is expected to evolve in the future. Analyzing historical information can be useful to see the trends and to help in forecasting future outcomes. Projections include: projected balance sheets to analyze liquidity and leverage; projected income statements and statements of comprehensive income to analyze profitability; projected cash flows to further analyze liquidity and debt repayment. The projected cash flows can be done on an annual basis or on a more frequent basis (e.g. quarterly or monthly) to see the expected needs or excesses of cash in the very short-term.



## Limitations

Ratios are based on accounting figures which, in turn, are based on accounting rules and principles that involve important limitations. In particular, some accounting figures are measured at historical cost, which may differ significantly from fair value. Under IFRS, a number of assets and liabilities are measured at fair value. For example, financial instruments, investment properties, fixed assets and intangibles can all be measured at fair value, but this is mainly optional, not automatic. So the notes attached to financial statements should be verified to see what accounting policies are applied by the company. Whenever possible, assets and liabilities should be adjusted to fair value in ratio calculations.

Revenues and expenses are based on the concept of accrual accounting. Another limitation of accounting figures is that many items are based on estimations and assumptions made by managers, which may be biased or influenced by incentives such as bonuses. A ratio analysis should take those limitations into consideration.



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