Financial analysis is the starting point of credit analysis. As a matter of fact, financial analysis is the starting point for all “securities” analysis – equity securities and debt (credit) securities or obligations. Historic trends and performance are the basis for making forecasts, and for judging the degree to which forecasts future operating results and financial position are reasonable.

An equity analyst will use financial analysis tools to estimate the value of a company’s equity. The goal of the equity analyst is to estimate value based upon estimates of revenue growth and consequent earnings growth. Various valuation methods are used, such as price / earnings multiples and the DCF method (discounted cash flow). In any event, the financial analyst will use past performance, competitive assessment, management and strategy assessment, and knowledge of the industry to predict future earnings and cash flow.

A credit analyst will use financial analysis to try to establish the degree to which an obligor can fulfill the terms of its debt obligations – short term and long term. This is analogous to the estimation of the value of these obligations. Unlike equity, the value of a debt obligation at its maturity date should be the same as when it was issued.

Both equity analysis and credit analysis require the use of significant judgment to assess future performance.

This chapter will review how financial analysis is utilized in credit analysis to assess business risk, performance, and capital structure, and the all important question of “how and when will I get paid back?” It is also about assessing the degree of risk associated with the question, “how and when will I get paid back?”

A. What is Financial Analysis?

Financial analysis is used to identify and assess all aspects of a company’s performance, liquidity, and financial position.

One of the most valuable benefits of financial analysis is to compare a particular company against its peers – companies in the same or similar industry. This helps to focus further analysis on areas where a company is at variance from its peers, in terms of operating performance and its capital structure.
Financial analysis is used to determine if a company is funding itself internally from operations, or needs to access external sources of cash. This is a primary means of assessing credit risk.

Financial analysis can also be used to determine if operating performance is real; i.e., whether or not there is a chance of fraud in the accounts.

Historical financial performance is the starting point for predicting future financial performance. But it is only the starting point. A company’s future performance is a function of its industry, competitive situation, its past performance relative to its peers, its management competency, and a comparison of its stated strategy and the analyst’s view of the strategic opportunities. As many sorry investors and lenders have learned, the past is not always a guide to the future!

In summary, financial analysis is used to identify and assess:

A company’s basic business model – how does it make money? How does it produce an acceptable return on equity? Does it operate with high or low margins? Does it have high or low asset turnover? Does it operate with high or low leverage?

Operating Performance – how is the company doing in terms of profitability? How is it doing in absolute terms and relative to its competitors?

Liquidity – how much cash, or near cash, does the company have relative to its near term financial obligations?

Cash Flow – are a company’s operations generating surplus cash, or is it using more cash than it is creating?

Capital Structure – how does the company fund its short-term and long-term assets? How does this compare to its competitors?

Judgments about future performance are clearly based on past performance, but must consider a number of factors that go beyond historic financial analysis. This will be the topic of Chapter III – credit analysis and cash flow forecasting.

B. Use of Financial Analysis to Understand Company and Industry Business Models

In Chapter I, we introduced the relationship between a company’s operating risks (business risks) and its capital structure. We said that the design of a company’s capital structure is not arbitrary. It must be created and maintained to achieve a return on equity that is high enough to attract capital and to create shareholder value. But it also must be appropriate for the nature of a company’s business risk.

Almost every company and every industry has a capital structure that is a natural function of the risks of its business model. This “natural” capital structure is based upon the nature of the assets used to produce revenue and profits, the
competitive and regulatory environment, the degree to which it is subject to the macro-economic environment, the labor environment, and the consequent stability of the company’s business – revenue and expenses.

Companies that are subject to heavy competition and are highly vulnerable to macro economic conditions generally cannot survive with a lot of debt – the operating cash flow is subject to a lot of variation (volatility). Companies that are well capitalized (a lot of equity relative to their business risk) can sustain long periods of low or negative cash flow. Companies that are poorly capitalized (too much debt relative to their business risk) cannot sustain long periods of low cash flow before they are forced into bankruptcy by their creditors.

Companies whose assets are highly liquid and have stable value can maintain a lot of leverage. This is a classic commercial banking model, and is the case for the banks that survived the 2008 credit crisis, as in Canada. Companies with illiquid assets, but which have very stable revenue and operating costs can also sustain a lot of leverage. Regulated utility companies are an example.

One of the key jobs of a credit analyst is to understand which types of business can sustain leverage, and which cannot. This is the concept of the “natural” capital structure.

What are the operating risk characteristics of companies in the following industries? What is the degree of volatility of their operating cash flow in a stable economic environment?

Supermarket?
Retail Apparel Department Store Chain?
Software Developer?
Pharmaceutical Manufacturer?

Supermarket chains have been the subject of a lot of leveraged buyouts by private equity investors, and many of them have been successful. The reason is that these businesses have a relatively small degree of revenue and expense volatility. They sell commodity products with relatively stable fixed costs. There is very little inventory risk (the risk that something won’t sell at its posted price). When these companies do fail, it’s usually do to over-expansion (building new stores that don’t produce the anticipated revenue), labor disputes, or extraordinary events, such as a major fire.

Retail apparel chains have also been subject to a lot of buyouts. Most of them failed. Standard and Poor’s once wrote a report (after some of the failures) that stated “a highly leveraged apparel retailer is a contradiction in terms”. There are so many things that can go wrong in the business, that high financial leverage adds a huge bankruptcy risk. Merchandise risk is just one of these risks. Moreover, a highly competitive apparel merchandiser needs to have tremendous financial flexibility. They need to move with trends – including buying fresh merchandise and marking down stale merchandise. The investment bankers that structured these deals didn’t seem to understand these basic risks.
Are pharmaceutical manufacturing or software development risky businesses? Based on historic knowledge of some very successful companies in these industries, one might be tempted to say “no”. But they share a common characteristic that make their business and operating risks very high. Both industries require huge investments in research and development to produce products. The success rate might be relatively low, and the time to develop saleable products can be very long. These industries require a lot of “patient” capital for their business model to work – equity is the dominant part of their capital structure.

As we saw in Chapter One, the business model of all companies can be defined through the use of the following model....

**ROE = Profit Margin X Asset Turnover X Leverage**

The goal of a company’s management is to produce a return on capital that is higher than the alternative of investing in risk free securities (government bonds). Moreover, the return should be adjusted for risk. If management does not produce a return on capital (equity) that is significantly higher than the alternative of investing in a government bond, then it is destroying value. This is the concept of Economic Value Added, a topic that is beyond the scope of this course.

The analysis of how companies make money is a good way to identify and define many elements of financial analysis. Key analysis and accounting terms that will be further defined are underlined in the following examples.

For example, supermarkets tend to have very low profit margins, because they can produce adequate ROE via very high asset turnover. Average days inventory is very low. Leverage is usually moderate, as it is not necessary to employ high leverage for a good ROE due to the high asset turnover. Since the bulk of the assets of a supermarket company tend to be inventory, which is largely financed via credit from vendors, working capital tends to be low, and sometimes negative.

A software developer such as Microsoft or SAP would tend to have high profit margins. It would generally also have low leverage, as the basic nature of its business is very high risk. Product development can take a long time, with very no guarantee of success, and very high fixed costs. The same can be said for the business model of a pharmaceutical manufacturer such as Pfizer or AstraZeneca.

A commercial bank will have very high financial leverage. The nature of a bank’s assets are (presumably) of high quality, liquid, and of low risk, which lend them to high leverage financing, and asset turnover is very low, especially if the bank’s loans are long term in nature.

C. Definition and use of basic financial ratios

**Liquidity** – companies become bankrupt when they run out of cash. Two traditional measures of liquidity are the Current Ratio and the Quick Ratio. Both provide an indication of the relationship between a company’s cash or “near”
cash position, and its obligations that are due in the near future. The quick ratio is the current ratio less current assets that are not immediately liquid.

Some companies’ liquidity is highly dependent upon short term sources of funding, such as trade credit (accounts payable) or short term bank loans, or lines of credit. A serious question is raised as to whether availability of credit is a source of liquidity. This is a subject for Chapter 3 – Credit Analysis. But companies which are highly dependent upon outside providers of credit and liquidity, often become bankrupt not only because they run out of cash, but also because: they fear that they’ll run out of cash, or their suppliers of liquidity fear that they’ll run out of cash.

Current Ratio – Current assets / Current liabilities. This is a basic measure of liquidity. A low or even negative current ratio is an indication that a company is heavily dependent on short term sources of funding, which can be transient and evaporate. A company could become insolvent very quickly if a creditor declines to continue to provide short term funding, particularly if the short term assets (current assets) are not extremely liquid.

Quick Ratio - cash, marketable securities and accounts receivable / current liabilities. This is a more refined measure of liquidity than the current ratio. It excludes current assets that cannot be turned into cash in a relatively short period of time.

Inventory turnover is a very important measure of asset efficiency (asset productivity). Competing companies in an industry should have similar turnover ratios. If there is an outlier, it could be an indicator of a potential problem, or competitive advantage.

Receivables collection period (days receivable) is another way to compare the operations of two competing companies in the same industry. It is also important to examine this over time for trends, good or bad. A lengthening collection period could be an indicator of deteriorating quality of the accounts receivable, or sloppy collection management.

Leverage ratios are a key indicator of financial risk. A basic measure of leverage is the ratio of total equity to total assets. This describes the portion of total assets that are funded by equity vs liabilities. Other typical metrics for leverage are: total debt / equity, total debt / total assets (which is the inverse of equity/assets), and long term debt / total capitalization.

Interest coverage is a metric that assesses the relationship between a company’s gross cash flow and its periodic interest payments. This is a particularly important metric for highly leveraged companies. There are some arbitrary market standards for coverage, by debt rating, but it is important that all fixed obligations (interest, principle payments, taxes, and capital expenditures) are reviewed relative to a company’s earnings. Gross earnings for this measurement are sometimes referred to as “EBITDA” – earnings before interest, taxes, depreciation and amortization. EBITDA is a proxy for gross cash flow.
Measures of Operating Performance include metrics that identify how a company is performing for its owners (Return on Equity), and how it is performing relative to its competitors (Profit Margin). As we’ve discussed, Return on Equity (ROE) is net profit / equity. Usually this ratio will use average equity, not the equity amount at the end of a particular fiscal period. Profit Margin is net profit / sales.

In addition, a financial analyst will need to understand how a company makes money. It might sell its products for a very high gross margin (selling price minus cost of goods sold). If that’s the case, it might have a lot of flexibility regarding operating expenses. The net profit margin is the result of the combination of the gross margin, and the expense margin. The size of the gross margin is usually determined by competitive factors. The expense margin or operating margin (sales and operating expense / sales) is under management control. If a company operates with a thin gross margin, it must control expenses very carefully, and a financial analyst will monitor the expense margin. In a competitive industry “the low cost producer, wins”! This is a ratio that a credit analyst will monitor carefully over time, as discussed in the next chapter.

Operating Leverage is a basic corporate finance and micro-economic concept. It refers to the degree that a company has high or low fixed expenses relative to revenue. If all of a company’s expenses are variable, they are highly correlated with sales, and the operating margin will be relatively stable regardless of the level of sales. Expenses go up and down with sales volumes.

D. FINANCIAL DETECTIVE EXERCISE

The following is an exercise to illustrate how companies in industries have financial characteristics that are driven by the nature of their business and the industry. All companies within an industry will tend to have common financial characteristics – both the balance sheet and the income statement. Competition will drive profit margins among competitors, and the operating risks of an industry will drive the composition of the balance sheet.

Industry practices will determine how much funding is supplied by vendors, and how much by debt and equity. A peer analysis of companies within an industry will lead to the identification of “outliers”, which are certain financial indicators that are different from peers, and which require investigation to determine why. Sometimes the answer is logical, due to management or a particular situation. Sometimes the answer is not clear, which should lead to a sense of skepticism about whether or not the situation is correctly portrayed by the financial statements and statistics.
Here is a list of industries. On page 9 is a set of statistics for one company in each of these industries. Your task is to match each industry to each set of statistics. You will do this based upon common knowledge of the characteristics you would expect for a company in that industry.

**Industries**

- Commercial Bank
- Software Developer
- Pharmaceutical Manufacturer
- Discount Retailer
- Airline
- Electric and Gas Utility

Perhaps the first question to ask is “how is the company performing?” The ratio that gives the first indication of this is “net income / net worth”, which is the Return on Equity. In this exercise, the companies have an ROE ranging from a low of 9.0% to a high of more than 30%. An analyst would expect a well performing company to produce an ROE in the range of 10% - 20%. Anything above or below that is an indicator of an ‘outlier’ – something to be explored to determine why performance is above or below average. It may an industry issue, or it may be unique to the company.

As discussed earlier and in Chapter 1, the next goal of the analyst is to use financial ratios to understand the business model of how the company produces its Return on Equity (ROE). As noted, ROE is a direct, mathematical, function of three elements – profit margin, asset productivity, and leverage. Profit margin is net income / sales or turnover. Asset productivity is the ratio of sales or turnover to total assets. Leverage is the ratio of total assets to equity.

In the exercise, note that one of the companies has very low asset productivity (net sales / assets = 3%). It produces an average ROE (16.7%) via very high leverage (total assets / net worth = 18.5, or the inverse is net worth = 5.48% of total assets). It also has very good profit margins (about 31%).

\[
(\text{Asset Productivity}) \times (\text{Leverage}) \times (\text{Profit Margin}) = \text{Return on Equity}
\]

\[
(0.03) \times (18.5) \times (0.31) = 0.17 = 17\% \text{ ROE}
\]

Another company has very low profit margins (net profit / net sales =3.3%), but produces very good ROE (18.3%) via relatively high asset productivity (sales / total assets = 2.28), and moderate leverage (total assets / net worth = 2.46).

Two of the companies have moderately high leverage (total liabilities are funding about 69% of total assets and total assets / net worth = 3.2), but the nature of their balance sheet assets is very different. One (C) produces a very high ROE (about 36%) while the other’s (F) ROE is only about 9%. C has much higher profit margins, and slightly higher asset productivity. Without this much leverage, the ROE of “F” would be extremely low.
One of the questions the credit analyst must answer for “F” or “C” is “is this leverage sustainable”, or does it present a degree of risk that is not compatible with the company’s (or industry’s) business risk (which we also describe as volatility of cash flow).

Here are some hints for the solution of this puzzle....

Each of the companies in these six industries has a business model that is driven by the nature of what they do and the competitive situation in their industry. The balance sheet is unique to each business model – it is a function of the risks of the business, the funding sources available to the particular industry, and the means by which the company generates revenue.

The primary source of revenue for a commercial bank is the “spread” on loans – the difference between the net revenue rate it receives on loans and its cost of funding. Net revenue is interest received less loan losses. This spread, or net interest margin, is relatively small. Perhaps 1% of a loan for a large corporate borrower, or as much as 6% for a consumer type of loan. This results in very low asset productivity, as measured by the ratio of net sales to total assets. Other sources of revenue for a bank are fees and trading income.

A bank’s profit margin is the ratio of its non-interest expenses (salaries, premises, operations, taxes, etc.) to total revenue. This is generally in the range of 25% to 30%. So, in order to produce an ROE in the range of 15% (after tax), a bank must operate with very high leverage, since its asset productivity is extraordinarily low, and profit margins are moderate.

A discount retailer will operate with very low profit margins. That’s the basis for its competitive position. Its business risk is relatively high, as it is subject to macro-economic trends, and it does not sell products that are easily differentiated. Leverage tends to be relatively low for companies in this industry. Therefore, in order to produce a competitive ROE, these companies must have extremely high asset productivity, as seen in the ratio of sales to total assets. It also makes sense that a discount store would have rapid inventory turnover, particularly if it is selling grocery items as well as soft goods.

Software development and pharmaceutical development and manufacturing are industries with a lot in common. While the products produced have very little in common, the risks of these industries are relatively similar. Both industries depend on intensive, and expensive, R&D to develop products. The outcome of this R&D is never certain, nor is the timing. Companies in these industries operate with very high fixed costs, and very high business risk. They must have a lot of “patient” capital to cover the investment period before their successful products produce revenue. They tend to have relatively high profit margins. When a product is successful, it tends to have pricing strength in the market, with little marginal cost of production. Most of the product costs are in the R&D effort. A software company probably does not have as much investment in plant and equipment as would a pharmaceutical manufacturer. Acquisition of other companies are common in these two industries, which would be reflected in a relatively large proportion of intangible assets (goodwill) to total assets.
Airlines and electric utility companies have a common characteristic – very high investments in fixed plant and equipment. These are fixed asset intensive companies, with only moderate asset productivity (sales relative to total assets are low). In order to produce a good ROE, these companies must generate high profit margins or use a lot of leverage. High leverage for an electric utility is not necessarily bad, as its cash flow is relatively stable, especially if it’s regulated. Unregulated airlines have a very difficult time generating stable cash flow!

Inventory turnover and the ratio of inventory to total assets are very useful statistics for identifying an industry. Obviously a bank would not have a lot of inventory relative to total assets, nor would an airline or a software developer. A discount retailer would not have a lot of accounts receivable, unless it maintained its own private label credit card.

**FINANCIAL DETECTIVE EXERCISE**

Each column shows actual financial statistics for six companies, each in a different industry. Please complete this exercising by matching the company described by the statistics in each column to one of these six industries:

- Commercial Bank
- Software Developer
- Pharmaceutical Manufacturer
- Discount Retailer
- Airline
- Electric and Gas Utility

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Balance Sheet Percentages</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash and Marketable Securities</td>
<td>12.41%</td>
<td>35.04%</td>
<td>12.23%</td>
<td>4.88%</td>
<td>15.15%</td>
</tr>
<tr>
<td>Accounts Receivable</td>
<td>57.33%</td>
<td>26.81%</td>
<td>13.90%</td>
<td>1.88%</td>
<td>8.47%</td>
</tr>
<tr>
<td>Inventories</td>
<td>0.00%</td>
<td>0.05%</td>
<td>4.42%</td>
<td>22.28%</td>
<td>0.78%</td>
</tr>
<tr>
<td>Other current assets</td>
<td>23.16%</td>
<td>4.66%</td>
<td>5.06%</td>
<td>1.78%</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Current Assets</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant and equipment</td>
<td>0.86%</td>
<td>12.69%</td>
<td>17.30%</td>
<td>56.48%</td>
<td>56.34%</td>
</tr>
<tr>
<td>Intangible</td>
<td>1.99%</td>
<td>13.16%</td>
<td>44.52%</td>
<td>9.10%</td>
<td>7.25%</td>
</tr>
<tr>
<td>Other assets</td>
<td>4.25%</td>
<td>7.60%</td>
<td>2.56%</td>
<td>3.61%</td>
<td>12.00%</td>
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<td><strong>Total Assets</strong></td>
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<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td>Notes payable</td>
<td>54.22%</td>
<td>0.00%</td>
<td>8.92%</td>
<td>5.42%</td>
<td>5.97%</td>
</tr>
<tr>
<td></td>
<td>4.25%</td>
<td>9.54%</td>
<td>14.53%</td>
<td>18.58%</td>
<td>10.77%</td>
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</tr>
<tr>
<td>Accounts payable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accrued Taxes</td>
<td>0.75%</td>
<td>0.00%</td>
<td>7.41%</td>
<td>0.47%</td>
<td>2.81%</td>
</tr>
<tr>
<td>Other current liabilities</td>
<td>17.84%</td>
<td>19.65%</td>
<td>0.81%</td>
<td>9.76%</td>
<td>4.53%</td>
</tr>
</tbody>
</table>

**Total Current Liabilities**

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<tr>
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<tr>
<td>Long-term debt</td>
<td>12.36%</td>
<td>0.36%</td>
<td>22.68%</td>
<td>20.33%</td>
<td>25.01%</td>
<td>31.54%</td>
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<tr>
<td>Other liabilities</td>
<td>5.10%</td>
<td>5.88%</td>
<td>14.55%</td>
<td>4.72%</td>
<td>6.57%</td>
<td>26.76%</td>
</tr>
<tr>
<td>Total Liabilities</td>
<td>94.52%</td>
<td>35.43%</td>
<td>68.90%</td>
<td>59.28%</td>
<td>55.66%</td>
<td>69.22%</td>
</tr>
</tbody>
</table>

**Preferred stock**

<p>| | | | | | | |</p>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Capital stock and surplus</td>
<td>1.99%</td>
<td>-4.82%</td>
<td>8.95%</td>
<td>3.81%</td>
<td>0.92%</td>
<td>9.04%</td>
</tr>
<tr>
<td>Retained earnings</td>
<td>3.49%</td>
<td>69.40%</td>
<td>22.15%</td>
<td>36.92%</td>
<td>43.42%</td>
<td>21.74%</td>
</tr>
<tr>
<td>Total Equity</td>
<td>5.48%</td>
<td>64.57%</td>
<td>31.10%</td>
<td>40.72%</td>
<td>44.34%</td>
<td>30.78%</td>
</tr>
</tbody>
</table>

**Total liabilities and equity**

<table>
<thead>
<tr>
<th></th>
<th>100.00%</th>
<th>100.00%</th>
<th>100.00%</th>
<th>100.00%</th>
<th>100.00%</th>
<th>100.00%</th>
</tr>
</thead>
</table>

**Selected Financial Data and Ratios**

<table>
<thead>
<tr>
<th></th>
<th>120.6%</th>
<th>228.0%</th>
<th>112.5%</th>
<th>90.0%</th>
<th>101.4%</th>
<th>100.7%</th>
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</thead>
<tbody>
<tr>
<td>current assets / current liabilities (current ratio)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cash, marketable securities and accounts receivable / current liabilities (quick ratio)</td>
<td>90.5%</td>
<td>211.9%</td>
<td>82.5%</td>
<td>19.7%</td>
<td>98.1%</td>
<td>66.4%</td>
</tr>
<tr>
<td>inventory turnover (x)</td>
<td>NA</td>
<td>2068.00</td>
<td>13.95</td>
<td>10.24</td>
<td>75.66</td>
<td>26.0%</td>
</tr>
<tr>
<td>receivables collection period (days)</td>
<td>6984.00</td>
<td>97.54</td>
<td>81.21</td>
<td>2.96</td>
<td>51.74</td>
<td>50.5%</td>
</tr>
<tr>
<td>total debt / total assets</td>
<td>93.8%</td>
<td>0.4%</td>
<td>31.6%</td>
<td>25.8%</td>
<td>31.0%</td>
<td>34.4%</td>
</tr>
<tr>
<td>long-term debt / capitalization</td>
<td>69.3%</td>
<td>0.6%</td>
<td>42.2%</td>
<td>33.3%</td>
<td>36.1%</td>
<td>50.6%</td>
</tr>
<tr>
<td>net sales / total assets (asset productivity)</td>
<td>3.0%</td>
<td>98.9%</td>
<td>61.6%</td>
<td>228.2%</td>
<td>59.0%</td>
<td>45.5%</td>
</tr>
<tr>
<td>net profit / net sales (profit margin)</td>
<td>30.9%</td>
<td>19.9%</td>
<td>19.0%</td>
<td>3.3%</td>
<td>7.0%</td>
<td>6.1%</td>
</tr>
<tr>
<td>net profit / total assets (return on assets)</td>
<td>0.9%</td>
<td>19.7%</td>
<td>11.7%</td>
<td>7.5%</td>
<td>4.1%</td>
<td>2.8%</td>
</tr>
<tr>
<td>total assets / net worth (leverage)</td>
<td>18.25</td>
<td>1.55</td>
<td>3.22</td>
<td>2.46</td>
<td>2.26</td>
<td>3.2%</td>
</tr>
<tr>
<td>net profit / net worth (return on equity)</td>
<td>16.7%</td>
<td>30.5%</td>
<td>37.7%</td>
<td>18.3%</td>
<td>9.4%</td>
<td>9.0%</td>
</tr>
</tbody>
</table>

**Exercise Solution:**
A is the commercial bank (HSBC 2006). The first clue is the very high leverage. Total assets / net worth = 18.25, which is also the same as total liabilities fund 94.5% of total assets. There is no inventory of any significance, but accounts receivable (loans) are 57% of total assets. The receivable collections period is not a mistake – it is evidence of a loan portfolio made up of a lot of long term loans, probably home mortgages.

B is the software developer (SAP 2006). This was somewhat more difficult. The most obvious hint is the almost significant level of inventory, which would be expected for a company in a services industry. Consequently, inventory turnover is extraordinarily high. Because this is a company that produces products using human capital rather than fixed capital, it has a low level of plant and equipment relative to total assets (12.7%). It might also have significant intangible assets (13.2%) due to the creation of “goodwill” from acquisitions. Because this is a high risk business due to the big investment in product development, leverage is low – equity funds about 65% of total assets. The company is also very profitable and retains a lot of cash (27% of total assets).

C is the pharmaceutical manufacturer (AstraZeneca 2007). This is probably the most difficult industry to identify. It has common characteristics of a manufacturing company, with two major exceptions. Inventory turnover and receivable collection period seem normal. Inventory turns a little bit less than once a month, and days receivable is between two and three months. Leverage is relatively high, but there is a lot of long term debt. Asset productivity is relatively low, but typical for a manufacturer – sales (turnover) is generated using a very large amount of fixed assets with a long term investment time frame. The two exceptional characteristics of this company are its extraordinary profitability (ROE of 37%) and a huge amount of intangible assets. Intangibles would include capitalized R&D and goodwill related to acquisitions.

D is the discount retailer (Wal*Mart 2007). This one should have been fairly easy. Inventory is a very large proportion of total assets (22%), while accounts receivable are very low (this is primarily a cash business – either direct cash or the rapid receipt of cash from independent credit card issuers). And, profit margins are extremely low (3.3%), though typical for a supermarket or discount store retailer. With moderate leverage, Wal*Mart produces an 18% ROE because of its very high asset productivity (sales / total assets = 228%). In 2007, Wal*Mart produced sales of US$355 billion with total assets of about US$151 billion. Nevertheless, Wal*Mart has produced only modest profit growth over the past few years. Part of this is due to the fact that inventory turnover has been declining. This is an example of trend analysis, an important component of financial and credit analysis.
E is the airline (Cathay Pacific 2006)
F is the electric and gas utility company (Con Edison of New York 2006)

“E” and “F” are two of three companies where the balance sheet is dominated by a large investment in property and equipment. One would expect an airline and an electric utility to have this characteristic. An electric company has generating plants, and an airline has airplanes! Even if the airplanes are leased, they will be on the balance sheet as capitalized leases. While “D” also has a lot of plant and equipment, it is clearly not a heavy equipment company due to its high inventory levels and high asset productivity.

It is challenging to differentiate between “E” and “F”. Both have a lot of fixed assets, profit margins (net profit / net sales) are about the same, as is leverage. Asset productivity (net sales / net assets) is better for “E” than it is for “F”, which might be expected, but not obviously. It is possible that an airline can produce more revenue for a given set of assets than a utility, if it were operating its planes very efficiently. It is difficult to improve the productivity of an electric power plant, but it is possible to improve the productivity of an airplane by reducing the number of hours that it is not in the air generating passenger revenue.

Inventory levels as a percentage of total assets are low for both “E” and “F”, but when compared with each other, inventory is even less significant for “E” than it is for “F”. The key difference is that the utility distributes both electricity (little inventory!) and natural gas, and it does maintain certain inventory of natural gas in storage tanks. The other hint is the level of intangibles. While an airline might not normally have many intangible assets, it is even less likely that a utility would.

Since leverage is a function of cash flow stability, it might seem unusual that the airline has as much leverage as the electric utility. Utilities have historically maintained relatively high leverage because cash flows are very stable. These have been regulated companies with guaranteed rates of return.

On the other hand, airlines clearly do not have a history of stable cash flow. They have a history of highly volatile cash flow. However, they are able to obtain a lot of long term financing. This is not due to predictability of their cash flow, but the nature of their assets. Lenders (and leasing) are willing to provide a lot of leverage due to the ability to structure loans based on the collateral of valuable and highly marketable aircraft. Due to the nature of this security, lenders are willing to accept a higher degree of risk around an airlines cash flow volatility.

E. Trend Analysis – Making Judgments and Early Warning Signs

A common mistake of an inexperienced financial analysis is a review of a company’s historical performance in the form of “elevator analysis”. This is a review that consists primarily of statements about certain parameters going “up” or “down”, but without any insights provided about “why” or the significance of the trend.
Trend analysis of financial statements is very important, but only useful if an analyst can identify significance to the trends, and causality. The purpose of trend analysis is to identify factors that imply superb performance, or factors that are warning signs.

An equity analyst is trying to establish the value of a company based on the present value of future cash flows. Earnings are a proxy for cash flow, and historical performance is the starting point, but only the starting point, for predicting future performance.

A credit analyst is trying to judge a company’s ability to pay back its short term, and long term, obligations. Since earnings are a proxy for cash flow, the analyst will look at the historical stability, or growth, in earnings to help predict future earnings. But, the credit analyst must also carefully examine trends in balance sheet items and net cash flow to identify potential cash or liquidity problems.

In terms of operations, it is important to look at trends in gross margins and operating margins. Good gross margins, along with good net margins, might hide a growing expense problem that will eventually result in reduced net (profit) margins. Net margins could be stable, or even growing, while operating expense margins are deteriorating. This could occur if gross margins were improving to make up for the increased relative operating expenses.

Inventory turnover ratio is a very important trend to monitor, for both the equity analyst and the credit analyst. Declining inventory turnover could be an indication of products that aren’t selling well, and markdowns or inventory write downs that will have to be recognized at some point in the near future.

Increasing days receivable could be an indication of deteriorating credit from customers, or a change in selling terms to maintain sales in a deteriorating market.

The ultimate goal of all of this analysis is to assess a company’s current and future liquidity, which is the basis for servicing its debt obligations.

D. Cash Flow Analysis – Introduction

A credit analyst will perform many of the same financial analysis tasks as an equity analyst. The goals are similar – to predict future cash flow.

The equity analyst is working to establish value, usually based upon the present value of future cash flows. Future earnings are often used as a proxy for future cash flows.

The credit analyst is working to determine the degree to which a company is able to service its debt in the near term and in the future. Cash flow forecasting is part of this task. Future net cash flow generation, after all other fixed obligations, including capital expenditure, must be compared to future interest and principle obligations.
But a credit analyst must also be able to examine current liquidity. He or she must also be able to understand historical cash generation, and the means by which a company has been funding its assets. There are many cases of company failures that were missed by analysts and bankers because they missed a simple fact that the company's cash flow was not sufficient to fund asset growth, even though it may be been reporting profits. Enron is an excellent example of this. Enron appeared to be an extremely profitable company, almost up to the point of its bankruptcy. But it was not generating sufficient cash from its operations to fund its growth. In the two years prior to its demise, Enron had negative cash flow in the range of $2 billion. This was all funded by debt. This was exacerbated by the fact that a lot of this debt was hidden from analysts and investors via off balance sheet vehicles.

Cash flow analysis for credit analysis is the topic of the next chapter, Chapter 3.