Handout for Business 189 undergraduate course in Strategic Management

Simple Financial Measures

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Things you should know

I don't ask for a great deal of financial analysis in this class – it's not an accounting class or a class in corporate finance. However, as graduating seniors there are some things that we expect everyone to have learned and remembered from other courses.

You should know your way around a financial statement. You need to know what a P&L (profit and loss) statement tells you and what you typically expect to see in one, and what a balance sheet tells you.

Profit and Loss (P&L) or Income Statement

A Typical Income Statement

Sales / revenue
Cost of Goods Sold
Gross Profit
Sales, General and Administrative Expenses
Depreciation
EBIT
Interest Expense
EBT
Tax
Net income

The P&L is an accounting statement of flows or changes between two points in time general a quarter or a year. It is the complement to the company's balance sheet which shows a snapshot of value at a point in time. The changes between one snapshot (balance sheet) and the next generate the record of changes, the 'flows' reported on the P&L.

The top line (see inset) is always the money booked as flowing into the company (though it may not actually arrive – tracking what actually comes in is the cash flow statement). All the other lines are (generally) outward flows; labor and materials costs, utilities, rent, salaries and commission, R&D, and advertising. There are often totals at different points as you work down the statement, shown in italics in the illustration, that provide different insights into the company. These are typically gross profit, operating profit or earnings before interest and taxes (EBIT), earnings before taxes (EBT) and net income. For example, a company may have a healthy operating profit but could still be unprofitable if its interest payments are too high. Or, it may have income from investments in other companies and report a profit even though its operations are not profitable, as was in essence, the case for Yahoo.

All P&Ls look something like this; while seeming rather sparse and uninformative, this standard allows you to make simple comparisons across companies. The structure also allows you to separate the operational costs from the financing costs and, broadly the direct costs (that vary directly with the level of activity) from fixed costs that don't, For example Cost of Goods Sold (COGS) would be expected to doubles when the number of units sold doubled, while sales, General and Administrative Expenses (SGA) will be the same whether you make lots or

very few of whatever you are making. That has implications for strategy. A firm with mostly fixed costs (such as a company that writes software) may be expected to respond differently to downturns in the market than a firm which has mostly direct costs. The former needs to keep volumes high to keep the assets (which are in effect a fixed cost) adequately utilized. To do this the firm may cut prices to (or sometimes below) long run average costs. Conversely, firms with mostly direct costs need not worry as much about changes in demand and may be less prone to price cutting in a downturn. A firm whose "Times Interest Earned", the ratio of EBIT over interest expense is close to one is a firm that can barely cover its interest payments (not good). "Times Interest Earned" less than 1 probably means the firms is going broke.

Return on…

Return on Sales (or profitability) is the ratio of income or earnings to sales. Another term for sales is revenues. Income can be before interest and taxes. If we are talking about earnings before interest and taxes, I will refer to this as 'EBIT'. ROS can also be calculated using earnings; after deducting taxes and interest expense. If we are talking about earnings after interest and tax, I will use the term 'net income' but sometimes refer to this simply as earnings or income. When you present an ROS number you should say which you have used.

$$ROS = \frac{EBIT}{revenue} \text{ or } ROS = \frac{net\ \ income}{revenue}$$

Having a low return on sales isn't necessarily a bad thing. Imagine you are Wall Mart and you earn only 1% on sales. This looks bad at first glance. But suppose you keep each item for a month only (i.e., your inventory turnover is 12) then you are probably doing better in terms of ROI than a firm with 10% return on sales but which keeps items in stock for an average of a year. ROS is easy to calculate but useful only to benchmark the company against other firms in its industry and against its own past performance.

Return on Equity is the ratio of income to shareholders equity (as presented in the balance sheet).

$$ROE = \frac{net\ income}{shareholders\ equity}$$

This is perhaps a more useful measure since it doesn't depend on the rate of inventory turnover as ROS does. Because a highly leveraged company (one with a large proportion of its liabilities in debt rather than equity) will have higher earnings before tax the more debt is has, it's probably better to use net income (i.e. after the interest and tax have been deducted) in this ratio.

Image a firm with no debt earns $10 million before interest and taxes and has $100 million in equity. Calculated using EBIT, its ROE will be 10%.

Now imagine that its managers go to the bank and borrow another $100 million to buy a competitor of about the same size. Its EBIT will double to $20 million. If we used EBIT here the ROE would rise to 20%, but we would be ignoring the interest payments it has to make on the money it has borrowed.

Using net income (i.e., after interest expense and taxes) we get quite a different picture. If the tax rate is 30%, then ROE after interest and taxes prior to the loan would be 7%. If the interest rate on the loan is 10%, then interest expense is $10 million and net income after taking out the loan and buying the competitor is still $10 million. So the ROE after interest and taxes would remain the same at 7%. However, if the money was borrowed at a lower rate, say 5%, then net income would be $15 million and ROE would be 10.5%. This measure is particularly interesting to shareholders because it is an indication of what they can (or should) expect in terms of dividends and/or the residual value of the firm.

Return on Assets is the ratio of income to the total assets of the company (as presented in the balance sheet).

$$ROA = \frac{EBIT}{total\ assets} \text{ or } ROA = \frac{net\ income}{total\ assets}$$

Return on assets is not sensitive to the company's level of debt because it includes both debt and equity in the denominator. It is also not sensitive to inventory turnover like ROS. As far as I'm concerned you can calculate this using either EBIT or net earnings. It gives a measure of how efficiently the company is using its capital asset base. If you are a retailer, think of this as how much money you make per square foot of floor space as well as how much you make on the value of your inventory.

If a company takes assets of its balance sheet, for example by selling its production facility to another company and then contracting with that company for the use of what was once its own equipment, its ROA might well increase. This assumes that in selling its assets, the reduction in debt service payments and the cost of operating this facility were more than it will now be paying the company to whom it has sold the facility and from whom it is now contracting for its use.

Share price

In a project presentation a few semesters ago, someone asserted that company X was better than company Y because X's share price was higher than Y's. Imagine that company X's share are trading at $120 a share and Y's at $70. Now, X announces a 2 for 1 stock split. It shares should now trade at around $60. Does this mean that X as a company is worth only half what it was before the split? No. Does it mean that X is doing only half as well after the split as before? No again. This simple example shows that share price alone offers no real indication of firm performance.

A change in share price is another matter. If shares increase in value this suggests that investors value the company more highly now than they did. That's a good sign. But does it tell us anything about the company? Perhaps, but more data are needed. Suppose the company's share price has risen 20% in the last year but all other firms in its industry have risen by 30%. That tells you that the company may be doing better but it is not doing as well as its competitors. And one only has too look at the huge rises in share prices of many of the firms in the Valley during the dot-com book to see why share price rise alone is not enough to tell us if a company is likely to be successful.

One indicator I particularly like is the price-earning (PE) ratio. The PE ratio links the company's present performance to the market's expectations about the future. PR ratio is the ratio of the firm's share price to its earnings per share. The earnings per share is a measure of current performance while the share price is an indicator of market expectations about future earnings, in a crude sense a measure of the net present value (see next section) of the company's discounted future earnings.

$$PE = \frac{price\ per\ share}{earnings\ per\ share} = \frac{price\ per\ share}{net\ earnings \Big/ number\ of\ shares\ outstanding}$$

NPV

The net present value of some future cash inflow is the amount you expect to receive discounted for the amount of time before you receive it. Suppose a wealthy distant relative has set up a trust fund for you from which you will receive $10,000 in twenty year time. That's worth less to you than if you were to receive it today. For example, inflation may mean that what you can buy with $10,000 in twenty years will be only half of what you could buy with the same amount today. Discounting is the way we take into account the 'time value' of money.

$$NPV(x,t,r) = x*(1-r)^t$$

Here, x is the amount you will receive, r is the *discount rate* and t is the number of periods before you will receive x.

Using the above example, suppose inflation is running at 3% a year. That would be our discount rate – the amount by which the value of the payout goes down in real terms every year.

$$NPV(\$10000\ ,20,0.03) = \$10000\ *(1-0.03)^{20} = \$10000\ *0.97^{20} = \$5,438$$

So your $10,000 will only be worth a little over half it current value in terms of today's dollars in 20 years time.

A simple formula for calculating the net present value of a constant income steam (i.e., you expect to receive x every year the next n years where n is a large number) is:

$$NPV = \frac{x}{r}$$

Suppose you expect a firm's net earnings will be $20 million a year over the net 60 years. At a discount rate of 10% it should have a market value of $200 million, and at a discount rate of 5% a market value of 400 million. If there are ten million shares outstanding you would expect the share price to be $20 a share if you use the 10% discount rate and $40 a share if you choose the 5% discount rate. Here the discount rate you choose should probably reflect the average rate of inflation over the period.

Other things you should know

Interest expense on the P&L comes from the amount of money the company owes to banks and others from whom it has borrowed to whom it has an obligation to repay. This does not include shareholders to whom the firm pays at its discretion in the form of a dividend. If shareholders (i.e. the company's owners) don't like the dividend, they have the option to replace the firm's directors.

I also expect you to know how to calculate expected values but that is the subject of another handout.