



PDHonline Course P190 (4 PDH)

Accounting Basics for the Engineer

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2020

PDH Online | PDH Center

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Accounting Basics for the Engineer

David J. Nowacki, MBA

Objectives of this Course:

This course targets the engineer and engineer-owner/manager in outlining key accounting and financial concepts. These basic topics are introduced to aid the professional practitioner in dealing with non-engineering professions such as commercial bankers, investment bankers and accountants. The course participant will learn the differences between: cash flows versus profits, return of investment versus return on investment, accrual versus cash accounting and book versus market values.

- Basic Financial Statements and Reporting.
- Differing view of the finance professional and the accounting professional.
- Some insights into governmental control involving tax issues.
- Language of the finance arena and why some common phrases like cash and profits are not identical.

Professor David J. Nowacki is an adjunct professor teaching graduate finance courses at Texas A&M University-Commerce and through the Mechanical Engineering Department at Southern Methodist University (SMU), Dallas, Texas. Mr. Nowacki has 20 years experience in the investment-banking arena having worked for Wall Street firms in New York City, San Francisco, Houston and Dallas. His specialty is fixed income securities and derivatives including hedge strategies. Mr. Nowacki also consults on merger and acquisitions, strategic planning and the venture capital arena.

Chapter 1

Revisiting the ‘Speaking Two Languages’

Course one on this series, dealing with basic financial math applied to managerial decision making, introduced the idea that wealth creation begins with the ‘speaking of two languages.’ While there are certainly exceptions, wealth creation comes from individuals being able to speak two different languages, but not in the traditional sense of Spanish, French or Russian. The separate languages are those that cross industry boundaries such as an engineer who understands the medical arena. An engineer adds value if he can relate stress-strain concepts to ball-and-joint synthetic limbs and communicates with medical professionals as easily as with other engineers.

This course, *Accounting Issues*, is designed to advance the professional engineer within his technical field by introducing or re-introducing languages from the accounting and finance professions. For the most part, the engineering profession is project based where there is a beginning, middle and an end. More and more projects are being scrutinized for economic sense using the analytical tools introduced in the initial course. This course further expands the evaluation process but takes the view that projects are continuing. Therefore, our analytical tools in this course target reporting mechanisms which are used by the accounting and finance professionals.

Why Accounting and Financial Analysis for Engineers

The professional engineer will be better suited in a corporate or entrepreneurial environment if they can grasp the nuances of the financial arena. On the surface, some business/accounting/finance topics can appear to be strange but not more alien than, say, thermodynamics, dynamics or advance calculus. For the most part, it is easier for a graduate engineer to pick up business concepts than it is for a business graduate to pick up engineering concepts. Therefore, a purpose for this course is to advance the professional engineer in his overall career activities.

There is a ‘language to business,’ specifically accounting and finance topics. Much of this language has crept into *street lingo* or common language. However, sometimes these phrases are incorrectly used so the student should be aware that there are specific definitions needed to be learned (or unlearned then relearned correctly). For example, while ‘sales’ and ‘revenues’ are generally considered the same thing, profits and cash flow are not definitions of each other. Cash is not the same as profits; cash is not the same as a ‘sale’ and profits are not cash flow! It is possible to have a profitable operation with a negative cash flow. It is possible to have an operation generating cash but not be profitable. Understanding these differences is important for smooth operating departments, divisions and business units. We begin with preliminary introductions into certain accounting and financial topics to serve as a background and base for further topics.

Chapter 2

Accounting versus Finance or Financial Planning

There is a significant difference between the accountant and the accounting industry and finance and financial planning. Accounting deals strictly in ARREARS. That is, a certain time period has come and gone and only after this time period does the accounting work begin. Usually in May of any given year, large public companies begin to issue/publish their financial statements for their fiscal year end of December 31st from the preceding year. So, the May issuance of these (delayed) documents indicate that the data provide is automatically wrong, not in the sense of errors, but in the context that the data does not represent anything that occurred in recent months.

On the other hand, finance professionals are looking to plan future events: next year's expansion, replacement of plant or equipment and even next week's payroll. In performing such plans, the finance professional must utilize accounts and accounting documentation to make predictions of future events. The finance profession generally looks forward.

Accounting: Rear View Mirror

Finance: Forward Planning

The Terms “OF” and “ON” & the IRS Taxes

A brief and simplified Income Statement, (referred to as “I/S”) is provided below.

| Income Statement | |
|--------------------------------------------------------|------------------------|
| 365 Days | |
| Revenues | \$ 12,000 |
| Cost of Goods Sold (COGS) | <u>\$ 4,000</u> |
| Operating Margin | <u>\$ 8,000</u> |
| Selling, General, & Administrative Expenses | \$ 800 |
| Depreciation and Amortization | \$ 3,000 |
| Interest Expense | <u>\$ -</u> |
| Gross Profit | <u>\$ 4,200</u> |
| Taxes (all jurisdictions) | <u>\$ 700</u> |
| Net Income | <u><u>\$ 3,500</u></u> |

Some quick notes about terminology and titles. Accountants are required to label everything identically. Revenues listed above are synonymous with Sales, but some report Net Sales. (Net Sales might be the term used if, for example, the company uses independent representatives who take their commissions before turning in sales orders to the company.)

Operating margin may, from time to time, be called gross margins. Selling, General & Administrative Expenses (SG&A) becomes a ‘catch-all’ category, especially if the executives use a corporate jet! In our example, Taxes incorporates all taxing jurisdictions (Federal, State, County, City, School, sewer, etc.). Net Income can also be termed Net Profits, net earnings or earnings.

The nine line items listed in this simple I/S can be expanded into several dozen lines providing more details (or sometimes more confusion). External reporting such as public corporations can use relatively lengthy or rather short statements. At the same time, internal use of the I/S might be incredibly involved (meaning dozens of line items) so that district, regional and senior managers can blame ...uh, evaluate their subordinates!

A Brief but Important Section on our Tax Collection Process

A ‘simple’ explanation of our tax structure involves a trip back to *Sesame Street* and the alphabet, as this part of the course is brought to you by the letter “F” and the letter “N”.

You will agree that there is a difference between:

“F”

and

“N”

(duh, Yes!)

You will then agree that there is a difference between these two words:

“OF”

and

“ON”

(well, Yes, double duh!)

Therefore, understand that there is a difference between:

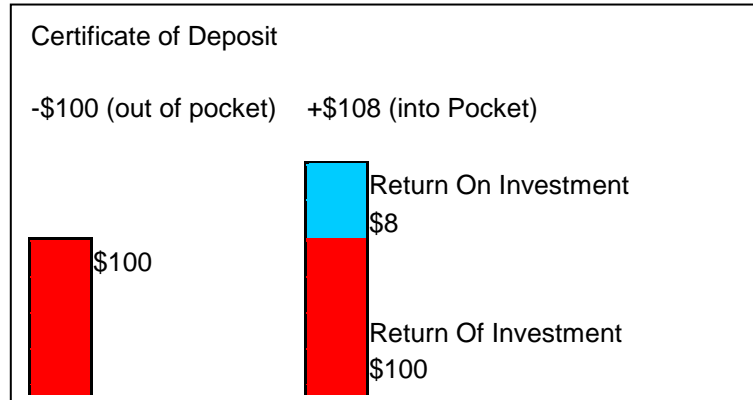
RETURN OF Investment

and

RETURN ON Investment!

Okay, there is a difference but what does that have to do with anything?

Look at an example of a CD:



Note the outbound cash flow (-\$100) is coded red; when this investment amount is returned, it is termed:

Return OF investment.

The blue portion is the actual

Return ON our investment.

Enter taxes:

Assume, for the moment, the government taxes this transaction on CASH FLOW, and say the tax rate was 10%. The transaction would be as follows:

$$\begin{aligned} & \text{-\$100 (investment)} \\ & + \$108 \text{ (payment) or cash flow at maturity} \\ & \text{less } \$10.80 \text{ taxes (10\% times cash flow)} \\ & = \\ & \text{a net of } \$97.20. \end{aligned}$$

We have less capital now than when we started!!!

Since our desire is to gain on investments, investors would never undertake this type of opportunity! If taxes are assessed as in this example, the entire market would adjust. Until such adjustments are implemented, all investment would dry up in our economy.

Fortunately, our tax laws are not based on cash flows; taxes are based on profits. Furthermore, the tax laws allow the investor the ability to recover his investment. Therefore in the CD example, the investor is allowed to recover his initial \$100 before being taxed on the remainder. The government understands that an investor is allowed to recover the initial investment AND then tax the investor on anything in excess of the original amount. Under such a system, the tax rate can be anything less than 100% and the investor will always have a positive return (albeit a smaller return under high tax rates) for all potential rates.

Return OF investment is permitted or allowed
And the **Return ON** investment is taxed.

Back to our simple Income statement:

| Income Statement | |
|--------------------------------------------------------|-----------|
| 365 Days | |
| Revenues | \$ 12,000 |
| Cost of Goods Sold (COGS) | \$ 4,000 |
| | \$ 8,000 |
| Operating Margin | \$ 8,000 |
| Selling, General, & Administrative Expenses | \$ 800 |
| Depreciation and Amortization | \$ 3,000 |
| Interest Expense | \$ - |
| | \$ 4,200 |
| Gross Profit | \$ 4,200 |
| Taxes (all jurisdictions) | \$ 700 |
| | \$ 3,500 |
| Net Income | \$ 3,500 |

Now for the crescendo of this section: Where in the Income statement is the concept of **return of** investment and the concept **return on** investment? (Pause for effect!)

Return on investment is the line item 'Net Income.'

The more challenging issue is that the line item Depreciation and Amortization is the mechanism for the **return of** investment. This line item is that process by which an investor gets to recover his costs (specifically, his capital costs) for purchasing longer-lived assets (pre-tax).

DEPRECIATION and Cash versus Non-Cash Expenses:

The topic of depreciation incorporates two separate activities that, at times, might not be related. To illustrate these, look at two common assets that show up in the business environment: real estate and automobiles. *(This example will disregard the possibility that an automobile may, over time, become a collector's item and increase in value. Our discussion will focus on an automobile used in the course of business.)*

The use of an automobile, especially when putting considerable mileage on the vehicle, will cause the value of that asset to diminish over time. The value can go down just because of age (vehicle that is 2 years old is more valuable than a vehicle that is 6 years old, even if they have the same mileage). When mileage and the use (wear and tear) of the vehicle is included in a valuation of the asset, the value of the vehicle declines on a fairly predictable path, as reported in public and private data bases for used vehicle sales. While these databases are both incomplete and may not be accessible to all market participants, the pricing for used vehicles is more fluid than, say, something that trades less frequently like used forklifts.

There are two 'costs' associated with the use of a vehicle. First, operating costs is the expense of running the vehicle: fuel, oil, normal or regular maintenance. Operating costs are included in the I/S lines items such as SG&A or could be included as a direct cost for a particular product (in COGS). Operating costs are considered cash expenses as they are realized when incurred; that is, you pay for the gasoline at the pump.

The second cost associated with the vehicle is due to a capital cost, the initial purchase of the vehicle where usage causes the value to decline. The value decline is considered to have 'depreciated' as the physical asset is worth less (and possibly worthless). The capital costs are 'accounted' in the depreciation line item of the I/S where a recovery of our investment is incorporated into the income statement. Note, that all things being equal, the higher the amount of depreciation reduces the amount of taxes due for a given period. Again, all things being equal, most investors want to pay less tax today. Therefore, there is tendency for investors to have as high a depreciation amount as they can.

Since changing (increasing) depreciation affects taxes collected, the IRS sets how fast we are allowed to recover such costs. The government controls these depreciation amounts by classifying assets such as a 3-yr, 5-yr, or 15-yr asset. Using a simple 'straight-line' method of depreciation, a 3-yr asset can deduct 1/3 of the capital costs each year. (This is not exactly true in real life, but sufficient for our example here.)

Take another look at the vehicle purchase and, say, this asset is given a 5-yr classification. Assume the vehicle was purchased for cash, the entire purchase price (vehicle cost, taxes, title, license) is the amount of the investment. We are allowed to deduct 1/5 of this

amount for each of the next 5 years, which is our **return of** investment line item. The actual line item in the I/S is ‘depreciation expense’, as defined earlier. But note, we are taking an “expense” on this year’s I/S but we have not written a check for this amount.

More specifically, the process of taking depreciation means that depreciation is a ‘non-cash’ expense. We get to deduct the **return of capital** expense but did not write a check for that specific amount in the time frame in question (I/S time frame). This is our return of investment, and we can deduct such before the line that designates taxable income.

Last item concerning automobiles (and similar assets): the accounting profession in dealing with the IRS allows the idea of a depreciation system that can track actual values of assets. That is, some assets depreciate very fast in the first few years and then the rate of value-loss over the remaining useful lives is slow. The IRS allows for a depreciation process to track closely with known value decays, commonly known as accelerated depreciation versus straight-line depreciation.

In shifting to real estate as an asset category, real estate is considered to be two separate assets: building (all improvements to property) and dirt (or land). Land is a separate line item in a detailed I/S because land is an asset that cannot be depreciated. The improvements, such as buildings, parking lots, etc. can then be separated into sub-categories themselves. Long-term assets that have a limited life can carry separate depreciation schedules.

Air-conditioning systems might be classified as a 7-yr asset; where, in general, every 7th year significant cash outlays are needed to replace or replenish significant operating parts. These cash outlays are referred to as **capital expenditures**. A capital expenditure (or CapEx) is the process where **CASH** goes out the door (you had to pay for the A/C system) but a current **year expense is not generated**. Why? The asset is classified as a 7-yr asset, for example, and must be recovered (return of investment) over the next 7-year period.

Back to the big picture on real estate where there is a significant and historical departure from vehicles. Automobiles used in business decay in value as they are utilized in operations. The depreciated value of the asset tends to conform to the actual market value of the asset. Real estate, which is used in operations of business, can show some wear and tear. However, as a general rule in our country, real estate has, over time, appreciated in value. The IRS allows depreciation expenses (according to its schedules for asset categories) so that a **return of investment** is allowed. At the same time, the value of the asset can actually rise. Please see “**Book versus Market Values**” later in this course.

To recap:

- **Return of** and **Return on** investment are two separate topics.
- **Return on** investment is considered a profit number.

- **Return of investment** is a recapture of investments and is considered depreciation, a non-cash expense.
- The IRS has developed rules and regulations effectively classifying assets into useful life categories which control the amount of depreciation expense that can be realized in any given period.
- The following is how depreciation affects net income and cash flow:
 - An increase in depreciation reduces gross profit, thus reducing taxes.
 - Depreciation is a non-cash expense.....to determine cash flow from the income statement, take net income and add all non-cash expenses.
 - If taxes are reduced, depreciation increases cash flow (all things equal).

Goodwill

Goodwill is an asset and is carried on the balance sheet. It is also classified as an intangible asset along with intellectual property such as patents, copy writes, trademarks, logos and certain contracts. Goodwill can only be created during a purchase and sale transaction when the purchaser pays more than the value of an asset. Huh? Why would anyone pay more for than the value of an asset? Ironically, this is one definition of wealth creation.

For example, lumber, drywall, screws, bath fixtures, land and labor have costs associated with them. A developer purchases these products and services in order to create an apartment complex. The funds are expended, the apartment complex is created and over the next year, the complex is entirely leased to tenants. The developer has a 'basis' in the assets. His 'accounting basis' is the book value of the operation which is the total costs associated with the complex. His land has a cost (and not a depreciable asset) and his buildings have a cost (parts and labor including interest expense during the construction period).

The complex is now operating smoothly when an investor, say a pension fund, wants to earn a specific yield for the pension fund's portfolio. If the target return for the pension fund is 12%, the fund manager will look at the net cash flows from the complex and calculate the price to be paid that will ensure this yield. This price might be above and beyond the value of the bricks, and mortar and land, but the investor is willing to pay this price for the asset because the fund will be assured of the yield. Here, the buyer is willing to pay above the value of the assets in order secure such a yield thus creating Goodwill.

Wealth creation comes about when one can purchase assets and then sell those assets for more than their purchase price. While this is very simplistic in nature, wealth creation does not get any more complex.

Another example:

- Purchase a bunch of steel.
- Assemble the steel to create a machine that makes widgets.
- Shove raw materials in one end and get a finished product at the other end.
- Sell the entire operation. However, the sales price is not based on 'costs' associated with creating the manufacturing operation; the sales price is based on the present value of the profits that will be created as the finished products are sold over the next 5, 10, 20 or indefinite years. (For a full discussion on this valuation technique, please refer to the first in this series of continuing education courses.)

The initial raw materials might have cost \$100,000 but the entire entity is sold for \$2 million. This \$2 million purchase price represents the present value of future profits/cash flows.

Assume the sale of the ongoing widget manufacturing business is as described above:

Seller's book value of assets = **\$100,000**

Buyer's offering and price accepted by seller = **\$2,000,000**

The transfer of assets will create certain accounting line items. For this transaction, assume the book value of the assets, as carried by the seller on their accounting statements (\$100,000); understate the actual market value of those assets at the time of the sale. An independent third party appraiser is hired to value these assets. Why a third-party? The establishment of 'true' values for depreciation purposes is required as this will become the basis for the new owner. If not properly conducted and valued, preferably by a third-party, the IRS might apply significant penalties upon the purchaser for creating fraudulent accounting entries, including jail time!

Assume that the third-party appraisal for the hard assets is \$200,000. *Hard assets* are those assets you can see and touch (not intangibles).

A recap of the transaction is:

Seller's book value = \$100,000

Buyer and Seller's agreed transaction price for the entire operation = \$2,000,000

Today's value of the assets of the seller (provided by third party appraiser) = \$200,000

Furthermore, assume that all hard assets are classified as 15-yr assets; useable life of 15 years now establishes the depreciation schedule for this classification of assets.

Purchase Price = \$2,000,000

'Hard assets' = \$200,000

Remainder = \$1,800,000.

The hard asset figure is the beginning book value for the buyer; thus establishing his book basis with future depreciation amounts emanating from this value according to IRS depreciation schedules for that asset class.

The remainder is the amount of money paid above and beyond the value of the hard assets purchased. This amount is paid because the operation can produce future profits. The

\$1,800,000 is called an ‘intangible’ asset or Goodwill. It can be considered to be the value of the operation as a whole (machine, plus logo, plus packaging, plus distribution system, explicit or implied product reliability, current and future customer base, yadda yadda).

Goodwill is an asset so the owner/investor has a right to earn his **return of** investment. Similar to depreciation on hard assets in which portions of the asset create a depreciation expense, Goodwill creates a non-cash expense also. However, Goodwill’s **return of** investment is termed ‘amortization’ rather than ‘depreciation.’ Lines items in an income statement might be entitled: Depreciation and Amortization Expenses (where both amounts are lumped into one reported figure).

Politics and the Olden days

Goodwill has been a hot topic for many Congresses on how to handle and how to allow the return of investment or its recovery. At some point, goodwill was a 20-year asset, then a 35-year asset with only a straight-line method of expensing allowed. Why has this changed throughout the years? Corporate raiders could use Goodwill as a tax-sheltering event reducing taxes over the life of their investment. By changing the regulations, Congress can, to a limited extent, alter the deduction amounts for a given year. But this was also a veiled attempt to reign in corporate raiders as well.

Currently, the law does not allow the amortization of any goodwill expense unless the owner can prove (document) goodwill was impaired. For example, if I own a XYZ Car Dealership (and in that purchase, goodwill was created) and XYZ Manufacturer issues a massive recall due to brake failures on all passenger cars, I can show that this recall has harmed the reputation of the brand, and therefore can deduct an expense due to reduction in value of the goodwill.

On another hand, a McDonald’s franchisee could argue (document) that the last national campaign for Happy Meals did not produce significant increase in sales. Such argument could be used to take a goodwill expense, even if revenues in total did not go down. The point here is that in the real world, a two-line discussion on how goodwill was impaired might be sufficient to take a goodwill deduction in just about any environment.

One of the best/worst examples of goodwill expense involved Time-Warner and their purchase of AOL. Technically, AOL had very little in hard assets when Time-Warner purchased them. However Time-Warner paid a great deal above the hard asset value as Time-Warner saw value in AOL’s customers, and distribution system. Over a very short period of time, it was realized that AOL’s customers were not that valuable to Time-Warner who, for example, could not deliver videos on demand. So the merged firm began to take massive deductions to the tune of \$56+ billion per quarter. This is one of the greatest wealth transfers (without blood being spilled) in the history of the world. The original Time-Warner owners transferred their ownership and wealth to the AOL owners (sellers). For a full discussion on management’s role in this debacle, see the third in this

series of continuing education courses for a full description and explanation on such events.

BOOK VERSUS MARKET VALUE

Book values versus market values and the complexity of this topic is the last background item needed before the discussion of financial statements. Market value will be defined as: that price that a willing buyer and willing seller agree to exchange assets (cash for the asset). Neither party is forced to make the purchase or sale nor harmed by the purchase or sale. True market values occur at auctions, where the price of an object is announced for all to hear. However, THE BEST example is the commodity pits where anyone, not just the auctioneer, can 'offer to sell' or 'bid to buy' at any price and any volume they so choose. The open outcry system allows price dissemination from both buyers and sellers simultaneously.

Book value is defined as the value an asset is held on the financial statement (namely, balance sheet) of a firm. The initial book value is the total value of the asset: purchase price, taxes, delivery and any installation charges. The book value of a specific asset is the amount or the basis by which the firm can create its depreciation schedule.

There are several aspects that come into play concerning book values which originate from governmental agencies, namely the IRS, and accounting professionals. The IRS establishes a certain life expectancy for asset classes, such as a 3-year or a 5-year asset, which limits the amount of depreciation. They also establish timing issues as to when the asset can be depreciated. For example, a 3-yr asset cannot be depreciated by 1/3 in the year it is purchased and put into service. This ruling tends to keep corporations from buying assets in late December to be able to take deductions in that year. (*Earlier this ruling was relaxed for ease of examples; check with your accountant for real world instructions.*)

The accounting profession puts on several restrictions as well. The major restriction is that the company must report the asset at:

The Lower of Cost

Or

Market Value

Memorize this phrase as the importance of this is outlined below.

In a dynamic world, the current book value (reported in the Balance Sheet) is defined as the total cost to put that asset into service less any cumulative depreciation expenses. If

an allowable depreciation expense has been taken for the given asset, that expense amount will be deducted from the book value of the asset this year.

Assume a 5-yr asset has a total cost of \$100,000, and we depreciate that asset over 5 years using a straight-line depreciation method (and relax the IRS restriction on year one's amount; so that we have \$20,000 per year). The cost basis, or book value, would be as follows when put into service:

| End of Year | Book Value |
|-------------|------------|
| 0 | \$100,000 |
| 1 | \$ 80,000 |
| 2 | \$ 60,000 |
| 3 | \$ 40,000 |
| 4 | \$ 20,000 |
| 5 | \$ 0 |

We have been able to take a depreciation deduction in the amount of \$20,000 each year for these 5 years. This depreciation amount 'flows' through the income statement in the given year and is evidenced by the difference in the balance sheet items from year to year. This depreciation deduction or depreciation expense is a non-cash expense. We did not write a check for \$20,000 but did deduct this amount for tax purposes. This amount is the return of investment we are allowed to recover each year.

Note that after year five, our book value is \$0. This \$0 book value does not, however, mean the market value of the asset is \$0 or that we place no value in the asset or there is no use for the asset. The asset itself might be quite useful and an integral part of our operations. Furthermore, the asset might have a significant 'market' value to some other operator if we ever decided to sell it.

Here is where the concepts of market and book value become complex.

Assume the corporation owns and uses an automobile in its operation. Assume further that this particular style of automobile is the most popular in the world, and a 'liquid' market of buying and selling used and new vehicles in the model exists with the data (pricing and values) made public. If the vehicle were placed on the books at \$10,000 with a 5-year life, its book values would be as follows (assuming no outside influence):

| End of Year | Book Value |
|-------------|------------|
| 0 | 10,000 |
| 1 | 8,000 |
| 2 | 6,000 |
| 3 | 4,000 |
| 4 | 2,000 |
| 5 | - |

However, since public data is available, we see that the book value (without outside influence) compared with the reported market values is:

| End of Year | Book Value Straight Line | True Market Values |
|-------------|-----------------------------|--------------------------|
| 0 | 10,000 | 10,000 |
| 1 | 8,000 | 6,000 |
| 2 | 6,000 | 4,000 |
| 3 | 4,000 | 3,000 |
| 4 | 2,000 | 2,500 |
| 5 | - | 2,000 |

Since our reporting rule is that we must report the **LOWER OF COST OR MARKET**, our balance sheet must reflect the adjusted book value as follows:

| End of Year | Book Value Straight Line | True Market Values | Adjusted Book Values |
|-------------|-----------------------------|-----------------------|-------------------------|
| 0 | 10,000 | 10,000 | 10,000 |
| 1 | 8,000 | 6,000 | 6,000 |
| 2 | 6,000 | 4,000 | 4,000 |
| 3 | 4,000 | 3,000 | 3,000 |
| 4 | 2,000 | 2,500 | 2,000 |
| 5 | - | 2,000 | - |

If, for example, in year 2 we report a value on our books of \$6,000 and the true market value is \$4,000, we will be lying to shareholders in stating values that were not true. With the new laws, specifically Sarbanes-Oxley, we could be thrown in jail for such fraudulent reporting.

Let us look at another example. However, we will remove all 'depreciation' expense from this analysis to remove clutter from the point to be made. Furthermore, we must assume all 'market values' are publicly disclosed and available to all parties. Note that there are a great many assets that don't have values commonly reported as they may not 'trade' that often in the used markets. In this example, the asset will have a market value decay due to local economic conditions; then the asset will increase in value as those economic conditions have reversed over the next several years. This might be similar to a

market cycle where there is a real estate bust in a local market which then attracts many buyers making the area popular resulting in firmer real estate prices throughout the area.

The use of a commercial real property will be used. The market value of the building changes in value as follows:

| Year | True Market Values |
|------|--------------------|
| 2000 | 5,000,000 |
| 2001 | 4,500,000 |
| 2002 | 4,200,000 |
| 2003 | 4,800,000 |
| 2004 | 5,500,000 |
| 2005 | 6,250,000 |
| 2006 | 7,000,000 |

We show a softening (decay) in values for a few years followed by market values becoming higher toward the end of our time frame. The following chart shows how the adjusted book value must be reported for the time period at hand. (Remember no depreciation is considered in this example.)

| Year | True Market Values | Adjusted Book Values |
|------|--------------------|----------------------|
| 2000 | 5,000,000 | 5,000,000 |
| 2001 | 4,500,000 | 4,500,000 |
| 2002 | 4,200,000 | 4,200,000 |
| 2003 | 4,800,000 | 4,200,000 |
| 2004 | 5,500,000 | 4,200,000 |
| 2005 | 6,250,000 | 4,200,000 |
| 2006 | 7,000,000 | 4,200,000 |

You will see where finance people and accounting people differ. Under the accounting rules, we must show the asset at the lower of cost or market. Year 2000 our book value is just our cost basis; however, the next year, the market value is below our book or cost basis so we must adjust our book value down to \$4.5 million. (We are allowed to take this 'loss' through our income statement which may create a lower tax bill for that particular year.)

Similarly, the next year, we must take another loss due to the deterioration of the market values again. These adjusted book values become the new cost basis for the next year.

You will see that when the market value of the building goes up, we are not allowed to increase the asset value on our books (lower of cost or market).

YOU MUST WRITE THE ASSET DOWN IF MARKET VALUES GO DOWN; YOU CANNOT INCREASE BOOK VALUES IF MARKET VALUES GO UP!

There are long-lived public corporations that may have assets with market values in the millions but have a \$0 basis on their books.

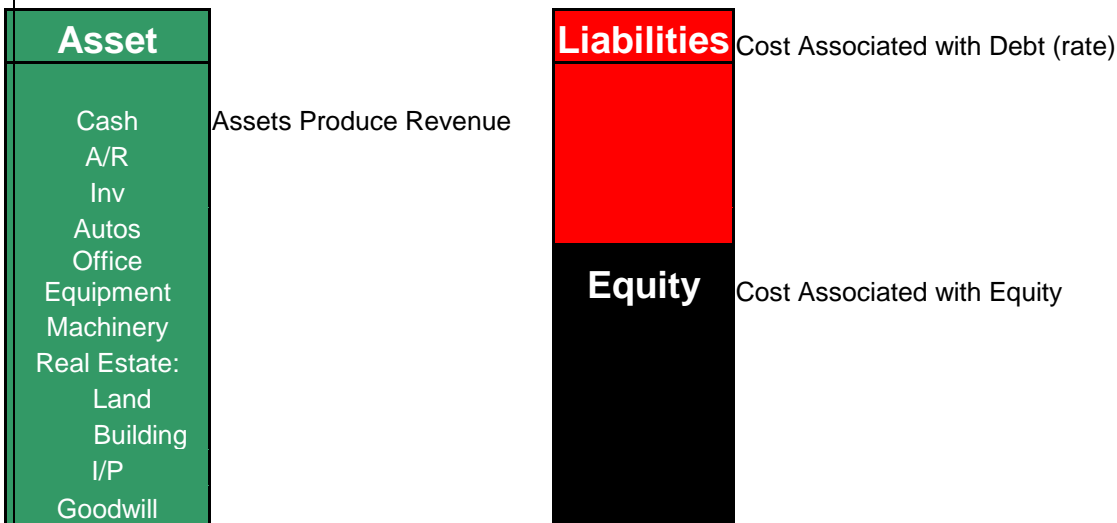
BALANCE SHEET

The first financial statement introduced in business education is the balance sheet (B/S) which lists the firm's assets (what the firm owns), the firm's liabilities (what it owes others) and the firm's equity. The left side of the B/S contains the assets (A) and the right side is the liabilities (L) and equity (E). The B/S is balanced because:

$$A = L + E$$

Assets are those 'things' the company secures to help produce revenue or sales. The left side of the balance sheet is an "accounting" (all pun intended) of the assets owned by the company, which are used to produce revenues and hopefully profits. Some inefficient companies may carry assets that are not used in the direct production of current profits; for example, real estate in form of raw land to be used for expansion.

Right Side Finances the Left Side



The right side of the B/S describes how those assets were secured: did we borrow (a liability) or did we pay cash (equity). The right side is said to “finance” the left side.

Both sides of the B/S are ordered. The left side is ordered according to liquidity, the ability to turn a particular asset into cash. Since cash is cash, cash is listed first. The right side is ordered according to maturity of the line item: short term debt, long-term debt and then equity. (Corporate equity is a perpetuity which can exist forever!)

| Left Side | | Right Side | |
|--------------------|------------------|---------------|--------------------|
| | Asset | | Liabilities |
| Order of Liquidity | Cash | A/P | Order of Maturity |
| | A/R | Short Term | |
| | Inv | Longer Term | |
| | Autos | | |
| | Office Equipment | | |
| | Machinery | | |
| | Real Estate: | | |
| | Land | | |
| | Building | | |
| | I/P | | |
| Goodwill | | Equity | |

Of interesting note, a company’s liability is what they owe someone else. Such a loan can only be secured with the consent of the lender. That is, an entity cannot just say, “We are going to borrow from someone today.” The lender must be in agreement with the terms and conditions, otherwise the borrower will not get his capital. While this might fall into the DUH category, this subtle idea means that this particular company is accessing the capital markets!

Whether this entity is located in the back of a garage or on Main Street, Anytown USA, public markets are being accessed. The lenders in this case have an opportunity to make a loan to this corporation or place their funds in some other alternative. No loan will be created if other opportunities are better in the ‘risk’ and ‘risk vs. return’ scenarios. Therefore, borrowers participate in the public markets whether they knew it or not!

Now looking at the equity portion of the balance sheet, like the debt area accessing capital markets, people (investors/owners/entrepreneurs) creating companies are not going to undertake such risky events if their potential returns are not sufficient. Why would an investor undertake a risky investment if that investment is predicted to earn, say, 5% when ‘riskless’ C.D.’s yield 5%? In both the equity and debt portions of the B/S, market forces (supply and demand for such capital) are directly and indirectly influencing these decisions.

Issues with the B/S

Book Value of the Assets

As outlined earlier, the B/S of a company carries that company's assets at the lower of cost or market. If market values are significantly higher than the book values, the B/S under-reports such **market value**. Market values of assets can never be lower than book value; if they are, jail time is eminent! Lenders and finance professionals know that from time to time assets are reported lower than market value. It is always a good idea for an owner to point out to outsiders, lenders in particular, when market values are greater than the book value entries. Of interesting note, financial institutions require independent valuations of assets. The institution itself, however, must conduct valuations. Owners can supply their own valuations but the institution must undertake such effort independently; however, they generally collect a fee from the potential borrower.

Market Value and Book Value of the Corporation

Book value of the corporation is determined by calculating the net equity from the B/S as follows:

$$\text{Equity} = \text{Assets less Liabilities}$$

$$\text{Net Worth or Equity} = \text{What you own less what you owe.}$$

Again, book value of the assets may not accurately reflect market values. If, however, you are to determine the true value of every asset, then a 'value' might be

$$\text{Net Worth or Equity} = \text{Market value of all assets less your total liabilities.}$$

There is another form of valuation, which places the focus on the entire entity as a whole. This process removes the valuation from specific assets or asset adjustments. An example is to value IBM. The corporation IBM has a book value from its B/S which we can retrieve from their financial statements. It also has a market valuation, based on the pricing of its equity and debt traded in the market on a daily basis. The debt component (long term bonds) will trade similarly to other entities deemed to have similar market risks (business risks, government risks, economic risks, international risks, etc). The equity component is priced through the auction markets, for example the New York Stock Exchange, where willing buyers and sellers set a price for the security (daily or on a minute by minute basis). The pricing of the shares of stock are based on many, many things including the B/S as reported, investor's opinion (in total) on the market value of the assets and the potential income streams these assets can produce in future years, discounted to the present time.

I like to call this process as ‘voting’ for a company. If you like the company, you vote FOR it. If you don’t like the company, you vote AGAINST it. A FOR vote means you buy the stock, thus creating upward pressure (supply and demand) and the stock rises in value. An AGAINST vote means you sell, driving the price of the stock down.

Not voting (neither buying nor selling) means a participant (or a non-participant for that matter) feels the shares are correctly priced or very near correctly priced (not worth adjusting the share price due to transaction costs).

TIME Issues

If you research any B/S, you will notice it has a reported date such as December 31, 2007. The B/S is a ONE-DAY EVENT or a Snapshot. It is a picture of the firm on that day and that one-day only. Do not think that this day is a typical day throughout the year! It is a snapshot.

REMEMBER SNAPSHOT

Q: Assume you are to be honored by your company and your picture will be taken next Tuesday for the local newspaper and a popular trade magazine. What are you going to do this weekend?

A: You will probably get a new hairdo or haircut. You will take steps to make yourself look good (or at least presentable) on the day your picture will be taken.

Does such activity happen when the snapshot for the B/S is to occur?

INCOME STATEMENT

The Income Statement (I/S) is the financial reporting document that generally targets or represents two views: profitability and tax liabilities. Owners are interested in knowing if their company is profitable. The IRS wants 'its pounds of flesh.' The I/S reports both of these.

The I/S time frame spans a period: quarterly, semi-annual or annual periods. As previously introduced, a simple I/S might be:

| Income Statement | |
|--------------------------------------------------------|------------------------|
| 365 Days | |
| Revenues | \$ 12,000 |
| Cost of Goods Sold (COGS) | <u>\$ 4,000</u> |
| Operating Margin | <u>\$ 8,000</u> |
| Selling, General, & Administrative Expenses | \$ 800 |
| Depreciation and Amortization | \$ 3,000 |
| Interest Expense | <u>\$ -</u> |
| Gross Profit | <u>\$ 4,200</u> |
| Taxes (all jurisdictions) | <u>\$ 700</u> |
| Net Income | <u><u>\$ 3,500</u></u> |

These financial statements are always produced in arrears. That is, the period is completed with the actual accounting occurring after the fact. Only after the end of the year do we know what some of our expenses have been. Then and only then can we determine the profitability of operations.

For example, we borrow 50% of the capital needed to start a snow-cone stand. From observation, we see that every snow cone sold provides us with \$1.00 in cash. We can also observe direct costs due to cups, flavoring syrup and labor. On a daily basis, we can calculate the cash taken in, the amount of goods that went out the door (cups, ice, flavoring syrup) and add to this the labor for that day. However, such a daily record does not take into account monthly rental, monthly utility costs and other indirect expenses (indirect because we cannot allocate one specific cost to a snow-cone sale). Furthermore, additional expenses due to interest expense (we pay quarterly) and depreciation expenses (non-cash expense) are not included until after the period is complete.

The I/S should take into account (again, all pun intended) all costs associated with the operations. All depreciation of assets and any amortization of goodwill (**return of capital**) is included in the I/S which effectively reduces taxes. In addition, the I/S can be used to economically evaluate our opportunity to determine if we are earning sufficient returns. For example, if operations are producing \$5 in after tax profits, we can look at our investment to determine if these profits provide sufficient returns for our risk undertaken. If \$100 in asset are required to operate the business, and that business creates \$5 Net after tax income, this represents a 5% after tax rate of return. If certificates of deposits (no risks whatsoever) pay 5% after tax return, there appears to be no reward for accepting additional risks. In this case, the opportunity is not worthwhile. A detailed discussion on this topic concerning a franchise model is provided toward the end of this course.

I/S can be structured to help management identify problem areas quickly. In the short or simplified I/S provided, Operating Margin is a number we target to evaluate margins. That is, we look at the revenues generated versus the direct costs to calculate the margins from the direct activity. That amount, in aggregate, is then used to pay all other bills. Back to the example of the snow cone. If the snow cone is sold for \$1.00 per unit, and costs per unit are \$0.16, our operating margin is \$0.84. Each sale produces \$0.84, which is used to pay for all indirect and overhead costs, including management salaries, management's corporate jets and anything paid to the owners as a return ON investment. (See the third course in this series for a full discussion on perquisites, management's greed and why contracts are structured the way they are!) Splitting the I/S this way allows us to focus on direct and indirect costs

One further note for those undertaking this course, do not think the I/S reports cash positions or cash generating activities (or at least reports them fully). Cash is cash as one can track it, see it deposited and see it withdrawn. Revenues can occur without cash exchanging hands, profits can be positive without any cash being generated. And, cash can be generated without any profits being realized.

Statement of Cash Flows

The Statement of Cash Flows (SCF), or sometimes referred to as the “Statement of Cash” or the “Sources and Uses of Funds” is the last financial statement produce by corporations in reporting their financial position. The ‘time frame’ for the SCF is identical to that of the I/S: quarterly, semi-annual or annual.

The SCF explains where cash was generated and then how that cash was used or applied. If cash was generated but not used or applied, then the cash balance reported on the B/S would change (upward) from period to period. The reporting period for a given year, say calendar year 2007, would provide two balance sheets (Dec. 31, 2006 and Dec. 31, 2007) along with and income statement for the calendar year 2007 and the statement of cash flows for calendar 2007. The differences between the line items on the two balance sheets should be tracked through the income statement and statement of cash flows.

The SCF is reported in three general classifications:

Cash from Operations

Cash from Investment Activities

Cash from Financing Activities

The three categories help managers, owners and interested parties (such as current or potential lenders, potential owners) understand where B/S changes occur and the use of cash generated by the business.

For our example, look at Southwest Airlines (SWA). SWA gets paid to fly people from one spot to another; this is the operating business. Outsiders would like to understand how they perform such activities and how much cash they generate in operating this business. Who are these outsiders? Investors have in interest in seeing how they operate. Current or potential lenders want to know if they are, in fact, producing cash from operations.

We look to the SCF operating activities to find the following:

Net Income before any dividends paid (from the Income Statement) =

Add:

Depreciation and Amortization Expenses
Increase in Accounts Payable
Increase in Accruals

Less:

Increase in Accounts Receivable
Increase in Inventories

Equals:

Net cash provided by operating activities.

We begin with Net Income as defined by the I/S report. Concerning Depreciation and Amortization, remember we were able to deduct such expenses as our attempt to recapture our initial investment (return of investment). However, since these expenses did not involve cash going out the door, we must add it to Net Income. (We deducted it before taxes to lower our overall taxes but add it back because it was not an actual cash outlay.)

In general, normal payables like utilities occur every month. If we delay a month's payment, cash does not go out the door; however, the liability will still show up on the B/S along with the cash not sent. The effect of just delaying a payable will increase both sides of the B/S. Similarly, accruals such as employment taxes do the same thing: balloon both sides of the B/S. (Employment taxes might be due quarterly or semi-annually; they build from month to month so the liability gets larger until it is paid.)

In the course of the time frame for the SCF, if people that owe you money that don't pay on time increase, this is a reduction in the actual cash received. Note, revenue from the sale is booked and included in the I/S; however, if collections of the receivables fall short of their historical trends, overall less cash is generated by the firm.

Likewise, buildup in inventory level use cash to the extent they are not financed by payables (addressed already).

Cash from Investment Activities

For SWA, the cash generated from operations tells how they produce from core operations. Again, their business is to fly people from place to place. However, from time to time, SWA must sell airplanes that it owns and buy more airplanes to replace

those sold or for route expansions. (SWA does lease some aircraft so they do not report asset purchases and sales in those instances.)

Target a particular aircraft that is to be sold; the airline calculates what current book value that aircraft reports on the B/S. An agreed price for that aircraft is negotiated between SWA, as seller, and some buyer resulting in cash exchanging hands for the asset itself. Before SWA gets access to the cash, any and all liens from lenders (loans on that particular aircraft) must be satisfied with the net remaining cash going to SWA. Furthermore, SWA must determine any tax liabilities resulting from the transaction (capital gain or loss depending on price and book value of the sale or ordinary recapture of taxes). The tax liabilities will be reported in the I/S and included in the SCF because this financial statement begins with Net Income.

Net Cash flow resulting from this sale is reported here. Furthermore, any cash that goes to more aircrafts are included in this portion of the SCF with careful attention to signs designating cash inflows (+) and cash outflows (-).

Cash from Financing Activities

This portion of the statement reports changes in reported debt levels and financings. For example, SWA's aircraft sale outlined above may require retirement of debt associated with that particular aircraft. This is where the cash used to reduce that debt is reported. Likewise, if debt is increased to buy new aircraft, that financing activity is reported here as well, again with careful attention to the (+) and (-) of the cash flows.

The total of all three of these line items are added to the beginning of the year's cash balance to show how the end of the year's cash balance is achieved.

One last note regarding these three financial statements and their uses, while there has been a lot of 'press' about many investors losing a great deal of money through the Enron meltdown; there were a few people who made a fortune. What they saw was an entity reporting significant profits (I/S) yet they were not generating enough cash (SCF). These people suspected foul play and 'voted against' Enron by shorting the stock. When it crashed from \$80+ per share to under \$3, they created tremendous wealth for themselves.

Financial Statement Analysis and the Use of Ratios

Business analytics has evolved into a sophisticated quantitative approach involving ratios and ratio analysis. Ratios have been created to quickly key-in on certain aspects of a firm's financial figures. There are 4 general classifications that ratios fall under:

- **Liquidity**
- **Asset Utilization and Efficiency**
- **Debt / Leverage Utilization**
- **Profitability.**

There are more than 60 ratios that can be calculated, and not all ratios are significant to users. For example, the biggest provider of credit in the market place originates from TRADE CREDIT. An example of trade credit is the process of delivering goods, say lumber, to a builder on Monday. The house builder starts the process of framing a house that day while the wholesale lumber operator begins the process of billing his customer. An invoice is sent to the builder with 'regular terms' for the transaction. 'Regular terms' is an industry specific agreement for the terms of payment. Each industry has evolved into a standard payment system like 30-day terms or 7-day terms as a "quasi-standard operating procedure".

Should a new vendor to that arena attempt to request harder terms such as 20-day payment when all others are at 30-days, that new entrant will not get any business even if prices are better! So, the example above for lumber at a 30-day term might be different than the banana department at your local grocer. Why? The bananas have a shorter shelf life and the last thing a lender wants is something owed to them without the asset being around.

Vendors selling on 5-day and 30-day terms are not interested in profitability ratios; they are keen on liquidity ratios as in, "Can I get my money in a week?!?!". Interested parties tend to focus their analytical efforts toward those ratios that are important to them. Long-term lenders are more interested in debt/leverage ratios and not so much on liquidity ratios. Commercial lenders and trades/vendors are more interested in getting paid within a reasonable time frame.

All lenders go through a process of 'spreading' financial statements, particularly commercial banks, in an effort to determine absolute values and relative values along with trends. Back to the lumber versus bananas examples, utilizing ratios between non-similar industries does not create a whole lot of value. Ratios can show trends and show some comparisons within an industry (one entity to another) but only in a limited sense.

Trouble with ratios:

- All financial statements are stale. They are outdated the moment they are printed.
- Some ratios utilize balance sheet items AND income statement items as if they were equivalent in timing. Balance Sheet is a 'one day' time frame while the income statement is over a period. So any ratio using these two statements may distort the results. (Don't forget the SNAPSHOT issue!)
- What is an industry? General Electric (GE) is classified as a diversified manufacturing operation. This cannot be farther from the truth. GE is one of the world's largest financial institutions and really only manufactures a few products. (For example, GE doesn't make light bulbs or small electric engines!)
- Are American Airlines and Southwest Airlines in the same industry? Actually, it is AMR and SWA. AMR has multiple subsidiaries while SWA does not. Can these two be compared head to head?
- Accountants and bankers will tell you that a current ratio (which is the ratio of current assets to current liabilities) exceeding 1.3 is good. GOOD FOR WHOM? A 1.3 ratio means you have \$13 for every \$10 coming due within the next year. Highly inefficient for the company, but the accountants and bankers want this because they are 'protected' better. So, ratios depend on one's viewpoint!

Cash, Cash Flow, Profits and Revenues

Cash, the balance sheet line item, is reported using the SNAPSHOT approach at that one moment in time. Cash flow is the concept of *cash* entering and leaving your company's bank account. Similar to an individual balancing his or her checkbook, a positive cash flow for any given month would imply that there is more cash coming into the accounts than going out in that time frame. While this is an important aspect for an ongoing entity, this fact does not completely address that month's cash issues. For example, what happens if all cash outflows occur in the first 20 days of the month, and collections (inbound cash) only occurs that last 10 days of the month? Cash and the timing of cash, while being a mundane issue for many, is still a very important part of financial planning (called 'cash management').

An additional legal point to bring to the engineer-owner needs to be outlined here. In the personal world of checking accounts, many people get paid (after 3 p.m.) on Fridays and go to their local grocery stores that night or over the weekend. What does this matter? Technically, the banking day ends at 3 p.m., so any check deposited after that moment becomes a 'next day' transaction. Since the next day is Monday, the check is actually deposited that day, so the company issuing the check gets extra days. Furthermore, and technically, the deposit is only valid when that particular check actually 'clears' which is the process by which funds are actually transferred. However, consumers have 'adapted' the process of writing checks based on the Friday 3 p.m. deposit and not when the actual check clears. (Do we really know when it clears?) Again, technically, writing a check based on non-cleared funds is a crime. However, the commercial banking industry does not pursue this avenue because it charges significant fees (NSF charges) to help their customers!

For commercial activities (companies and corporations), officers of that entity can be held accountable for writing checks based on funds that are not cleared. It is against the law to write checks based on a deposit that has not cleared. Legal efforts generally do not pursue such actions until something else goes wrong with the company. But, when other things go wrong, this is an area where prosecutors can pursue. So owners, managers and corporate officers, be aware of writing bad checks.

Revenue, or sales, is the term referencing successful events where the company sold goods or services. The revenue figure is the amount used to pay for cost of goods sold, then overhead, any taxes due. The final line item is profits or earnings which is the amount remaining after all costs. Of course, revenue does not equal profits. But does a Revenue line item match with cash or cash flow? No. For example, your best salesperson brings a purchase order to the company on December 20th. The order calls for shipment of goods January 20th, followed by an invoice to be paid by February 20th. When was the sale made? Was the sale made (revenue booked) in December (purchase order), January (shipment) or February (collection)?

This example shows that Revenue recognition might not match the actual cash flow associated with the sale. The answer to the above timing of the sale is that each date could be accepted as the revenue recognition date as long as each and every transaction before and after follows the same logic. The company cannot pick one or the other each year. It must be consistent.

‘Cash basis’ is the accounting convention where sales and expenses match the actual receiving and disbursement dates. ‘Accrual basis’ is the process of recognizing the transaction when presented, such as when the purchase order was presented. Hopefully you can see that revenue recognition can, in certain circumstances, not match cash generating activities. Profits might be recognized in the accrual convention without any cash being generated!

The Franchise Model and Revisiting Return of and Return On

An income statement can provide valuable insight into economic viability of an opportunity (net income generated versus the costs associated with that activity). Furthermore, cash is also an important evaluating tool remembering that, at times, cash and profits (net income) are not always consistent in growth.

Franchisers are notorious for saying their investment opportunity provides a 15% 'cash on cash' return in operating their (your) stores. While the 15% might be accurate, this number needs to be further evaluated. Of the 15%, 5% might be a true economic return (**return on**) while the 10% portion is a **return of** investment. The 10% is just the franchisee's own money being recycled. If C.D.'s pay 5%, you will be taking tremendous risk (even borrowing money, compounding even more risk) without being paid a sufficient return versus risks taken.

How do we address this issue? Most CFO's don't know that two separate and distinct analyses are required. First, the opportunity (be at acquisition or buying a copier) needs to be evaluated economically. If the economic evaluation comes up negative, the second analysis is not needed and the opportunity is discarded. If the first economic evaluation is positive, then the asset is deemed to be valuable so a second financial analysis is due. (Huh?)

What is an economic evaluation? The economic evaluation is an un-leveraged analysis of the opportunity at hand. The purchase price of the opportunity is compared with the Net Income of that particular activity or asset. No debt is used in the analysis (no interest expense), and we do not care about cash flows in the economic evaluation but do care about the leveraged analysis.

Say, we have an opportunity to buy a coin-operated soda-dispensing machine. The machine costs \$1,000. Revenue from each soda is \$1 per event. Furthermore, we calculate what the costs per can will be: electricity charges, rent to place the machine and costs associated with servicing the machine (replacement of sold items, revenue collections and repair). We run our income statement on this opportunity (no debt) and determine our net income will be \$60 per year. This \$60 is an after-tax net income figure. This is a 6% yield on our money!

Is this 6% sufficient return to undertake the risk?

(This question is very personal; if not sufficient, pass on this opportunity.)

If we accept this economic analysis and say the yield is sufficient, we proceed to the second analysis where we might borrow 80% of the purchase price. Under this scenario, after servicing debt, our net income might be \$40 but after tax cash flow will be \$50. In

the second analysis, cash on cash would mean \$200 cash outlay (machine price less what we can borrow) with a \$50 cash return or a 25% return.

If we just looked at the 'cash on cash' return of 25%, the conclusion might be that this is an acceptable return. However, looking at the economic return, we might reject the business as 6% does not pay significant returns for the risk undertaken.

In evaluating any opportunity, it is always possible to lie to oneself. Model assumptions can be slanted to prove anything. Hopefully the analysis is performed under a conservative approach so that accounting assumptions (see next section) do not distort the results. (For example, the depreciation used in the analysis should reflect the asset's value, and not selected to minimize taxes.)

Cash is real vs accounting opinion.

Assume the two companies (“A” and “B”) are in same industry. Look at the following data reported:

| | Company "A" | Company "B" | |
|-----------------------------|---------------------|---------------------|--------------|
| Sales | 9,200 | 11,000 | |
| Less Returns and Allowances | <u>(1,000)</u> | <u>(1,000)</u> | |
| Net Sales | 8,200 | 10,000 | (a) |
| Beginning Inventory | 2,000 | 2,000 | |
| Purchases and Freight | <u>6,000</u> | <u>6,000</u> | |
| Net purchases | 8,000 | 8,000 | |
| Less ending inventory | <u>(2,000)</u> | <u>(3,000)</u> | (b) |
| Cost of goods sold | <u>6,000</u> | <u>5,000</u> | |
| Gross Margin | 2,200 | 5,000 | |
| Op. Expenses | | | |
| Selling Costs | 1,500 | 1,500 | |
| Depreciation | 500 | 300 | (c) |
| Pension | 100 | 20 | (d) |
| Other | 200 | 50 | (e) |
| Salaries | 200 | 200 | |
| Bonuses | <u>100</u> | <u>100</u> | |
| Total Op Exp | <u>(2,600)</u> | <u>(2,170)</u> | |
| Net Op Income | (400) | 2,830 | |
| Less Interest Exp | <u>(100)</u> | <u>(100)</u> | |
| Taxable Income | (500) | 2,730 | |
| Federal Taxes | 50% | <u>(250)</u> | <u>1,365</u> |
| Net Income | <u><u>(250)</u></u> | <u><u>1,365</u></u> | |

The last column has footnotes that will be explained later.

If we quickly go down the Income Statement to the line item of Gross Margin, we see that “B” is tearing up “A”! “B” is by far a superior company!

- “B” has a superior sales force (selling more than “A”).
- The depreciation line item might indicate that “A” has more machines than “B”!
- Or, “A” has newer machines than “B” (and therefore, higher depreciation expense).
- “A” carries fewer inventories so “A” is more efficient.
- “A” has higher pension fund liabilities and other costs where “B” does not!

“A” is not even profitable!

But a closer look at both of ‘these companies’ might reveal something unique! Review the footnotes:

- a) One company uses the accrual basis for booking sales, the other uses a cash basis.
- b) One company uses an inventory tracking system called L.I.F.O (last in, first out); while the other uses F.I.F.O. (first in, first out). Allocating earlier pricing for a commodity, such as fuel costs, rather than later pricing can change a COGS entry.
- c) One company uses accelerated depreciation methods versus a straight-line depreciation method.
- d) One company properly funds its current pension fund liability while the other adopts erroneous assumptions and purposely under-reports (and under funds) its pension fund liabilities.
- e) One company properly reports capital expenditures (capitalizing long term assets) while the other takes current year deductions (technically a prison able offense, but provided here as an illustration).

The most important ‘REVEAL’:

Company “A” and “B” are the same company.

CASH IS REAL

PROFITS ARE AN ACCOUNTING OPINION

Cash is ‘real’ means one can track actual deposits and withdrawals. A snow cone can generate \$1 in cash and that cash can be deposited into a bank account. The costs associated with these activities can be tracked as checks are written to cover these costs.

The ‘profit’ from that one snow-cone transaction cannot be determined when you have that \$1 bill in your hand nor determined when deposited. Only after the accounting

period is over do we gather all expenses, both cash and non-cash expenses, to determine what our gross profit is and then determine what our taxes will be.

By changing accounting assumptions, profits are altered. Assumptions like cash versus accrual accounting, depreciation methods and inventory controls are chosen by owners. Each of these assumptions are ethical and do not violate laws. So, Profits have been altered within the same operating entities due to the accounting opinions adopted.

Conclusion

Having taken 18 hours of college level calculus in my engineering studies (and passing most of these!), I thought handling the ‘simple’ balance sheet and income statements would be a breeze.

“Give me those math-oriented reports and I will be an expert on business!”

Upon further and extensive studying of these financial statements, I began to realize that I am not an expert as the numbers were not talking to me. Being somewhat intimidated, I did not express my lack of knowledge and the feeling of helplessness in evaluating business statements. I continued to look for the answers in the financial statements. I kept hoping for the “Eureka!” that was suppose to surface and when it came I would be the best business ‘evaluator’ in the world.

If you think the financial statements reported by public companies are just a bunch of numbers providing very little information, you are not alone. It took 4 years of lecturing graduate and undergraduate finance courses before that “Eureka!” finally came to me!

I was looking for the financial statements to provide me “answers” which is entirely wrong! The financial statements ARE a bunch of ‘meaningless’ numbers and they provide very little information, at least on the surface!

What are financial statements and what is the “EUREKA?”

Financial statements are TIPS OF ICEBERGS. They do not provide answers to many questions. What financial statement should do is create hundreds, if not thousands, of questions and only in the answers to that multitude of questions does information make sense.

How are revenues booked? What makes up your COGS? Where is overhead allocated to COGS versus SG&A? Are you cash or accrual based?

However, once these questions are answered, you only have insight to this one entity as each entity may have different assumptions.