A Primer on Financial Statements*

(what you need to take Introductory Finance)

This note is part of a self-taught module that provides a very basic introduction to the understanding and use of financial statements. It covers the basic accounting fundamentals that are required as a prerequisite for the Tepper School’s introductory course in finance. This material is by no means a substitute for an introductory course in accounting.

The idea is this. The accounting tools that one needs for introductory finance are a fairly small subset of what’s in a typical introductory accounting course. This module, therefore, serves to get students up to speed on exactly what’s needed. It relaxes the constraint that an accounting course is a prerequisite for finance. Naturally, if a student has already taken accounting, then there’s no need to work through this module (other than as an optional finance-targeted refresher).

Relaxing a prerequisite, of course, doesn’t come without a cost. You should understand the basic tradeoff that’s at work here. Ideally, you’d take accounting before finance. You’d learn things at a deeper level and you’d be taught by a pro. But sometimes there are good reasons to depart from what’s ideal. If you do, then you need to work through this module before getting started with finance. If you then take accounting afterward (or concurrently), you will encounter some redundancy. Not much — this module is designed to take you only a few hours — but some. So this is the tradeoff: getting to finance sooner, versus avoiding redundancy. Of course, if you don’t ever take accounting — not an option for business majors, MBA’s etc. — then the tradeoff doesn’t exist. Then this module’s goal is to make finance accessible to you via a seat-of-the-pants treatment of accounting.

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1 Financial Statements

Public companies are companies that have their shares traded on public stock exchanges such as the New York Stock Exchange (NYSE). Public companies provide financial information to their stakeholders — their shareholders, employees, bankers, suppliers, customers, etc. — so that people can figure out what’s going on inside the company. This financial information takes the form of standardized financial statements — the balance sheet, the income statement and the cash flow statement — as well as a large array of supplemental ‘notes.’ Public companies typically provide this information on a quarterly and an annual basis. In the U.S., we refer to their quarterly statements as their “10-Q” statements and their annual statements as their “10-K” statements (named after the forms that are required by the Securities Exchange Commission (SEC), the federal regulatory authority in charge of securities markets). The database that contains all of this information is located at the SEC and is called EDGAR. Give it try! Go to Edgar and enter GPS into the “Fast Search” facility.¹ GPS is the stock-market symbol (the “ticker symbol”) for The Gap, the retailing company that we’ll use as an example throughout this module. Access their most recent 10-K statement. This is where the data that we’ll use comes from.

Time to dive in. All of the numbers in what follows are from the accompanying spreadsheet. You’ll find it helpful to have it open as you read, and to flip back and forth a lot and poke around.

2 The Balance Sheet

Firms use tangible and intangible assets, along with labor, to create goods and services.² The balance sheet provides a snapshot at a moment in time of a company’s assets and of where the money came from that was required to buy those assets. We’ll use the clothing retailer The Gap as an example. Below is a simplified version of their balance sheet. The units are millions of dollars. So, for example, The Gap’s Property, Plant and Equipment, after allowing for how much it has depreciated over time, was $2.758 billion in February 2014. Their total assets were $7.849 billion (we’ll shorten this to $7.849bn). These dollar values refer to acquisition cost, sometimes called historical value. This means “what you initially paid for them, minus how much they’ve depreciated,” as opposed to “what you could sell them for now.” Note that negative numbers are denoted with parentheses, not negative signs (accountant’s choice of notation, not mine).

¹https://www.sec.gov/edgar/searchedgar/companysearch.html
²Economists typically use the word “capital” instead of “assets,” but since we’re doing accounting here, we’ll stick to “assets.”
2.1 Assets

The balance sheet lists assets in declining order of *liquidity*. Liquid assets — *Current Assets* in accounting parlance — come first. They are assets that are likely to be (or are easily) turned into cash in the near future. They include cash itself, financial securities like stocks and bonds (*Cash Equivalents*), *Accounts Receivable* (money owed to the firm by its customers for goods and services already delivered), and *Inventories* of raw materials, finished goods and work-in-progress. There is also the ubiquitous *Other* category that shows up everywhere in financial statements. Sometimes you can figure out what it is, other times you can’t. Don’t worry about it.\(^3\)

\(^3\)If you dig into the spreadsheet a little you’ll see that about half of this *Other* is *Prepaid Expenses* and the other half is *Other*. The *Other* One might get smaller, but it rarely goes away (note the
After *Current Assets* comes *Tangible Fixed Assets* like real estate, vehicles, and machinery and computer equipment. These things are often grouped together as *Plant, Property and Equipment* (PPE). They are typically longer-term and a lot less liquid than *Current Assets*. Note that *Accumulated Depreciation* is subtracted from PPE, to arrive at *Net Tangible Fixed Assets* (*i.e.*, what’s left, “net” of depreciation). Depreciation is a tricky thing in accounting. More details are below. For now, just think of depreciation as stuff “wearing out.” *Fixed Assets* also includes *Intangible Assets* like brand names that the firm has purchased, intellectual property, customer lists, etc.. For The Gap, intangible assets are mostly trade names that they have acquired by buying another firm.\(^4\) Closing things out are *Long Term Investments*, which are typically financial investments that are long-term in some sense, but can include ownership investments in other firms.

It is critical to understand that the balance sheet doesn’t include *all* of a company’s assets. Things like the value of the brands that a firm has developed in-house, a firm’s reputation (*e.g.*, a law firm), the technological processes that have been discovered (*e.g.*, Amazon’s logistical know-how), and so on, all play a critical role in how a firm creates goods and services and, thus, value. Yet most of these things don’t appear on the balance sheet.\(^5\) Accountants are reluctant to record such items because of the inherent difficulties in measuring and valuing them. By leaving them off, the practice of accounting is said to be *conservative*. More on this later.

Here’s a summary of the assets that The Gap uses to do what it does. They have *Current Assets* of $4.4bn, $1.5bn of which are *Cash*. Why they need to have $1.5bn in the bank is kind of mysterious to me (and most other people who think about this). Why they have the other $2.9bn isn’t. These assets are fundamental to running a retail operation. Most obvious is *Inventory* of just under $2bn. You can’t be a retailer without having goods on shelves. Aside from *Current Assets*, The GAP has spent about $8.2bn on PPE (*e.g.*, stores and shelves), $5.4bn of which has “depreciated.” They have also spent just over $300m on buying-up other firms/brands to bring

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\(^4\) For example, in 2008 The Gap paid $150m to acquire the women’s sports-clothing maker *Athleta*. Part of this payment was for some tangible assets like inventory and manufacturing equipment (I guess), and part was for the “trade name” *Athleta*. In The GAP’s 2014 10K they report a $54m value for the *Athleta* name itself. Note that “trade name” is a synonym for “brand name” (*as far as we’re concerned*). Also note that you’ll sometimes see the acquisition value of brand names lumped into the intangible category of *Goodwill*. Again, we’ll treat these things synonymously.

\(^5\) A rough rule-of-thumb is that if a firm acquired some intangible assets by buying another firm, then they go on the balance sheet and are either referred to as *Intangibles* (*e.g.*, in the case of The Gap) or as *Goodwill*. If a firm creates the intangible assets itself, then they don’t show up. Apple Computer’s brand value, for instance, is not included on its balance sheet. For a wonderful discussion of the accounting treatment of “brand equity” see “Untouchable Intangibles,” *The Economist*, Aug 30 2014. A companion article, “What are brands for?,” *The Economist*, August 2014, discusses what brands *are* and how researchers try to measure their value.
under The Gap umbrella. They also have $350m in *Long Term Investments* which, upon looking through their 10K, are primarily cash deposits required to collateralize insurance contracts as well as the *rights* to lease certain properties in the future. This all adds up to about $7.8bn of assets.

### 2.2 Liabilities and Shareholder’s Equity

OK, The Gap has $7.8bn worth of assets. How did they pay for them? This is what the other side of the balance sheet — *Liabilities and Shareholder’s Equity* — tells us. *Liabilities* represent money owed by the company to various “creditors:” parties that have lent money to the firm. As was the case for assets, we begin with liabilities that must be paid in the near future, *Current Liabilities*. These include *Accounts Payable* — funds owed to suppliers that must be paid in 1 to 3 months (typically) — *Accrued Expenses* (things like wages, taxes and interest that are owed but haven’t been paid yet) and *Unredeemed Gift Cards* (maybe you have one in your pocket ... it’s your asset and The Gap’s liability). Next comes *Long Term Debt*, the amount owed to the firm’s bondholders.\(^6\) Finally *Other Long-Term Liabilities* can include all kinds of things like certain types of lease obligations and tax liabilities that aren’t due for years.

After *Liabilities* comes *Shareholders Equity*, which is comprised of *Paid-in Capital* and *Retained Earnings*. This gets a little hairy — why, for example, is *Common Stock and Other Paid in Capital* a big negative number? — and it gets ahead of where we’re at just now.\(^7\) So we’ll just worry about the total value of *Shareholder’s Equity*: $3.062bn. Just think of this as the sum of two things: how much money the shareholders have put into the company plus how much of the company’s profits from previous years have been “plowed back in” and reinvested in the company (as opposed to paid out to the shareholders as *dividends*). In fact, since the reinvested profits — the *Retained Earnings* — are essentially the property of the shareholders, we can just simplify the language and say that *Total Shareholders Equity* is just the amount of money that the shareholders contributed to what was needed to buy the $7.8bn of assets.

OK, let’s come in from the weeds and summarize how we should think about the balance sheet. The Gap has $7.8bn in assets. How did they pay for these assets? In

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\(^6\)For example, The Gap might have issued a 10 year bond with a principal of $50m and annual coupon payments of 6%. This means that the must pay 6% of $50m, $3m, once per year for the next 10 years, and then they must pay back the principal of $50m after 10 years. What would appear on the balance sheet is (roughly) $50m, the “par value” of the bond.

\(^7\)The short answer to why *Common Stock and Other Paid in Capital* is negative is that The Gap has purchased a bunch of their shares from some investors and the share price at which they did so was greater than that at which the shares were first issued. This negative number — often called “Treasury Stock” — is a balance sheet “plug” that ensures that things add up.
two ways. First, they “borrowed” $4.8bn. Second, the “owners” (the shareholders) contributed $3bn of their own money. The former is represented by various types of liabilities and the latter is represented by the ownership of common stock. This is a gross simplification in a bunch of ways, but it’s close enough for now. The nuances will come up as we move along. Don’t lose sight of the forest for the trees.

Now for a few important details and additional concepts.

2.3 Working Capital

Here is how accountants define Working Capital:

\[
\text{Working Capital} = \text{Current Assets} - \text{Current Liabilities}
\]

\[
= 4,430 - 2,445 = 1,985
\]

There are couple of ways to think about why this definition is important. Sometimes people refer to this as the company’s ‘potential reservoir of cash.’ It measures how fragile their short-term financial position is in the sense that, if it is small (or negative) then the company is susceptible to something bad happening to their Current Assets (e.g., customers don’t pay on time) which might prevent them from making good on their Current Liabilities.

A better way to think of Working Capital (I think) goes as follows. Current Assets are fundamental to the business operations of a firm. For retailers like The Gap, this is crystal clear. They could not operate without their inventories. Current Liabilities are simply one way in which a firm “funds” (pays for) their Current Assets. If The Gap doesn’t have to pay their suppliers for 3 months, for example, then this helps them pay for all the blue jeans that must be constantly sitting on their shelves. Or, the other way around, if they had to pay their suppliers upon delivery, then how would they pay for the blue jeans that are always sitting on the shelves? They’d have to come up with the money either by borrowing or by getting it from shareholders. Working Capital, then, is the (net) amount of money that the firm must come up with to fund (finance) the Current Assets that are required for its business. In Introductory Finance we’ll examine lots of examples of how important Working Capital is to a firm’s overall business operations.

Here’s a variation on this theme. Consider the following alternative definition of working capital.

\[
\text{Operating Working Capital} = \text{Current Assets} - \text{Current Liabilities} - \text{Cash}
\]

\[
= 4,430 - 2,445 - 1,510 = 475
\]

The idea is that, aside from a small amount of cash-in-the-drawer, Cash isn’t really an asset that is needed for business operations. Nevertheless, many firms hold vast
quantities of cash these days. Frankly, nobody’s quite sure why. But, no matter the rationale, what’s pretty clear is that The Gap (and many, many other firms) doesn’t need $1.5bn in the bank to do what they do. So, we’ll think of Cash as a “non-operating asset,” define working capital to be net of cash, and call what results Operating Working Capital. For The Gap, this is a substantially smaller number, at just $475m. In a way, this is good news for them. It says that the amount of “capital” required to run the short-term part of their business isn’t $2bn, it’s only $475bn. Even though they have receivables and inventories (and Other) that are worth around $3bn, their Current Liabilities of $2.5bn allow them to “pay for” almost all of this. Basically, the unredeemed gift card that you have in your wallet is helping The Gap to pay for their inventory.

By netting out Cash you now see that we get a clearer picture of the capital required to run the business of a clothing retailer. Cash clouds this picture. Including it suggests that, to be a clothing retailer with $16bn in sales you need $2bn in working capital. You don’t. You only need about 1/4 of that: $475bn.\(^8\)

### 2.4 Book Value vs Market Value

Accountants typically record each asset’s “book value,” not its market value. This is a very important aspect of accounting. For instance, if The Gap purchased a building in Manhattan 10 years ago for $100m, and the building’s market value is now $150m, then their balance sheet will report $100m, not $150. We call the $100m the building’s “book value” or its “acquisition cost.” There are a lot of reasons for doing this, but they all boil down to a desire to have accounting standards be fundamentally conservative. Market values for illiquid assets, for example, can be hard to estimate. Moreover, one needs to be careful in terms of who is doing the estimation. If it’s the firm itself, the concern is that they are overly optimistic. An asset’s acquisition cost may be a more reliable measure of “value” in such cases because it’s based on a transaction that actually took place. As always, there are two sides to this coin. “Book value accounting,” is conservative in that assets that have appreciated in value get understated. But, in contrast, assets that have depreciated get overstated. Beware book-value-accounting after the bubble has popped!

\(^8\) A stark example of this sort of thing is Amazon. Their end-of-2013 Total Assets were $40bn. Their Working Capital was $1.6bn, about 4% of total assets. But a whopping $12bn of this was Cash. So their Operating Working Capital was negative $10.4bn! Why? Because you and I pay them right away, but Amazon doesn’t pay its suppliers until a long time after they sell the goods and get paid. Their Accounts Payable are large and their Accounts Receivable are small. This creates a lot of value for Amazon. It more than finances their entire inventory! If they ever make any money, their working capital policies will be a big part of the reason! :)}
2.5 Depreciation

Fixed Assets are listed on the balance sheet after subtracting off some measure of how much of the asset has “worn out” since it was acquired. For example, if The Gap bought some store-shelving for $5m, 5 years ago, and if the shelving is estimated to have a usable life of 10 years, then $500 thousand of depreciation would be subtracted from the book value of $5m each year. This way the value of the shelving now would be $2.5m and after 10 years it would be zero. Have a look at The Gap’s balance sheet. More than half of their $8.159b of book value of Property, Plant and Equipment (PPE) has been eliminated due to depreciation.\(^9\)

This discussion suggests that depreciation is all about physical deterioration in one way or another. While this is an important part of it, it’s crucial to note that an equally-important part is the “matching” of revenues with expenses. Moreover, tax considerations almost always enter into the mix. We’ll discuss these things when we get to the income statement.

3 The Income Statement

<table>
<thead>
<tr>
<th>INCOME STATEMENT</th>
<th>The Gap ($millions), NYSE: AEO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2014</td>
</tr>
<tr>
<td>Revenue (“Sales”)</td>
<td>16,148</td>
</tr>
<tr>
<td>Cost of Goods Sold (COGS)</td>
<td>(9,855)</td>
</tr>
<tr>
<td>Gross Profit</td>
<td>6,293</td>
</tr>
<tr>
<td>Selling, General and Admin Expenses</td>
<td>(4,144)</td>
</tr>
<tr>
<td>Depreciation</td>
<td>-</td>
</tr>
<tr>
<td>Earnings Before Interest and Tax (EBIT)</td>
<td>2,149</td>
</tr>
<tr>
<td>Interest Expense (Income)</td>
<td>(56)</td>
</tr>
<tr>
<td>Taxable Income</td>
<td>2,093</td>
</tr>
<tr>
<td>Tax</td>
<td>(813)</td>
</tr>
<tr>
<td>Net Income, Continuing Operations</td>
<td>1,280</td>
</tr>
<tr>
<td>Gain (loss) on Discontinued Ops</td>
<td>-</td>
</tr>
<tr>
<td>Net Income</td>
<td>1,280</td>
</tr>
</tbody>
</table>

Now we turn to the Income Statement. If the balance sheet is like a snapshot of The Gap’s business in February 2014, then the income statement is like a video of what

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\(^9\)Warning: you never want to take accounting measures of physical depreciation too literally. They are typically a very rough approximation. For example, an accountant would probably depreciate my $50,000 car over 10 years by $5,000 per year whereas, in reality, a car’s value depreciates more rapidly in the early years than the late years.
Starting at the top, you see that The Gap had Sales of $16.1bn worth of merchandise between Feb 2013 and Feb 2014. Seems like a lot. But, of course, they had to pay for what they sold ... either for what they manufactured themselves or for what they purchased from their suppliers. They also had to pay salespeople, freight charges and so on. The sum of these things are the Cost of Goods Sold (COGS). COGS are the expenses associated with the direct production and sale of a firm’s stuff. For The Gap, COGS was almost $10bn in Fiscal 2013. Once we incorporate this, we end up at Gross Profit — Sales less COGS — of about $6.3bn. Sometimes we express this proportionally and call it the Gross Profit Margin:

\[
\text{Gross Profit Margin} = \frac{\text{Gross Profit}}{\text{Sales}} = \frac{6,293}{16,148} = 0.39
\]

We’d say that “The Gap’s profit margins were 39% in Fiscal 2013.”

Making a profit of 39% of what you sold would be great. Unfortunately, there are more costs. Selling, General and Administrative Expenses (SGAE) include a whole host of things, ranging from managerial salaries, to marketing expenses, to rent, utilities and insurance. Basically, these are expenses that aren’t as directly tied to sales as are COGS. If sales go down by 5%, for instance, it is reasonable to think that COGS also goes down by 5%. Not so for SGAE. Although I’m sure that an accountant would object, let’s think of these things as fixed costs ... costs that the firm must pay, at least in the short-term, regardless of how much they sell. For The Gap, these things came to about $4.2bn in Fiscal 2013, gobbling up a big chunk of that $6.3bn of Gross Profit.

Next comes Depreciation. We’ll say more about this below, but for now just think of it as the “expense” of wearing out a firm’s PPE. Or, somewhat more realistically, depreciation is Fiscal 2013’s share of a bunch of capital expenditures that were undertaken in previous years, resulting in the availability of capital used for production in Fiscal 2013. For The Gap, Depreciation in Fiscal 2013 was zero. In previous years it was positive, but still small. This isn’t always the case for retailers. Have a look at American Eagle, for example (in the spreadsheet). For other firms/industries, depreciation can be a much bigger deal. Energy firms, for example, face big up-front

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10The way in which income statements express calendar years can be a little tricky. For annual income statements (in the U.S.), the relevant time period is often the “12 months ending in early February.” If we are talking about February 2014, for example, we refer to these 12 months (Feb 2013 – Feb 2014) as “Fiscal Year 2013,” or “Fiscal 13.” Note that, in the spreadsheet, I’ve labeled Fiscal 13, on the income statement, as “2014.” The idea is that this refers to the date on which the financial statements became available. It also allows for a consistent labeling of balance sheet and income statement columns. It’s also irritating, I realize. But it’s unavoidable.
capital expenditure costs than are then depreciated throughout the life of their oil wells, gas wells, wind farms, etc.

Once we subtract COGS and SGAE we are left with *Earnings Before Interest and Taxes*, commonly called *EBIT*. EBIT is a big deal. You’ll see it appear frequently in the business media. Google it. But don’t expect to get a date using your knowledge of EBIT (or EBITDA ... which excludes “Depreciation and Amortization”).\(^\text{11}\) From EBIT there are just two main steps to the bottom line. First, if a firm has long-term debt — e.g., bonds that they’ve issued, bank loans that they’ve taken out — then the interest paid on the debt is subtracted from EBIT.\(^\text{12}\) The result is *Taxable Income*. The Gap paid $56m in interest on their debt in 2013 and used this to reduce their tax bill. The tax that they owe is then computed as their tax rate times their taxable income:

\[
\text{Taxes Owed} = \text{Tax Rate} \times \text{Taxable Income}
\]

The Gap paid $813m in taxes on Feb 2014, based on *Taxable Income* of $2,093, so their tax rate was about 39%.\(^\text{13}\)

Finally, *Net Income* is what’s left after subtracting *Tax* from *Taxable Income*. Well, almost finally. If a firm has sold a business unit in the previous fiscal year (or shut down a business unit), then this disappears from their balance sheet and the associated gain or loss from doing so “flows through” to the income statement. Since this business unit didn’t contribute to operations in the current year, we refer *Net Income \*before\* the income statement impact as *Net Income, Continuing Operations*. After adding (subtracting) a gain or loss, we arrive at plain old *Net Income*. The Gap didn’t have any of this between 2009 and 2014, but that doesn’t mean it can’t be important. You can see in the spreadsheet, for example, that Abercrombie suffered a write-off in Fiscal 09 that reduced their *Net Income, Continuing Operations* from $79m to zero! Yikes!

To summarize, The Gap sold $16bn worth of stuff in Fiscal 2013. After subtracting their expenses, this left them with EBIT of just over $2bn. After subtracting their

\(^{11}\)For the irony impaired, I’m not sure that Luke Powell goes to lot of parties ... he’s too busy writing mundane letters to the *FT*.

\(^{12}\)The fact that firms can deduct their interest expense before calculating their tax bill plays a huge role in corporate finance. The “tax deductibility of interest income” reduces taxes owed — and therefore increases after-tax profit — for a firm with lots of debt relative to a similar firm with no debt. So, you ask, why don’t all firms have lots of debt? Good question! Stay tuned. The point for now is to flag the importance of this. Its not obvious that it’s a desirable part of the tax code. To draw a comparison to the household sector, the U.S. is one of the few countries in the world that allows homeowners to deduct the interest they pay on their mortgages from their income prior to computing their tax bill. Many argue that this provides a nasty incentive to have a big mortgage as well as a puzzling incentive to own and not rent.

\(^{13}\)Financial statements don’t usually report the tax rate, leaving us to infer it as I’ve done. One reason is that the tax code is so complex. Firms are reluctant to say “our tax rate is \(x\)” because they pay tax on different kinds of income at different rates. Think of the 39% as some sort of *average* rate.
interest expense and taxes owed — being careful to subtract the interest before calculating the tax bill — they were left with $1.28bn in *Net Income* (people often call this the firm’s *Earnings*). What did The Gap do with this net income? From the spreadsheet:

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Retained Earnings, Beginning of Year</td>
<td>13,259</td>
<td>12,364</td>
<td>11,767</td>
<td>10,815</td>
</tr>
<tr>
<td>Net Income</td>
<td>1,280</td>
<td>1,135</td>
<td>833</td>
<td>1,204</td>
</tr>
<tr>
<td>Less: Dividends and Share Repurchases</td>
<td>(321)</td>
<td>(240)</td>
<td>(236)</td>
<td>(252)</td>
</tr>
<tr>
<td>Fudge Factor (to make things balance)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Retained Earnings, End of Year</td>
<td>14,218</td>
<td>13,259</td>
<td>12,364</td>
<td>11,767</td>
</tr>
</tbody>
</table>

They paid $321m out to shareholders — either as a cash dividend or by “buying back” shares from shareholders (“share repurchases”) — and the rest they “plowed-back” into the firm in the form of *Retained Earnings*. These earnings can be used for future investment and are an important component of how firms grow. Note, however, that *Retained Earnings* is *not* cash that’s available for new investment, etc. It is an accounting construct that, among many other things, places much emphasis on matching-up revenues with expenses and little emphasis on the actual timing of the cash flows that go in and out of a firm. The latter are reported in the *Cash Flow Statement*, which is included in the spreadsheet, but won’t be dealt with here. If you find this confusing, or bewildering, that’s OK. I understand. Please be patient. The last few subsections of this note should clarify things greatly. Please come back here after finishing the note and check.\textsuperscript{14}

As we did with the balance sheet, there are a few important concepts and definitions that we need to drill-down on a little bit.

### 3.1 Depreciation

Back to *Depreciation*, yet again. There are two important things to note here. First, depreciation is what’s called a non-cash expense. It reduces earnings, but there are

\textsuperscript{14}This is good place to answer a question that I get asked a lot: “what’s the difference between finance and accounting?” Aside from the fact that finance professors are funnier, an important part of the answer relates to the “timing of the cash flows.” The accounting machine intentionally “distorts” the timing because the objective is to measure things so as to match up revenues with the costs incurred to achieve them. In finance, we are forced to pay more attention to the timing of the cash flows because ... ultimately you gotta pay the band! Also because a dollar next year is worth less than a dollar this year. You’ll learn exactly what the latter means in introductory finance.
often no cash flows associated with it. Second, the role of depreciation, on the income statement, is more about matching-up sales with costs than it is about “physical” or “value” depreciation. These things are best understood with an example. Suppose that I buy a coffee roaster for $500 thousand that will last for 10 years. Each year I buy raw beans, roast them and sell them for a profit. The income statement tries to measure what my annual profit is. Now, supposing that I have to pay the $500K up-front, it’s clear that if I simply subtracted my cash payments from my sales receipts, then I’d have a big negative profit in the first year and then a 9 years worth of positive profits in subsequent years. But it’s just as clear that these measures of profit distort what’s really going on ... some of my “cost” in Year 5 should surely include part of the $500K I had to pay in Year 1. So what does the income statement do to allow for this? It subtracts $50K worth of depreciation each year. It does not subtract a huge $500K expense in the first year. It does not due this in spite of the fact that the $500K must be paid in the first year! The next sub-section has a simple little example that will elaborate.

The accounting treatment of depreciation is simply a rough-and-ready attempt to match-up costs with “benefits” (sales). The cash flows associated with most capital-like assets are “front-loaded,” whereas the fruit from the assets is more evenly distributed over time. The income statement tries to correct for this — so as to match the time pattern of costs and benefits — by subtracting the non-cash expense called “depreciation” from sales revenue. This is really useful for “cost accounting” — trying to figure out where profit is coming from — but lots of times we also need to pay attention to the cash flows. So you’ll see us frequently “add back in the non-cash expenses reported on the income statement” to arrive at some measure of cash flow. Stay tuned.

3.2 To Expense, or to Capitalize and Depreciate?

When a company incurs an expense required to produce some goods and services an important issue is whether it gets “expensed” immediately, or it gets “capitalized and depreciated.” This is best understood with a simple example.

Suppose that I have a very simple little firm. It lasts for three years: this year, next year and the year after that. Its EBIT is 100 per year and its tax rate is 20%. Here’s its income statement:
Note that I’ve just added up the net income over the three years. In general, this is a no-no. We need to take into account interest rates and the like. But they will only clutter things up here, so we’ll ignore them.

An opportunity arises. I can buy a machine that is a money pump ... it just pumps out money. Or, since we are doing accounting, let’s call it an EBIT-pump. I pay 10 now and it gives me 10 more in EBIT in Year’s 1 and 2. Suppose that I expense the machine in the year when I must pay for it. Then here is my revised income statement.

Sure enough, this is an opportunity. My total net income increases. But that’s not the point. The point is as follows. Instead of expensing the machine in Year 0, suppose that I capitalize and depreciate the expense of buying the machine. Then my income statement will look like this:
You can see that the cost of the machine of 10 gets spread out over Years 1 and 2 in the form of depreciation, instead of reported as an expense (i.e., a SGAE) in Year 0. Instead of expensing the machine when I pay for it, I capitalize and depreciate it. What does the “capitalize” part of this phrase mean? It means that the machine appears as PPE on the balance sheet of 10 in Year 0, 5 in Year 1 and 0 in Year 2. I’ll omit the balance sheet for simplicity.

Note that total net income doesn’t change, no matter what the accounting treatment of this capital expenditure is (accountants call this “CAPEX”). But what does change is the timing of the net income. When we capitalize and depreciate, net income gets “pulled back” from the future. This is idea of “accrual accounting” (the name for the kind of accounting that we’re doing here). Revenues and costs get matched up. The machine generates new revenues of 10 in Years 1 and 2, so we “match” them with 1/2 of the cost of the machine in each year. Today’s net income is the same before and after the purchase of the machine. It doesn’t get pushed down by attributing an expense required to earn a future revenue to today’s operations.

That’s it for “expensing versus capitalizing.” You now know what it means. You also now know what I mean earlier when I said that Net Income is not cash that can be used for other activities. In the above example, with the capitalizing and depreciating accounting treatment, even though Net Income in Year 0 is 80, the firm only has 70 of cash to spend (100 of EBIT, less 20 of tax, less 10 for the machine). Net Income and “Cash Flow” are different things. In finance you’ll learn to call the latter Free Cash Flow and you’ll see that this plays a pivotal role in figuring out what stock prices should be and so on.

### 3.3 What if We Incorporate Interest Rates?

You can stop reading here if you like. But, since we’ve gotten this far, I’ll give you the option of delving into a little finance before ending. In the previous example, you may not like the fact that I’m just adding up Net Income over time. You may be aware that, because of interest rates, a dollar in the future is worth less than a dollar today. You are right! Based on this, you might argue that my little firm is better off capitalizing and depreciating than it is expensing. After all, the former gives me more of the total net income, sooner. You are wrong! Remember, Net Income is not a cash flow.

Here’s the tricky bit. As you’ve seen, accounting is a bit of a fiction in that it glosses over when the actual cash flows occur. Accountants re-arrange the cash flows to provide better information about which activities are profitable and which are not. Yet, no matter what the accountant chooses to do, the machine still has to be paid for in Year 0 and it still spits out EBIT in Years 1 and 2. How can the accounting choice affect the value of these cash flows? The answer is “taxes.” The method of
accounting doesn’t affect the timing of the machine’s cash flows. But it does affect the timing of the tax payments. The total tax paid in both cases is 62. But in the “expense it” case, 44 of this is paid in the future versus 42 in the “capitalize and depreciate it” case. If interest rates are positive, you’d rather pay your taxes later than sooner. So the accounting treatment matters for valuation because it changes around the time pattern of tax liabilities. Unlike net income, these tax liabilities are actual cash flows. Just like The Band, you have to pay The Man.

Punchline: your intuition about the timing of net income gets the “preferred” tax treatment exactly wrong. If we take into account interest rates, we’d rather expense right away.

Is this big potatoes or is it small potatoes? It depends on the particulars of the business. For the retailers we’ve been emphasizing, this isn’t a huge deal. A lot of their business expenses and revenues are sort of naturally “matched.” They pay Levis-Strauss for jeans now, and sell the jeans shortly afterward. They pay shopping malls rent now and use the space to sell stuff, now. Other expenses that aren’t so naturally matched — the costs of a marketing campaign designed to build brand loyalty for years to come, for example — tend to get expensed and not depreciated, nevertheless. This is because accounting is conservative and is reluctant to put the associated ‘capital’ from a marketing campaign on the firm’s balance sheet.

On the other hand, consider firms with big, up-front CAPEX costs. Energy firms for example. They spend vast amounts now to develop a new oil well or wind farm, and the proceeds (hopefully) pan out over years in the future. For these firms, the accounting treatment and implications for taxes can matter a lot. In fact, one of the primary ways that the government subsidizes oil and gas firms is by allowing them to accelerate the depreciation of their CAPEX expenditures and, as a result, push their tax liabilities into the future (i.e., understate their earnings now and overstate them in the future, relative to how a careful accountant would measure them). Don’t believe me? Read U.S. Energy Firms Rewarded with Tax Deferrals, Wall Street Journal, July 2014. This is nothing new (why it persists is pure politics).