

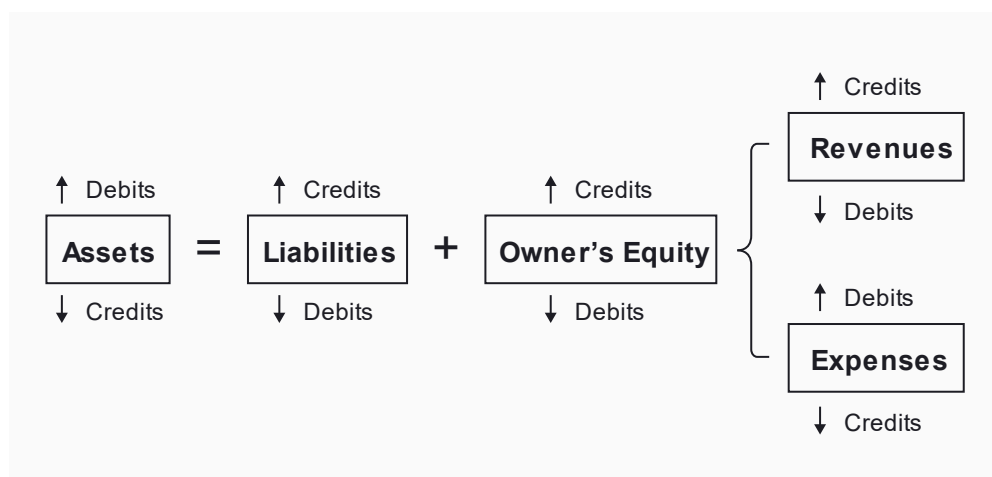
Financial Accounting

Module 1 The Accounting Equation

- Accounting allows us to understand what's going on within a business.
- The Accounting Equation is the fundamental building block of accounting.
 - **Assets = Liabilities + Owners' Equity**
- All transactions impact the accounting equation. The accounting equation, like any mathematical equation, must always balance.
- A transaction is really just an event that occurs during the course of starting a business or running a business. Some examples of these events are making an equity investment, taking a loan, purchasing inventory, selling goods, performing services, and ordering office supplies.
- When any transaction takes place, we can see its impact on the accounting equation as it increases or decreases assets, liabilities, and/or owners' equity.
- Most companies use the accrual method of accounting, which means that transactions are recorded in the period to which they relate, regardless of when cash is exchanged.
- Accounting is governed by principles and rules. Some of the guiding principles are conservatism, relevance vs. reliability, historical cost, consistency, materiality, the entity concept, money measurement, and going concern.
- The elements of accounting such as assets, liabilities, owners' equity, revenue, and expenses, each have specific definitions outlined in accounting standards. The basic definitions are:
 - Assets are resources owned or controlled by an entity that will produce benefits in the future.
 - Liabilities are obligations to pay a third party for resources provided to an entity.
 - Owners' equity consists of funds contributed by owners as well as profits generated by the business.
 - Revenue is the money that a business receives from providing goods or services to a customer.
 - Expenses are the costs associated with providing goods or services to a customer.

Module 2 Recording Transactions

- When businesses are recording transactions in their financial records, they use smaller groupings called accounts. For example, assets include accounts such as cash, accounts receivable, inventory, and fixed assets.
- We use an accounting method called double entry accounting, which uses debits on the left and credits on the right. Debits and credits do not necessarily mean good and bad, they simply represent increases or decreases, depending on the account being debited or credited.
- Assets and expenses increase with a debit and decrease with a credit, while liabilities, equity, and revenue increase with a credit and decrease with a debit.



- The total of debits must always be equal to the total of credits. This is why the fundamental accounting equation holds true and assets equal liabilities plus owners' equity.
- All transactions are recorded in journal entries, with debits on the left and credits on the right. Journal entries can then be summarized in T-accounts, again with debits on the left and credits on the right.
- Finally, all the T-accounts of a business can be summarized in a trial balance. A trial balance is simply a list of all of the business' accounts that have balances at that date, and the amount in each account.
- The balance in each account is listed in the trial balance, shown in either the debit or credit column. Asset and expense accounts will typically have debit balances, while liability, equity, and revenue accounts will show credit balances.
- Since debits always equal credits for each journal entry, and every journal entry is posted to T-accounts, it follows then that the total of all the debit balance accounts should equal the total of all the credit balance accounts in the trial balance.

Module 3 Financial Statements

- The trial balance contains two types of accounts—real accounts and nominal accounts. Real accounts end up on the balance sheet and reflect the cumulative balance in each account from the inception of the business. Assets, liabilities, and equity accounts are real accounts. Nominal accounts end up on the income statement and their balances represent activity over a certain period of time. Revenues and expenses are nominal accounts.
- At the end of each accounting period, the balance of all nominal accounts are transferred to retained earnings (part of owners' equity, a real account), so their balances start back at zero at the beginning of each accounting period. This allows for isolating the operating activity associated with each accounting period. Accounts on the trial balance typically are combined into condensed accounts for presentation on the balance sheet and income statement.
- The balance sheet provides a snapshot of the business at a specific point in time. The balance sheet shows all of the asset, liability, and owners' equity accounts as of that specific date.
- Under US GAAP, the balance sheet presents accounts in the following order: current assets, non-current assets, current liabilities, non-current liabilities, and owners' equity. Within each asset and liability group, items are presented in order of liquidity, with the most liquid (those that can be most easily and quickly converted to cash) first. Under IFRS, the balance sheet is generally presented with the least liquid items first, and in the following order: non-current assets, current assets, owners' equity, non-current liabilities, and current liabilities.
- The income statement shows all revenue and expense accounts for a given period of time. Using trial balances from any two points in time, a business can create an income statement that will tell the financial story of the activities for that period.
- The income statement can show the following measures of income: gross profit (sales less cost of goods sold), operating income (gross profit less operating expenses), income before taxes (operating income less nonoperating expenses), and finally, net income (income before taxes less taxes).
- Together, the balance sheet and income statement are two important financial statements that show the company's financial position.

Module 4 Takeaway Document

- Transactions that enter the accounting systems can be considered either explicit transactions or implicit transactions. Explicit transactions are those that are triggered by a specific event, often an exchange of resources between two parties. Implicit transactions, on the other hand, do not have a specific trigger, but instead, often involve some degree of judgment in determining the timing and amount of the journal entries.
- Implicit transactions often lead to what is known as adjusting entries, which are journal entries made at the end of a given accounting period (month, quarter, or year) to record necessary adjustments. The goal is generally to conform to the revenue recognition and matching principles.
- Adjusting journal entries typically relate to either accruals or deferrals. Accruals are transactions where cash changes hands after revenue or expense is recognized and deferrals are transactions where cash changes hands before revenue or expense is recorded. Accruals and deferrals always involve revenues or expenses and are the essence of two important concepts we have already covered—revenue recognition and the matching principle. At the end of the period, a company will want to ensure that all appropriate accrual and deferral entries have been made to accurately reflect the activities related to that period.
- Inventory is another asset that needs to be analyzed at the end of each period. While some businesses use the perpetual inventory system and record the expense for inventory at the time it is sold, other businesses use the periodic inventory system. Under this system, the business only periodically records cost of goods sold by physically counting the actual inventory on hand and backing into the amount that must have been sold. This is another example of an adjusting journal entry.
- Inventory systems can use any of several costing methods, including First In First Out (FIFO), Last In First Out (LIFO), weighted average, or specific identification.
- For a manufacturing business, inventory costs are a bit more complicated. Most businesses will have two types of costs: Product Costs and Period Costs. Product costs are those that a business incurs to buy, manufacture, and deliver a good or service to a customer. The product costs will include the raw materials and parts that are purchased from suppliers as well as direct labor and supervision and overhead costs such as rent on the plant building and depreciation of plant equipment. Period costs, on the other hand, are all of the other costs a company incurs while doing business, such as executive salaries or office rent. A manufacturing business will track its inventory in three stages: raw materials, work in process (WIP), and finished goods.

- Every time a business makes a purchase, which is an explicit transaction, it must determine when the corresponding benefit from that purchase will come. Long-lived physical assets, such as machinery and buildings, will often help produce revenues for many years to come. To reflect this, we record adjusting journal entries to recognize depreciation expense related to the assets over multiple periods, which is an implicit transaction.
- Straight-line depreciation is calculated by dividing the gross book value by the estimated useful life of the asset. Any salvage value should be subtracted from the gross book value and any disposal costs should be added to the gross book value before calculating depreciation. The original cost of the asset less accumulated depreciation (a contra-asset account) is the net book value of the asset. Remember that land is an exception to the rule. We do not depreciate land because it is not “used up” by the business, and its value is typically not reduced or consumed.
- Note that there are depreciation methods other than straight-line, such as the double declining balance method. This is an accelerated method, which causes more depreciation expense to be recognized in the early years and less in the later years. The choice of depreciation method can have a large impact on net income for the period. Over the life of the asset, the same amount of depreciation will be calculated, but a company using double declining balance depreciation will report lower net income in the early years, and higher in the later years, compared to a company using straight-line depreciation.
- When an asset is sold, the journal entry to record the sale eliminates net book value by writing off the asset and the accumulated depreciation on the asset and then recognizes any gain or loss based on whether the asset sold for higher or lower than its net book value at the time of the sale.
- Non-physical long-lived assets such as intangible assets are treated in a similar manner, except the expense is called amortization, rather than depreciation. In some cases, the journal entry will directly reduce the asset account, while in other cases, the journal entry will use a contra-asset account called accumulated amortization.
- Another example of contra-asset accounts is the allowance for credit losses, which is commonly used by credit providers to recognize potential credit risks.
- In a balance sheet, the allowance for credit losses, otherwise known as the allowance for bad debts or allowance for doubtful accounts, records the estimated amount of receivables that a creditor considers uncollectible. Netting off the bad debt allowance against the gross amount of receivables, the creditor can calculate the value the company expects to receive from credit customers.
- In an income statement, a bad debt expenses account is used to record any increase to the allowance. This account records losses from expected defaults in the same accounting period that the credits are extended.
- Then, when specific receivables fall past due beyond a given period (e.g., 120 days), they are written off from the balance sheet. To do so, the creditor would credit the receivables account and debit the allowance account.

- Another example of adjusting journal entries is deferred tax assets and deferred tax liabilities. These arise because temporary timing differences can cause the calculation of taxable income to be deferent from how a business calculates its income before taxes for financial reporting purposes.
- A deferred tax liability arises when there is an amount of tax that is going to be due in the future, related to income that is reported in the current period. A deferred tax asset reflects a prepayment of some amount of tax on an amount that has not yet been reported as income on the income statement.
- Adjusting journal entries are part of the closing process. The closing process is really just an opportunity for a company to evaluate its trial balance and ensure that the proper accruals and other adjusting entries have been made so that the financial statements will accurately reflect the results of all transactions that occurred during the period.

Module 5 The Statement of Cash Flows

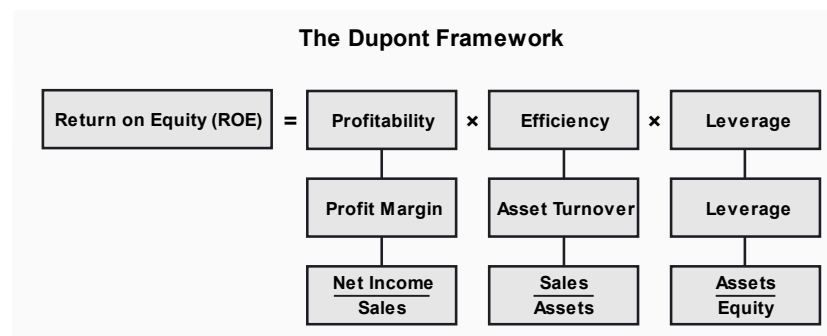
- In addition to the balance sheet and the income statement, the statement of cash flows is the third and final of the financial statements.
- The purpose of the statement of cash flows is to provide a more detailed picture of what happened to a business' cash during an accounting period. It shows the different areas in which a business used or received cash, and reconciles the beginning and ending cash balances.
- Cash flows are important for valuing a business and managing liquidity and are essential to understand where actual cash is being generated and used. The statement of cash flows gives more detail about the sources of cash inflows and the uses of cash outflows.
- The sections of a statement of cash flows are: Operating Activities, Investing Activities, and Financing Activities. The format of this statement is slightly different between US GAAP and IFRS.
- **The Cash Flows from Operating Activities** section includes information on cash used or received in the process of preparing and providing goods or services to customers. This section is closely tied to net income; it essentially shows what net income would be under the cash accounting method. It does this by taking away the components of the income statement that don't have an impact on the cash account and those that do not pertain to the operations of the company.
- There are two methods for preparing the operating section: **the direct method and the indirect method**. Both methods result in the same number: net cash flow from operating activities. Calculating the operating section of the statement of cash flows using the direct method is straightforward; simply take all of the cash collections from operating activities and subtract all of the cash disbursements from operating activities. This method uses transactional information that impacted cash during the period. Rather than organizing transactional data as we did under the direct method, when using the indirect method, we start with net income from the income statement and make adjustments to undo the impact of the accruals that were made during the period.
- **The Cash Flows from Investing Activities** section of the statement of cash flows contains cash flows relating to longlived assets, such as property, plant, and equipment. Additional inflows and outflows that would be included in this section relate to loans made to another entity, called loans receivable, and certain investment securities.

- **The Cash Flows from Financing Activities** includes cash flows associated with raising and paying back money to investors and creditors. Dividends paid are included in this section under US GAAP, but under IFRS dividends paid may be included in the operating rather than the financing section. While interest paid is included in the operating section under US GAAP, it can sometimes be included here under IFRS. Another useful way to get a feel for how a business is managing its cash is to create a statement of sources and uses of funds.
- As with all financial statements, we should interpret the information on the statement of cash flows with the context of the business in mind. One thing to consider and an area where the statement of cash flows gives us a lot of insight is what phase the business is in: fast-growing startup, profitable/growing, mature company, or a company in state of decline. Our expectations for the business' statement of cash flows changes based on the business' phase.

A start-up will typically have negative or very low cash flow from operating activities, negative cash flow from investing activities, and large fluctuations in cash flow from financing activities. A profitable/growing business will usually have positive cash flow from operating activities, negative cash flow from investing activities, and positive, negative, or neutral cash flow from financing activities. A mature company will generally have positive cash flow from operating activities, slightly negative cash flow from investing activities, and negative cash flow from financing activities. A business in decline will typically have negative cash flow from operating activities, positive cash flow from investing activities, and cash flow from financing activities that could be either positive or negative.

Module 6 Analyzing Financial Statements

- Analyzing financial statements is critical in order to understand the performance of a business. To do so, we can use different types of ratios that uncover important relationships between financial statement items.
- Ratios are typically most useful when making comparisons to other companies or to the past performance of the company itself. Therefore, it's important to first get an overall understanding of the company and the industry in which it operates.
- One of the most commonly evaluated ratios is a firm's **return on equity** or **ROE**, which shows the return that a business generated during a period on the equity invested in the business by the owners of the business. It is calculated by dividing net income by owners' equity.
- The DuPont Framework expands the ROE formula to consist of three factors:



- The **DuPont Framework** measures profitability using Profit Margin, efficiency using Asset Turnover, and leverage using the Leverage Ratio (or Equity Multiplier), as shown above. Although they are not used in the DuPont Framework, there are many other ratios that measure profitability, efficiency, and leverage, which can provide useful insights in financial statement analysis.
- **PROFITABILITY RATIOS:**
 - **Profitability** reveals how much profit is left from each dollar of sales after all expenses have been subtracted. *Profit margin* is calculated by dividing net income by the total sales for the period.
 - *The gross profit margin* ratio is calculated by dividing gross profit by total sales for the period and tells us what percentage of our revenue is left to cover other expenses after the cost of goods sold is subtracted. Recall that gross profit is equal to sales minus cost of goods sold.
 - *Earnings before interest after taxes* or *EBIAT*, is a measure of how much income the business has generated while ignoring the effect of financing and capital structure, or the proportion of debt that the business has.

- **EFFICIENCY RATIOS:**

- To measure **Operating Efficiency**, *asset turnover* (calculated as sales divided by average assets) tells us how well a business is using its assets to produce sales. A business that can create more revenue with fewer assets is more efficient. This ratio uses both the income statement and the balance sheet; we typically use the average of the beginning and ending balance sheet amounts to estimate the average level of assets during the period.
- *Inventory turnover* (calculated as COGS divided by average inventory) helps understand how efficiently a business is managing its inventory levels. A higher inventory turnover represents more efficient inventory management.
- *Days Inventory* (calculated as 365 divided by inventory turnover) relates to inventory turnover. The only difference is that it is expressed as the average number of days the inventory is held before it is sold rather than how many times the inventory turned over during the period. At times it may be more intuitive to consider and discuss ratios and changes to these ratios when the terms are expressed in days.
- The *accounts receivable turnover* or *AR turnover* (calculated as sales divided by average accounts receivable) indicates a business' efficiency in collecting receivables from customers. A higher AR turnover represents more efficient cash collections.
- The *average collection period*, sometimes referred to as *Days Sales Outstanding* or *Days Sales in Receivables* (calculated as 365 divided by AR turnover), is the average number of days it took for a business to collect payment from a customer.
- To measure *Accounts payable turnover*, or *AP turnover* (calculated as COGS divided by average accounts payable), we look at how long it takes us to pay our vendors. Vendors include suppliers of inventory and also suppliers of services or other non-inventory items.
- Another way to gauge our accounts payable is to look at *days purchases outstanding* (calculated as 365 divided by AP turnover). Again this simply shows the AP turnover measured in average days outstanding.
- The days purchases outstanding, days inventory, and average collection period combine into what is called a *cash conversion cycle*. This metric, is a measure of how long it takes a business from the time it has to pay for inventory from its suppliers until it collects cash from its customers.

$$\boxed{\text{Days Inventory}} + \boxed{\text{Average Collection Period}} - \boxed{\text{Days Purchases Outstanding}} = \boxed{\text{Cash Conversion Cycle}}$$

- **LEVERAGE RATIOS:**
 - **Financial Leverage**, also known as the **Equity Multiplier**, is calculated as average total assets divided by average total equity and measures the impact of all non-equity financing, or debt of all sorts, on the firm's ROE. If all of the assets are financed by equity, the multiplier is 1. As liabilities, which are forms of debt, increase, the multiplier increases from 1 demonstrating the leverage impact of the debt.
 - Another very common indicator of leverage is the *debt to equity ratio*, which is calculated as average total liabilities divided by average total equity.
- **OTHER RATIOS:**
 - The *current ratio* (calculated as current assets divided by current liabilities) helps us understand the business' ability to pay its short term obligations. It focuses on the business' more liquid assets and liabilities, or those that are convertible to cash or coming due, within a year.
 - The *quick ratio* is similar to the current ratio except only highly liquid current assets can be used in the numerator. It is typically calculated as current assets less inventory, all divided by current liabilities. It's also sometimes called an *acid test ratio*
 - The *interest coverage ratio*, also known as the *times interest earned*, is calculated as EBIT divided by interest expense and is a good way to gauge how capable a business is of making the interest payments on its debt. For this, we use a common income number called EBIT (Earnings Before Interest and Taxes).
 - Ratios can be very useful when comparing one company to another because they allow you to eliminate to a large extent the impact of size differences that exists among companies. Most ratios, however, are in some ways influenced by managerial judgment in recording transactions that have a great impact on the financial statement. As a financial analyst, in some cases you will need to make adjustments to the financial statements to account for the differences before they can be used for comparisons. Considerations such as seasonality and the impact of policy differences may need to be taken into account when analyzing financial information.

Module 7 Takeaway Document

- Forecasting financials is an important part of accounting skills and is used by managers, financial analysts, and investors to predict future potential revenue streams, expenses, and cash flow. While creating financial reports for future periods involves a great deal of uncertainty, it is still very useful for businesses to make their best predictions based on the information they have. Forecasts can be used at a project level, for example, to help make a decision as to whether to undertake a particular project or at a company level, for example, to decide whether to invest in a certain company or whether financing is needed.
- Pro-forma financial statements are one of the most common types of financial forecasts. The percent of sales forecasting method is used when creating pro-formas internally; it involves determining future expected sales and finding trends among various accounts in the financial statements. Businesses also use other assumptions and methodologies when the percent of sales method is not ideal. For example, some line items, such as cost of goods sold, can often be forecasted by assuming that they will continue to grow proportionally with sales. Other line items may be more accurately forecasted using assumptions based on information other than sales, such as other information in the annual report or in industry reports. For example, in forecasting PPE and depreciation, while longer-term planned capital expenses may roughly mirror sales, we will often use more detailed descriptions about planned purchases in the notes sections of financial statements as the basis of our forecast. Another account that typically does not vary directly with sales is income tax expense. Instead, if the business is stable, income tax expense generally can be estimated as a certain percentage of income before taxes.
- To forecast liabilities and equity, the current portion of long-term debt is determined based on the part of a long-term loan that becomes current or is to be repaid within one year. Since they are linked, interest expense and borrowings can be tricky to forecast and may take some trial and error. For example, a company that may need additional funding, meaning an increase in borrowings, will have increased interest expense. In some cases, borrowings will be a plug to make the balance sheet balance. In other cases, another account such as cash or equity may be used as a plug to make the balance sheet balance. Retained earnings are calculated by adding net income to the retained earnings account balance of the prior year. Any dividends to be paid need to be subtracted from retained earnings.

- Another important component in planning and evaluating the future of a business is to look at the expected cash flows that the company will generate. These provide an indication of how much actual cash is generated, and hence available, to be paid out to investors in the business or invest in new projects. The equation is:

$$\text{FCF} = (1-t) \times \text{EBIT} + \text{DEP} - \text{CAPX} - \Delta \text{NWC}$$

FCF = Free Cash Flows
t = Tax Rate
EBIT = Earnings Before Interest and Taxes
Dep = Depreciation and Amortization
Capx = Capital Expenditures
Δ NWC = Change in Net Working Capital

*Formula from HBS case "Calculating Free Cash Flows", Robin Greenwood, David Scharfstein

- With free cash flows determined, stakeholders consider the valuation of various projects. In order to fully consider the valuation of a project, however, stakeholders must consider the concept time value of money because a dollar received today is worth more than one that would be received a year from now due to opportunity costs of how else the dollar could be spent, inflation, and the certainty of payments. In order to fairly compare different projects, the value of the cash flows has to be considered at the same time period. For simplicity, we often translate all cash flows to the value that they would be worth today, the "present value." In order to make the calculation, you need a discount rate, which is the rate that would otherwise be available in the market or the rate that best captures the risk inherent in the project being evaluated.
- In evaluating potential projects, we also have to have an idea of how long the cash flows will continue. In some cases, cash flows will be finite. In others, they will be assumed to continue indefinitely. In the latter case, we use this model to determine the terminal value of the cash flows.

GORDON GROWTH MODEL

$$\text{Present Value of Infinite Cash Flows} = \frac{\text{Cash Flows in the Final Year of Our Projection}}{\text{Discount Rate} - \text{Growth Rate}}$$

- With all cash flows determined, the value of the project can be calculated by using the net present value, or NPV, of the cash flows. The NPV nets out the present values of all the cash inflows and outflows of the project. The result is a single number that gives a good indication of what a business or a particular investment is worth today. It is important that the NPV uses only relevant cash flows in the analysis.
- If the business has already paid for something that will be used at no additional cost by the new project, those costs are omitted because they are sunk costs and shouldn't factor into the decision of whether or not the project should be undertaken. Likewise, costs that will be incurred whether we go ahead with the project or not are also irrelevant to this decision. The valuation of a project will change as the assumptions that go into the NPV model, such as the cash flows and discount rate, change. This sensitivity analysis is an important part of the overall analysis.
- Other valuation measures introduced in the module include the internal rate of return, or IRR, and the Payback Period. The IRR is the discount rate that sets the NPV of a project equal to zero. The IRR allows us to see the percentage rate that would be earned for a given set of cash flows. This method incorporates the time value of money as the NPV does. This metric is often used when there is a lack of clarity or a lack of consensus within the company as to what discount rate should be used in an NPV calculation. The payback period tells us how fast the investors can expect to have their money returned. This metric is more useful for someone who is concerned about limiting the downside potential rather than evaluating the whole project. It ignores the time value of money and the cash flows that occur after the payback period.
- Lease accounting is the process by which an organization records the financial impacts of their leasing activities in their accounting calculations and reports. According to the latest lease accounting standards, lessees are required to recognize ROU assets and lease liabilities for all leases with terms longer than 12 months. Under US GAAP, two types of long-term leases are operating leases and finance (previously capital) leases. In contrast, under IFRS, all long-term leases are treated as finance leases.