

FUNDAMENTALS OF FINANCE

Session 2:

Basic Accounting

Agenda

Recap of previous class

Solution to problem set

Basic Accounting (Chapter 3)

Measuring Financial Performance (Chapter 4)

Recap and preview next class

Recap

- What is the role of a financial manager?
- What is the agency problem?
- Who are the players in the financial market?

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Problem Set

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Basic Accounting

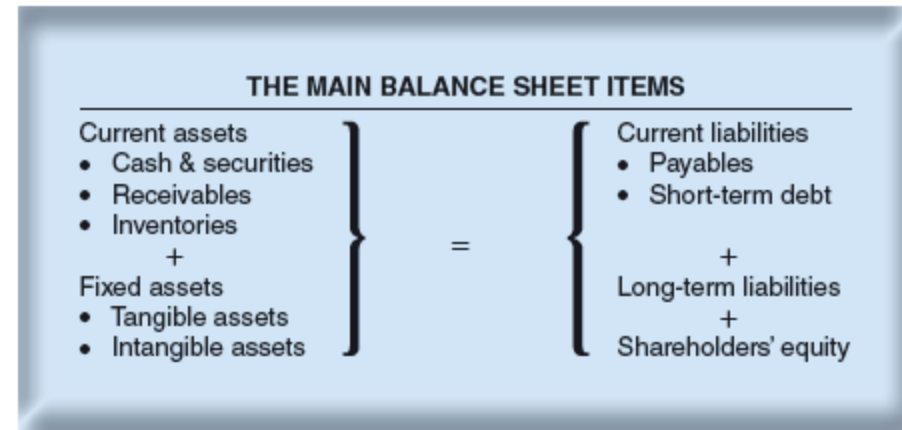
- Financial statements are a set of quantitative reports about a organization's financial results, financial condition, and cash-flows.
 - Based on specific rules
 - Some rules are open to interpretation, others reflect choices made by the company
 - Auditable and replicable, although replicability requires the use of identical assumptions
 - Backward looking
 - Used for mostly forward looking implications
- Common uses of financial statements:
 - To determine the ability of a business to generate cash, and the sources and uses of that cash.
 - To determine whether a business has the capability to pay back its debts.
 - To track financial results on a trend line to spot any looming profitability issues.
 - To derive financial ratios from the statements that can indicate the condition of the business.
 - To investigate the details of certain business transactions, as outlined in the disclosures that accompany the statements.

Basic Accounting

- 3 main financial statements
 - Balance sheet
 - Income statement
 - Statement of cash flows
- Balance Sheet: The balance sheet presents a snapshot of the firm's assets (uses of funds) and liabilities + equity (sources of funds) at one particular moment. Reflects book values, not market values. Assets must always equal liabilities.
- Income Statement: Shows how profitable the firm has been during a certain period of time. It's also based on book values and accounting rules. Profits are not necessarily received as cash.
- Statement of cash flows: shows all of the firm's cash inflows and outflows. These includes operations (normal business operations) as well as from its investments and financing activities.

Balance Sheet

- The assets—representing the uses of the funds raised—are listed on the left-hand side of the balance sheet. The liabilities—representing the sources of that funding—are listed on the right.
- Within each section, items are ordered according to their liquidity, or how easily they can be converted into cash.
- Current assets (liabilities) are those that are expected to turn into cash (so either received as cash or paid in cash) within one year.
- Fixed assets (Long term liabilities) are those that are expected to turn into cash in over a year.
- Equity = Total Assets – Total Liabilities => Whatever is left after paying everything the company owes => Residual claim on assets.



Balance Sheet

TABLE 3.1 Home Depot's balance sheet (figures in \$ millions)

Assets	End of Fiscal		Liabilities and Shareholders' Equity	End of Fiscal	
	2012	2011		2012	2011
Current assets			Current liabilities		
Cash and marketable securities	2,494	1,987	Debt due for repayment	1,321	30
Receivables	1,395	1,252	Accounts payable	8,871	8,173
Inventories	10,710	10,360	Other current liabilities	1,270	1,183
Other current assets	773	866	Total current liabilities	11,462	9,386
Total current assets	15,372	14,465			
Fixed assets			Long-term debt	9,475	10,798
Tangible fixed assets			Deferred income taxes	319	212
Property, plant, and equipment	38,491	37,059	Other long-term liabilities	2,051	2,161
Less accumulated depreciation	14,422	12,738	Total liabilities	23,307	22,557
Net tangible fixed assets	24,069	24,321			
Intangible asset (goodwill)	1,170	1,267	Shareholders' equity		
Long-term investments	140	138	Common stock and other paid-in capital	8,433	7,649
Other assets	333	551	Retained earnings	20,038	17,246
Total assets	41,084	40,742	Treasury stock	-10,694	-6,710
			Total shareholders' equity	17,777	18,185
			Total liabilities and shareholders' equity	41,084	40,742

Note: Column sums subject to rounding error

Source: Derived from Home Depot annual reports

Book vs Market Value

- Market values of assets and liabilities do not generally equal their book values. Book values are based on historical or original values. Market values measure current values of assets and liabilities.
- The difference between the market values of assets and liabilities is the market value of the shareholders' equity claim. The stock price is simply the market value of shareholders' equity divided by the number of outstanding shares.
- Which one should shareholders (and managers) care about?

CAPEX - Depreciation

- In more advanced finance courses (and certainly in accounting courses), you will learn in detail how to create a balance sheet, how to input and forecast each account.
- For this course, we will mostly be concerned with depreciation, due to its fundamental impact in cash-flows.
- Large investments (also known as capital expenditures, or CAPEX) require large amounts of money. This expense can be quite large compared to the sales of a company.
- If an investment will allow the company to generate income for many years, how should we allocate its cost through time?
 - All at once?
 - At the end?
 - Little each year?

Depreciation

- We will simplify the different depreciation rules and use only linear depreciation over useful life.
- To calculate depreciation (or how much of the CAPEX we are going to consider an expense during a reporting period), we need 3 inputs:
 - Historical cost, useful life and residual value
- Historical cost: How much it cost to acquire
- If an asset can be used for 5 years, then it's useful life is 5 years (there are rules for useful life too...)
- Residual value: How much can the company sell the asset AFTER the useful life is over. In this case, after 5 years.

Depreciation example

- A company acquires a fleet of trucks for \$100 million. The trucks will be used for 4 years. After the 4 years have passed, the company will sell the fleet form \$20 million.
- Annual depreciation = $\frac{\text{Historical Cost} - \text{Residual Value}}{\text{Useful Life}} = \frac{\$100 - \$20}{4} = \20 M per year
- A company acquires software for \$30 million. The software will be used for 3 years. After the 3 years have passed, the company will stop using the software and won't be able to resell it.

Common Size - Balance Sheet

TABLE 3.2 Common-size balance sheet of Home Depot (all items expressed as a percentage of total assets)

Assets	End of Fiscal		Liabilities and Shareholders' Equity	End of Fiscal	
	2012	2011		2012	2011
Current assets			Current liabilities		
Cash and marketable securities	6.1%	4.9%	Debt due for repayment	3.2%	0.1%
Receivables	3.4	3.1	Accounts payable	21.6	20.1
Inventories	26.1	25.4	Other current liabilities	3.1	2.9
Other current assets	1.9	2.1	Total current liabilities	27.9	23.0
Total current assets	37.4	35.5			
Fixed assets			Long-term debt	23.1	26.5
Tangible fixed assets			Deferred income taxes	0.8	0.5
Property, plant, and equipment	93.7	91.0	Other long-term liabilities	5.0	5.3
Less accumulated depreciation	35.1	31.3			
Net tangible fixed assets	58.6	59.7	Total liabilities	56.7	55.4
Intangible asset (goodwill)	2.8	3.1	Shareholders' equity:		
Long-term investments	0.3	0.3	Common stock and other paid-in capital	20.5	18.8
Other assets	0.8	1.4	Retained earnings	48.8	42.3
			Treasury stock	-26.0	-16.5
Total assets	100.0%	100.0%	Total shareholders' equity	43.3	44.6
			Total liabilities and shareholders' equity	100.0%	100.0%

Note: Column sums subject to rounding error

Income Statement

- If the balance sheet resembles a snapshot of the firm at a particular time, its income statement is like a video. It shows how profitable the firm has been during a period in time (usually month, quarter or a year).
- It can also be shown in “common size” format.
- It does not reflect cash movements:
 - CAPEX and Depreciation
 - Accrual accounting

	\$ Million	% of Sales
Net sales	74,754	100.0
Cost of goods sold	48,912	65.4
Selling, general, & administrative expenses	16,305	21.9
Depreciation	<u>1,684</u>	<u>2.3</u>
Earnings before interest and income taxes (EBIT)	7,853	10.5
Interest expense	632	0.8
Taxable income	7,221	9.7
Taxes	<u>2,686</u>	<u>3.6</u>
Net income	4,535	6.1
Allocation of net income		
Dividends	1,743	2.3
Addition to retained earnings	2,792	3.7

Source: Derived from Home Depot annual reports.

Accrual Accounting

- The income statement reflects values that might not have been received or paid in cash
 - Consumers pay with credit cards. The credit card company will usually transfer the amount to the company's bank account at the end of the month (and will bill the consumer by the end of the month). Yet, the sale is recorded in the income statement
 - Supplier gives the company 30 days to pay for product it uses in production, yet the cost of the goods sold is recorded in the income statement. Supplies that haven't been sold and are still in inventory are not recorded in the income statement (but are included in the Balance Statement)
- The simplest way to understand it is: in the income statement we account for transactions as if they were all paid in cash and all occur simultaneously. (This is not the accounting way, just my simplification)
- So, if we see there is a profit in the Income Statement, what does it mean?
- Can shareholders “withdraw” that profit?
- Should shareholders (and managers) maximize profits?

Statement of Cash-Flows

- Shows the firm's cash inflows and outflows from operations, investments and financing activities.
 - I prefer to say it simply shows all cash-flow, and it's divided into operations, investments and financing activities.
- Cash-flow from operations: reflects the normal business of the company. Start with net income and then adjust for all account movement that did not involve cash.
- Cash-flow from investments: My definition, everything that is either an expense or income that affects more than one year, so purchase or sale of assets to be used for over one year. (and it's depreciation)
- Cash-flow from financing: Any change in liabilities or equity that is not in operations. So, issuance or repayment of debt, interests, issuance or repurchase of stock, dividend payments.

Statement of Cash-Flows

Cash provided by operations	
Net income	4,535
Depreciation	1,684
Changes in working capital items	
Decrease (increase) in accounts receivable	-143
Decrease (increase) in inventories	-350
Decrease (increase) in other current assets	93
Increase (decrease) in accounts payable	698
Increase (decrease) in other current liabilities	87
Total decrease (increase) in working capital	385
Cash provided by operations	6,604
Cash flows from investments	
Cash provided by (used for) disposal of (additions to) property, plant, and equipment	-1,432
Sales (acquisitions) of other long-term assets	313
Cash provided by (used for) investments	-1,119
Cash provided by (used for) financing activities	
Additions to (reduction in) short-term debt	1,291
Additions to (reduction in) long-term debt	-1,323
Dividends	-1,743
Issues of stock	784
Repurchases of stock	-3,984
Other	-3
Cash provided by (used for) financing activities	-4,978
Net increase (decrease) in cash and cash equivalents	507

Source: Calculated from data in Tables 3.1 and 3.3.

- 2 key terms:
- Net working capital:
 - Difference between current assets and current liabilities
 - Amount that needs to be kept in the company to ensure operations
 - Increase in NWC implies more money needs to be kept in the company
- Free cash flow:
 - Cash-flow from operations + Cash-flow from investments
 - Cash that's left to pay financiers: Debt or Equity.
 - Debt should be paid first

The most important take-aways

- Profit is important because it measures how much money the company could legally distribute
- Free cash-flow is important because it measures how much money the company could physically distribute
- If you distribute money that you shouldn't (legally), you are in trouble
- If you don't have money to physically distribute, you are also in trouble
- Profitable companies can be bankrupt
- Cash generating companies can be bankrupt

Taxes

- There is a section that discusses taxes... not important for this part of the course.
- Just remember:
 - Corporations are separate entities from shareholders, so each pays taxes on their own.
 - Dividends are paid after taxes (Corporation pays taxes and then distributes dividends)
 - Shareholders pay taxes on the dividends they receive and on the capital gain/loss from buying and selling shares (Person is also taxed)
 - This would be double-taxation. In some countries this doesn't happen
 - Interest payments are considered an expense, so they reduce tax payments
 - If a company can choose, it would prefer to pay interest than to pay dividends (all things equal), as interest reduces the amount of taxes it has to pay. More on this with Prof. Shen

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Recap and preview next class

Measuring financial performance

- Why?
- What?
- How?
- Who?
- When?
- Different reasons, different accounts, different methods, different analysts and audiences, at different times.

Measuring financial performance

- They are very simple numeric calculations (something over something), ruled by common sense
- You'll have a list with formulas and simple explanation
- You need to know when to use them

You already know financial analysis

- Common sense...
- What would you look at to see if a company is:
 - Profitable?
 - More profitable than before?
 - More profitable than the rest of companies in the industry?
- Efficient? (Using resources well)
 - More than before?
 - More than the rest?

Value creation

- Market value or market capitalization: Total market value of equity, equal to share price times number of shares outstanding.
 - 1,754 million shares at \$67.30 per share = \$118.044 million
- Book value of equity: What the balance statement says
 - \$17,777 million
- Market value added: Difference between...
 - Which should be higher?
 - \$100,267 million
- Should we care about how many dollars of value are created or how many dollars of value compared to how many dollars were invested?
 - Market to book ratio = $\frac{\text{market value of equity}}{\text{book value of equity}}$

Economic value added

- Economic value added (EVA): Net income minus a charge for the cost of capital employed. Also called *residual income*.
 - Considers the alternative cost of investing capital. How much could I get from investing in another business of similar risk.
- Here we consider all long term capital (liabilities and equities). Sum of long term liabilities and all equity.
 - For 2011, total capitalization would be \$28,983 million, \$10,798 million of long-term debt and \$18,185 million of shareholders' equity.
 - Cost of capital, or the best alternative return for the same level of risk is 8%.
 - So, in 2012, the business should generate at least $8\% \times \$28,983 \text{ million} = \$2,319 \text{ million}$
 - From income statement: net income = \$ 4,535 million
 - Interest paid to debt= \$632 million, minus tax savings (1-35%) = \$411 million

$$\begin{aligned} \text{EVA} &= \text{after-tax interest} + \text{Net Income} - (\text{cost of capital} \times \text{total capitalization}) \\ &= \$411 + \$4,535 - \$2,319 = \$2,627 \text{ million.} \end{aligned}$$

- Value creation above and beyond what should be expected in the business

Economic value added

- Again, we can ask what should we care about?
 - Dollars of EVA
 - Dollars of EVA compared to Dollars in Total Capitalization?
- Return on capital (ROC): Net income plus after-tax interest as a percentage of long-term capital.
- Return on Assets (ROA)?
 - Net income plus after-tax interest as a percentage of total assets.
- Return on Equity (ROE)?
 - Net income plus after-tax interest as a percentage of total equity.

Sample of performance measures

TABLE 4.6 Summary of Home Depot's performance measures

Performance Measures		
Market value added (\$ millions)	market value of equity – book value of equity	\$100,267
Market-to-book ratio	market value of equity ÷ book value of equity	6.6
Profitability Measures		
Return on assets (ROA)	after-tax operating income/total assets	12.1%
Return on capital (ROC)	after-tax operating income/(long-term debt + equity)	17.1%
Return on equity (ROE)	net income/equity	24.9%
EVA* (\$ millions)	after-tax operating income – cost of capital × capital	\$2,627
Operating profit margin	after-tax operating income/sales	6.6%
Efficiency Measures		
Asset turnover	sales/total assets at start of year	1.83
Receivables turnover	sales/receivables at start of year	60
Average collection period (days)	receivables at start of year/daily sales	6.1
Inventory turnover	cost of goods sold/inventory at start of year	4.7
Days in inventory	inventories at start of year/daily cost of goods sold	77
Leverage Measures		
Long-term debt ratio	long-term debt/(long-term debt + equity)	35%
Long-term debt-equity ratio	long-term debt/equity	53%
Total debt ratio	total liabilities/total assets	57%
Times interest earned	EBIT/interest payments	12.4
Cash coverage ratio	(EBIT + depreciation)/interest payments	15.1
Liquidity Measures		
Net working capital to assets	net working capital/total assets	0.10
Current ratio	current assets/current liabilities	1.34
Quick ratio	(cash + marketable securities + receivables)/current liabilities	0.34
Cash ratio	(cash + marketable securities)/current liabilities	0.22
Growth Measure		
Payout ratio	dividends/earnings	0.38

Efficiency measures

- Asset Turnover Ratio or sales-to-assets ratio: shows how much sales are generated by each dollar of total assets.

$$\text{Asset turnover} = \frac{\text{sales}}{\text{total assets at start of year}} = \frac{74,754}{40,742} = 1.83$$

- Inventory Turnover: how much of the cost of sales are generated by the inventory.

$$\text{Inventory turnover} = \frac{\text{cost of goods sold}}{\text{inventory at start of year}} = \frac{48,912}{10,360} = 4.7$$

- Average days in inventory: how many days of output are generated by the inventory.

$$\text{Average days in inventory} = \frac{\text{inventory at start of year}}{\text{daily cost of goods sold}} = \frac{10,360}{48,912/365} = 77 \text{ days}$$

Efficiency measures

- Receivables turnover: measures the firm's sales as a multiple of its receivables.

$$\text{Receivables turnover} = \frac{\text{sales}}{\text{receivables at start of year}} = \frac{74,754}{1,252} = 60$$

- Average collection period: average length of time for customers to pay their bills.

$$\text{Average collection period} = \frac{\text{receivables at start of year}}{\text{average daily sales}} = \frac{1,252}{74,754/365} = 6.1 \text{ days}$$

Financial Leverage measures

- Why is debt called “leverage”?
- Debt ratios:

$$\text{Long-term debt ratio} = \frac{\text{long-term debt}}{\text{long-term debt} + \text{equity}} = \frac{9,475}{9,475 + 17,777} = .35, \text{ or } 35\%$$

$$\text{Long-term debt-equity ratio} = \frac{\text{long-term debt}}{\text{equity}} = \frac{9,475}{17,777} = .53, \text{ or } 53\%$$

$$\text{Total debt ratio} = \frac{\text{total liabilities}}{\text{total assets}} = \frac{23,307}{41,084} = .57, \text{ or } 57\%$$

Financial Leverage measures

- Times interest earned ratio: How many times can the firm pay interest, given the level of earnings before interests and taxes.

$$\text{Times interest earned} = \frac{\text{EBIT}}{\text{interest payments}} = \frac{7,853}{632} = 12.4$$

- Cash coverage ratio: how many times can the firm pay interest, given the “operational cash-flow” the company generates.

$$\text{Cash coverage ratio} = \frac{\text{EBIT} + \text{depreciation}}{\text{interest payments}} = \frac{7,853 + 1,684}{632} = 15.1$$

Liquidity measures

- Liquidity: how fast the company can turn assets into cash.
- Is liquidity good? Should companies try to increase their “liquid” assets?
- Net Working Capital to Total Assets Ratio:
 - Current assets include cash, marketable securities, inventories, and accounts receivable. Current assets are mostly liquid. The difference between current assets and current liabilities is known as net working capital. Since current assets usually exceed current liabilities, net working capital is usually positive and represents the need of short term capital.

$$\frac{\text{Net working capital}}{\text{Total assets}} = \frac{3,910}{41,084} = .10, \text{ or } 10\%$$

Liquidity measures

- Current Ratio: ratio of current assets to current liabilities
 - Is this usually greater than 1 or less than 1?

$$\text{Current ratio} = \frac{\text{current assets}}{\text{current liabilities}} = \frac{15,372}{11,462} = 1.34$$

- Quick (Acid-Test) Ratio: Excludes Inventories from numerator

$$\text{Quick ratio} = \frac{\text{cash} + \text{marketable securities} + \text{receivables}}{\text{current liabilities}} = \frac{2,494 + 1,395}{11,462} = .34$$

- Cash Ratio:

$$\text{Cash ratio} = \frac{\text{cash} + \text{marketable securities}}{\text{current liabilities}} = \frac{2,494}{11,462} = .22$$

Du-Pont

- Decomposition of ratios
- Next class we'll start with this

Agenda

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Recap and preview next class

Recap of today

- Which are the 3 main financial statements?
- Tell us 3 things about:
 - Balance Sheet
 - Income Statement
 - Statement of Cashflows
- Why do we:
 - use ratios?
 - compare ratios to a benchmark?
 - use industry or competitors as a benchmark?
 - use time trend or evolution over time as a benchmark?

Preview

- Less reading. Chapters 5 and 8
- Problem set due at the beginning of the class
 - Available tomorrow on Canvas. Will be much shorter than today's.
- Next class:
 - Time value of money
 - Net Present Value and Investment Decision Criteria