Accounting Essentials

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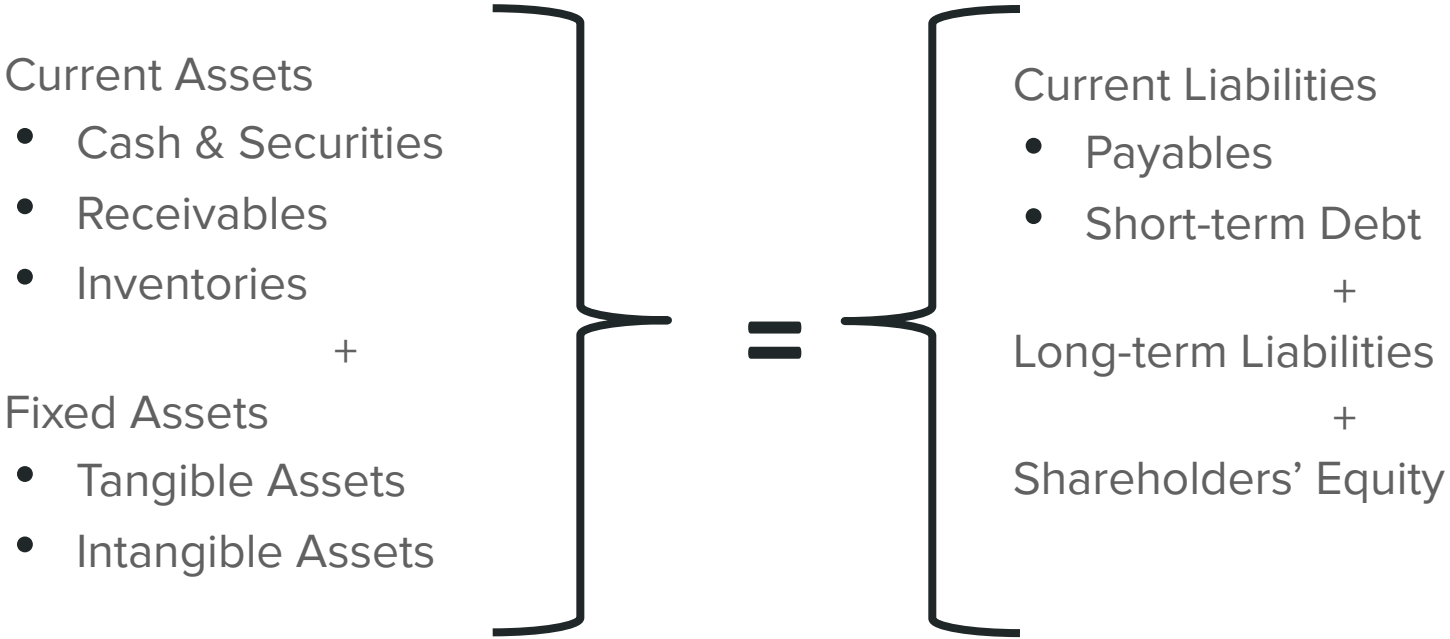
Agenda

1. The Balance Sheet
2. The Income Statement
3. The Statement of Cash Flows
4. Taxes

The Balance Sheet

Financial statement that shows the value of the firm’s assets and liabilities at a particular time (from an accounting perspective)

The Main Balance Sheet Items



Example

Balance sheet items are usually entered in order of declining liquidity. Place each of the terms below in the appropriate place in the following balance sheet

Accounts payable	Total current assets
Net fixed assets	Accounts receivable
Debt due for repayment	Total current liabilities
Cash and marketable securities	Inventories
Equity	Long-term debt

Assets	Liabilities and Equity
a.	f.
b.	g.
c.	h.
d.	i.
e.	j.
Total assets	Total liabilities and equity

Example Solution

Assets		Liabilities and Equity	
a.	Cash and marketable securities	f.	Debt due for repayment
b.	Accounts receivable	g.	Accounts payable
c.	Inventories	h.	Total current liabilities
d.	Total current assets	i.	Long-term debt
e.	Net fixed assets	j.	Equity
	Total assets		Total liabilities and equity

An Example Balance Sheet

Home Depot, Dec 31, 2017 ($ Millions)

Assets	End of fiscal 2017	2016	Liabilities and shareholders' equity	End of fiscal 2017	2016
Current assets					
Cash and marketable securities	3,595	2,538	Current liabilities		
Receivables	1,952	2,029	Debt due for repayment	2,761	1,252
Inventories	12,748	12,549	Accounts payable	11,628	11,212
Other current assets	638	608	Other current liabilities	1,805	1,669
Total current assets	18,933	17,724	Total current liabilities	16,194	14,133
Fixed Assets			Long-term debt	24,267	22,349
Tangible fixed assets			Other long-term liabilities	2,614	2,151
Property, plant, and equipment	41,413	40,426			
Less accumulated depreciation	19,339	18,512	Total liabilities	43,075	38,633
Net tangible fixed assets	22,075	21,914			
			Shareholders' equity:		
Intangible asset (goodwill)	2,275	2,093	Common stock and other paid-in capital	9,715	9,010
Other assets	1,246	1,235	Retained earnings	39,935	35,517
			Treasury stock	(48,196)	(40,194)
			Total shareholders' equity	1,454	4,333
Total Assets	44,529	42,966			
			Total liabilities and shareholders' equity	44,529	42,966

Example

Construct a balance sheet for Sophie's Sofas given the following data. What is shareholders' equity?

1. Cash balances = $10,000
2. Inventory of sofas = $200,000
3. Store and property = $100,000
4. Accounts receivable = $22,000
5. Accounts payable = $17,000
6. Long-term debt = $170,000

Example Solution

BALANCE SHEET OF SOPHIE'S SOFAS			
Assets		**Liabilities & Shareholders' Equity**	
Cash	$ 10,000	Accounts payable	$ 17,000
Accounts receivable	22,000	Long-term debt	170,000
Inventory	200,000	Shareholders' equity	145,000
Store and property	100,000		
Total assets	$ 332,000	Total liabilities & shareholders' equity	$ 332,000

Common Size Balance Sheet: All items expressed as a percentage of total assets

Home Depot Common Size Balance Sheet (December 31, 2017) $ Millions

	End of fiscal			End of fiscal	
Assets	**2017**	**2016**	**Liabilities and shareholders' equity**	**2017**	**2016**
Current assets			Current liabilities		
Cash and marketable securities	8.1%	5.9%	Debt due for repayment	6.2%	2.9%
Receivables	4.4%	4.7%	Accounts payable	26.1%	26.1%
Inventories	28.6%	29.2%	Other current liabilities	4.1%	3.9%
Other current assets	1.4%	1.4%	Total current liabilities	36.4%	32.9%
Total current assets	42.5%	41.3%			
			Long-term debt	54.5%	52.0%
Fixed Assets			Other long-term liabilities	5.9%	5.0%
Tangible fixed assets					
Property, plant, and equipment	93.0%	94.1%	Total liabilities	96.7%	89.9%
Less accumulated depreciation	43.4%	43.1%			
Net tangible fixed assets	49.6%	51.0%	Shareholders' equity:		
	0.0%	0.0%	Common stock and other paid-in capital	21.8%	21.0%
Intangible asset (goodwill)	5.1%	4.9%	Retained earnings	89.7%	82.7%
Other assets	2.8%	2.9%	Treasury stock	-108.2%	-93.5%
			Total shareholders' equity	3.3%	10.1%
Total Assets	100.0%	100.0%	Total liabilities and shareholders' equity	100.0%	100.0%

Example

Here are the 2018 and 2019 (incomplete) balance sheets for Newble Oil Corp.

BALANCE SHEET AT END OF YEAR (Figures in $ millions)					
Assets	**2018**	**2019**	**Liabilities and Shareholders' Equity**	**2018**	**2019**
Current assets	$ 310	$ 420	Current liabilities	$210	$240
Net fixed assets	1,200	1,420	Long-term debt	830	920

a. What was shareholders' equity at the end of 2018?
b. What was shareholders' equity at the end of 2019?
c. If Newble paid dividends of $100 in 2019 and made no stock issues or buybacks, what must have been net income during the year?
d. If Newble purchased $300 in fixed assets during 2019, what must have been the depreciation charge on the income statement?
e. What was the change in net working capital between 2018 and 2019?
f. If Newble issued $200 of new long-term debt, how much debt must have been paid off during the year?

Example Solution

a&b.
Shareholders' equity = Total assets – Total liabilities (as shown in the balance sheet above)
$470 = $1,510 − $1,040
$680 = $1,840 − $1,160

c.
If the firm issued no stock, the increase in Shareholders' equity must be due entirely to retained earnings. Since Shareholders' equity increased by $210 and dividends were $100, net income must have been $310.

d.
Since net fixed assets increased by $220, and the firm purchased $300 of new fixed assets, the depreciation charge must have been $80.

e.
Net working capital increased by $80, from ($310 – $210) = $100 in 2018 to ($420 – $240) = $180 in 2019.

f.
Since long-term debt increased by $90, and the firm issued $200 of new long-term debt, $110 of outstanding debt must have been paid off.

Book Values and Market Values

- Book Values
  - Value of assets or liabilities according to the balance sheet
  - Backward-looking: Historical cost adjusted for depreciation
- Market Values
  - The value of assets or liabilities were they to be resold in a market
  - Forward-looking: Depends on the profits investors expect the assets to provide
- Generally Accepted Accounting Principles (GAAP)
  - Procedures for preparing financial statements
- Equity and asset “market values” are usually higher than their “book values” (book value of equity is cash that shareholders have contributed in the past plus cash retained and reinvested by company)
- Short-term liability “market values” should be close to “book values”
- Long-term liability “market values” may be higher or lower than the book value
  - Suppose you owe 1 Million after many years: If interest rates rise after you have issued the debt, lenders may not be prepared to pay as much as $1 million for your debt; if interest rates fall, they may be prepared to pay more than $1 million.

Example

According to GAAP, your firm has equity worth $6 billion, debt worth $4 billion, assets worth $10 billion. The market values your firm's 100 million shares at $75 per share and the debt at $4 billion.

Q: What is the market value of your assets?

Example Solution

According to GAAP, your firm has equity worth $6 billion, debt worth $4 billion, assets worth $10 billion. The market values your firm's 100 million shares at $75 per share and the debt at $4 billion.

Q: What is the market value of your assets?

A: Since (Assets = Liabilities + Equity), your assets must have a market value of $11.5 billion

Book Value Balance Sheet	
Assets: $10 Billion	Liabilities: $4 Billion Equity: $6 Billion

Market Value Balance Sheet	
Assets: $11.5 Billion	Liabilities: $4 Billion Equity: $7.5 Billion

Example

Suppose that Home Depot borrows $500 million by issuing new long-term bonds. It places $100 million of the proceeds in the bank and uses $400 million to buy new machinery. What items of the balance sheet would change? Would shareholders' equity change?

Example Solution

Suppose that Home Depot borrows $500 million by issuing new long-term bonds. It places $100 million of the proceeds in the bank and uses $400 million to buy new machinery. What items of the balance sheet would change? Would shareholders' equity change?

Answer:

Cash and equivalents would increase by $100 million. Property, plant, and equipment would increase by $400 million. Long-term debt would increase by $500 million. Shareholders' equity would not increase: Assets and liabilities have increased equally, leaving shareholders' equity unchanged.

The Income Statement

Financial statement that shows the revenues, expenses, and net income of a firm over a period of time (from an accounting perspective).

An Example Income Statement

Home Depot's Income Statement (December 31, 2017) $ Millions

	$ Million	% of Sales
Net sales	100,904	100.0%
Other income	325	0.3%
Cost of goods sold	66,548	66.0%
Selling, general & administrative exper	17,864	17.7%
Depreciation	2,062	2.0%
Earnings before interest and income ta	14,755	14.6%
Interest expense	1,057	1.0%
Taxable income	13,698	13.6%
Taxes	5,068	5.0%
Net income	8,630	8.6%
Allocation of net income		
Dividends	4,212	4.2%
Addition to retained earnings	4,418	4.4%

Earnings Before Interest and Taxes (EBIT) Calculation

EBIT = total revenues + other income - costs - depreciation

= 100,904 + 325 - (66,547 + 17,864) - 2,062

= $ 14,755 million

Example

A firm's income statement included the following data. The firm's average tax rate was 20%.

Cost of goods sold	$8,000
Income taxes paid	$2,000
Administrative expenses	$3,000
Interest expense	$1,000
Depreciation	$1,000

a. What was the firm's net income?
b. What must have been the firm's revenues?
c. What was EBIT?

Example Solution

a.

If the firm paid income taxes of $2,000 and the average tax rate was 20%, then taxable income must have been: $2,000 / 0.20 = $10,000.

Therefore: Net income = Taxable income − Taxes = $8,000

b.

Revenues	$???	
Cost of goods sold	−8,000	
Administrative expenses	−3,000	
Depreciation expense	−1,000	
Interest expense	−1,000	
Taxable income	$ 10,000	[from part (a)]

We conclude that revenues were $23,000.

c.

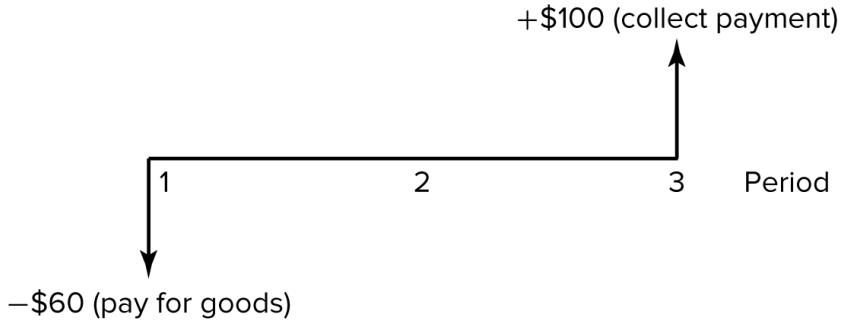
Revenues	$ 23,000
Cost of goods sold	−8,000
Administrative expenses	−3,000
Depreciation expense	−1,000
EBIT	$ 11,000

Profits vs. Cash Flows

- Depreciation
  - “Profits” subtract depreciation (a non-cash expense)
  - “Profits” ignore cash expenditures on new capital (the expense is capitalized)
  - To calculate the cash produced by the business, it is necessary to add the depreciation charge (which is not a cash payment) back to accounting profits and to subtract the expenditure on new capital equipment (which is a cash payment)
- Accrual Accounting
  - “Profits” record income and expenses at the time of sales, not when the cash exchanges actually occur
  - “Profits” do not consider changes in working capital

Profits vs. Cash Flows (Illustration)

Consider a manufacturer that spends $60 to produce goods in period 1. In period 2 it sells these goods for $100, but its customers pay their bills with a delay, so payment is not received until period 3. The following diagram shows the firm's cash flows. In period 1 there is a cash *outflow* of $60. Then, when customers pay their bills in period 3, there is an *inflow* of $100.



Income Statement	
Revenue	$100
Less Cost of Goods Sold	$60
Profit	$40

Example

Consider a firm that spends $200 to produce goods in period 1. In period 2, it sells half of those goods for $150, but it doesn’t collect payment until one period later. In period 3, it sells the other half of the goods for $150, and it collects payment on these sales in period 4. Calculate the profits and the cash flows for this firm in periods 1 to 4.

Example Solution

	1	2	3	4
Cashflow	-200	0	150	150
Profit	0	50	50	0

Profits in period 2 and 3 are 150 - ½ (100) = 50 each.

Example

South Sea Baubles has the following (incomplete) balance sheet and income statement.

BALANCE SHEET AT END OF YEAR
(Figures in $ millions)

Assets	2018	2019	Liabilities and Shareholders' Equity	2018	2019
Current assets	$ 90	$140	Current liabilities	$ 50	$ 60
Net fixed assets	800	900	Long-term debt	600	750

INCOME STATEMENT, 2019
(Figures in $ millions)

Revenue	$1,950
Cost of goods sold	1,030
Depreciation	350
Interest expense	240

Example

a. What is shareholders' equity in 2018?
b. What is shareholders' equity in 2019?
c. What is net working capital in 2018?
d. What is net working capital in 2019?
e. What are taxes paid in 2019? Assume the firm pays taxes equal to 21% of taxable income.
f. Net fixed assets increased from $800 million to $900 million during 2019. What must have been South Sea's *gross* investment in fixed assets during 2019?

Example Solution

a&b.
Shareholders' equity = Total assets – Total liabilities
2018: Shareholders' equity = $890 – $650 = $240
2019: Shareholders' equity = $1,040 – $810 = $230

c&d.
Net working capital = Current assets – Current liabilities
2018: Net working capital = $90 – $50 = $40
2019: Net working capital = $140 – $60 = $80

e.
Taxable income = $1,950 – $1,030 – $350 – $240 = $330
Taxes paid = 0.21 × $330 = $69.30
Net income = $260.70

f.
Gross investment = Increase in net fixed assets + Depreciation
= $100 + $350 = $450

The Statement of Cash Flows

Financial statement that shows the firm’s cash receipts and cash payments over a period of time.

An Example Statement of Cash Flows

Home Depot Statement of Cash Flows (December 31, 2017) $ Millions

Cash provided by operations:	
Net income	8,630
Depreciation	2,062
Changes in working capital items	
Decrease (increase) in accounts receivable	139
Decrease (increase) in inventories	(84)
Decrease (increase) in other current assets	(10)
Increase (decrease) in accounts payable	352
Increase (decrease) in other current liabilities	669
Total decrease (increase) in working capital	1,066
Cash provided by operations	11,758

Cash flows from investments:	
Capital expenditure	(1,897)
Sales (acquisitions) of long-term assets	47
Other investing activities	(105)
Cash provided by (used for) investments	(1,955)
Cash provided for (used by) financing activities:	
Increase (decrease) in short-term debt	850
Increase (decrease) in long-term debt	2,448
Dividends	(4,212)
Repurchases of stock	(7,745)
Other	(211)
Cash provided by (used for) financing activities	(8,870)
Net increase (decrease) in cash and cash equivalents	933

An Example Statement of Cash Flows

Home Depot Statement of Cash Flows (December 31, 2017) $ Millions

Cash provided by operations	11,758
Cash provided by (used for) investments	(1,955)
Cash provided by (used for) financing activities	(8,870)
Net increase (decrease) in cash and cash equivalents	933

Example

Would the following activities increase or decrease the firm's cash balance?

- Inventories are increased.
- The firm reduces its accounts payable.
- The firm issues additional common stock.
- The firm buys new equipment.

Example Solution

Would the following activities increase or decrease the firm's cash balance?

- Inventories are increased.
  - An increase in inventories uses cash, reducing the firm's net cash balance.
- The firm reduces its accounts payable.
  - A reduction in accounts payable uses cash, reducing the firm's net cash balance.
- The firm issues additional common stock.
  - An issue of common stock is a source of cash.
- The firm buys new equipment.
  - The purchase of new equipment is a use of cash, and it reduces the firm's net cash balance.

Example

Candy Canes Inc. spends $100,000 to buy sugar and peppermint in April. It produces its candy and sells it to distributors in May for $150,000, but it does not receive payment until June. Assuming that sales in April and June are zero, fill in the following table.

	Sales	Net Income	Cash Flow
April	a.	b.	c.
May	d.	e.	f.
June	g.	h.	i.

Example Solution

Candy Canes Inc. spends $100,000 to buy sugar and peppermint in April. It produces its candy and sells it to distributors in May for $150,000, but it does not receive payment until June. Assuming that sales in April and June are zero, fill in the following table.

Candy Canes Inc.	April	May	June
Sales	$ 0	$ 150,000	$ 0
Cash flow*	(100,000)	0	150,000
Net income**	0	50,000	0

Free Cash Flow

Cash available for distribution to investors after firm pays for new investments or additions to working capital.

Free Cash Flow = Net Income + interest + depreciation - additions to net working capital + Cashflow from Investments

Home Depot free cash flow = $8,630 + $1,057 + $2,062 + $1,066 - $1,955 = $10,860

Alternatively,

Free Cash Flow = Interest + Cashflow from Operations + Cashflow from Investments

Example

The following table shows an abbreviated income statement and balance sheet for Quick Burger Corporation for 2019.

BALANCE SHEET OF QUICK BURGER CORP., 2019
(Figures in $ millions)

Assets	2019	2018	Liabilities and Shareholders' Equity	2019	2018
Current assets			**Current liabilities**		
Cash and marketable securities	$ 2,336	$ 2,336	Debt due for repayment	–	$ 367
Receivables	1,375	1,335	Accounts payable	$ 3,403	3,143
Inventories	122	117	Total current liabilities	$ 3,403	$ 3,509
Other current assets	1,089	616			
Total current assets	$ 4,922	$ 4,403			
Fixed assets			Long-term debt	$13,633	$12,134
Property, plant, and equipment	$24,677	$22,835	Other long-term liabilities	3,057	2,957
Intangible assets (goodwill)	2,804	2,653	Total liabilities	$20,093	$18,600
Other long-term assets	2,983	3,099	Total shareholders' equity	15,294	14,390
Total assets	$35,387	$32,990	Total liabilities and shareholders' equity	$35,387	$32,990

INCOME STATEMENT OF QUICK BURGER CORP., 2019
(Figures in $ millions)

Net sales	$ 27,567
Costs	17,569
Depreciation	1,402
Earnings before interest and taxes (EBIT)	$ 8,596
Interest expense	517
Pretax income	8,079
Federal taxes (@ 21%)	1,697
Net income	$ 6,382

Example

In 2019 Quick Burger had capital expenditures (hint: this is cashflow from investments) of $3,049.

a. Calculate Quick Burger's free cash flow in 2019.
b. If Quick Burger was financed entirely by equity, how much more tax would the company have paid? (Assume a tax rate of 21%.)
c. What would the company's free cash flow have been if it was all-equity financed?

Example Solution

a. Additions to net working capital = (1375-1335)+(122-117)+(1089-616)-(3403-3143) = $258

   Free cashflow = 6382+517+1402-258-3049 = $4994

b. Tax increase due to $517 million more in taxable income = 517 x 0.21 = $108.57

c. Additions to net working capital = $258 (from above)

   Free cashflow = 6791+0+1402-258-3049 = $4886

Taxation Principles

1. Corporate Tax Rate is 21% in the US. In case of losses, the firm can carry the losses forward, using the losses to offset up to 80% of future years' income.
2. Interest is not taxable.

	Firm A	Firm B
EBIT	$100	$100
Interest	40	0
pretax income	60	100
Tax (21% of pretax income)	12.6	21
Net Income	47.4	79

3. Suppose, you were both the debt holder and equity holder, Firm A generates a total of 40+47.4= $87.4, while Firm B generates $79.

Personal Income Tax

1. Taxes have a major impact on financial decisions
2. Marginal Tax Rate is the tax that the individual pays on each extra dollar of income
3. Average Tax Rate is the total tax bill divided by total income

Taxable Income (dollars)		
Single Taxpayers	Married Taxpayers Filing Joint Returns	Tax Rate
0 - 9,525	0 - 19,050	10.0%
9,525 - 38,700	19,050 - 77,400	12.0%
38,700 - 82,500	77,400 - 165,000	22.0%
82,500 - 157,500	165,000 - 315,000	24.0%
157,500 - 200000	315,000 - 400,000	32.0%
200,000 - 500,000	400,000 - 600,000	35.0%
500,000 and above	600,000 and above	37.0%

Personal Income Tax

For a single person earning $50000,

Tax = (.10 x 9,525) + (.12 x 29,175) + (.22 x 11,300) = $6939.50

Average Tax Rate = 6939.50/50,000 = .139 or 13.9%

Example

a. What would be the marginal tax rate for a married couple with income of $90,000?
b. What would be the average tax rate for a married couple with income of $90,000?
c. What would be the marginal tax rate for an unmarried taxpayer with income of $90,000?
d. What would be the average tax rate for an unmarried taxpayer with income of $90,000?

Example Solution

a.
For a married couple, the marginal tax rate on $90,000 of income is 22%.

b.
Taxes = ($19,050 × 0.10) + (($77,400 – 19,050) × 0.12) + (($90,000 – 77,400) × 0.22) = $11,679
The average tax rate = $11,679 / $90,000 = 12.98%

c.
For a single person, the marginal tax rate on $90,000 of income is also 24%.

d.
Taxes = ($9,525 × 0.10) + (($38,700 – 9,525) × 0.12) + (($82,500 – 38,700) × 0.22) + (($90,000 – 82,500) × 0.24) = $15,889.50
The average tax rate = $15,889.50 / $90,000 = 17.66%

References

Much of this presentation is derived from the course textbook: Fundamentals of Corporate Finance by Richard A. Brealey, Stewart C. Myers and Alan J. Marcus, 10th edition, McGraw Hill Education.