Introduction to Accounting and Corporate Cash Flow

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Based on lecture materials from J. Weston, Rice University

Topics

- Financial statements
- Measure cash creation
- Free cash flow measures
- Terminal/salvage values
- DCF valuation

Main Financial Statement

- Balance Sheet
- Income Statement (Profit & Loss)
- Cash Flow Statement

Balance Sheet

- What does the firm own?
- How was it paid for?
- Assets = Liabilities + Owner's Equity
  - Equity = share value reflected to share holder, which is asset minus liability
- Real world example:
  - https://investor.bangkokhospital.com/en/downloads/financial-statements

Assets on the Balance Sheet

- Current Assets
    - Cash and marketable securities
        - Marketable securities are liquid financial instruments that can be quickly converted into cash at a reasonable price, e.g., share of other public companies
    - Accounts receivable
    - Inventories
- Property, Plant, and Equipment
    - Land, buildings, and machinery
    - Accumulated depreciation
- Other Assets (e.g. Intangibles)

The Other Side of the Balance Sheet

- Liabilities
  - Short-term (payables, current debt, etc.)
  - Long-term (deferred taxes, long-term debt)
- Shareholders equity
  - Preferred and common stock
  - Retained earnings

Income Statement

Net Sales (Revenue)

minus Cost of goods sold

minus SG&A expense

Selling, general, and administrative expense (SG&A) in a company's income statement includes all general and administrative expenses (G&A) as well as the direct and indirect selling expenses of the business.

= **EBITDA**

EBITDA = Earnings Before Interest, Taxes, Depreciation, and Amortization

minus Depreciation and Amortization

= **EBIT** ("pre-tax operating profit")

minus Interest expense

= Taxable income

minus Income tax

minus Dividends (if any) =

Net Income (Profit or "earnings")

Statement of Cash Flows

- Accrual method of accounting
  - Revenue is accounted for when it is earned before any money changes hands
  - This is in contrast to cash method of accounting where revenue is reported on the income statement only when cash is received and expenses are only recorded when cash is paid out
- Reports on cash movements across activities:
  - Operating (net income, depreciation)
  - Investing (capital expenditures, sale of assets)
  - Financing (dividends, new debt)
- Reconciles balance sheet/income statement

Financial Statements Examples – Amazon Case Study

https://corporatefinanceinstitute.com/resources/knowledge/accounting/financial-statements-example-amazon-case-study/

FINANCIAL STATEMENTS	Historical Results 2012	2013	2014	2015	2016	2017
Income Statement						
Revenue	**102,007**	**118,086**	**131,345**	**142,341**	**150,772**	**158,311**
Cost of Goods Sold (COGS)	39,023	48,004	49,123	52,654	56,710	58,575
Gross Profit	**62,984**	**70,082**	**82,222**	**89,687**	**94,062**	**99,736**
Expenses						
Salaries and Benefits	26,427	22,658	23,872	23,002	25,245	26,913
Rent and Overhead	10,963	10,125	10,087	11,020	11,412	10,000
Depreciation & Amortization	19,500	18,150	17,205	16,544	16,080	15,008
Interest	2,500	2,500	1,500	1,500	1,500	1,500
Total Expenses	**59,390**	**53,433**	**52,664**	**52,066**	**54,237**	**53,421**
Earnings Before Tax	**3,594**	**16,649**	**29,558**	**37,622**	**39,825**	**46,314**
Taxes	1,120	4,858	8,483	10,908	11,598	12,968
Net Earnings	**2,474**	**11,791**	**21,075**	**26,713**	**28,227**	**33,346**
Balance Sheet						
Assets						
Cash	167,971	181,210	183,715	211,069	239,550	272,530
Accounts Receivable	5,100	5,904	6,567	7,117	7,539	7,807
Inventory	7,805	9,601	9,825	10,531	11,342	11,715
Property & Equipment	45,500	42,350	40,145	38,602	37,521	37,513
Total Assets	**226,376**	**239,065**	**240,252**	**267,319**	**295,951**	**329,564**
Liabilities						
Accounts Payable	3,902	4,800	4,912	5,265	5,671	5,938
Debt	50,000	50,000	30,000	30,000	30,000	30,000
Total Liabilities	**53,902**	**54,800**	**34,912**	**35,265**	**35,671**	**35,938**
Shareholder's Equity						
Equity Capital	170,000	170,000	170,000	170,000	170,000	170,000
Retained Earnings	2,474	14,265	35,340	62,053	90,280	123,627
Shareholder's Equity	**172,474**	**184,265**	**205,340**	**232,053**	**260,280**	**293,627**
Total Liabilities & Shareholder'	**226,376**	**239,065**	**240,252**	**267,319**	**295,951**	**329,564**
Cash Flow Statement						
Operating Cash Flow						
Net Earnings	2,474	11,791	21,075	26,713	28,227	33,346
Plus: Depreciation & Amortization	19,500	18,150	17,205	16,544	16,080	15,008
Less: Changes in Working Capital	9,003	1,702	775	903	827	375
Cash from Operations	**12,971**	**28,239**	**37,505**	**42,354**	**43,480**	**47,980**
Investing Cash Flow						
Investments in Property & Equipment	15,000	15,000	15,000	15,000	15,000	15,000
Cash from Investing	**15,000**	**15,000**	**15,000**	**15,000**	**15,000**	**15,000**
Financing Cash Flow						
Issuance (repayment) of debt	-	-	(20,000)	-	-	-
Issuance (repayment) of equity	170,000	-	-	-	-	-
Cash from Financing	**170,000**	**-**	**(20,000)**	**-**	**-**	**-**
Net Increase (decrease) in Cash	167,971	13,239	2,505	27,354	28,480	32,980
Opening Cash Balance	-	167,971	181,210	183,715	211,069	239,550
Closing Cash Balance	**167,971**	**181,210**	**183,715**	**211,069**	**239,550**	**272,530**

Inferring Cash Flow from Financial Statements

Accounting Earnings Are Not Cash

- You cannot spend earnings
- Non-cash expenses
- Extraordinary items
  - One-time only cost that does not get booked as expenses
- Balance sheet changes
  - Does not reflect on the income statement, but may generate cash

Why Extracting Out Cash

- Only cash matters in the end
- Not all cash is paid out
- Need a measure of cash creation that is consistent over time and across firms
- Free Cash Flow (FCF)

Free Cash Flow (FCF)

- Ingredients:
  - Working capital
  - Depreciation (non-cash)
  - Capital expenditures
  - Asset sales (salvage, terminal)

$$
\begin{aligned}
\text{FCF} = {} & \text{Operating Profit (after tax)} \\
& - \text{Increase in WC} \\
& + \text{Depreciation} \\
& - \text{Capital expenditure} \\
& + \text{After-tax salvage value}
\end{aligned}
$$

FCF

- NPV, IRR, etc. based on cash
- Cash creation will drive valuation
- Measuring FCF is paramount

Working Capital

- Working Capital (WC) = Current Assets – Current Liabilities
- Operating liquidity
- WC represents an opportunity cost
  - Can turn it into cash and generate revenues
- Not included as an expense, but WC generates cash flow to the firm, and, hence, must be accounted for

Current Liabilities (CL)

- Liabilities to be settled < 1 year
- Accounts payable
- Current portion of debt due
- Increase in CL is a cash source
- Decrease in CL is a cash drain

Current Assets (CA)

- Sold, consumed, or exhausted in 1 year
- Accounts receivable
- Inventory
- Increase in CA is a cash drain
- Decrease in CA is a cash source

Working Capital Example

	0	1	2	3
Assets				
Current	100	125	135	100
Long-term Assets	150	150	150	150
Total Assets	250	275	285	250
Liabilities				
Current	75	65	65	100
Long-term Liabilities	80	80	80	80
Total Liabilities	155	145	145	180
Net Worth (Equity)	95	130	140	70
Working Capital	25	60	70	0
Change in WC	25	35	10	-70

FCF = Operating Profit (after tax)
– Increase in WC
+ Depreciation
– Capital expenditure
+ After-tax salvage value

Depreciation and Amortization

- Wear and Tear
- Loss of value
- Non-cash expense
- Amortization for intangibles
- These two are included in earnings in the firm's income statement

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\end{aligned}
$$

Capital Expenditures (CAPX)

- Buying/ replacing long-term assets
- Property, plant, equipment
- This spending not reported in earnings
- Need to be subtracted for FCF

$$
\begin{aligned}
\text{FCF} = \ & \text{Operating Profit (after tax)} \\
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\end{aligned}
$$

Salvage and Terminal Values

- CAPX is spending cash
- Selling assets generates cash
- Asset sales go into FCF

The End of a Project

- The balance sheet is real
- PP&E cannot vanish
- Balance sheet must "sweep clean"
- We have to sell off anything on the books!

$$\begin{aligned} \text{FCF} = \; & \text{Operating Profit (after tax)} \\ & - \text{Increase in WC} \\ & + \text{Depreciation} \\ & - \text{Capital expenditure} \\ & + \text{After-tax salvage value} \end{aligned}$$

Projected Balance Sheet	0	1	2
Cash and Marketable Sec.	$75	$75	$200
Other Current Assets	$0	$100	$75
Fixed Assets			
At cost	$500	$500	$500
Accumulated Depreciation	$0	$100	$200
Net Fixed Assets	$500	$400	$300
Total Assets	$575	$575	$575
Current liabilities	$75	$75	$75
LT Debt	$250	$250	$250
Total liabilities	$325	$325	$325
Stock and acc. ret. earnings	$250	$250	$250
Total liabilities and equity	$575	$575	$575

This is salvage/ terminal values

- Assets are an opportunity cost; at the end of the project, must make sure to trade it for others!
- Accounting term: sweep clean the book

FCF Example

Year	0	1	2	3
Revenue		$500	$500	$500
Total costs		$300	$300	$300
Depreciation		$100	$100	$100
EBIT		$100	$100	$100
Taxes (30%)		$30	$30	$30
NOPAT		$70	$70	$70
Capital Spending	$500	$0	$0	$0
Net PP&E	$500	$400	$300	$200
Cash from operations	$0	$170	$170	$170
Working Capital	$150	$100	$50	$0
Terminal (Asset Sales)	$0	$0	$0	$200
Free Cash Flow	**-$650**	**$220**	**$220**	**$420**

FCF and Capital Budgeting

https://tinyurl.com/56hc8pra

What We Have Learned

- Financial statements
  - Balance sheets
  - Income statements
  - Cash flow statements
- Extracting out free cash flow (FCF)
  - Formula for FCF calculation
- FCF usage in conjunction with capital budgeting