

Financial Accounting II

BUSI 721: Data-Driven Finance I

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A Simplified Balance Sheet

Long Term Assets

(Property, Plant & Equipment)

Long Term Liabilities

(Debt)

Short Term Operating Liabilities

(Payables)

Other Short Term Liabilities

(Short term debt)

Short Term Operating Assets

(Receivables, Inventory)

Shareholders Equity

Other Short Term Assets

(Cash, Marketable Securities)



Invested Capital

- The balance sheet balances: $LTA + STOA + OSTA = LTL + STOL + OSTL + SE$
- Therefore, $LTA + STOA - STOL = SE + LTL + OSTL - OSTA$
- Both sides are invested capital
 - Left-hand side is, roughly, Net PP&E plus NWC
 - Right-hand side is, roughly, Shareholders Equity + Net Debt
- Shareholders equity is capital contributed by shareholders plus the sum over all past years of net income minus dividends paid (retained earnings)



An Income Statement Example

Item	With interest	Without interest
EBIT	300	300
Less interest	(100)	0
Pre-tax income	200	300
Less taxes @ 30%	(60)	90
Net income	140	210

- What is the 70 difference? It is interest net of the tax deduction (70% of 100), i.e., the after-tax interest.
- So, to go from "with interest" to "without interest," we **add** the after-tax interest expense.



Return on Capital Employed

- On Monday,

$$\frac{\text{EBIAT}}{\text{Net PPE} + \text{NWC}}$$

- An equivalent definition:

$$\frac{\text{Net Income} + \text{After-tax Interest}}{\text{Shareholders Equity} + \text{Net Debt}}$$



Accounting for Acquisitions

- Suppose you buy a company for 100 million cash
- The company had assets of 150 million and liabilities of 70 million
- So, it had shareholders equity of 80 million
- The assets and liabilities (not shareholders equity) go directly on your balance sheet as they were on the target company's balance sheet.
- You are net adding assets of 50 million (assets of 150 but drawing down cash of 100).
- You are net adding liabilities of 70 million.
- How does the balance sheet balance? You add another asset of 20 million called "goodwill."



Accounting for Subsidiaries and Joint Ventures

- If Chevron owns a controlling interest (50%+) then income statement and balance sheet are consolidated.
 - At bottom of income statement, there is "income to noncontrolling interests" which is the part of the fraction of subsidiary income not owned by Chevron.
 - At bottom of balance sheet, there is "equity of noncontrolling interests," which is capital contributed by partners plus the sum over years of their part of income less dividends paid.
- If Chevron owns less than a controlling interest, then income and balance sheet **are not** consolidated.
 - At top of income statement, there is "income from equity affiliates," which is Chevron's part of the income.
 - Near the top of the balance sheet, there is "investments and advances," which is capital contributed by Chevron plus the sum over years of Chevron's part of net income less dividends received.



Basic Rules of Accrual Accounting

1. In income statement as + but not cash inflow \Rightarrow asset (like receivables)
 2. Not in income statement as – but cash outflow \Rightarrow asset (like PP&E)
 3. In income statement as – but not cash outflow \Rightarrow liability (like payables)
 4. Not in income statement as + but cash inflow \Rightarrow liability (like provision for warranties)
- Rules 1 & 2: Income statement overstates cash \Rightarrow asset
 - Rules 3 & 4: Income statement understates cash \Rightarrow liability
 - These are why subtracting Δ (assets-liabilities) from income produces cash.



Timing of Balance Sheets and Income Statements

- Balance sheet is at a point in time (end of fiscal year)
- Income statement describes things that happened during the fiscal year
- Compare income statement to beginning-of-year balance sheet?
- Or compare to end-of-year balance sheet?
- Usually average balance sheet items. Examples:
 - $\text{ROCE} = \text{net income} + \text{after-tax interest} / \text{average invested capital}$
 - $\text{asset turnover} = \text{sales} / \text{average assets}$
 - etc.



Profitability Ratios

- Gross profit margin = $(\text{revenue} - \text{COGS}) / \text{revenue}$
- Net profit margin = $\text{net income} / \text{revenue}$
- Return on equity = $\text{net income} / \text{shareholders equity}$
- Return on assets = $\text{net income} / \text{total assets}$
- ROCE (also called ROIC = return on invested capital)



Efficiency Ratios

- Asset turnover = $\text{revenue} / \text{assets}$
- Inventory turnover = $\text{COGS} / \text{inventory}$

Liquidity/Solvency Ratios

- Leverage ratio = $\text{assets} / \text{debt}$
- Debt to equity = $\text{debt} / \text{shareholders equity}$
- Current ratio = $\text{current assets} / \text{current liabilities}$
- Quick ratio = $(\text{current assets} - \text{inventory}) / \text{current liabilities}$



DuPont Analysis

$$\text{ROE} = \text{Net Profit Margin} \times \text{Asset Turnover} \times \text{Equity Multiplier}$$

$$\frac{\text{Net Income}}{\text{Equity}} = \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}}$$



Getting financial Sstatements with yfinance



```
In [15]: # !pip install --upgrade yfinance
import yfinance as yf

ticker = yf.Ticker('COP')
income_statement = ticker.financials
balance_sheet = ticker.balance_sheet
cash_flows = ticker.cashflow
```

```
In [16]: for item in income_statement.index:  
        print(item)
```

```
Tax Effect Of Unusual Items  
Tax Rate For Calcs  
Normalized EBITDA  
Total Unusual Items  
Total Unusual Items Excluding Goodwill  
Net Income From Continuing Operation Net Minority Interest  
Reconciled Depreciation  
Reconciled Cost Of Revenue  
EBITDA  
EBIT  
Net Interest Income  
Interest Expense  
Interest Income  
Normalized Income  
Net Income From Continuing And Discontinued Operation  
Total Expenses  
Diluted Average Shares  
Basic Average Shares  
Diluted EPS  
Basic EPS  
Diluted NI Availto Com Stockholders  
Net Income Common Stockholders  
Otherunder Preferred Stock Dividend  
Net Income  
Minority Interests  
Net Income Including Noncontrolling Interests
```




```
In [17]: for item in income_statement.columns:  
         print(item)
```

```
2022-12-31 00:00:00  
2021-12-31 00:00:00  
2020-12-31 00:00:00  
2019-12-31 00:00:00
```



```
In [18]: for item in balance_sheet.index:  
        print(item)
```

```
Treasury Shares Number  
Ordinary Shares Number  
Share Issued  
Net Debt  
Total Debt  
Tangible Book Value  
Invested Capital  
Working Capital  
Net Tangible Assets  
Common Stock Equity  
Total Capitalization  
Total Equity Gross Minority Interest  
Minority Interest  
Stockholders Equity  
Gains Losses Not Affecting Retained Earnings  
Other Equity Adjustments  
Treasury Stock  
Retained Earnings  
Additional Paid In Capital  
Capital Stock  
Common Stock  
Total Liabilities Net Minority Interest  
Total Non Current Liabilities Net Minority Interest  
Other Non Current Liabilities  
Employee Benefits  
Non Current Deferred Liabilities
```



```
In [19]: for item in balance_sheet.columns:  
         print(item)
```

```
2022-12-31 00:00:00  
2021-12-31 00:00:00  
2020-12-31 00:00:00  
2019-12-31 00:00:00
```

