Financial Accounting II

BUSI 721: Data-Driven Finance I

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A Simplified Balance Sheet

Long Term Assets

(Property, Plant & Equipment)

Short Term Operating Assets

(Receivables, Inventory)

Other Short Term Assets

(Cash, Marketable Securities)

Long Term Liabilities

(Debt)

Short Term Operating Liabilities

(Payables)

Other Short Term Liabilities

(Short term debt)

Shareholders Equity

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:

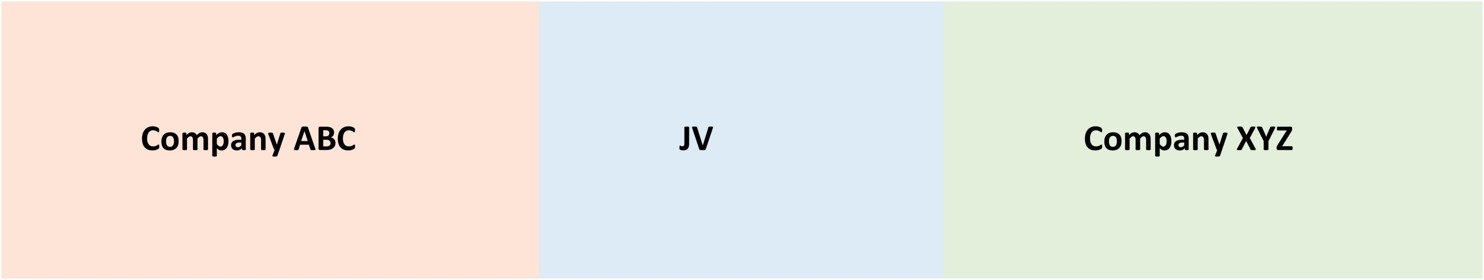
$$\frac{\text{Net Income} + \text{After-tax Interest}}{\text{Shareholders Equity} + \text{Net Debt}}$$

Accounting for Acquisitions

- Suppose you buy a company for 100 mllion 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 Subs and JVs

Suppose two companies jointly own a third company. Suppose ABC has two-thirds ownership.



- Because ABC has a controlling interest, all of the assets and liabilities of the joint venture are shown on ABC's balance sheet, just as if they were directly ABC's assets and liabilities.
- To reflect XYZ's part ownership, ABC shows a liability: "equity of noncontrolling interests." Also "income to noncontrolling interests" on income statement.
- XYZ's balance sheet reflects its part ownership by showing an asset: "investments and advances to equity affiliates." Also, in the income statement: "income from equity affiliates."

Company ABC	ABC Liability = XYZ Asset	Company XYZ

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:
    - ROCE = net income + after-tax interest / average invested capital
    - asset turnover = sales / average assets
    - etc.

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 statment, 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.

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Profitability Ratios

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

Efficiency Ratios

- Asset turnover = revenue / assets
- Inventory turnover = COGS / inventory

Liquidity/Solvency Ratios

- Leverage ratio = assets / debt
- Debt to equity = debt / shareholders equity
- Current ratio = current assets / current liabilities
- Quick ratio = (current assets - inventory) / 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 [20]:

```
# !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 [21]:

```
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 [22]:

```
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 [23]:

```
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 [24]:

```
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
```