Modeling and Plugs

F305 Intermediate Corporate Finance

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Slide Set B3 – Modeling and Plugs

Phase 2 of Valuation Project

What I'm looking for as we get to your final report/presentation:

The next step is to build an interactive model of the main financial statements

- Discuss the interactions between the statements
- Implement your best understanding of the firm's policy for managing growth
- Solve by iterations

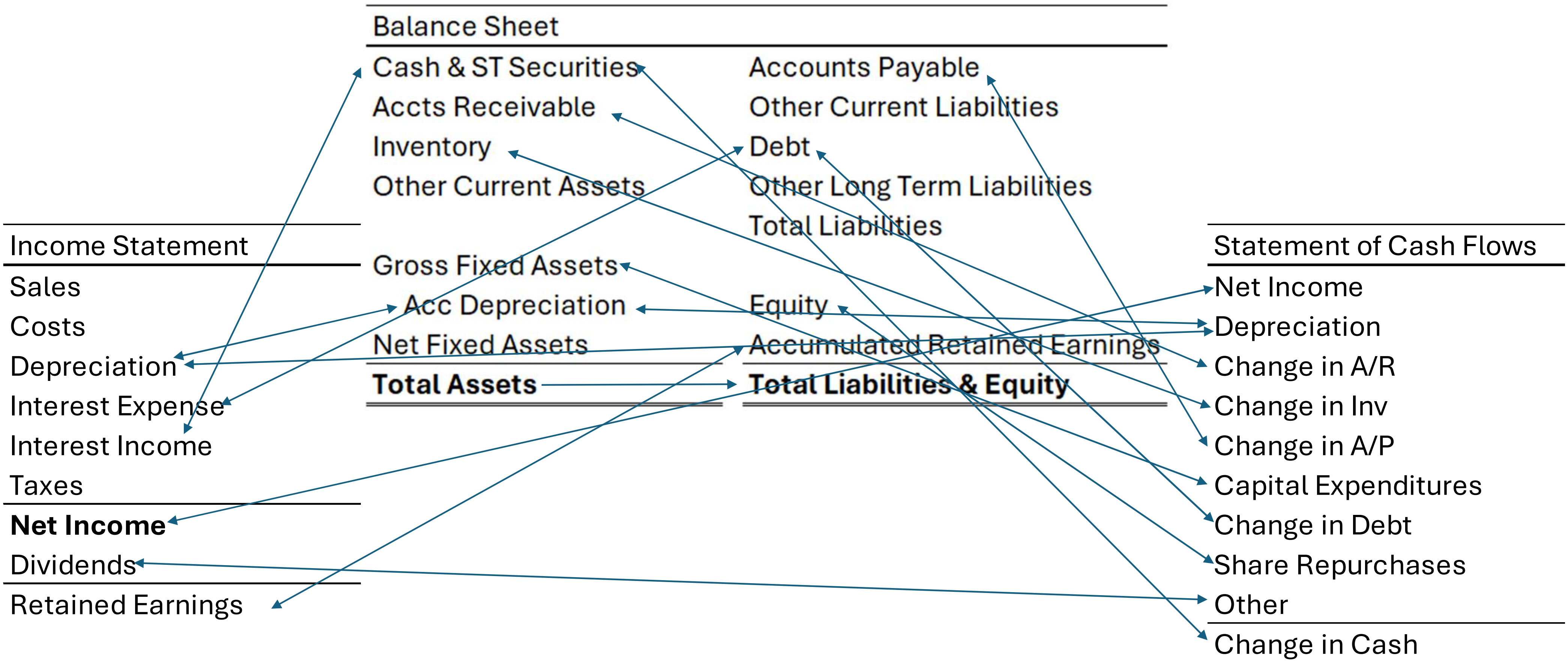
Then use your results to determine free cash flow projections for the future 10 years, plus a final "constant growth" set of assumptions for years 11 and on.

Overview

Financial Statement Analysis is the gateway to building financial models.

- But to do it right, you have to plan for a strategy for funding changes to the firm to support growth.
- Doing so requires:
  - ➢ Strategic knowledge of how the firm's capital structure should change to support growth
  - ➢ Tactical knowledge of an in-depth understanding of how the pro forma statements interact with one another to correctly reflect how changing the capital structure will affect the firm’s cash flows

The Interconnectedness Across 3 Financial Statements



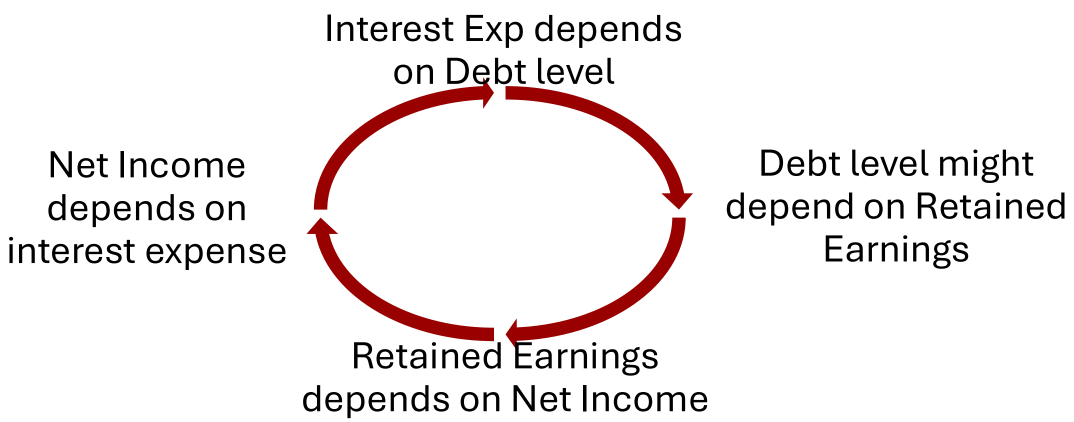
Mercifully, we will focus on the B/S and I/S

Main focus on sales-driven pro formas

Assume that various items in B/S and I/S are related to sales as much as possible

- Relationships need not be linear
  - You can change sales growth, margins, cash flow cycles (i.e., days), anything you want, so long as there's a rationale that makes sense

The interconnectedness mean we will get CIRCULAR equations



Much more simple

So much Simpler

Balance Sheet	
Cash & ST Securities	Accounts Payable
Accts Receivable	Other Current Liabilities
Inventory	Debt
Other Current Assets	Other Long Term Liabilities
	Total Liabilities
Gross Fixed Assets	
Acc Depreciation	Equity
Net Fixed Assets	Accumulated Retained Earnings
Total Assets	**Total Liabilities & Equity**

Income Statement
Sales
Costs
Depreciation
Interest Expense
Interest Income
Taxes
Net Income
Dividends
Retained Earnings

The PLUG

After you build the first-pass *pro formas* assuming just about everything will vary with sales, you have to take an approach to making the balance sheets balance **that conforms with the firm's goals/intentions**

- The proverbial "Magic Bullet" will be the (hopefully) small number(s) added to one side or the other to make everything work

How much you have to plug, and the source(s), will depend on how much growth you're forecasting and the firm's strategy for managing growth.

Why Growth Assumptions Matter

How MUCH is the firm going to grow?

- Cat 1: At or less than the Internal Growth Rate?
- Cat 2: More than the IGR but less than the Sustainable Growth Rate?
- Cat 3: More than the SGR?

The answer to this question will identify what type of "plug(s)" you're going to need to use:

- Cat 1: All growth funded from Equity accounts. Affects:
  - Cash and Equivalents
  - Retained Earnings
  - Dividends
- Cat 2: All growth funded with Equity accounts and a limited amount of Debt. Affects:
  - Cash and Equivalents
  - Retained Earnings
  - Dividends
  - ST Debt (levels and costs)
  - LT Debt (levels and costs)
- Cat 3: Firm will need to raise both new Equity and new Debt. Affects:
  - All of the above, plus Common Share, Additional Paid In Capital...

So, What Does This Mean for Your *Pro Formas*?

Three-step process:

1. You're going to have to go back and change your assumptions about the liability and equity levels (and the payments to them) being a percentage of sales to choices of funding that are commiserate with your company's strategy.
2. Your "downstream" entries in the income statements will need to be updated to point at levels/changes in Debt and Equity accounts.
3. In the course of doing so correctly, you will induce **circular references** into your *pro formas*.

Circularity Example: You're in a Cat 2 Situation

Managing to a Debt-to-Equity number

What if the firm has a target debt-equity ratio that it wishes to meet?

In such a model, both debt & equity are plugs

Target Debt/Equity Ratio

Determine Equity as the first part of the circular calc.

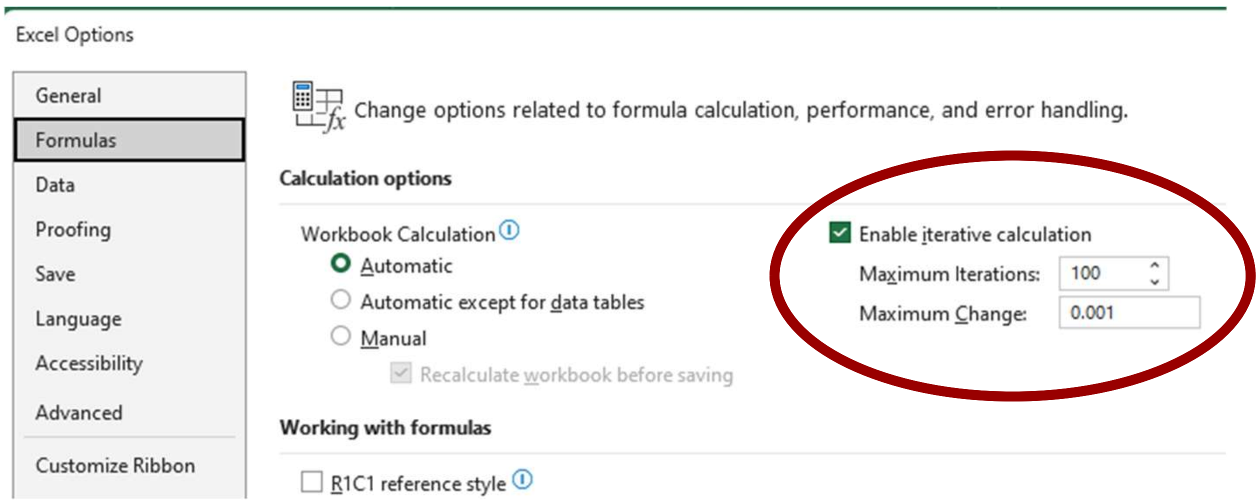
- Calc Debt off the desired D/E ratio * Equity
  - ➢ Equity = Stock + Accumulated Retained Earnings
  - ➢ Stock = Total Assets – Current Liabs – Debt – Acc Ret Earn
- Debt = TARGET D/E * Equity

Note: We have excluded current liabilities from D-E ratio computation

- Often, you'd include working capital credit & short-term debt (i.e., bank debt) as part of the D/E calculation

Dealing with Circularity in Your Spreadsheets

File | Options | Formulas | Set to Automatic | Check "Iterations" box should be checked | Set to 100



The multiple calculations will grind the circularity down to an indistinguishable number

Modeling: Things to Remember

Changing your *pro formas* to conform to a strategic plan for your capital structure that balances your balance sheets won't be easy.

- Doing so requires a level of attention to detail that is quite high
- The interactions between the statements and their need to balance can be frustrating
- Your assumptions underlying your changes and the resulting numbers need to be defensible

Assumption Challenges

There could be other factors that impact *pro formas* that we haven't considered:

- Non-sales related expenses or balance sheet items
- Payout policy of the firm
- Cost structure (fixed vs. variable) of the firm

In reality, NOT all current assets and current liabilities are related to sales

- Cash & marketable securities are current assets that do not depend on sales
- Accrued Expenses aren't tied to sales
- Short-term debt and the current portion of long-term debt are current liabilities, that do not depend on sales

Fixed Assets aren't always tied to sales

Dividends are generally not a constant percentage of net income

- Usually, it is a constant level than may increase (or decrease) over time

Up Next

Next Class: Plugging and Modeling with Target Example