Financial Statements and Valuation

(Welch, Chapter 14)

Ivo Welch

Sample Project I

Create an IRS Income Statement and IRS Cash Flow Statement

- 3-Year Project
- $250 capital expense in year 1
- $50 capital expense in year 2
- Net Revenues (EBITDA): $200, $400, $200
- Cost of Capital: 15% / year.
  - (CoC is not really used, just sketched.)

Sample Project II

- Corporate Tax Rate: 40% / year
- Debt: \$200 (r=10%). Assume in year 1, you get the money but you already pay interest.
- IRS allows Depreciation: 2 years, linear.
  - The usual US IRS schedules are 5 years, 7 years, or 10 years, sometimes accelerated (depending on Congress) and depending on the asset.
  - We are too lazy to deal with so many columns, so we sketch it with a 2-year depreciation schedule.

Income Statement (IS)

Create the Income Statement (IS).

What extra info do you know from the CFS?

Project Cash Flows

A project is like a "black box," with both inflows and outflows.

- The net CFs are then returned to financiers, *both* debt *and* equity.
- Interest payments are a flow back to financiers, just like dividend payments.
  - They are not negatives that just evaporate.
  - They are a return of capital to financiers.
  - They are not a cost of operating.

Equity Cash Flows

If you own just the equity (and borrow money from someone else), then

- you get a cash inflow from the creditors upfront,
- and you have to pay interest to creditors later.
- You must count both!

Project vs Equity CFs

Total project cash flows can be paid out to debt and equity holders *combined*.

- Imagine you provide both debt and equity.
- You get the interest payment back.

Put differently, subtract interest only if you get the loan!

- Overall project: All cash flow goes to the owners.
- Equity: We first receive credit and then we pay it back.

Nerd: Project CF is not Unlevered!

Project cash flows here are not the "as-if-unlevered" cash flows later in the WACC chapter.

- There, an unlevered firm will have less of an interest tax shield.
- Therefore it will have to pay more in corporate income taxes.

Project and Equity CFs & NPV

What are the project CFs and NPV?
What are the equity CFs and NPV?

Think "Economics" and not "Accounting."

Reverse-Engineered

What are the project and equity cash flows, reverse-engineered from the financials?

What Formula Did You Use?

There are many ways to get the same number, of course. Here are some variants:

$$\text{CF} = \text{Net Sales} - \text{Tax} - \text{CapExpense}$$

$$\text{CF} = \text{NI} + \text{Deprec} - \text{CapExp} + \text{Interest}$$

Discounted Net Income (NI)?

Could you have just discounted net income? Close enough?

Discounting NI would come to

$$\$33 + \$138/1.15 + \$93/1.15^2 \approx \$223.$$

This is much different from the correct \$257 calculated earlier.

Discounted EBITDA?

Would it make sense to discount EBITDA?

- Sales Minus COGS Minus SGA.
- Are you nuts?
- Would you really want to discount near-sales, ignoring tax and depreciation??? How should capex matter?

Discounted Net Income + Depreciation?

Would it make sense to discount NI + Dep?

- Are you super-nuts?
- Do you need to spend CapEx to produce? Or
- Do your cash flows fall like manna from heaven?

- Is it better to subtract fictional capex (as in NI) or zero capex (as in NI+Dep)!

IS or CFS Depreciation?

Should you take depreciation from the IS or the depreciation figure from the CFS?

Deferred Tax or Taxes Payable?

What is the difference between deferred tax and taxes payable?

GAAP vs IRS

The reported GAAP financials force a three-year depreciation schedule. How would the publicly-reported financials look look? Where on the public financials would you find IRS Tax Payments?

Note: the project and its economic CF's do not change. The only thing that changes is that you now see only the public financials, not the IRS financials.

Reverse Engineering

What formula could you use?

Recall that your formula needs to come to

- CF0: –$72,
- CF1: $258, and
- CF2: $138.

Deferred Tax Adjustment Conclusion

With the (true) IRS financials, we would have calculated cash flows of

NI + Dep - CapExp + Int = \$33 + \$125 – \$250 + \$20 = –\$72

We only see the public financials.

NI + Dep - CapExp + Int + ?? = \$58 + \$83 – \$250 + \$20 + ?? = –\$89 + ??.

- Add the change in deferred taxes to the public financials, which here is \$17, and you have the right number back.

A/R: Half Now, Half Later

Assume COGS and SG&A were $0. Customers pay half of what they owe immediately, half of what they owe one year later — what are your actual cash flows now?

If customers pay later, are the economic cash flows different?

Public Financial Statements

How do your public financials look like?

Reverse Engineering

What formula could you use?

Working Capital

What else is in *working capital*?

Why do you work with *changes* in working capital and not working capital itself?

Goodwill

What is Investment in Goodwill?

Valuation Formula I

Earnings after Interest before Taxes (= NI + Tax)
\+ Interest Expense
= EBIT
-- Corporate Income Tax
= Net Operating Profit
\+ Changes in Deferred Taxes
\+ Depreciation
= Gross Cash Flow

Formula Continued II

= Gross Cash Flow
-- Capital Expenditures
-- Changes in Working Capital (e.g. payables)
-- Investment in Goodwill
-- Miscellaneous Increases in Other Assets
= Free Cash Flow from Operations

Formula Continued III

= Free Cash Flow from Operations

-- Acquisition and Divestitures

-- Short-Term Investments

-- Miscellaneous Investing

= Project Firm Cash Flow to Debt + Equity

+ Net Issuance of Debt

-- Interest Expense

= Project Firm Cash Flow to Equity

Public Firm's CFS Example

(Student Choice)

Easier Better Estimates

Use the CFS directly, but realize that interest expense goes to capital providers!!!

CF Project = CF Oper + CF Invest + Int Expense

CF Equity = CF Oper + CF Invest + Net Debt Iss

+ Int Expense – Int Expense

= CF Project – Int Expense + Net Debt Iss

Balance Sheet Truths

What can you believe on the Balance Sheet?

What Manipulation Is Possible?

Do accountants have discretion?

How would you overreport earnings?

How would you overreport cash flows?

How would you try to detect this as an external analyst?

How Would You Manipulate?

- How many products will customers return?
- How much debt will be repaid to you? (I.e., sell product on credit)
- How much inventory will spoil?
- How long will equipment last?
- Is it an expense (maintenance) or an acquisition?