DECISION MAKING AND SCENARIOS
MODULE 4.5 – New Product Venture

Expanding Beyond The Time Horizon

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Agenda – Valuation of a Proposed New Product Venture and Evaluation of Alternative Scenarios

- Introduction and Spreadsheet Set up
- Forecasting of Future Cash Flows
- Valuation (NPV and IRR)
- Formulation and Evaluation of Alternative Scenarios
- **Expanding Beyond the Time Horizon**

Disposal Value

- In our example, we assume we **Terminated** the New Product Venture in Period 8
- This resulted in a set of one-time cash flows
  - Sale of PPE
  - Sale of Remaining Inventory at a reduced price
  - Collection of Remaining Receivables
  - Payment of Remaining Payables
  - Other Disposal Costs
    - **This is an easy one to overlook or underestimate**
- As these are all ONE-TIME costs that occur 8 periods out, it's easy to calculate their impact on the overall NPV of the project

But What if We Continue Beyond the Forecast Horizon?

- By Continuing the Project Itself
- Or by Rolling it over into a New Project
- This is especially relevant if we're trying to value the FIRM as a whole (which has an indefinite life)

Valuing a Firm

- We can think of a firm as a set of projects
  - Some are operating simultaneously
  - But new ones arise to take the place of old ones that get phased out
- A Firm has an Indefinite life
- We can’t keep forecasting all the way out to infinity

Two Part Approach to Forecasting and Valuation

- Individual yearly forecasts are usually made for a finite horizon (typically 3 to 7 years).
- Then a more ad hoc (simplified) assumption is made regarding what will happen beyond that time (often called the Terminal Value)

What Happens Beyond the Forecast Horizon?

- Usually we assume that the firm goes into “steady state” beyond the forecast horizon
- Common Assumptions about Steady State
  - Cash Flows are Constant beyond the Forecast Horizon
    - Say, equal to the Cash Flow from Period 7
    - This is called a perpetuity
  - Cash Flows **grow at a constant rate** beyond the forecast Horizon
    - This is called a constant growth perpetuity
- While often a good “approximation,” the main virtue of these assumptions is that the math is easy

Valuation of a Constant Growth Perpetuity

- Suppose the discount rate is r
- If the cash flows start at C and grow at g percent per year, the present value is

$$\text{PV of growing perpetuity} = \frac{C}{r - g}$$

- The growth rate g has to be less than the discount rate r
  - You can't grow at too a high a rate forever!
- No growth is just a special case of this
- In our case, this constant growth perpetuity doesn't start until year 8, so we have to further discount the above formula

The Terminal Value Assumption Has a Big Impact on Valuation!

- Discount Rate = 6%

What Happens Beyond Year 7?	Present Value of Cash Flows Beyond Year 7		Present Value of Cash Flows During Years 0-7	Total Present Value of Cash Flows
Terminate – One Cash Flow of $9,800 in Period 8	$6,148		$20,476	$26,624
Perpetuity – 0% Growth Over Period 7 Cash Flow	$381,299		$20,476	$401,775
Perpetuity – 2% Growth Over Period 7 Cash Flow	$583,388		$20,476	$603,864

- Most of the Value of the Firm is from Cash Flows Beyond Year 7, even with no growth

Course Conclusions

- In this course, we've developed a framework for evaluating business decisions and strategies
- We stressed the importance of thinking of business strategies in terms of the financial consequences these strategies will have
- To do this requires thinking about the business activities that will occur, the resources that will be employed, and the obligations that will be incurred
- We stressed the value of accounting systems for keeping track of all these things in a systematic way
  - How balance sheets and income statements and cash flow statements are linked together

Conclusions Continued

- Balance Sheets list the resources and obligations associated with a business strategy
- Income Statements calculate the profits associated with the business activities and events that occur during a period
- Cash Flow Statements calculate the inflows and outflows of cash that derive from the business activities and events
- Ultimately it's the future cash flows that the strategy or project will affect that is relevant
  - Balance Sheets and Income Statements help you calculate this
  - Cash Flows can be expressed in terms of the Income Statement and Balance Sheets

How do You Compare Different Streams of Future Cash Flows?

- We showed that NET PRESENT VALUE is the most economically sensible way to do this
  - Done properly, it reflects
    - the opportunity cost of capital
    - the riskiness of the strategy
- Net Present Value Calculations allow you to look at an investment that will generate an uncertain return in the future and allow you to answer
  - How big does that return need to be for the investment to be worthwhile?
  - How does the answer depend on how far into the future it is before the return occurs?
  - How does the answer depend on how risky the return is?

Spreadsheet Setup and Scenario Analysis

- We talked about the value of spreadsheets in
  - Making assumptions clear cut
  - Making calculations and re-calculations easier
  - Allowing easier exploration of risks and alternative scenarios

After You've Initiated the Project

- The same forecasts we had developed can now be used to help monitor the progress of the project
  - To allow us to spot if things are going "off course" and help us decide what to do about it
- What you learn on one project can be very helpful in structuring your thinking for the next project
- Business Success involves an Ongoing Iterative Process of Valuation, Evaluation and Learning,
- Our course has developed important tools to help you do this better


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