An Introduction to Financial Modeling with Excel

Econ 466
Spring, 2010
Why Model?

- To make your life miserable
- Because it is so fun
- Because it provides a way to synthesize technological, public policy and economic information into a comprehensive framework
- It is a good way to learn
- There is a strong likelihood that you are going to do this in your professional life
A little inspiration before we begin …

• Begin with the end in mind
  ❖ Stephen Covey
Elements of Model Design

- Goals and objectives
  - What issues are you interested in exploring
- Inputs
- Outputs
- Equations or algebraic relationships between inputs and outputs
- Remember Stephen Covey’s quote:
  - Begin with the end in mind
A Desktop Modeling Exercise

Let's suppose you want to develop a model (or a tool) that will allow you to assess the costs and returns from producing corn.

- TTYN and try to list the objectives, outputs, inputs and equations that we would need to design the required model.
Objectives

- Why are we doing this?
- What do we want to know?
- What is the time frame for the analysis?
Outputs

What are the “answers” we are seeking?

- Revenue
- Production costs – by categories
- Impact of any relevant public policies
- Net Returns
  - ✔ Over all costs
  - ✔ Over variable costs
- Cashflow
- Risk??
Inputs

What information do we have to supply for the analysis?

• What inputs do we want to change in the analysis?
  ✓ Prices
  ✓ Quantities
  ✓ Policy variables
  ✓ Historical yields or prices
  ✓ Other information?
Equations

How do we link the inputs to the outputs?

- Revenue = Product price \times quantity
- Cost = Input price \times input quantity
Model Schematic

Inputs → Equations → Outputs
In-class Team Project

Develop and use a loan amortization table

- What is a loan amortization table
  - A table (not surprising)
  - Columns show beginning loan balance, interest due, principal due and ending balance
  - Rows for year payment period (years in this case)

Try to use most of the Excel functions on your crib sheet.
Amortization table schematic

<table>
<thead>
<tr>
<th>Year</th>
<th>Beginning Balance</th>
<th>Interest Due</th>
<th>Principal Due</th>
<th>Ending Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$100,000</td>
<td>$6,500</td>
<td>$4,135</td>
<td>$95,865</td>
</tr>
<tr>
<td>2011</td>
<td>$95,865</td>
<td>$6,231</td>
<td>$4,404</td>
<td>$91,461</td>
</tr>
</tbody>
</table>

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OK?

HAVE AT IT!