Five Microsoft Excel Features to Enhance Financial Analysis

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The Microsoft Excel program contains hundreds of useful features but it can be daunting to identify appropriate applications. In this paper I demonstrate how five features can enhance financial analysis. The features are applied in a capital budgeting context but could also be utilized in other financial contexts including forecasting, valuation and working capital management. The features examined are: the choose function to create scenarios, data validation to restrict selections, data tables for sensitivity analysis, conditional formatting to highlight key results and scenarios under consideration and concatenation to string together text and formula results.

INTRODUCTION

One of the challenges faced by users of the Microsoft Excel program is that it can be difficult to imagine how some features can be applied to suit a given user's goals. For those working in finance, the program includes hundreds of useful functions and features. In this paper, I demonstrate how to apply five features to enhance an analysis. I have selected a capital budgeting problem to provide context but the features can also be applied in many other types of problems typically considered in corporate finance such as forecasting, valuation and working capital management. The features examined are: the ***choose*** function to create scenarios, ***data validation*** to restrict selections, ***data tables*** for sensitivity analysis, ***conditional formatting*** to highlight key results and scenarios under consideration and ***concatenation*** to string together text and formula results. I begin with a basic solution to a simple capital budgeting problem and then add scenarios and other features.

THE PROBLEM ANALYZED

For purposes of this analysis consider the following problem typical of those found in basic financial management and corporate finance texts. Firm LDC has produced and sold electrical appliances for twenty years. The marketing manager is now proposing an extension of an existing line. The concept is to enter a relatively high margin niche of the lamp market. Information related to the project appears below.

- A consulting company was hired to do a preliminary study of the potential market. The study cost $30,000 and concluded that LDC could sell approximately 40,000 lamps in the first year, 35,000 in the second year, 30,000 in the third year, 20,000 in the fourth year and 10,000 in the fifth year after which the project would be terminated.
- Lamps could be sold for $40 each with prices rising by no more than 3% per year. Raw material costs would be $8 per lamp and might rise by 2.5% per year. Labor and energy costs are estimated at $5 per lamp and are
- expected to rise at 3% per year. Operating working capital of about 10% of revenues would be required.
- The net impact of cannibalization (revenues less all associated costs) of existing product lines would be $250,000 in the first year, 150,000 in the second year, 100,000 in the third year, 75,000 in the fourth year and 50,000 in the fifth year after which the project would be terminated.
- The lamps would be built in an unoccupied part of the firm's manufacturing facilities but operating costs of using this facility are estimated at $18,000 per year.
- The project would require an initial investment of $2,000,000 in equipment that would fall into the 3 years MACRS class.
- The salvage value of the equipment is estimated at $250,000 after dismantling costs.
- The firm's marginal tax rate is 38% and the wacc is 11%. The firm believes the wacc is appropriate to use as the discount rate for this project since the project is of average risk.

I created a basic financial model in Excel (available to users by contacting me) to analyze the problem. To facilitate "what-if" analysis I created a simple model based off key inputs to find net present value, internal rate of return and modified internal rate of return. The basic solution appears in table 1.

FEATURE 1: USE THE CHOOSE FUNCTION TO ADD SCENARIOS

To analyze the problem further I could simply change the inputs to reflect alternative scenarios. This is one technique for scenario analysis. Another technique for scenario analysis is to create "live" scenario options using the choose function. Suppose that management wants to allow for three different scenarios for unit sales and three possible scenarios related to cannibalization of existing product lines. This can be accomplished as follows.

1. Create alternative scenario assumptions.
2. Set up a cell to "control" the scenario selection.
3. In the calculations use the choose function to return the appropriate value.

Note that the choose function arguments are

=choose (index number, value 1, value 2…)

The Choose function returns the selection (from the values entered) that corresponds to the index number. So if the index number is 1; the first of the values is returned. If the index number is 2, the second is returned and so on.

Steps 1 and 2 are depicted below. The box containing the "1" is the cell "controlling" the scenario selection. This is the index number. The choose statement for year 1 units will need to "choose" whichever level of units is indicated by the scenario selected (figure 1)

Table 1. The Basic Solution.

Calculations							
Year		0	1	2	3	4	5
Set up cash flows							
	PP&E	(2,000,000.0)					
	Shipping/installation	0.0					
	Set up cash flows	**(2,000,000.0)**					
Operating cash flows							
	Revenues		1,600,000.0	1,442,000.0	1,273,080.0	874,181.6	450,203.5
	Raw material costs		(320,000.0)	(287,000.0)	(252,150.0)	(172,302.5)	(88,305.0)
	Labor and energy costs		(200,000.0)	(180,250.0)	(159,135.0)	(109,272.7)	(56,275.4)
	Lease expense		(18,000.0)	(18,000.0)	(18,000.0)	(18,000.0)	(18,000.0)
	Depreciation		(666,600.0)	(889,000.0)	(296,200.0)	(148,200.0)	0.0
	Cannibalization - net		(250,000.0)	(150,000.0)	(100,000.0)	(75,000.0)	(50,000.0)
	Taxable income		145,400.0	(82,250.0)	447,595.0	351,406.4	237,623.1
	Taxes		(55,252.0)	31,255.0	(170,086.1)	(133,534.4)	(90,296.8)
	Net income		90,148.0	(50,995.0)	277,508.9	217,872.0	147,326.3
	Depreciation		666,600.0	889,000.0	296,200.0	148,200.0	0.0
	Investment in net working capital	(160,000.0)	15,800.0	16,892.0	39,889.8	42,397.8	45,020.4
	Operating cash flows	**(160,000.0)**	**772,548.0**	**854,897.0**	**613,598.7**	**408,469.8**	**192,346.6**
End of project cash flows							
	Salvage value						250,000.0
	Tax on Salvage value						(95,000.0)
	End of project cash flows						**155,000.0**
	Total project cash flows	**(2,160,000.0)**	**772,548.0**	**854,897.0**	**613,598.7**	**408,469.8**	**347,346.6**
Output							
	Net present value	**153,705.9**					
	Internal rate of return	**14.3%**					
	Modified internal rate of return	**12.5%**					

Figure 1.

		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Inputs							
Select a Scenario for unit sales		2					
1	*Base case*		40,000.0	35,000.0	30,000.0	20,000.0	10,000.0
2	*Best case*		55,000.0	45,000.0	40,000.0	40,000.0	40,000.0
3	*Worst case*		25,000.0	30,000.0	30,000.0	20,000.0	10,000.0

Step 3 follows:

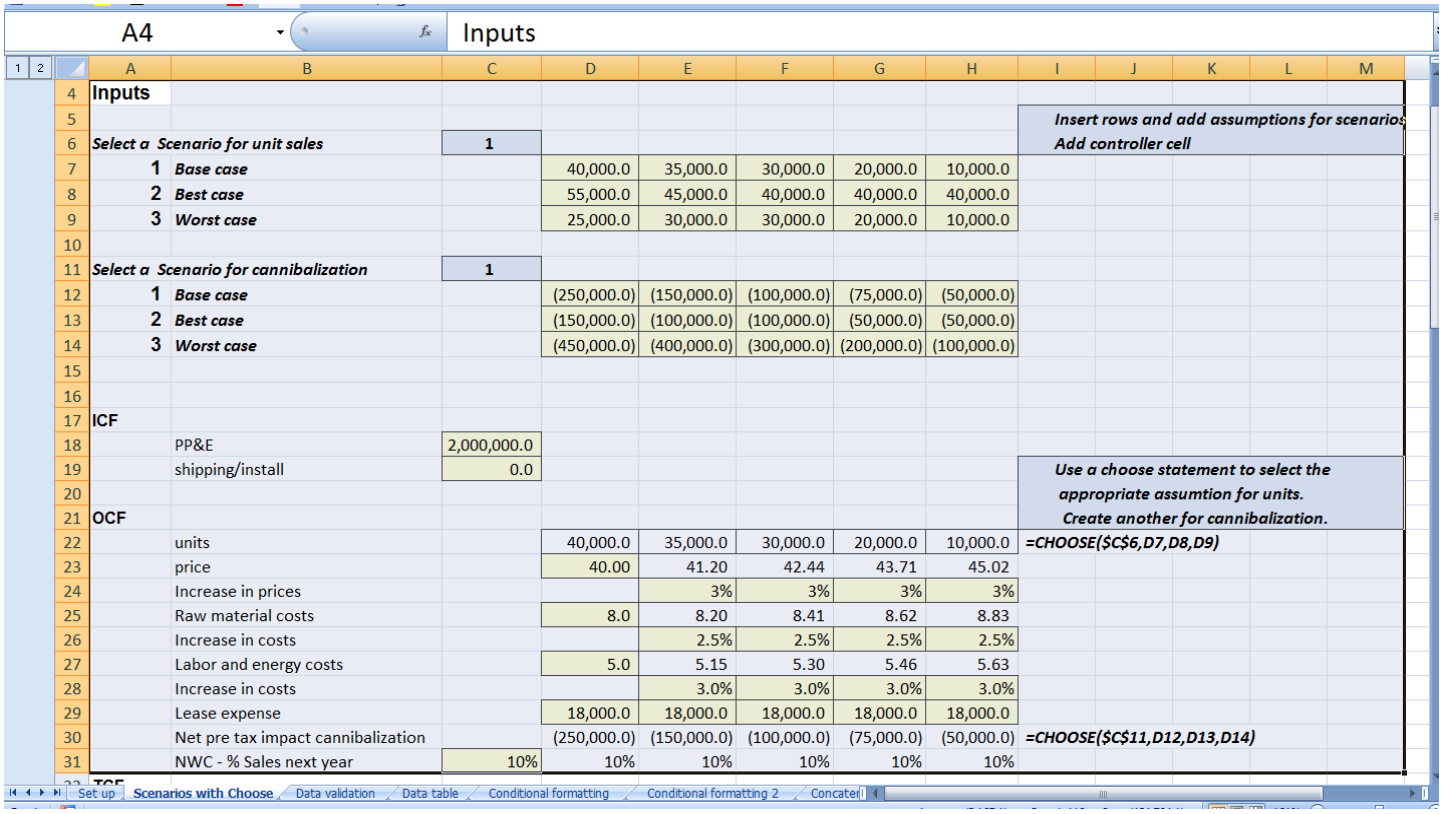
Figure 2.

	Year 1	Year 2	Year 3	Year 4	Year 5		
Units	55,000.0	45,000.0	40,000.0	40,000.0	40,000.0		*=CHOOSE($C$6,D7,D8,D9)*

The controller cell/index number is cell C6 while the possible unit sales for year 1 are 40,000 (contained in cell D7); 55,000 (contained in cell D8) and 25,000 (contained in cell D9). Since the scenario selector cell is set to 1, the first "choice" is returned. If the selection is changed to 2 the result would be 55,000.

In the accompanying excel file there is another scenario created on cannibalization. The screen shot below (figure 3) shows the scenario assumptions and choose statements.

Figure 3.

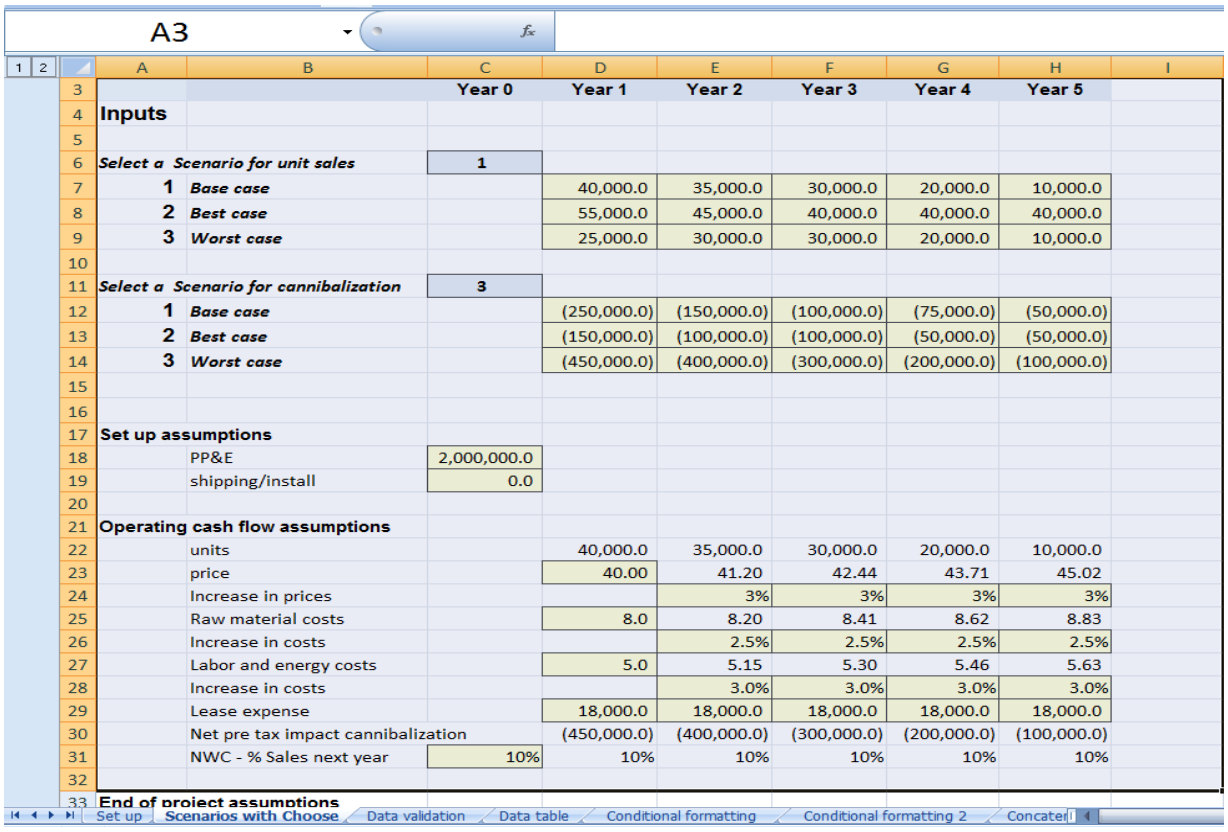


	A	B	C	D	E	F	G	H	I	J	K	L	M
4	Inputs												
5									*Insert rows and add assumptions for scenarios*				
6	*Select a Scenario for unit sales*		1						*Add controller cell*				
7	1	*Base case*		40,000.0	35,000.0	30,000.0	20,000.0	10,000.0					
8	2	*Best case*		55,000.0	45,000.0	40,000.0	40,000.0	40,000.0					
9	3	*Worst case*		25,000.0	30,000.0	30,000.0	20,000.0	10,000.0					
10													
11	*Select a Scenario for cannibalization*		1										
12	1	*Base case*		(250,000.0)	(150,000.0)	(100,000.0)	(75,000.0)	(50,000.0)					
13	2	*Best case*		(150,000.0)	(100,000.0)	(100,000.0)	(50,000.0)	(50,000.0)					
14	3	*Worst case*		(450,000.0)	(400,000.0)	(300,000.0)	(200,000.0)	(100,000.0)					
15													
16													
17	ICF												
18		PP&E	2,000,000.0										
19		shipping/install	0.0						*Use a choose statement to select the*				
20									*appropriate assumtion for units.*				
21	OCF								*Create another for cannibalization.*				
22		units		40,000.0	35,000.0	30,000.0	20,000.0	10,000.0	*=CHOOSE($C$6,D7,D8,D9)*				
23		price		40.00	41.20	42.44	43.71	45.02					
24		Increase in prices			3%	3%	3%	3%					
25		Raw material costs		8.0	8.20	8.41	8.62	8.83					
26		Increase in costs			2.5%	2.5%	2.5%	2.5%					
27		Labor and energy costs		5.0	5.15	5.30	5.46	5.63					
28		Increase in costs			3.0%	3.0%	3.0%	3.0%					
29		Lease expense		18,000.0	18,000.0	18,000.0	18,000.0	18,000.0					
30		Net pre tax impact cannibalization		(250,000.0)	(150,000.0)	(100,000.0)	(75,000.0)	(50,000.0)	*=CHOOSE($C$11,D12,D13,D14)*				
31		NWC - % Sales next year	10%	10%	10%	10%	10%	10%					

Set up | Scenarios with Choose | Data validation | Data table | Conditional formatting | Conditional formatting 2 | Concater

One advantage of this approach to scenarios is that one need not apply a single scenario (i.e. best case) to all assumptions. This is especially useful in financial projections where different geographic areas may experience different revenue growth and cost scenarios. The result follows assuming unit sales are set to the base case and cannibalization is set to the worst case scenario.

Figure 4.



	A	B	C	D	E	F	G	H	I
3			Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	
4	Inputs								
5									
6	*Select a Scenario for unit sales*		1						
7	1	*Base case*		40,000.0	35,000.0	30,000.0	20,000.0	10,000.0	
8	2	*Best case*		55,000.0	45,000.0	40,000.0	40,000.0	40,000.0	
9	3	*Worst case*		25,000.0	30,000.0	30,000.0	20,000.0	10,000.0	
10									
11	*Select a Scenario for cannibalization*		3						
12	1	*Base case*		(250,000.0)	(150,000.0)	(100,000.0)	(75,000.0)	(50,000.0)	
13	2	*Best case*		(150,000.0)	(100,000.0)	(100,000.0)	(50,000.0)	(50,000.0)	
14	3	*Worst case*		(450,000.0)	(400,000.0)	(300,000.0)	(200,000.0)	(100,000.0)	
15									
16									
17	Set up assumptions								
18		PP&E	2,000,000.0						
19		shipping/install	0.0						
20									
21	Operating cash flow assumptions								
22		units		40,000.0	35,000.0	30,000.0	20,000.0	10,000.0	
23		price		40.00	41.20	42.44	43.71	45.02	
24		Increase in prices			3%	3%	3%	3%	
25		Raw material costs		8.0	8.20	8.41	8.62	8.83	
26		Increase in costs			2.5%	2.5%	2.5%	2.5%	
27		Labor and energy costs		5.0	5.15	5.30	5.46	5.63	
28		Increase in costs			3.0%	3.0%	3.0%	3.0%	
29		Lease expense		18,000.0	18,000.0	18,000.0	18,000.0	18,000.0	
30		Net pre tax impact cannibalization		(450,000.0)	(400,000.0)	(300,000.0)	(200,000.0)	(100,000.0)	
31		NWC - % Sales next year	10%	10%	10%	10%	10%	10%	
32									
33	End of project assumptions								

Set up | Scenarios with Choose | Data validation | Data table | Conditional formatting | Conditional formatting 2 | Concater

FEATURE 2: APPLY DATA VALIDATION TO RESTRICT SCENARIO CHOICES

One potential problem with using the choose function is that a user may enter a value other than 1, 2 or 3 into the scenario "controller" cell. If this occurs, an error message is returned because in our example there are only three choices. To guard against this, use data validation to restrict choices to a preset selection.The results appear in figure 5.. Note that when a user puts the cursor in the scenario "controller" cell the scenario alternatives pop up as shown below. Directions follow.

Figure 5.

	A	B	C	D	E	F	G	H
1	**Data Validation**						© Bridget Lyons 2009	
2	**LDC Manufacturing**							
3			Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
4	**Inputs**							
5								
6	*Select a Scenario for unit sales*		1					
7	1	*Base case*		40,000.0	35,000.0	30,000.0	20,000.0	10,000.0
8	2	*Best case*		55,000.0	45,000.0	40,000.0	40,000.0	40,000.0
9	3	*Worst case*		25,000.0	30,000.0	30,000.0	20,000.0	10,000.0
10								
11	*Select a Scenario for cannibalization*		1					
12	1	*Base case*		(250,000.0)	(150,000.0)	(100,000.0)	(75,000.0)	(50,000.0)
13	2	*Best case*		(150,000.0)	(100,000.0)	(100,000.0)	(50,000.0)	(50,000.0)
14	3	*Worst case*		(450,000.0)	(400,000.0)	(300,000.0)	(200,000.0)	(100,000.0)
15								
16								
17	ICF							
18		PP&E	2,000,000.0					

Select a scenario.
1= Base
2 = Best
3 = Worst

Set up | Scenarios with Choose | Data validation | Data table | Conditional formatting | Conditional formatting 2 | Concater

To use data validation you must first have a list of choices to enter. In this case the choices are 1, 2, 3 and are entered in cells A7, A8 and A9. The box contains instructions related to the choices but we will need numbers as the choices since the scenario is driven by a choose statement which requires an index value that is a number.

The steps to use data validation follow.

1. Select data validation from the data menu under data tools
2. On the settings tab, under "Allow" select list to allow a list of scenarios. In the "Source" box enter the cells where the possible scenarios are listed. Here this is in cells A7, A8, A9.
3. If you choose you can also enter an input message and/or an error message on the following tabs in the dialog box. The input message appears when a user clicks in the cell containing data validation. The purpose is to provide instruction. In this example the input message is "Select a scenario. 1=Base; 2= Best; 3= Worst". You can also add an error message that will display if a user enters a value directly rather than selecting from the choices provided.

The results appear below. Data validation is especially useful when a spreadsheet is created by one individual but used by others who may be less skilled in financial modeling.

Figure 6.

	A	B	C	D	E	F	G	H
1	**Data Validation**							
2	**LDC Manufacturing**							
3			Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
4	**Inputs**							
5								
6	*Select a Scenario for unit sales*		1					
7	1	*Base case*				30,000.0	20,000.0	10,000.0
8	2	*Best case*				40,000.0	40,000.0	40,000.0
9	3	*Worst case*				30,000.0	20,000.0	10,000.0
10								
11	*Select a Scenario for cannibalization*		1					
12	1	*Base case*				00,000.0)	(75,000.0)	(50,000.0)
13	2	*Best case*				00,000.0)	(50,000.0)	(50,000.0)
14	3	*Worst case*				00,000.0)	(200,000.0)	(100,000.0)
15								
16								
17	ICF							
18		PP&E	2,000,000.0					

Data Validation
Settings | Input Message | Error Alert
Validation criteria
Allow: List
Data: between
Source: =$A$7:$A$9
Ignore blank
In-cell dropdown
Apply these changes to all other cells with the same settings
Clear All | OK | Cancel

Set up | Scenarios with Choose | Data validation | Data table | Conditional formatting | Conditional formatting 2 | Concater

FEATURE 3: CREATE A DATA TABLE TO PERFORM SENSITIVITY ANALYSIS

Data tables allow a user to display the results of a formula under different input assumptions. Data tables can be constructed to allow for one or two inputs to be altered. This feature will be demonstrated by creating a data table for net present value under different assumptions regarding the operating working capital required (as a percent of sales) and the weighted average cost of capital, assumed here to be an appropriate discount rate. The end result appears directly below followed by the steps to create the table. Note that for high WACCs and high assumptions regarding OWC as a percent of sales, NPV is lower. For example, if OWC is 12% of sales and the WACC is 13% then the project NPV is $46,542.

Figure 7.

	A	B	C	D	E	F
85						
86	***Add a data table on OWC % of sales and WACC***					
87						
88						
89		**NPV for different assumptions on OWC as % of Sales and WACC**				
90			***Operating Working Capital - % Sales***			
91						
92		153,705.9	**12%**	**11%**	**10%**	**9%**
93		**13%**	46,542.4	52,012.8	57,483.3	62,953.7
94		**12%**	94,416.2	99,570.5	104,724.9	109,879.2
95	***WACC***	**11%**	144,057.4	148,881.6	153,705.9	158,530.2
96		**10%**	195,555.1	200,034.5	204,513.9	208,993.3
97		**9%**	249,004.2	253,123.0	257,241.9	261,360.8
98						
99						
100						

Set up | Scenarios with Choose | Data validation | **Data table** | Conditional formatting | Conditional formatting 2 | Concate

Steps to create a data table:

1. Select an area for the table and use a cell reference to the formula to analyze. Here in cell B92 the formula is = C82 since the NPV calculation is performed in C82. Data tables must be created based on a formula since the function operates by recalculating the formula with different input assumptions. The reference to the formula must be in the top left of the table.

2. Type in the range of values for the inputs you want to analyze. In this example OWC as a percent of sales ranges from 12% down to 9% in 1% increments. WACC ranges from 13% to 9%. These values are just typed in. You must type the values in immediately right and below the reference to the formula leaving no blank cells. You CANNOT use a reference to the original input assumption in the border of your table or the table does not calculate properly. At this point the table should appear as follows:

Figure 8.

	A	B	C	D	E	F
85						
86	***Add a data table on OWC % of sales and WACC***					
87						
88						
89		**NPV for different assumptions on OWC as % of Sales and WACC**				
90			***Operating Working Capital - % Sales***			
91						
92		153,705.9	**12%**	**11%**	**10%**	**9%**
93		**13%**				
94		**12%**				
95	***WACC***	**11%**				
96		**10%**				
97		**9%**				
98						
99						
100						

Set up | Scenarios with Choose | Data validation | **Data table** | Conditional formatting | Conditional formatting 2 | Concate

3. Now select the entire table from cell B92 through F97. Once selected go into the data menu. Under data tools, select "what if" analysis and then select data table. A dialog box will appear prompting you for a row input cell and a column input cell. For row input cell enter the cell that contains the original assumption on OWC as a percent of sales. In this file that cell is C31. For column input cell, enter the cell containing the original assumption for WACC, here cell C35. Then hit enter and your data table should be complete and should appear as at the beginning of this section.

Data table hints:

- Once a data table has been created, you may change the input assumptions on the borders and the results will update. You may not remove a row or column in the table once created. If you want to eliminate a row or column delete the interior of the table first.
- Inputs used in the data table must be pulled from the tab on which the data table is constructed (you cannot pull from another sheet in the workbook).
- As mentioned above, the borders should be typed in and SHOULD NOT use a cell reference to the original input as this leads to inaccurate results.
- If you are working in a model and the data tables do not seem to be functioning, check that calculations are set to automatic and not automatic except tables.

FEATURE 4: APPLY CONDITIONAL FORMATTING TO HIGHLIGHT KEY RESULTS OR SCENARIOS SELECTED

Conditional Formatting with Data Tables

Data tables are a helpful visual for displaying the results of a formula under a variety of assumptions. Conditional formatting can be used in conjunction with a data table to highlight key results.

In this example, conditional formatting will be applied to make it clear what WACC and OWC assumptions are required to yield a net present value of at least $100,000.

When complete the data table will appear as follows. Note that only values with NPV's exceeding $100,000 appear. That is because the formatting applied is to "white out" values less than $100,000. However, this is just one example. Conditional formatting allows for a variety of fonts, colors, borders and fills.

Figure 9.

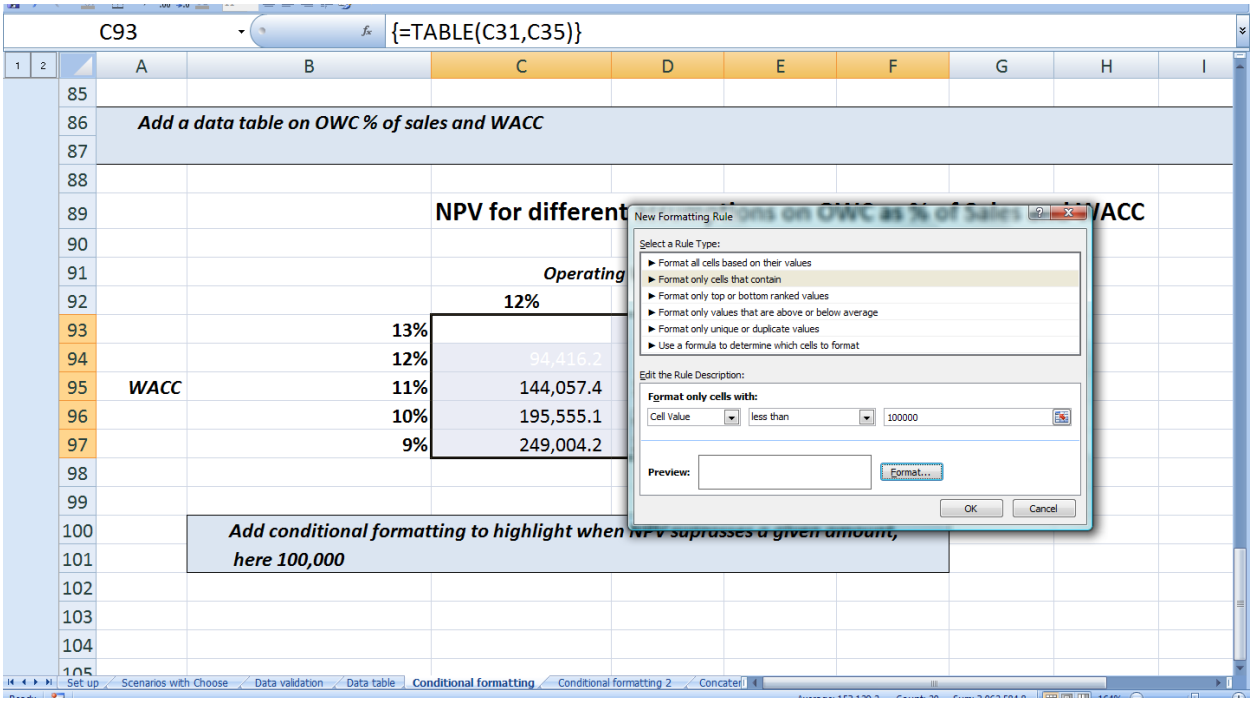
	A	B	C	D	E	F	G	H	I
85									
86	*Add a data table on OWC % of sales and WACC*								
87									
88									
89		NPV for different assumptions on OWC as % of Sales and WACC							
90									
91			*Operating Working Capital - % Sales*						
92			12%	11%	10%	9%			
93		13%							
94		12%			104,724.9	109,879.2			
95	*WACC*	11%	144,057.4	148,881.6	153,705.9	158,530.2			
96		10%	195,555.1	200,034.5	204,513.9	208,993.3			
97		9%	249,004.2	253,123.0	257,241.9	261,360.8			
98									
99									
100		*Add conditional formatting to highlight when NPV suprasses a given amount,*							
101		*here 100,000*							
102									

Steps to apply conditional formatting:

1. Select the cells to apply formatting to. In this example select only the interior of the table not the borders.
2. On the home tab, under styles, select conditional formatting. Then select "New rule". For the rule type select "Format only cells that contain".

Assume we want to format cell values below 100,000 in white font. To achieve this under "Format only cells with" in the first box select "cell value". In the middle box select "less than". Then in the right most box type 100000. Then select a format; here white font but note that there are many color, font, border and fill options. Click OK. The results should appear as above.

Figure 10.

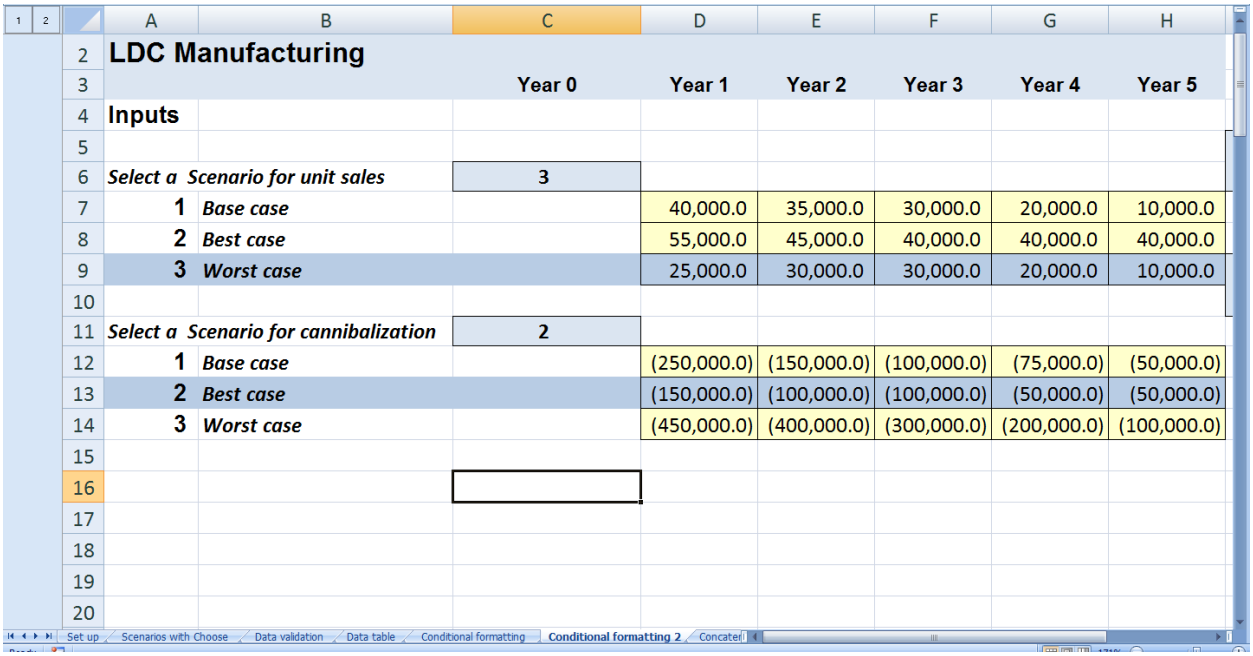


Conditional Formatting with Scenarios

Next conditional formatting is used to highlight the scenario selected. Recall in the first section scenarios were created using the choose function.

Here, conditional formatting is added to highlight which scenario is in use. In the screen shot below scenario 3 has been selected for unit sales and scenario 2 for cannibalization. The use of conditional formatting makes this very clear by applying a blue fill to the scenario in use. The results appear below.

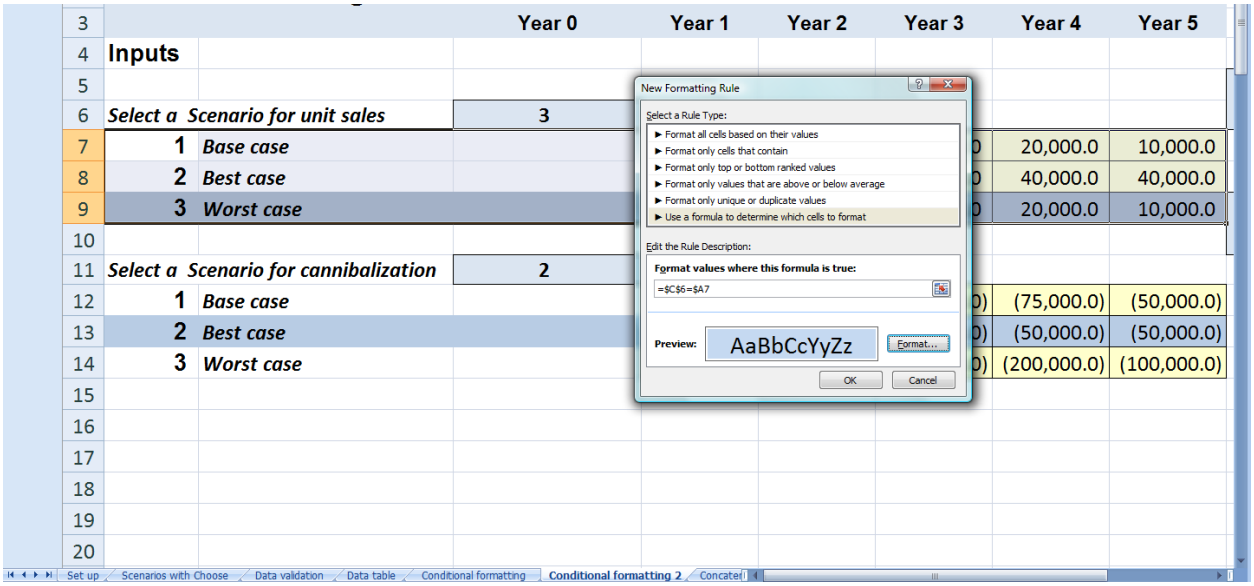
Figure 11.



The steps to apply conditional formatting to scenarios as displayed above follow.

1. Select the area to be formatted. In this example, cells A7 through H9 for the unit sales scenario. (Later cells A12 through H14 for the cannibalization scenario).
2. On the home tab, under styles, select conditional formatting. Then select "New rule". Select "Use a formula to determine which cells to format".
3. Here the formula is "=$C$6 = $A7". This allows us to format the row of the scenario matching the scenario in the controller cell. Be careful to only lock the column reference, A, and not the row since this rule will apply to rows 8 and 9 as well.
4. For the format select a fill, here blue. For "applies to" fill in the range to apply to here "=$A$7:$H$9". Then ok.

Figure 12.



FEATURE 5: CONCATENATION TO STRING TOGETHER TEXT AND FORMULA RESULTS

Using the ampersand operator or the concatenation function in Excel enables the user to string together text and formula results. This can be useful in summarizing results and is especially useful when the results should be updated to reflect changes in assumptions, data, scenarios etc. In this example the NPV and IRR are summarized in a statement at the bottom of the analysis but this could also appear on a summary page.

The results follow. This is based on both scenarios set to the base case.

The net present value is $153,706 and the internal rate of return is 14.27%.

If the user switches both scenarios to scenario 2 the results automatically update to:

The net present value is $1,805,549 and the internal rate of return is 40.67%.

The steps to return this information are to include any text in quotes and to connect text and formula results with the "&" operator or by using the concatenate function.

The following formula yields the results below (this assumes the formula for NPV is in cell C82 and the formula for IRR is in cell C83).

Formula:

="The net present value is "&C82&" and the internal rate of return is "&C83

Result:

The net present value is 1805549.38574101 and the internal rate of return is 0.406744551557681

The steps to return this information are to include any text in quotes and to connect text and formula results with the "&" operator (used here) or by using the concatenate function (detailed below). However the results do not apply the formatting in the original cell and are not appealing. To avoid this, wrap the cell reference in a text function and specify the formatting desired.

For example, the following formula:

="The net present value is "&TEXT(C82,"$#,000")&" and the internal rate of return is "&TEXT(C83,"0.00%")&"."

yields these results:

The net present value is $1,805,549 and the internal rate of return is 40.67%.

Be sure to leave a blank space within the text if that is desired.

While it is straightforward to use concatenation, it takes a bit of practice to get comfortable with the text function to specify desired format. The following tips should facilitate use of the text function for formatting.

- The text format must be entered in quotes
- # means to show a number only if there is a number (other than zero)
- 0 means show a number and if there is no number show zero
- Use a comma in the text format if you want a "thousands" separator
- Use "$" or "%" if you want that displayed

For example:

If the number is	*To display as*	*Set up as*
1234.555667	$1,234.6	=TEXT(C113,"$#,000.0")
234.5556667	$0,234.56	=TEXT(C114,"$0,000.00")
1234.555667	1234.56	=TEXT(C115,"#000.00")
1234.555667	1235	=TEXT(C116,"#000")
23.4567%	23.46%	TEXT(C117,"0.00%")
0.56%	0.6%	=TEXT(C118,"0.0%")
0.56%	1%	=TEXT(C118,"0%")
0.56%	.6%	=TEXT(C118,".0%")

You can also use the concatenate function to achieve the same results.

The formula:

=CONCATENATE("The net present value is ",C82," and the internal rate of return is ",C83)

Yields:

The net present value is 1805549.38574101 and the internal rate of return is 0.406744551557681

Here the text and cell references all appear within the concatenate function separated by commas.

To "clean up" the results, wrap the cell reference numbers in the text function.

To get this result:

The net present value is $1,805,549 and the internal rate of return is 40.67%.

Use this formula:

=CONCATENATE("The net present value is ",TEXT(C82,"$#,000")," and the internal rate of return is ",TEXT(C83,"0.00%"))

CONCLUSION

The Microsoft Excel program contains many features useful for financial analysis. This paper demonstrates how five functions can be applied. The features are: the ***choose*** function to create scenarios, ***data validation*** to restrict selections, ***data tables*** for sensitivity analysis, ***conditional formatting*** to highlight key results and scenarios under consideration and ***concatenation*** to string together text and formula results. Interested users may access the accompanying excel file by emailing me at lyonsb@sacredheart.edu.

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Creating Depth of Knowledge Using Team-Based Research Projects in Money and Banking and Financial Markets Courses

Bradley Hobbs and Daniel J. Borgia

Many undergraduate programs enroll students in a Money and Banking or Financial Markets course just after completing the principles of economics or an introductory financial management course. As professors who have taught Money and Banking and Financial Markets courses over a number of years, we have often faced a conundrum. Students note in their evaluations and comments that the course content tends to be "a bit dry" when compared to their experience in introductory courses. As a result, in developing our financial markets course, we have incorporated a project that has helped to engage students. Student responses indicate success in making the material more pertinent, engaging, and accessible.

Our "Financial Markets Project" requires students to produce a comprehensive, structured analysis of a specific financial market instrument or, alternatively, some institutional aspect of financial markets. After completing the project, students are required to present their findings to the class. This project helps students to develop skills they will need in their subsequent academic and working lives, such as: organizing and conducting research; collecting, sorting and analyzing data; writing and editing their findings; and publicly presenting their results to a peer audience. The entire project is carried out