EXCEL ‹‹‹‹‹‹

By Bill Jelen

Gathering Totals from Worksheets of Various Size

Let's say you have an Excel workbook with one worksheet for each cost center. Each worksheet has a different number of records, and there are more than 100 cost centers in the workbook. Each sheet will have a line for Total Revenue and Total Expenses somewhere in column A. You need a formula to pull the revenue and expenses from each cost center worksheet into a total summary worksheet.

The complicating factor here is the variable-size nature of each cost center's worksheet. You don't know if Total Revenue will be in row 10 or row 50. A VLOOKUP would solve the problem, but a typical VLOOKUP would have the worksheet name hard-coded in the lookup table reference: =VLOOKUP("Total Revenue",'CC 1020'!$A:$G,6,False). You wouldn't be able to copy this formula down to other rows in the Total worksheet without editing each and every formula to point to a new worksheet.

INDIRECT Function to the Rescue

The solution is the INDIRECT function. Spreadsheet veterans might recall the function from Lotus 1-2-3, where it was the @@() function. It was renamed in Excel since the "At-At" name of the Lotus version was a bit too confusing.

Figure 1

	A	B	C	D	E
1			100	=INDIRECT("A3")	
2	B5		128	=INDIRECT(A2)	
3	100				
4	Q1	Q2	Q3	Q4	
5	64	128	256	512	

The first argument to the function has to be some text that looks like a valid cell reference that points to a cell or a range in the current workbook. Note that INDIRECT can point to a single cell or it can point to a range of cells. The cells don't have to be in the current worksheet, but they do have to be somewhere in the current workbook. Unfortunately, the function can't be used to get data from external workbooks.

For example, consider =INDIRECT ("A3"). This formula will return the value from cell A3. For comparison, consider =INDIRECT(A2). This formula will look at cell A2, where it will expect to find something that appears to be a valid cell reference. If the text in cell A2 is B5, then the formula will return the result from cell B5 (see Figure 1).

Applying INDIRECT to the Total Worksheet

Returning back to the worksheet example, the solution is to replace the hard-coded lookup table argument with an INDIRECT function. The function will have to use concatenation to build a reference that looks like 'CC 1020'!A6. Assuming that your Total worksheet has a column that shows CC 1020 in column A, you need to concatenate two literal values with the cost center in between.

The first part of the argument is going to be the hardest to read when you look in the Excel formula bar. You need to put a single apostrophe in the middle of two

Figure 2

quotation marks. In the font used in the Excel formula bar, this will appear to be five apostrophes in a row, but it is really "''". The next part of the formula is a cell reference to the cost center in cell A4. Since you'll want to copy this formula across, you would only use a $ before the A in $A4. The last part of the argument will be an apostrophe, and then the lookup area of $A:$G.

The function INDIRECT("'"&$A4&"'$A:$G") will evaluate to INDIRECT('CC 1020'!$A:$G). As shown in figure 2, use the INDIRECT function as the second argument in the VLOOKUP: =VLOOKUP ("Total Revenue",INDIRECT("'"&$A4&"'!$A:$F"),6,FALSE). Copy the formula down to all of your cost centers. To use the formula in the expenses column, edit the "Total Revenue" argument to say "Total Expenses" instead.

Limitations of INDIRECT

Using INDIRECT prevents you from having to individually write 150 different formulas in this case. This is a timesaver, but be aware that the INDIRECT function is a special class of function called volatile functions. Excel can't tell if the cells containing INDIRECT need to be calculated or not, so those cells are calculated every time you make a change to any worksheet. This could negatively impact your calculation times.

The other drawback to using INDIRECT is that you can't use it to concatenate together a drive, path, file name, sheet name, and cell reference to pull data from external workbooks. This would have been a natural extension, and you frequently see questions online from people who need to use INDIRECT to get data from external workbooks. One workaround is the PULL function, a bit of VBA written by Excel guru Harlan Grove. When you have this need, search online for "Harlan Grove Pull" for several examples of implementing the VBA function. **SF**

Bill Jelen is the host of MrExcel.com. Catch him on his Power Excel tour through IMA chapters this year. Send questions for future articles to IMA@MrExcel.com.