

# Sum Product

NEWSLETTER #22 - September 2014

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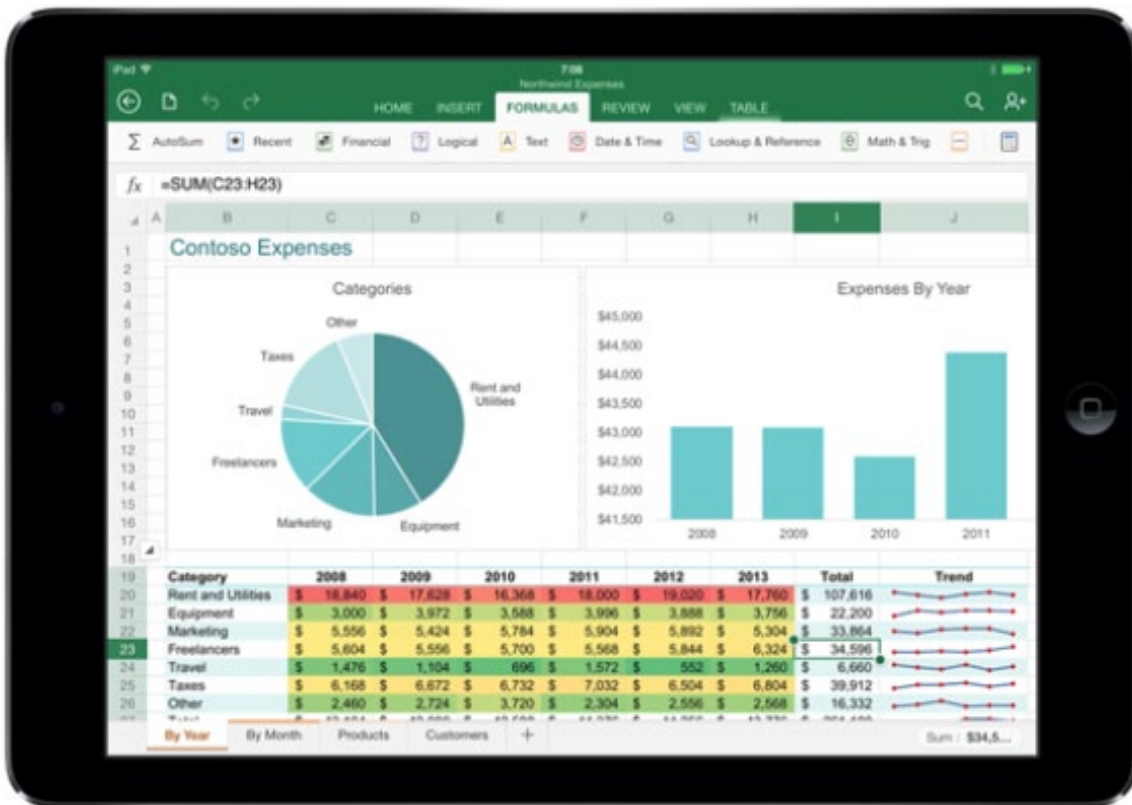
*Things are looking up* this month as we bring you upgrades, updates and lookups (well, an alternative for the latter anyway). We also continue our series focusing on current training courses offered (hey, we have to try and sell you something!) to whet your appetite.

As usual, we hope you find these newsletters useful – if so, keep spreading the word!

*Liam Bastick*, Managing Director, SumProduct



## Excel for iPad Upgrade



We have reported previously that Excel is now available for your iPad. Now, Microsoft have updated their Excel app. Reported improvements for Version 1.1 include:

- External Keyboard Support: Using an external keyboard to input data and move around a worksheet is now better supported.
- Flick to Select: Flick a cell's selection handle in any direction to quickly and easily select all the data in a row or column.
- Fonts: Third-party fonts are now available in the Fonts menu.
- Picture Tools: Crop to focus on just the right part of the photo, or reset to undo your changes.

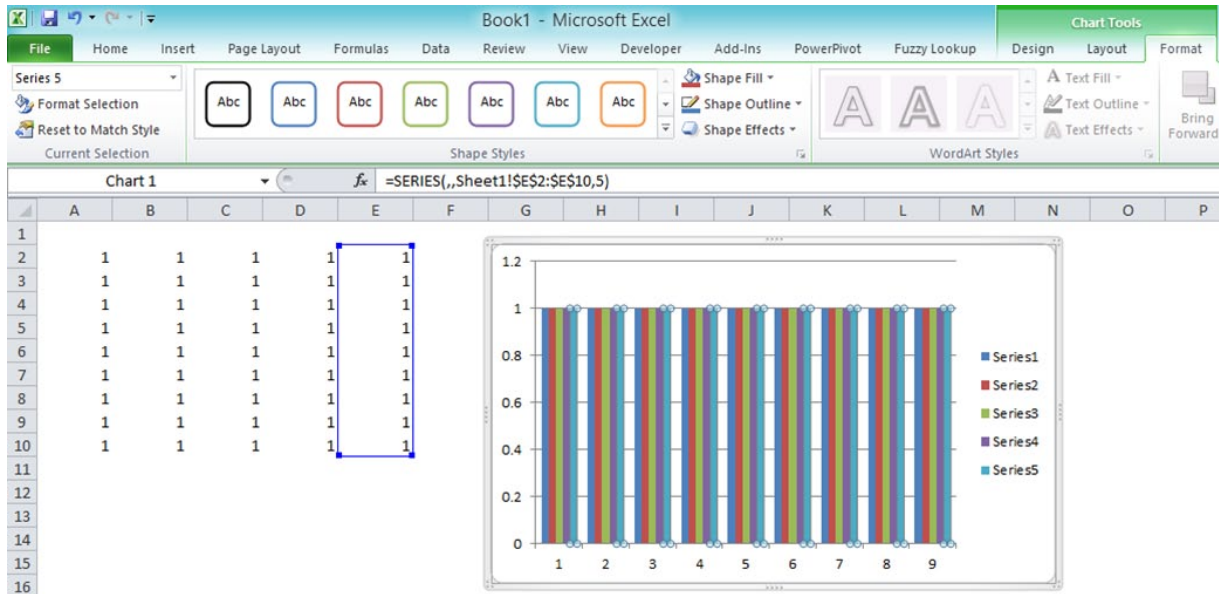
- PivotTables: Interaction is now possible with PivotTables that have the source data in the same workbook.
- Print Options: More paper sizes and scaling options for printing workbooks.
- Send PDFs: Excel files may now be sent as PDFs.

As always, Excel spreadsheets may be viewed for free on the iPad; however, to create and edit, an Office 365 subscription is still needed.

New versions of Word and PowerPoint are also out now too.

## Charting Update

You may recall we highlighted the following charting anomaly in Excel 2010 last month:



One key shortcut often employed to add new data was to select the Chart Area in the 'Current Selection' group of the 'Chart Tools – Format' tab of the context-specific Ribbon and simply type a formula such as

`=SERIES(,Sheet1!$E$2:$E$10,5)`

in the Formula bar, which can expedite editing multiple chart series.

We are pleased to report this bug has now been fixed in the latest update of Excel 2010, so there's no excuses now for not enabling those pesky automatic updates!

## Useful Excel Combinations: INDEX and MATCH

One of the most common problems in Excel is looking up data where you want to look up the resulting value of a dependent factor based upon another variable. Often modellers will use functions like LOOKUP, HLOOKUP and VLOOKUP, but there is a more flexible solution.

For example, imagine you want to check whether a modelled balance sheet is balancing, and, if not, when the first period of any misbalance occurs, e.g.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	<b>Balance Sheet - Looking For Misbalances</b>														
2	<b>INDEX MATCH Examples</b>														
3	<a href="#">Go to Table of Contents</a>														
4	↑ ← →														
5															
6	Month Ending									Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09
7	Month									M1	M2	M3	M4	M5	M6
20	<b>Balance Sheet Summary</b>														
21															
22															
23															
24	Net Assets									100.0	110.0	120.0	130.0	137.8	150.0
25															
26	Total Equity									100.0	110.0	120.0	130.0	140.0	150.0
27															
28	Balance Check:									-	-	-	-	1	-
29															
30	Error Message:	Error in May-09													
31															

This is a common modelling query. The usual suspects, LOOKUP and HLOOKUP / VLOOKUP do not work here:

- **LOOKUP(lookup\_value, lookup\_vector, [result\_vector])** gives the wrong date as the balance checks are not in **strict** ascending order (i.e. ascending alphanumerically with no duplicates); whilst
- **HLOOKUP(lookup\_value, table\_array, row\_index\_num, [range\_lookup])** gives #VALUE! since the first row must contain the data to be 'looked up', but the Balance Check is in row 28 in our example above, whereas the dates we need to return are in row 6 – hence we get a syntax error.

There is a solution, however: INDEX MATCH. They form a highly versatile tag team, but are worth introducing individually.

## Index

Essentially, INDEX(array, row\_num,[column\_num]) returns a value or the reference to a value from within a table or range (list).

For example, INDEX({7,8,9,10,11,12},3) returns the third item in the list {7,8,9,10,11,12}, i.e. 9. This could have been a range: INDEX(A1:A10,5) gives the value in cell A5, etc.

INDEX can work in two dimensions as well (hence the column\_num reference). Consider the following example:

		1	2	3	4	5	6	7
		F	G	H	I	J	K	L
1	11	1	2	3	4	5	6	7
2	12	8	9	10	11	12	13	14
3	13	15	16	17	18	19	20	21
4	14	22	23	24	25	26	27	28
5	15	29	30	31	32	33	34	35
6	16	36	37	38	39	40	41	42
7	17	43	44	45	46	47	48	49
8	18	50	51	52	53	54	55	56
9	19	57	58	59	60	61	62	63
10	20	64	65	66	67	68	69	70
11	21	71	72	73	74	75	76	77

INDEX(F11:L21,4,5) returns the value in the fourth row, fifth column of the table array F11:L21 (clearly 26 in the above illustration).

## Match

**MATCH(lookup\_value,lookup\_array,[match\_type])** returns the relative position of an item in an array that (approximately) matches a specified value. It is not case sensitive.

The third argument, match\_type, does not have to be entered, but for many situations, I strongly recommend that it is specified. It allows one of three values:

- **match\_type 1 [default if omitted]:** finds the largest value less than or equal to the lookup\_value – but the lookup\_array must be in strict ascending order, limiting flexibility;

- **match\_type 0:** probably the most useful setting, MATCH will find the position of the first value that matches lookup\_value exactly. The lookup\_array can have data in any order and even allows duplicates; and
- **match\_type -1:** finds the smallest value greater than or equal to the lookup\_value – but the lookup\_array must be in strict descending order, again limiting flexibility.

When using MATCH, if there is no (approximate) match, #N/A is returned (this may also occur if data is not correctly sorted depending upon match\_type).

MATCH is fairly straightforward to use:

	E	F
12	1	a
13	2	b
14	3	a
15	4	c
16	5	b
17	6	d
18	7	d
19	8	e
20	9	f
21	10	a
22	11	c

In the figure above, MATCH("d",F12:F22,0) gives a value of 6, being the relative position of the first 'd' in the range. Note that having match\_type 0 here is important. The data contains duplicates and

is not sorted alphanumerically. Consequently, match\_types 1 and -1 would give the wrong answer: 7 and #N/A respectively.

## Index Match

Whilst useful functions in their own right, combined they form a highly versatile partnership. Consider our original problem:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
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27																
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29																
30	<b>Error Message: Error in May-09</b>															
31																

MATCH(1,J28:O28,0) equals 5, i.e. the first period the balance sheet does not balance in is Period 5. But we can do better than that.

INDEX(J6:O6,5) equals May-09, so combining the two functions:

**INDEX(J6:O6,MATCH(1,J28:O28,0))**

equals May-09 in one step.

Note how flexible this combination really is. We do not need to specify an order for the lookup range, we can have duplicates and

the value to be returned does not have to be in a row / column below / to the right of the lookup range (indeed, it can be in another workbook never mind another worksheet!).

With a little practice, the above technique can be extended to match items on a case sensitive basis, use multiple criteria and even 'grade'.

More information on this useful combo – including a free example Excel workbook you can download – may be found at <http://www.sumproduct.com/thought/index-match>.

## Key Strokes

Each newsletter, we'd like to introduce you to several useful keystrokes you may or may not be aware of. This month we consider the often ignored F11 function key:

Keystroke	What it does
F11	Insert chart sheet
SHIFT + F11	Insert new worksheet
CTRL + F11	Insert new macro worksheet
ALT + F11	Open Visual Basic Editor

There are over 540 keyboard shortcuts in Excel. For a comprehensive list, please download our Excel file at <http://www.sumproduct.com/thought/keyboard-shortcuts>.

## Upcoming SumProduct Training Courses

**Perth 1st Sep 2014:** Power Pivot training

**Perth 2nd - 5th Sep 2014:** Financial Modelling for Mergers & Acquisitions

**Brisbane 9th Sep 2014:** Excel Update

**Kuala Lumpur 13th - 17th Oct 2014:** Accounting, Finance & Decision-Making

**Sydney 21st Oct 2014:** Excel Update

**Sydney 22nd Oct 2014:** Excel Tips & Tricks

**Sydney 22nd Oct 2014:** Tabling Tables

**Singapore 18th - 21st Nov 2014:** Strategic Planning, Forecasting and Budgeting

**Melbourne 1st - 2nd Dec 2014:** Power Pivot training

**Sydney 3rd - 4th Dec 2014:** Power Pivot training

**Brisbane 8th - 9th Dec 2014:** Power Pivot training

**Perth 10th-11th Dec 2014:** Power Pivot training

## Training Update: Financial Modelling

It has been a busy time for SumProduct recently with two courses being particularly popular. We featured Power Pivot training last month and in this newsletter we focus on the other success story, **Financial Modelling**.



If you work in accounting / finance, you will appreciate that it's critical that you understand the purpose of the three primary financial statements: namely, the Income Statement, Balance Sheet and Cash Flow Statement.

This interactive course focuses on building models efficiently and effectively using well established methodologies developed by SumProduct over the years. There's no need for balancing figures, circulars and macros.

In fact, the most common feedback from this course has been from more seasoned modellers who regularly lament, "I wish someone had shown me this when I first started modelling".

From a blank Excel workbook, this course develops a small, straightforward model which enables our method to be demonstrated

readily and practised comprehensively. By the end of the course, users will have built a full set of financial statements and will be able to repeat this process and apply it to their own model developments.

You may note that training dates for this course are presently conspicuous by their absence. We have just run several sessions and the next dates are being scheduled as we go to press. Do not let this deter you from registering your interest and in-house courses may be scheduled often at a week or so's notice.

If you are interested but unsure what course is for you and / or your team, drop us a line at [training@sumproduct.com](mailto:training@sumproduct.com) and we will send you out our new, no-obligation self-survey that should point you in the right direction.

### Our Services

We have undertaken a vast array of assignments over the years, including:

- **Business planning**
- **Building three-way integrated financial statement projections**
- **Independent expert reviews**
- **Key driver analysis**
- **Model reviews / audits for internal and external purposes**
- **M&A work**
- **Model scoping**
- **Project finance**
- **Real options analysis**
- **Refinancing / restructuring**
- **Strategic modelling**
- **Valuations**
- **Working capital management**

If you require modelling assistance of any kind, please do not hesitate to contact us at [contact@sumproduct.com](mailto:contact@sumproduct.com).

### Spread the Word

These newsletters are not intended to be closely guarded secrets. Please feel free to forward this newsletter to anyone you think might be interested in converting to "the SumProduct way".

If you have received a forwarded newsletter and would like to receive future editions automatically, please subscribe by completing our newsletter registration process found at the foot of any [www.sumproduct.com](http://www.sumproduct.com) web page.

### Any Questions?

If you have any tips, comments or queries for future newsletters, we'd be delighted to hear from you. Please drop us a line at [newsletter@sumproduct.com](mailto:newsletter@sumproduct.com).

### Training

SumProduct offers a wide range of training courses, aimed at finance professionals and budding Excel experts. Courses include Excel Tricks & Tips, Financial Modelling 101, Introduction to Forecasting and M&A Modelling.

Check out our more popular courses in our training brochure:



Drop us a line at [training@sumproduct.com](mailto:training@sumproduct.com) for a copy of the brochure or download it directly from <http://www.sumproduct.com/training>.