

Sum Product

NEWSLETTER #10 - September 2013

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Our Newsletter turns 10 this month

and to celebrate, we're turning on the style (quite literally), see what F10 actually does and announce the winner of the recent "Most Useless Function in Excel" competition. And guess what? It's not the VLOOKUP function much as I believe it should be... Enjoy!

Liam Bastick, Managing Director, SumProduct



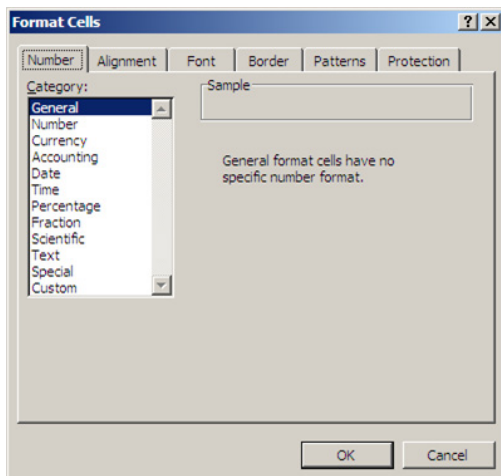
Gone Too Soon



We start this month's newsletter with sad news. With a heavy heart, we are sad to announce the passing of friend and colleague Mike Glover, responsible for SumProduct's web design and newsletter, who tragically drowned recently whilst on holiday with his family. Words are insufficient at a time like this; our deepest sympathies go out to his wife Kylie and young family. Rest In Peace, Mike. We shall all miss you.

Formats versus styles

The terms 'format' and 'style' are often used interchangeably, but in the world of Excel they are not the same thing. To see this, select any cell in Excel and apply the shortcut keystroke CTRL + 1. This shortcut brings up the 'Format Cells' dialog box:

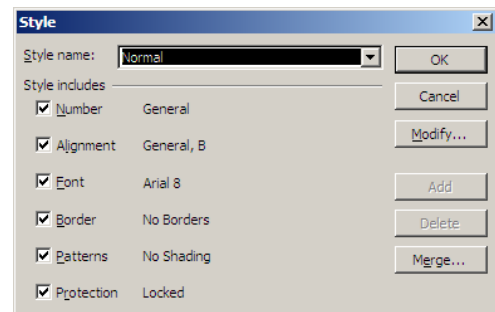


Excel has six format properties: Number, Alignment, Font, Border, Patterns and Protection. A style is simply a pre-defined set of these various formats. With a little forethought, these styles can be set up and applied to a worksheet cell or range very easily.

Creating your own styles is straightforward with Excel's Style dialog box:

- In Excel 2003 (and earlier), go to Format--> Style (ALT + O + S).
- In Excel 2007 (and later), go to the Home tab, click the arrow in the bottom right corner and then select 'New Cell Style...'
(ALT + N):

Either way, the dialog box appears:



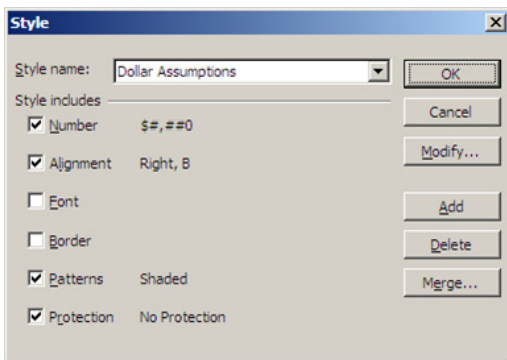
Example

Consider we create an assumption format for entering data in dollars. First, select a cell or range of cells. Then, call up the above dialog box. The dropdown box (highlighted above) can be edited. We'll change the name to 'Dollar Assumptions' and click the 'Modify' button (Excel 2003 and earlier) or the 'Format' button (Excel 2007 and later).

The Format Cells dialog box reappears:

- **Number:** select the Currency category, with zero decimal places and apply the '\$' symbol
- **Alignment:** Horizontal – Right (Indent) with zero indent
- **Patterns:** select an 'easy-on-the-eye' colour such as pale green
- **Protection:** uncheck the Locked check box (allows the cell to be changed in a protected worksheet)
- Click 'OK' to return to the Style dialog box.

Note that no formats have been ascribed for Font or Border in this example. We don't want the style to control (that is, overwrite) these properties, so the 'Style includes' check boxes for these two format properties should be unchecked:



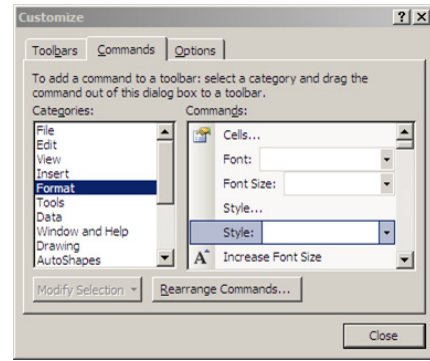
By clicking 'OK' or 'Add', the cell or range has now been formatted with the 'Dollar Assumptions' style.

Now that this style has been added, in Excel 2007 / later you simply select the range and then click on the style in the Styles gallery on the Home tab.

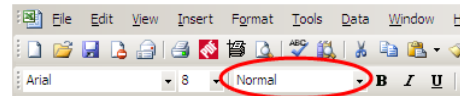
Applying styles in Excel 2003 (and earlier) is just as simple once you have made a customisation.

For pre Excel 2007, you can call up the Style dialog box and then choose the appropriate style and click 'OK'. This is a little cumbersome. It is easy to incorporate this Style dropdown box onto an existing toolbar and dispense with several of these steps.

By right-clicking on any toolbar or using the shortcut (ALT + T + C), call up the Customize dialog box and select the Commands tab, then the Format category.



Choose the Style dropdown using the left-click on the mouse and drag it onto an existing toolbar of your choice (then close the dialog box).



Easy!

Updating and retaining styles

The difference between Formats and Styles becomes obvious when you realise you want to change (update) a style. Just select one of the cells that the style is attached to and call up the Style dialog box in the usual way, modifying the style as required. Click 'OK' when finished. Note that every cell in the open workbook that uses this style has automatically updated. Once you start using styles, you will never look back!

You will only want to set up styles once. When you're finished, simply save the file as a template using File --> Save As (you may wish to delete or remove formatted cells first so that you have a blank workbook). Using File --> New (or Office Menu --> New --> My Templates in Excel 2007 and later) will call up your saved styles.

Most Useless Excel Function

Long, long ago in Excel fora far, far away (well, earlier this year anyway), a call went out to Excel users and gurus alike to vote for what they believed was the most useless function ever in Excel. Given this began pre-Excel 2013, our current favourite – **BITAND** (look it up) – was deemed ineligible.

The crowd favourite was **FACTDOUBLE**, a function I am sure most

$$3! = 3 \times 2 \times 1 = 6$$

$$7! = 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 5,040$$

We thought **FACTDOUBLE** would therefore work as follows:

$$\text{FACTDOUBLE}(3) = 3!! = (3 \times 2 \times 1)! = 6! = 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 720$$

But no.

$$\text{If } n \text{ is odd, } \text{FACTDOUBLE}(n) = n (n-2) (n-4) \dots 3 \times 1$$

$$\text{If } n \text{ is even, } \text{FACTDOUBLE}(n) = n (n-2) (n-4) \dots 4 \times 2, \text{ e.g.}$$

$$\text{FACTDOUBLE}(7) = 7 \times 5 \times 3 \times 1 = 105$$

$$\text{FACTDOUBLE}(8) = 8 \times 6 \times 4 \times 2 = 384$$

$$\text{and therefore (!?) in Excel 2013 } \text{FACTDOUBLE}(\text{BITAND}(13,25)) = 945$$

readers will have used on less than zero occasions. This superstar of the modelling world returns the double factorial of a number (?).

Microsoft does like making terms up on occasion and we can't help thinking this might be one such instance. Mathematicians amongst you will know that the factorial function (denoted by '!') only works with integers and is the product of all non-negative integers less than or equal to integer selected, e.g. \searrow

In fact, it will even work with non-negative decimals, the value is simply truncated so that it becomes a whole number.

Having said all this, since it was announced, various Excel users have been challenging each other to come up with a rationale for this function. Apparently, it is necessary to compute the odds of winning in Texas Hold 'Em (obviously!) so it isn't a function without use after all...



Complex Formula of the Month

Financial modelling requires several skills. Aside from a good understanding of Excel, an ability to solve problems, a strong technical knowledge in accounting, statistics, taxation and valuation theory amongst other areas, it's useful to have at hand the right formulae for the right circumstance.

In a very ad hoc series (trust us, this will be very ad hoc!), we submit for your perusal a formula you may not be aware of that does have a practical use for those working in finance.

In a fiercely competitive market, managers are often trying to work out what is the maximum discount they can offer for a product in order to incentivise debtors paying without eroding profits and / or market share significantly.

To this end, ladies and gentlemen, we present Hill and Reiner's formula from 1979 which suggested the optimum maximum discount that should be made. \searrow

$$\delta_{\max} = 1 - (1+i)^{M-N'} \left[1 - \frac{1}{P} + \frac{(1-b)(1+i)^{N'-N} + vg(1+i)^{N'-Q}}{p(1+g)(1-b+k)} \right]$$

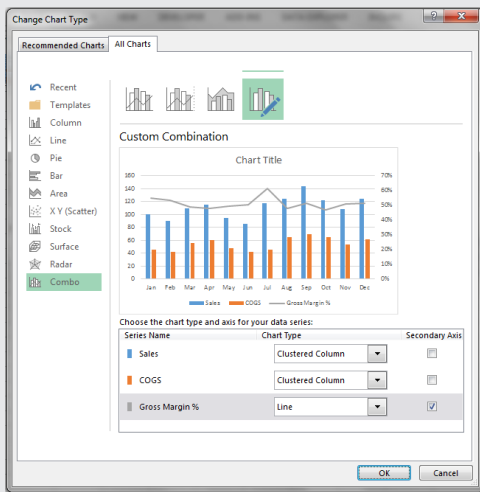
where:

- | | | | |
|----------|---|---------|---|
| δ | = cash discount for early payment, new policy, | p | = fraction of sales derived from earlier payers, |
| i | = opportunity cost of capital, discount rate, | $(1-p)$ | = fraction of sales derived from later payers, |
| N | = mean collection period for all payers under current policy, | b | = fraction of sales never collected or bad debts, |
| N' | = mean collection period for later payers under new policy, | k | = fractional bad debt reduction from early payment, |
| M | = mean collection period for earlier payers under new policy, | g | = fractional change in sales volume or growth rate, |
| Q | = average payment day of variable costs, | v | = variable costs as a fraction of sales. |

We expect to see all of our clients incorporating this into their budgeting models in the very near future. Or maybe not.

[Jokes aside, SumProduct has incorporated a variant of this calculation into several recent cash flow forecasting models for our clients. If you'd like to find out more about how this might help and apply to you, drop us a line at contact@sumproduct.com.]

Excel Gotchas



After our April newsletter (and in light of our continuing discussions about the pro's and con's of Excel 2013), we've received a few queries from modellers struggling to change the chart type of an individual data series in a chart with more than one set of data.

Before Excel 2013, users were able to change individual data series to a different chart type by selecting them, and then clicking Chart Tools -> Options -> Change Chart Type. Excel would then change the chart type of the selected data series only. However, Excel 2013 has arguably become too clever for its own good. If you proceed in this manner in the latest version of Excel, you will discover that the spreadsheet software will automatically change the chart type for all data series in the chart.

Now, this could be a blessing or a curse. Assuming you wish to only change the chart type for a selected data series, you must first change your chart to a combo chart. To do this, select the chart in order to show the 'Chart Tools' on the Ribbon, then click 'Change Chart Type' on the 'Design' tab, and pick 'Combo chart'. Then you can proceed in the usual way.

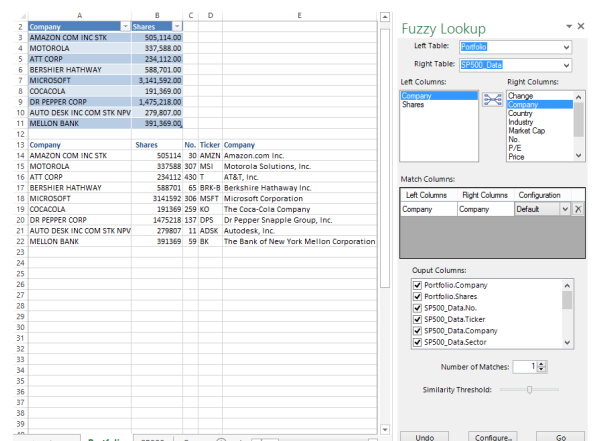
A Warm and Fuzzy Welcome

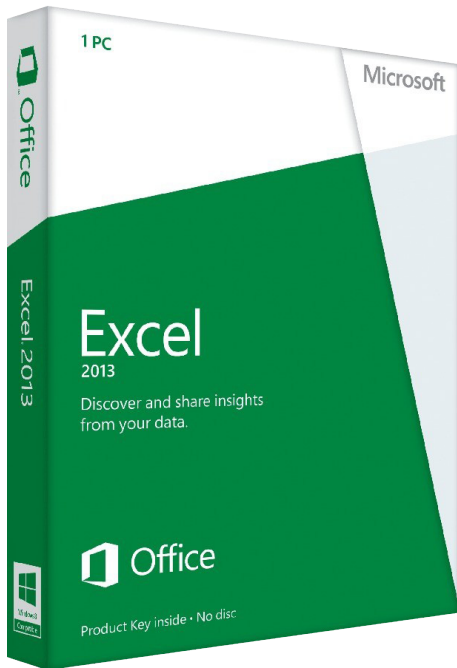
Ever tried to connect two data sets where the identifier is not precisely the same for the two tables? If this strikes a familiar chord with you, you have probably tried to perform "fuzzy matching", whereby modellers seek to link two similar data entries, e.g. "SumProduct Pty Limited" should be connected to "sum product ltd".

Launched just recently, the **Fuzzy Lookup Add-In for Excel** was developed by Microsoft Research and performs fuzzy matching of textual data in Microsoft Excel. It can be used to identify fuzzy duplicate rows within a single table or to fuzzy join similar rows between two different tables. The matching is robust to a wide variety of errors including spelling mistakes, abbreviations, synonyms and added / missing data.

While the default configuration works well for a wide variety of textual data, such as product names or customer addresses, the matching may also be customised for specific domains or languages too.

The add-in is available for Excel 2010 onwards and along with an example Excel file and high-level instructions, you can download it from the Microsoft website: <http://www.microsoft.com/en-us/download/details.aspx?id=15011>.





Key Strokes

Each newsletter, we'd like to introduce you to several useful keystrokes you may or may not be aware of. Given we have turned 10 this newsletter, we concentrate on F10 this time out and show you how to manipulate Excel in ways that even the most hardened keyboard user often reverts to the mouse for:

Keystroke	What it does
F10	Activate menus
SHIFT + F10	Activate context menus (same as right-click)
CTRL + F10	Toggle maximised / restored window

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>.

Excel Thinks Inside The Box

It's official. After months of needing a PhD in Astrophysics to work out which version of Office 2013 you might need, for those considering Office 2013, you can now purchase a retail SKU that includes Power Pivot and Power View. Excel 2013 Standalone SKU will now include the add-ins when installed.

For those who may be seething that they have already purchased Excel 2013 Standalone and don't have these useful add-ins, don't worry. The next time Office updates via Click-to-Run, Excel 2013 will update for these add-ins.

Common sense has prevailed!

Upcoming SumProduct training courses

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

Perth 6th Sep: Introduction to Power Pivot

Hong Kong 23rd - 27th Sep: Structuring Mining Project Finance Models

Kuala Lumpur 2nd - 3rd Oct: Valuation Modelling (Extended)

Melbourne 10th - 11th Oct: Power of Power Pivot

South Africa 21st - 25th Oct: Structured Mining Project Finance Models

Sydney 28th - 29th Oct: Power of Power Pivot

Brisbane 30th - 31st Oct: Power of PowerPivot

Hong Kong 26th - 29th Nov: Strategic Planning, Budgeting and Forecasting

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.

Please forward

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