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Chapter 4

Common Errors in Modelling

Let's talk about some errors in financial modelling. I'm not talking about mistakes that we make, I'm talking about error values and dealing with those or perhaps not dealing with those, so let's talk about that.

Common Error Values

In Chapter 4 you'll find a whole list of the possible Excel errors that you can find or that you may have found, if you've been modelling for any length of time, you probably have seen some of these Excel errors before, the first one being the railroad tracks.

That's probably my favourite error because it's not really an error. It just means that your column is not wide enough.

Then there is the #DIV 0! which is really is not a big deal and that's one that we do actually suppress quite a lot, when you were to divide something. For example, if you of an actual versus budget and you have a variance amount and then you want to have a percentage variance and you have that percentage as a percentage on the budget for example, sometimes there'll be amount in there and sometimes it will be zero. But to follow Best Practice, of course you want to have exactly the same formula, all the way down the page.

Sometimes there'll be a value in there and sometimes there won't and if it's a zero, it's going to give you a #DIV 0! error, which really looks messy, you don't want to see and I'm going to show you how to suppress those errors.

Just bear in mind though, that some modellers don't recommend that you suppress errors. They say you shouldn't use error suppression as it can mask real errors. Personally I prefer to suppress, I am a bit of a suppressor myself, I prefer to not show those errors. I don't think they look tidy in a financial model, so I would tend to use an IS error suppression. So let's have a look at how to do that.

So for example here, if I were to create a VLOOKUP formula and if I say, 63 is my criteria and I'm going to say that's my array, looking for the third column across and I'm going to ask for an exact match, which it won't be able to find, so I've now got a #N/A error.

If I say that's okay, that I don't want to actually show anything, you could suppress that error. This is going to be different depending on which version, I'll show you how to make it compatible with 2003 first of all, because there is a new function that came out in 2007 and above, called an IFERROR, which is not available in the previous versions.

So if you want this formula to be compatible with the previous version, you'll need to use this one, which I am about to show you now, otherwise, if you're going to be using the later version, you can use a much easier IFERROR function, so we'll look at both of those.

If you wanted to be compatible with 2003, you need to highlight the formula. Go in and copy it and then, if it is an error, go to the end. It's a zero and then CNTRL V, to paste it. So you have to actually have the formula in there twice.

So if your formula is this long, the whole thing ends up being that long and it's going to look like that, which is not a particularly efficient way of doing it because it can end up being quite long.

Let's look at how you would do that if you're using Excel 2007 or above.

You would literally just need to go, IFERROR, 0. That's a much more succinct concise way of doing it but it's obviously one of the new functions that's only available in the later versions of Excel. That's how you suppress errors if you choose to suppress them.

Let's continue to have a look at some of these other error values that you might see. You might see a #N/A, that's the one that we got with the VLOOKUP, basically the values not available, the name (#NAME?), usually when you're using a name range, and you've perhaps misspelled it or mistyped it. REF! errors are pretty ugly. Basically they mean that the value that you are referring to doesn't exist, or the cell that you are referring to doesn't exist on the page. You've either deleted it or it's literally not there, so it's quite hard to fix up because it's been deleted, it's been removed. So you need to go in and recreate it. They can be a bit, a bit tricky to recreate. And the value (VALUE!) is not a big deal it really just means you probably just mistyped the function name or something like that.

Circular references lastly are pretty horrible. You really don't want to have a model that's got a circular reference in there. If you accidentally get a circular reference, just stop what you are doing and just undo it, whatever it was, the last thing you did. Don't save it - don't keep having a circular reference in there because your model just won't calculate properly. Most of the time the circular references are accidental and they sort of end up with this big loop, so try to find out what it is and get rid of it.

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Circular Reference in Interest Calculations

There's a pretty common situation when you're creating a set of financial statements where you do end up with this loop. Some modellers will actually say that that is valid, that you would actually have this interest loop happening, and they will go in and actually enable iterative calculations, which means that your circular reference is okay. What you're telling Excel is, "I intend to have a circular reference and that's okay." I'm not a huge fan of doing that. I find that it causes quite a few problems. It means that other circular references will be allowed and I just find that things often don't calculate properly. So I would prefer not to take that option.

We'll look at a couple of other options. But basically what happens here is that you are calculating your P&L and you've got your retained earnings that come out at the bottom, which then go through, they come in as cash flow, which then are calculating how much cash you've got. How much cash you've got will push out the amount that you need to borrow. Then your interest will rely on your borrowing. Then that interest goes into your P&L, which will then drive your retained earnings, which will then drive your cash, which will then drive your borrowings, which will then drive your interest. And you end up with a great big loop that goes round and round and round. And that's a fairly common problem in financial modelling.

So there's a couple of ways around it. If you're doing the advanced financial modelling course we're going to have a similar situation where you're looking at all three sets of financial statements. We are going to get around it mathematically in this case because we're going to do a working P&L. Then we do all of the calculations in there and pull that through into a proper P&L. We're going to break the loop that way. That's probably the simplest way of doing it, if you can get around that problem mathematically.

Alternatively, if you're not able to do that, what you can do is, if it's a monthly model, you can actually have your interest calculating on your prior month's balances. It's not entirely accurate, it's not as accurate. That is an option. The other option, of course, is to create a macro that's going to hard code your interest amount. But of course then you haven't got that linking going on, the whole point of financial modelling is having your inputs and output dynamic, changing all of the time. So if you change something it is not going to flow through automatically. I prefer not to hard code and if I do I probably create a macro that would run it, re-calculate it and the hard code the values again, that’s another option of getting around that circular reference.

Let me just demonstrate what a circular reference looks like and how to find them and move them and how to enable iterative calculation. So this is an example of a fairly basic and a fairly common sort of a circular reference is for you to create a SUM like that and you accidentally SUM itself like that. So it is going to come out with a warning to say that I have got a circular reference in there.

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So it is pretty easy to see that it is in A8, so you need to locate it and find it and get rid of it which is not always as easy as that because if you are on another page for example you can see the circular references but you don't know where they are. So finding them can be a little tricky. The easiest way to find them is on your formula tab, go into error checking and go to circular references and it will actually take you there. That's probably be the easiest way of finding a circular reference if you do have one in your model, that can be a little bit tricky to find.

If you do decide to enable iterative calculation if you got that interest problem or if there is another issue and you decide that having a circular reference is okay. If you are using Excel 2010, go into file, options and then under formulas, just there it will say enable iterative calculations and in 2007 it is just under the button. So that's have you enable iterative calculations if you want to.

So those are some of the errors that you might find in your financial model and how to deal with them.

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