3 Statement Modeling with Iterations

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Contents

- 3 Statement modeling steps - overview
- Historic data
- Ratios and statistics and forward assumptions
- Income statement
- Balance sheet
- Debt and interest calculations
- Cash flow statement
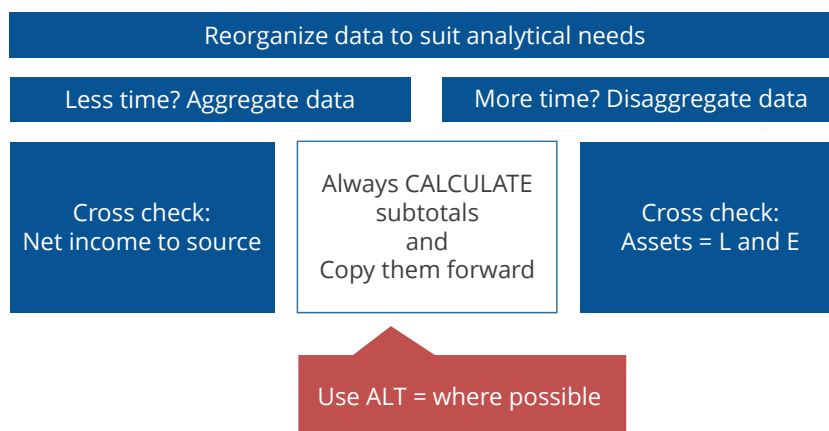- Interest and circular references
- Prepare for handoff

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Slide 1

Remember to have the iteration setting turned OFF before starting

1	Input historical data for income statement and balance sheet
2	Calculate ratios and statistics
3	Decide on forecast assumptions
4	Build the forecast income statement except for interest
5	Build the forecast balance sheet except for cash, revolver and debt
6	Build the cash flow statement using the rules of cash
7	Plug cash into the balance sheet from the cash flow statement
8	Build the debt and interest calculations
9	Plug revolver and long term debt into the balance sheet
10	Link the interest into the income statement and deal with any circular reference

Slide 2

Entering Historical Data

Reorganize data to suit analytical needs

Less time? Aggregate data		More time? Disaggregate data
Cross check: Net income to source	Always CALCULATE subtotals and Copy them forward	Cross check: Assets = L and E

Use ALT = where possible

Ratios, Statistics and Forward Assumptions

Explain variations with footnotes/ comments	Historical data - Actual	Forward assumptions – Research, Management, Analyst's own
	Understand business	Forward assumptions drive forecast – 5 or 10 years common
	Trends over time? Compare with peers, industry and economic benchmarks	

Examples	Year -1 A	Year 0 A	Year 1 E	Year 2 E	Year 3 E	Year 4 E	Year 5 E
Revenue growth	6.2%	6.6%	6.5%	6.0%	5.5%	5.0%	4.0%
Costs % revenues	72.4%	70.8%	71.0%	71.0%	71.0%	71.0%	71.0%
Margins	12.4%	14.4%	15.2%	14.8%	14.5%	14.5%	14.5%
OWC % revenues	8.0%	8.2%	7.8%	7.5%	7.4%	7.4%	7.4%
Tax rate	25.5%	25.2%	23.0%	23.0%	23.0%	23.0%	23.0%

Income Statement

	Actual	Build forecast, from assumptions, for all line items except interest				
Income statement	**Year 0 A**	**Year 1 E**	**Year 2 E**	**Year 3 E**	**Year 4 E**	**Year 5 E**
Revenues	10,265.3	10,727.2	11,210.0	11,714.4	12,241.6	12,792.4
Operating costs	8,754.9	9,332.7	9,752.7	10,191.5	10,650.2	11,129.4
EBIT	1,510.4	1,394.5	1,457.3	1,522.9	1,591.4	1,663.0
Interest income	9.0					
Interest expense	223.4					
Earnings before tax	1,296.0	1,394.5	1,457.3	1,522.9	1,591.4	1,663.0
Tax expense	304.0	320.7	335.2	350.3	366.0	382.5
Net income	991.9	1,073.8	1,122.1	1,172.6	1,225.4	1,280.5

SENSE, STRUCTURE and STRESS check Year 1 forecast BEFORE copying across

Balance Sheet

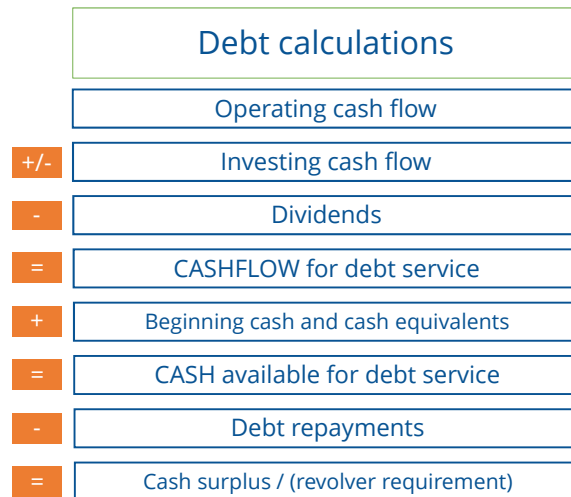| Balance sheet	Actual Year 0 A	Build for all line items except cash, revolver and debt				
		Year 1 E	Year 2 E	Year 3 E	Year 4 E	Year 5 E
Cash and cash equivalents	2,143.6					
Operating assets	4,382.2	4,720.0	4,932.4	5,154.3	5,386.3	5,628.7
Long term assets	4,351.3	4,277.1	4,224.2	4,191.3	4,177.1	4,180.8
Total assets	10,877.1	8,997.1	9,156.6	9,345.6	9,563.4	9,809.4
Revolver	606.0					
Operating liabilities	2,907.3	3,218.2	3,363.0	3,514.3	3,672.5	3,837.7
Long term debt	3,743.7					
Total liabilities	7,257.0	3,218.2	3,363.0	3,514.3	3,672.5	3,837.7
Equity	3,620.1	4,049.7	4,498.5	4,967.6	5,457.7	5,969.9
Total liabilities and equity	10,877.1	7,267.8	7,861.5	8,481.9	9,130.2	9,807.6
Balance ?	0.0	(1,729.3)	(1,295.1)	(863.7)	(433.2)	(1.8)

SENSE, STRUCTURE and STRESS check Year 1 forecast BEFORE copying across
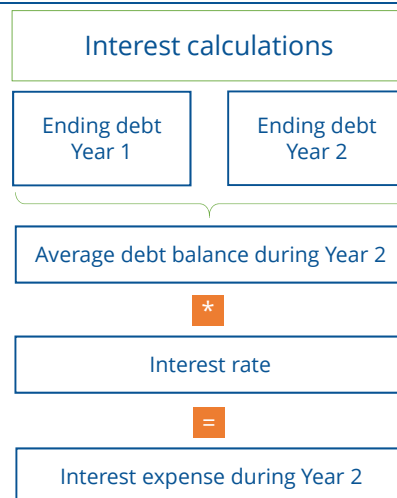
Cash Flow Statement

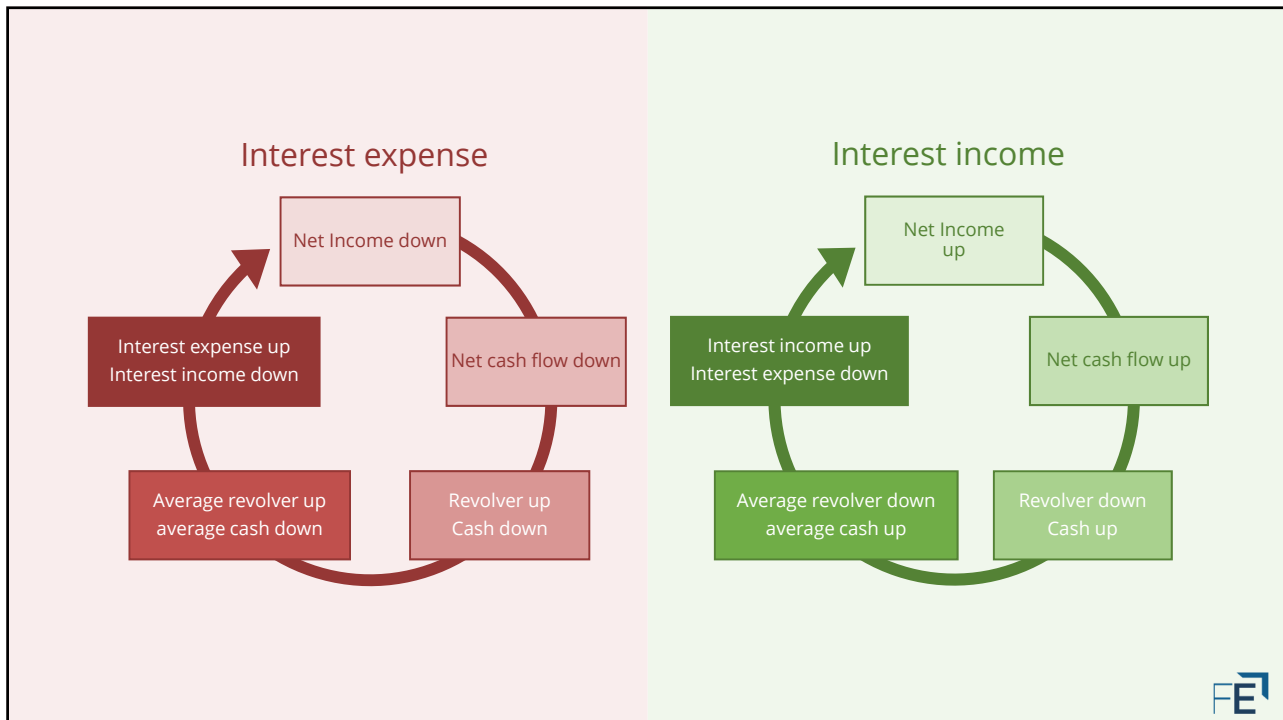| Cash flow statement	Year 0 A	Year 1 E	Year 2 E	Year 3 E	Comment
Net income		1,073.8	1,122.1	1,172.6	RE up - Cash up
D&A		396.0	389.2	384.4	PP&E down – Cash up
Change in OWC		(26.9)	(67.6)	(70.6)	OWC up – Cash down
Operating cash flow		1,442.9	1,443.8	1,486.4	Subtotal
Capex		(321.8)	(336.3)	(351.4)	PP&E up – Cash down
Investing cash flow		(321.8)	(336.3)	(351.4)	Subtotal
Dividends paid		(644.3)	(673.3)	(703.6)	RE down – Cash down
Revolver issuance (repayment)		(606.0)	0.0	0.0	Revolver down – Cash down
Debt issuance / (repayment)		(300.0)	0.0	(350.0)	Debt down – Cash down
Financing cash flow		(1,550.2)	(673.3)	(1,053.6)	Subtotal
Net cash flow		(429.2)	434.2	81.4	Op, Investing, Financing
Beginning cash and equivalents		2,143.6	1,714.4	2,148.6	From prior period
Ending cash and equivalents	2,143.6	1,714.4	2,148.6	2,230.0	Beginning + flow = Ending

Equals cash and cash equivalents in the BS and the debt calculations
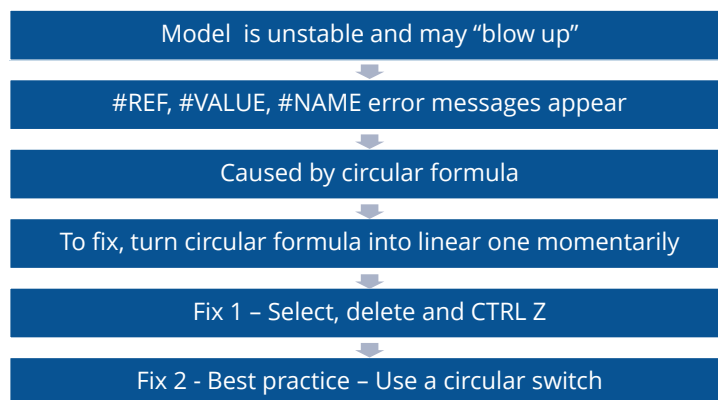
Debt Calculations

	Debt calculations
	Operating cash flow
+/-	Investing cash flow
-	Dividends
=	CASHFLOW for debt service
+	Beginning cash and cash equivalents
=	CASH available for debt service
-	Debt repayments
=	Cash surplus / (revolver requirement)

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Interest Calculations

Interest calculations

Ending debt Year 1	Ending debt Year 2

Average debt balance during Year 2

*

Interest rate

=

Interest expense during Year 2

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Dealing with Circular References

Circular references

Model is unstable and may "blow up"
#REF, #VALUE, #NAME error messages appear
Caused by circular formula
To fix, turn circular formula into linear one momentarily
Fix 1 – Select, delete and CTRL Z
Fix 2 - Best practice – Use a circular switch

Prepare for Handoff

Check that the output looks reasonable based on assumptions ☑

Ensure consistency of formatting: formulas black, hard numbers blue ☑

Is the layout intuitive? ☑

Are complex calculations broken down into steps? ☑

Is the model documented where necessary? ☑

Is the circular switch ON, is iteration ON ☑

Is the model beauty saved? (Ctrl + Home on every sheet) ☑

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