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# Financial Modeling Fundamentals, Module 4: Three-Statement Projections

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**Key Rule #1: Projecting the Three Financial Statements**

In many modeling tests and case studies, you'll receive requests to "project the financial statements" for a company.

For example, a banker might give you a company's Income Statement, Balance Sheet, and Cash Flow Statement for the past 3 years and say, "Please project this company's statements over the next 5 years."

You then have to make reasonable assumptions for the company's revenue growth, margins, taxes, and cash flow to create these projections.

Do **NOT** get lost in the weeds with this exercise.

**The purpose of creating a "3-statement projection model" for a company is to estimate its Cash Flow, Cash, and Debt balances over the years.**

**Repeat after me: CASH FLOW IS KING.**

Too often, people obsess over small details that don't make a difference: Should you link Accounts Receivable to Revenue? Or should you project it based on Days Sales Outstanding?

Should you make Depreciation a percentage of CapEx? Or Revenue? Or create a schedule?

Should you project each Working Capital item separately, or group the entire section together?

Here's the answer to everything: **It doesn't matter what you do as long as you get the company's CASH FLOW directionally correct.**

For example, if the company has grown its Cash Flow in each historical year, and its revenue is expected to grow at 10-15%, with its margins staying the same, then its Cash Flow *should* grow in the future as well.

On the other hand, if the company has had negative Cash Flow despite solid growth and margins, then it will probably continue to lose Cash in the future.

If the case study provides specific instructions, you should follow them. If they want projections for individual Working Capital items, make them. If they want a Depreciation Schedule, build it.

**But in my experience, most people waste A TON of time and mental energy by worrying about irrelevant items in these projections.**

Before we walk through the process step-by-step, I'll make one other important point: **You don't necessarily *need* to create 3-statement projections when analyzing a company.**

Why?

Because you could just project the company's revenue, expenses, and cash flow items, and determine the company's Cash, Debt, and Equity balances like that!

We use the same approach throughout all the courses and guides on the site: In simpler DCF, M&A, and LBO models, we often project the company's "Cash Flow" and skip full projections.

Full Balance Sheet projections are **unnecessary** because a company's Cash, Debt, and Equity balances change based on its Cash Flow Statement – and you can project **everything** on its Cash Flow Statement independently!

Also, you don't even need a *full* Cash Flow Statement because many items on it are non-recurring (e.g., most of the Cash Flow from Financing section). You could away with projecting just Cash Flow from Operations and CapEx and leave it at that.

There are a few exceptions in certain industries, such as commercial banks and life insurance, but we're describing the "standard" industries here (e.g., technology, industrials, healthcare, consumer/retail, power/utilities, etc.).

So, before you spend time projecting the 3 financial statements, verify that you need to do it.

## Step 1: Project Revenue in a Reasonable Level of Detail

There are dozens of industries and dozens of ways to project a company's revenue.

The "best" method depends on:

1) The company's **industry**.

2) How much **data** you have.

3) How much **time** you have.

4) The **purpose** and **intended audience** of the analysis.

Broadly speaking, you can project revenue in 3 main ways:

1) A simple percentage growth rate.

2) # Units Sold * Average Price per Unit.

3) Market Share * Market Size.

If you're pressed for time, and you have limited data, you'll often use the first method.

For example, if you're completing a 30-minute case study, and the instructions tell you that the company's revenue should grow at 10% per year, use that number.

On the other hand, if you have more time – 60 minutes up to several hours or days – you will almost always use methods #2 or #3.

These more complex methods won't necessarily give you different numbers, **but they will make your numbers easier to justify.**

For example, if you're presenting your work to an MD, he/she could easily grill you if he/she sees a random 8% revenue growth rate assumption in your model.

But if you can explain it by saying, "The company's unit sales are expected to grow by 5% based on the 3 new sales reps it's hiring, and its prices are increasing by 3%; those changes result in an 8% growth rate," then the MD will be *far* less likely to question you.

Here are a few examples of how you might project revenue for companies at different maturity stages in different industries:

**Example #1: High-Growth Recruiting/Headhunting Firm (Frank Recruitment)**

Here, we link the company's revenue ("Turnover" in U.K. terminology) to the number of sales reps and the sales per sales rep ("Sales Rep Productivity"):

| | | Historical | | | Projected | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Financial Statement Drivers:** | *Units:* | **FY13** | **FY14** | **FY15** | **FY16** | **FY17** | **FY18** | **FY19** | **FY20** |
| **Income Statement Drivers:** | | | | | | | | | |
| Sales Reps: | *# People* | 192 | 271 | 417 | 626 | 876 | 1,138 | 1,423 | 1,708 |
| % Growth: | *%* | | 41.1% | 53.9% | 50.0% | 40.0% | 30.0% | 25.0% | 20.0% |
| Sales Rep Productivity: | *£ M* | 0.205 | 0.231 | 0.228 | 0.235 | 0.242 | 0.246 | 0.251 | 0.256 |
| % Growth: | *%* | | 12.3% | (1.2%) | 3.0% | 3.0% | 2.0% | 2.0% | 2.0% |

| | | Historical | | | Projected | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Consolidated Profit and Loss Account:** | *Units:* | **FY13** | **FY14** | **FY15** | **FY16** | **FY17** | **FY18** | **FY19** | **FY20** |
| **Turnover:** | *£ M* | **£ 39.4** | **£ 62.5** | **£ 95.0** | **£ 146.7** | **£ 211.6** | **£ 280.6** | **£ 357.8** | **£ 437.9** |
| *% Growth Rate:* | *%* | *N/A* | *58.6%* | *52.0%* | *54.5%* | *44.2%* | *32.6%* | *27.5%* | *22.4%* |

**Example #2: Mature Airline Company (Avianca)**

An airline operates a certain number of flights, which are represented by its "Available Seat Kilometers" (ASK) or "Available Seat Miles" (ASM).

But it never sells 100% of the seats on all its flights – so you have to multiply the total number of *Available* Seat Kilometers or Seat Miles by the "Load Factor" to determine how many ASK or ASM it *earns revenue on*.

Then, you assume that each mile or kilometer flown generates a certain amount of revenue based on the average ticket price passengers have paid.

For example, if the average ticket from New York to London costs $500, and it's about 5,500 km between the cities, that's a "Yield" of $0.091 per Revenue Seat Kilometer.

You then aggregate this number over all the passengers and flights, or use simple averages:

| | | Projected | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Revenue Assumptions:** | *Units:* | 3Q 16 | 4Q 16 | 1Q 17 | 2Q 17 | 3Q 17 | 4Q 17 | 1Q 18 | 2Q 18 | 3Q 18 | 4Q 18 |
| **Passenger Revenue Assumptions:** | | | | | | | | | | | |
| Available Seat Kilometers (ASK): | *Millions* | 11,734 | 11,682 | 12,194 | 12,212 | 12,556 | 12,558 | 12,987 | 12,944 | 13,497 | 13,562 |
| *ASK YoY Growth Rate:* | *%* | 1.0% | 1.0% | 6.0% | 5.5% | 7.0% | 7.5% | 6.5% | 6.0% | 7.5% | 8.0% |
| Passenger Load Factor: | *%* | 81.3% | 79.6% | 78.7% | 78.3% | 81.3% | 79.6% | 78.7% | 78.3% | 81.3% | 79.6% |
| Revenue Seat Kilometers (RSK): | *Millions* | 9,540 | 9,301 | 9,600 | 9,565 | 10,207 | 9,998 | 10,224 | 10,139 | 10,973 | 10,798 |
| *RSK YoY Growth Rate:* | *%* | *1.0%* | *0.9%* | *6.0%* | *5.8%* | *7.0%* | *7.5%* | *6.5%* | *6.0%* | *7.5%* | *8.0%* |
| Passenger Revenue: | *$ M* | 787.0 | 767.3 | 816.0 | 813.0 | 918.7 | 899.9 | 945.7 | 937.9 | 1,042.4 | 1,025.8 |
| Yield (Revenue / RSK): | *$ as Stated* | $ 0.0825 | $ 0.0825 | $ 0.0850 | $ 0.0850 | $ 0.0900 | $ 0.0900 | $ 0.0925 | $ 0.0925 | $ 0.0950 | $ 0.0950 |

**Example #3: Expansion-Stage Retailer (Michael Hill)**

For a retailer, revenue is based on the number of stores times the average revenue per store, or the number of square feet or square meters times the sales per square foot or square meter.

You could make these projections granular and look at individual stores, or you could go higher-level and divide the company into several different regions, as we do for Michael Hill:

| Revenue and Expenses: | Units: | FY17 | FY18 | FY19 | FY20 | FY21 | FY22 |
|---|---|---|---|---|---|---|---|
| | | | | | | Projected | |
| **# of Stores and Sales per Store:** | | | | | | | |
| **Revenue by Segment:** | | | | | | | |
| Australia: | *$ M AUD* | $ 320.3 | $ 335.8 | $ 349.9 | $ 362.4 | $ 374.4 | $ 385.6 |
| New Zealand: | *$ M NZD* | 127.1 | 132.1 | 136.1 | 140.2 | 145.8 | 151.5 |
| Canada: | *$ M CAD* | 112.5 | 131.4 | 152.8 | 181.0 | 210.1 | 241.6 |
| USA: | *$ M USD* | 15.5 | 24.4 | 42.6 | 62.3 | 83.3 | 115.5 |
| Emma & Roe: | *$ M AUD* | 17.0 | 26.6 | 40.0 | 54.8 | 70.7 | 90.7 |
| **Number of Retail Stores:** | | | | | | | |
| Australia: | *# Stores* | 171 | 174 | 175 | 176 | 176 | 176 |
| New Zealand: | *# Stores* | 53 | 53 | 53 | 53 | 54 | 54 |
| Canada: | *# Stores* | 75 | 80 | 90 | 100 | 110 | 120 |
| USA: | *# Stores* | 10 | 20 | 30 | 40 | 50 | 70 |
| Emma & Roe: | *# Stores* | 25 | 35 | 50 | 60 | 75 | 90 |
| **Total Stores, Fiscal Year End:** | *# Stores* | **334** | **362** | **398** | **429** | **465** | **510** |
| **Sales per Store:** | | | | | | | |
| Australia: | *$ M AUD* | 1.89 | 1.95 | 2.00 | 2.07 | 2.13 | 2.19 |
| New Zealand: | *$ M NZD* | 2.42 | 2.49 | 2.57 | 2.64 | 2.72 | 2.81 |
| Canada: | *$ M CAD* | 1.59 | 1.70 | 1.80 | 1.91 | 2.00 | 2.10 |
| USA: | *$ M USD* | 1.55 | 1.63 | 1.70 | 1.78 | 1.85 | 1.92 |
| Emma & Roe: | *$ M AUD* | 0.83 | 0.89 | 0.94 | 1.00 | 1.05 | 1.10 |

**Example #4: Mature Technology Company (Dell)**

Large, mature companies operate in so many markets that it is often difficult to determine the number of units sold and the average unit price.

If your company is one of a few players in a large market (e.g., a $50 billion market where 3 companies each have 20-30% market share), it's often better to project revenue based on market share and market size.

Here's an example for Dell:

| Income Statement - Segment-Level Revenue Scenarios | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Historical | | | | Projected | | | | |
| FY Ending February 1, | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| **Revenue by Product:** | | | | | | | | | |
| Servers and Networking: | $ 6,032 | $ 7,609 | $ 8,336 | $ 9,294 | $ 9,517 | $ 9,993 | $ 10,193 | $ 10,589 | $ 10,694 |
| Storage: | 2,192 | 2,295 | 1,943 | 1,699 | 1,750 | 1,802 | 1,839 | 1,875 | 1,913 |
| Services: | 5,622 | 7,673 | 8,322 | 8,396 | 9,179 | 9,592 | 10,024 | 10,425 | 10,842 |
| Software & Peripherals: | 9,499 | 10,261 | 10,222 | 9,257 | 9,627 | 10,012 | 10,313 | 10,622 | 10,888 |
| Mobility: | 16,610 | 18,971 | 19,104 | 15,303 | 13,909 | 14,048 | 13,334 | 13,401 | 12,612 |
| Desktop PCs: | 12,947 | 14,685 | 14,144 | 12,991 | 12,801 | 12,865 | 12,329 | 12,267 | 11,675 |
| **Total Revenue:** | **52,902** | **61,494** | **62,071** | **56,940** | **56,783** | **58,313** | **58,031** | **59,179** | **58,625** |
| **Selected Case:** Base | | | | | | | | | |
| **Total Market Size by Product Segment:** | | | | | | | | | |
| Servers and Networking: | $ 49,851 | $ 52,840 | $ 55,573 | $ 54,351 | $ 55,981 | $ 57,101 | $ 58,243 | $ 58,825 | $ 59,414 |
| Mobility: | 136,920 | 162,145 | 160,538 | 151,515 | 154,545 | 156,091 | 156,871 | 157,655 | 157,655 |
| Desktop PCs: | 98,198 | 107,582 | 104,770 | 105,618 | 106,674 | 107,207 | 107,207 | 106,671 | 106,138 |
| **Growth in Total Market Size by Product Segment:** | | | | | | | | | |
| Servers and Networking: | | 6.0% | 5.2% | (2.2%) | 3.0% | 2.0% | 2.0% | 1.0% | 1.0% |
| Mobility: | | 18.4% | (1.0%) | (5.6%) | 2.0% | 1.0% | 0.5% | 0.5% | 0.0% |
| Desktop PCs: | | 9.6% | (2.6%) | 0.8% | 1.0% | 0.5% | 0.0% | (0.5%) | (0.5%) |
| **Market Share by Product:** | | | | | | | Base Case: | | |
| Servers and Networking: | 12.1% | 14.4% | 15.0% | 17.1% | **17.0%** | **17.5%** | **17.5%** | **18.0%** | **18.0%** |
| **Market Share Cases - Servers and Networking:** | | | | | | | | | |
| Conservative Case: | | | | | 16.0% | 15.0% | 15.0% | 14.0% | 14.0% |
| Base Case: | | | | | 17.0% | 17.5% | 17.5% | 18.0% | 18.0% |
| Upside Case: | | | | | 17.5% | 18.0% | 18.0% | 18.5% | 18.5% |
| Street Consensus Case: | | | | | 16.0% | 15.5% | 15.5% | 15.0% | 15.0% |
| **Selected Case:** Base | | | | | **17.0%** | **17.5%** | **17.5%** | **18.0%** | **18.0%** |

**The Bottom Line:** There is no "best" way to project revenue. It depends on the company, its markets, and the time and resources available to you.

Regardless of the method you use, you must be able to **justify** your assumptions – even if it's a time-pressured case study where you're in a rush to finish.

## Step 2: Project Expenses and/or Margins

Once you've projected the company's revenue, you need to project its expenses: Cost of Goods Sold (COGS) and Operating Expenses such as Selling, General & Administrative (SG&A), Research & Development (R&D), and Sales & Marketing (S&M).

You often project these items in *less* detail than the company's revenue.

For example, if the company's operating margin has risen from 10% to 11% historically, you might continue that trend and make it rise to 12% over the next few years.

In more complex models, you could link these expenses to individual employees, units sold, factories, or other assumptions.

As with the revenue projections, the best approach depends on your time, your data, the industry, and the purpose of the analysis.

Here's a simple example of expense projections for Frank Recruitment:

| | | Historical | | | Projected | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Financial Statement Drivers:** | *Units:* | FY13 | FY14 | FY15 | FY16 | FY17 | FY18 | FY19 | FY20 |
| **Income Statement Drivers:** | | | | | | | | | |
| Sales Reps: | *# People* | 192 | 271 | 417 | 626 | 876 | 1,138 | 1,423 | 1,708 |
| % Growth: | % | | 41.1% | 53.9% | 50.0% | 40.0% | 30.0% | 25.0% | 20.0% |
| Sales Rep Productivity: | *£ M* | 0.205 | 0.231 | 0.228 | 0.235 | 0.242 | 0.246 | 0.251 | 0.256 |
| % Growth: | % | | 12.3% | (1.2%) | 3.0% | 3.0% | 2.0% | 2.0% | 2.0% |
| Other Staff: | *# People* | 53 | 66 | 88 | 131 | 175 | 216 | 256 | 290 |
| Other Staff % Sales Reps: | % | 27.6% | 24.4% | 21.1% | 21.0% | 20.0% | 19.0% | 18.0% | 17.0% |
| Net Fee Income % Margin: | % | 51.3% | 47.9% | 48.4% | 48.0% | 47.0% | 46.0% | 45.0% | 44.0% |
| Average Payroll Costs per Person: | *£ M* | 0.041 | 0.049 | 0.051 | 0.053 | 0.056 | 0.058 | 0.061 | 0.063 |
| % Growth: | % | | 19.2% | 4.3% | 5.0% | 5.0% | 4.0% | 4.0% | 4.0% |
| Other SG&A: | *£ M* | 4.9 | 5.2 | 5.6 | 5.9 | 6.3 | 6.6 | 6.9 | 7.1 |
| % Growth: | % | | 6.1% | 7.7% | 6.0% | 5.5% | 5.0% | 4.5% | 4.0% |
| U.K. Corporate Tax Rate: | % | | | | 20.0% | 19.0% | 19.0% | 19.0% | 18.0% |

| | | Historical | | | Projected | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Consolidated Profit and Loss Account:** | *Units:* | FY13 | FY14 | FY15 | FY16 | FY17 | FY18 | FY19 | FY20 |
| **Turnover:** | *£ M* | £ 39.4 | £ 62.5 | £ 95.0 | £ 146.7 | £ 211.6 | £ 280.6 | £ 357.8 | £ 437.9 |
| *% Growth Rate:* | % | *N/A* | *58.6%* | *52.0%* | *54.5%* | *44.2%* | *32.6%* | *27.5%* | *22.4%* |
| **Net Fee Income (NFI):** | *£ M* | 20.2 | 30.0 | 46.0 | =+H203*H135 | | 129.1 | 161.0 | 192.7 |

Company's Gross Profit is based on a simple percentage of Revenue ("Turnover").

| Financial Statement Drivers: | Units: | Historical FY13 | FY14 | FY15 | Projected FY16 | FY17 | FY18 | FY19 | FY20 |
|---|---|---|---|---|---|---|---|---|---|
| **Income Statement Drivers:** | | | | | | | | | |
| Sales Reps: | # People | 192 | 271 | 417 | 626 | 876 | 1,138 | 1,423 | 1,708 |
| % Growth: | % | | 41.1% | 53.9% | 50.0% | 40.0% | 30.0% | 25.0% | 20.0% |
| Sales Rep Productivity: | £ M | 0.205 | 0.231 | 0.228 | 0.235 | 0.242 | 0.246 | 0.251 | 0.256 |
| % Growth: | % | | 12.3% | (1.2%) | 3.0% | 3.0% | 2.0% | 2.0% | 2.0% |
| Other Staff: | # People | 53 | 66 | 88 | 131 | 175 | 216 | 256 | 290 |
| Other Staff % Sales Reps: | % | 27.6% | 24.4% | 21.1% | 21.0% | 20.0% | 19.0% | 18.0% | 17.0% |
| Net Fee Income % Margin: | % | 51.3% | 47.9% | 48.4% | 48.0% | 47.0% | 46.0% | 45.0% | 44.0% |
| Average Payroll Costs per Person: | £ M | 0.041 | 0.049 | 0.051 | 0.053 | 0.056 | 0.058 | 0.061 | 0.063 |
| % Growth: | % | | 19.2% | 4.3% | 5.0% | 5.0% | 4.0% | 4.0% | 4.0% |
| Other SG&A: | £ M | 4.9 | 5.2 | 5.6 | 5.9 | 6.3 | 6.6 | 6.9 | 7.1 |
| % Growth: | % | | 6.1% | 7.7% | 6.0% | 5.5% | 5.0% | 4.5% | 4.0% |
| U.K. Corporate Tax Rate: | % | | | | 20.0% | 19.0% | 19.0% | 19.0% | 18.0% |

| Consolidated Profit and Loss Account: | Units: | Historical FY13 | FY14 | FY15 | Projected FY16 | FY17 | FY18 | FY19 | FY20 |
|---|---|---|---|---|---|---|---|---|---|
| **Turnover:** | £ M | £ 39.4 | £ 62.5 | £ 95.0 | £ 146.7 | £ 211.6 | £ 280.6 | £ 357.8 | £ 437.9 |
| *% Growth Rate:* | % | *N/A* | *58.6%* | *52.0%* | *54.5%* | *44.2%* | *32.6%* | *27.5%* | *22.4%* |
| **Net Fee Income (NFI):** | £ M | 20.2 | 30.0 | 46.0 | 70.4 | 99.5 | 129.1 | 161.0 | 192.7 |
| **Operating Expenses:** | | | | | | | | | |
| (+) Payroll Costs: | £ M | 10.0 | 16.4 | 25.6 | =+H137*(H132+H126) | | 78.8 | 101.6 | 125.7 |
| (+) Other SG&A: | £ M | 4.9 | 5.2 | 5.6 | 5.9 | 6.3 | 6.6 | 6.9 | 7.1 |
| **Total Operating Expenses:** | £ M | 14.9 | 21.6 | 31.2 | 46.3 | 65.0 | 85.4 | 108.5 | 132.9 |

We link Payroll Costs to the total # of staff, which is, in turn, linked to Total Revenue. And then we assume an Average Payroll Cost per Staff Member.

Other G&A is based on a percentage growth rate, since it relates to expenses like advertising, marketing, accounting, IT, etc. that don't necessarily move in-line with the number of employees.

The rest of the expenses come from separate schedules or simple percentages:

| Cash Flow Statement Drivers: | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Capital Expenditures % Turnover: | £ M | 0.9% | 1.2% | 0.7% | 1.0% | 1.2% | 1.4% | 1.6% | 1.8% |
| Depreciation % Turnover: | % | 0.5% | 0.6% | 0.6% | 0.8% | 1.0% | 1.2% | 1.4% | 1.6% |
| Purchases of Intangible Assets: | £ M | | | | 5.0 | 5.0 | 10.0 | 10.0 | 15.0 |
| Amortisation of Existing Intangibles: | | | | | 10.0% | | | | |
| Amortisation of NEW Intangible Assets: | % | | | | 20.0% | | | | |
| Amortisation - Existing Intangibles: | £ M | | | | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 |
| Amortisation - Year 1 Purchases: | £ M | | | | 0.5 | 1.0 | 1.0 | 1.0 | 1.0 |
| Amortisation - Year 2 Purchases: | £ M | | | | | 0.5 | 1.0 | 1.0 | 1.0 |
| Amortisation - Year 3 Purchases: | £ M | | | | | | 1.0 | 2.0 | 2.0 |
| Amortisation - Year 4 Purchases: | £ M | | | | | | | 1.0 | 2.0 |
| Amortisation - Year 5 Purchases: | £ M | | | | | | | | 1.5 |
| **Total Amortisation:** | £ M | | | | 2.8 | 3.8 | 5.3 | 7.3 | 9.8 |

| Consolidated Profit and Loss Account: | Units: | Historical FY13 | FY14 | FY15 | Projected FY16 | FY17 | FY18 | FY19 | FY20 |
|---|---|---|---|---|---|---|---|---|---|
| **Turnover:** | £ M | £ 39.4 | £ 62.5 | £ 95.0 | £ 146.7 | £ 211.6 | £ 280.6 | £ 357.8 | £ 437.9 |
| *% Growth Rate:* | % | *N/A* | *58.6%* | *52.0%* | *54.5%* | *44.2%* | *32.6%* | *27.5%* | *22.4%* |
| **Net Fee Income (NFI):** | £ M | 20.2 | 30.0 | 46.0 | 70.4 | 99.5 | 129.1 | 161.0 | 192.7 |
| **Operating Expenses:** | | | | | | | | | |
| (+) Payroll Costs: | £ M | 10.0 | 16.4 | 25.6 | 40.3 | 58.8 | 78.8 | 101.6 | 125.7 |
| (+) Other SG&A: | £ M | 4.9 | 5.2 | 5.6 | 5.9 | 6.3 | 6.6 | 6.9 | 7.1 |
| **Total Operating Expenses:** | £ M | 14.9 | 21.6 | 31.2 | 46.3 | 65.0 | 85.4 | 108.5 | 132.9 |
| **EBITDA:** | £ M | 5.3 | 8.4 | 14.8 | 24.2 | 34.4 | 43.7 | 52.5 | 59.8 |
| (-) Depreciation & Amortisation: | £ M | (0.7) | (2.0) | (1.9) | =-H186*H203-H198 | | (8.7) | (12.3) | (16.8) |
| (-) Interest Expense: | £ M | (1.2) | (3.1) | (3.4) | (2.1) | (2.2) | (2.2) | (2.3) | (2.3) |
| (+) Interest and Other Income: | £ M | 0.0 | 0.0 | - | 0.2 | 0.3 | 0.6 | 1.0 | 1.6 |
| (-) Provision For Income Taxes: | £ M | (0.6) | (1.2) | (2.8) | (3.6) | (5.1) | (6.3) | (7.4) | (7.6) |
| **Profit for the Year:** | £ M | £ 2.8 | £ 2.1 | £ 6.7 | £ 14.6 | £ 21.5 | £ 27.0 | £ 31.5 | £ 34.6 |

Depreciation is a simple percentage of Revenue, while Amortization is based on a simple schedule that tracks existing vs. new intangibles.

We track the company's Debt and Cash balances separately and multiply by the appropriate interest rates to calculate these; you typically link them in as the final step in a model.

To calculate Income Taxes, we subtract D&A and the Net Interest Expense from EBITDA and multiply by the U.K. corporate tax rate (which ranged from 18-20% at the time of this case study).

We show the Interest Expense and Interest Income in the screenshot above, but typically you would **NOT** be able to project them at this stage of the model.

You have to forecast the company's Cash and Debt balances first, which means you have to project the Balance Sheet and/or Cash Flow Statement.

**Step 3: Project the Operational Balance Sheet Items and Link Them to the CFS**

"Operational Balance Sheet Items" refers to ones such as Accounts Receivable, Inventory, Prepaid Expenses, Deferred Revenue, and Accounts Payable.

These items relate **directly** to the company's core business of making and selling products to customers, and they trend with the company's Income Statement line items.

Typically, you link revenue-related items to the company's Revenue (or "Turnover" in U.K. terminology).

For example, you'll often make Accounts Receivable (AR) and Deferred Revenue (DR) percentages of Revenue based on historical trends.

If AR as a percentage of Revenue has increased from 10% to 12% in the past 3 years, you might continue that trend and make it increase to 15% over the next 5 years.

But you also have to consider the company's business model: Is there a *specific reason* why these items should be changing?

If the company is switching to subscriptions, with a large portion paid upfront, then it's reasonable that Deferred Revenue as a percentage of Revenue will increase over time.

But if the company's business model is not changing, then these percentages should not change dramatically.

You usually link items related to expenses, such as Accounts Payable, Accrued Expenses, and Other Liabilities to Operating Expenses, COGS, or specific expenses on the Income Statement.

For example, if Accrued Expenses represented 5% of Operating Expenses 3 years ago and rose to 6% last year, you might make it increase to 7% or 8% over the next few years.

But if jumped from 5.0% to 6.5% to 4.3%, you might use an average of those percentages since it's not following a clear trend.

**Do NOT obsess over the specific Income Statement line item(s) you link these operational Balance Sheet items to – it barely makes a difference.**

We've received approximately 52,471 questions to the effect of: "Help! I can't decide whether to link Accrued Expenses to Total Operating Expenses or SG&A. I'm going to die if I can't figure this out. Help me!!!!!!!! I'm dying!!!!"

**IT DOESN'T MATTER.**

Think about **the big picture:** How will that decision affect the company's **CASH FLOW?**

You just want to ensure that the company's Change in Working Capital follows a reasonable trend as its Revenue increases or decreases.

For example, if the Change in Working Capital has been negative as Revenue has increased, it should continue to be negative going forward because the company needs to spend in advance of its growth (e.g., a retailer purchasing Inventory).

As long as you get that **overall trend** correct, the specifics do not matter much.

Here's what we did for Frank Recruitment:

| Balance Sheet Drivers: | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Receivables % Turnover: | % | 13.4% | 19.5% | 13.2% | 13.0% | 12.5% | 12.0% | 11.5% | 11.0% |
| Prepaid Expenses % OpEx: | % | 13.6% | 18.1% | 11.9% | 12.0% | 12.0% | 11.0% | 11.0% | 10.0% |
| Accounts Payable % OpEx: | % | 4.9% | 3.2% | 4.4% | 4.2% | 4.2% | 4.2% | 4.2% | 4.2% |
| Accrued Expenses % OpEx: | % | 12.8% | 24.5% | 20.0% | 20.0% | 20.0% | 19.0% | 19.0% | 18.0% |
| Other Current Liabilities % OpEx: | % | 15.8% | 10.4% | 8.4% | 8.0% | 8.0% | 7.0% | 7.0% | 7.0% |

Continuing these trends and making the Receivables % Turnover and Prepaid Expenses, Accrued Expenses, and Other Liabilities % OpEx decrease slightly over time.

But Prepaid Expenses % OpEx doesn't follow as much of a trend, so we use a simple historical average for it.

And then we multiplied these percentages by the corresponding Income Statement items to project these line items on the Balance Sheet:

| Statement of Financial Position: | Units: | Historical FY13 | FY14 | FY15 | Projected FY16 | FY17 | FY18 | FY19 | FY20 |
|---|---|---|---|---|---|---|---|---|---|
| **ASSETS:** | | | | | | | | | |
| **Current Assets:** | | | | | | | | | |
| Cash & Equivalents: | £ M | £ 2.8 | £ 2.4 | £ 12.1 | | | | | |
| Accounts Receivable: | £ M | 5.3 | 12.2 | 12.5 | 19.1 | 26.5 | 33.7 | 41.1 | 48.2 |
| Prepaid Expenses: | £ M | 2.0 | 3.9 | 3.7 | 5.6 | 7.8 | 9.4 | 11.9 | 13.3 |
| **Total Current Assets:** | £ M | **10.1** | **18.5** | **28.4** | **24.6** | **34.3** | **43.1** | **53.1** | **61.5** |
| **Non-Current Assets:** | | | | | | | | | |
| Net PP&E: | £ M | 0.5 | 0.9 | 0.9 | | | | | |
| Other Intangible Assets: | £ M | 26.2 | 24.6 | 23.3 | | | | | |
| **Total Non-Current Assets:** | £ M | **26.7** | **25.4** | **24.1** | **-** | **-** | **-** | **-** | **-** |
| **Total Assets:** | £ M | **£ 36.8** | **£ 43.9** | **£ 52.5** | | | | | |
| **LIABILITIES AND EQUITY:** | | | | | | | | | |
| **Current Liabilities:** | | | | | | | | | |
| Accounts Payable: | £ M | £ 0.7 | £ 0.7 | £ 1.4 | £ 1.9 | £ 2.7 | £ 3.5 | £ 4.5 | £ 5.5 |
| Accrued Expenses: | £ M | 1.9 | 5.3 | 6.3 | 9.3 | 13.0 | 16.2 | 20.6 | 23.9 |
| Other Current Liabilities: | £ M | 2.3 | 2.2 | 2.6 | 3.7 | 5.2 | 6.0 | 7.6 | 9.3 |
| **Total Current Liabilities:** | £ M | **5.0** | **8.2** | **10.3** | **14.9** | **20.9** | **25.7** | **32.7** | **38.7** |
| **Non-Current Liabilities:** | | | | | | | | | |
| Long-Term Debt: | £ M | 32.8 | 34.6 | 34.0 | | | | | |
| Other Long-Term Liabilities: | £ M | 0.1 | 0.0 | 0.0 | | | | | |
| **Total Non-Current Liabilities:** | £ M | **32.9** | **34.6** | **34.0** | **-** | **-** | **-** | **-** | **-** |
| **Total Liabilities:** | £ M | **£ 37.9** | **£ 42.8** | **£ 44.2** | | | | | |
| **Equity Shareholders' Funds:** | £ M | **-£ 1.1** | **£ 1.1** | **£ 8.3** | | | | | |
| **Total Liabilities & Equity:** | £ M | **£ 36.8** | **£ 43.9** | **£ 52.5** | | | | | |
| *Balance Check:* | | *OK!* | *OK!* | *OK!* | | | | | |

Finally, we linked these Balance Sheet items to the Cash Flow Statement by subtracting New Assets from Old Assets and subtracting Old Liabilities from New Liabilities:

| Cash Flow Statement: | Units: | Historical FY13 | FY14 | FY15 | Projected FY16 | FY17 | FY18 | FY19 | FY20 |
|---|---|---|---|---|---|---|---|---|---|
| **CASH FLOWS FROM OPERATING ACTIVITIES:** | | | | | | | | | |
| **Profit for the Year:** | £ M | | | | | | | | |
| **Adjustments for Non-Cash Charges:** | | | | | | | | | |
| (+) Depreciation: | £ M | | | | | | | | |
| (+) Amortisation: | £ M | | | | | | | | |
| (+) PIK Interest: | £ M | | | | | | | | |
| **Changes in Operating Assets and Liabilities:** | | | | | | | | | |
| Accounts Receivable: | £ M | | | | (6.5) | (7.4) | (7.2) | (7.5) | (7.0) |
| Prepaid Expenses: | £ M | | | | (1.8) | (2.3) | (1.6) | (2.5) | (1.4) |
| Accounts Payable: | £ M | | | | 0.5 | 0.8 | 0.8 | 1.0 | 1.0 |
| Accrued Expenses: | £ M | | | | 3.0 | 3.8 | 3.2 | 4.4 | 3.3 |
| Other Liabilities: | £ M | | | | 1.0 | 1.5 | 0.8 | 1.6 | 1.7 |
| **Net Cash Flow from Operations:** | £ M | | | | **(3.8)** | **(3.6)** | **(4.0)** | **(3.1)** | **(2.4)** |

The linking process is simple. The main problem here is that we don't have a great way of CHECKING these forecasts against historical numbers since we don't have historical numbers. *Ideally*, we want to see that historically, the company's Change in Working Capital has been a small negative percentage of its Change in Revenue so that these projections make sense.

Here, the Change in Working Capital ("Changes in Operating Assets and Liabilities") is about (7%) to (3%) of the company's Change in Revenue each year.

If we had historical data, we'd want to see those numbers in the historical data as well.

If the historical Change in WC as a % of the Change in Revenue ranged from (25%) to (20%) or from 30% to 40%, we'd have to rethink these assumptions.

## Step 4: Project the Remaining Cash Flow Statement Line Items

Once you've projected the *operational* Balance Sheet line items and linked the changes to the Cash Flow Statement, you forecast the remaining Cash Flow Statement line items.

Some of these items may be based on simple percentages, while others may come from separate schedules, depending on the time available and the company's industry.

For example, if you're projecting an airline, manufacturer, or railroad company, **Capital Expenditures (CapEx)** are important, and it's worthwhile to create a separate schedule for them.

But if you're modeling a software company, CapEx is almost irrelevant because software companies grow based on employee productivity, not capital asset productivity.

Often, the **Amortization of Intangible Assets** is more important for these companies. We used fairly simple assumptions for Frank Recruitment:

| Cash Flow Statement Drivers: | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Capital Expenditures % Turnover: | £ M | 0.9% | 1.2% | 0.7% | 1.0% | 1.2% | 1.4% | 1.6% | 1.8% |
| Depreciation % Turnover: | % | 0.5% | 0.6% | 0.6% | 0.8% | 1.0% | 1.2% | 1.4% | 1.6% |
| | | | | | | | | | |
| Purchases of Intangible Assets: | £ M | | | | 5.0 | 5.0 | 10.0 | 10.0 | 15.0 |
| Amortisation of Existing Intangibles: | | | | | 10.0% | | | | |
| Amortisation of NEW Intangible Assets: | % | | | | 20.0% | | | | |
| | | | | | | | | | |
| Amortisation - Existing Intangibles: | £ M | | | | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 |
| Amortisation - Year 1 Purchases: | £ M | | | | 0.5 | 1.0 | =+$H188*$H$190 | | 1.0 |
| Amortisation - Year 2 Purchases: | £ M | | | | | 0.5 | 1.0 | 1.0 | 1.0 |
| Amortisation - Year 3 Purchases: | £ M | | | | | | 1.0 | 2.0 | 2.0 |
| Amortisation - Year 4 Purchases: | £ M | | | | | | | 1.0 | 2.0 |
| Amortisation - Year 5 Purchases: | £ M | | | | | | | | 1.5 |
| **Total Amortisation:** | £ M | | | | **2.8** | **3.8** | **5.3** | **7.3** | **9.8** |

CapEx and Depreciation are simple percentages since they don't matter much.

We assume that 20% of each Purchase of Intangibles is amortized in each subsequent year, and that the existing balance amortizes at 10% per year.

We also created a separate Debt schedule because we assumed that the investors used a modest amount of Debt (Term Loans A and B and a "Shareholder Loan") to acquire the company.

The Term Loans had modest amortization and variable interest rates linked to LIBOR, while the Shareholder Loan had no amortization and a fixed 10% interest rate:

| Debt and Cash Drivers: | Amount: | Interest: | Principal: | PIK? |
|---|---|---|---|---|
| Facility 'A' Bank Loan: | 10.2 | L + 350 | 10.0% | No |
| Facility 'B' Bank Loan: | 23.8 | L + 400 | – | No |
| Shareholder Loan (PIK): | 5.0 | 10.0% | – | Yes |
| Cash: | 12.1 | L + 50 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| LIBOR: | % | 1.0% | 1.2% | 1.2% | 1.4% | 1.5% |
| Facility 'A' Bank Loan - Interest: | % | 4.5% | 4.7% | 4.7% | 4.9% | 5.0% |
| Facility 'B' Bank Loan - Interest: | % | 5.0% | 5.2% | 5.2% | 5.4% | 5.5% |
| Shareholder Loan (PIK) - Interest: | % | 10.0% | 10.0% | 10.0% | 10.0% | 10.0% |
| Cash - Interest: | % | 1.5% | 1.7% | 1.7% | 1.9% | 2.0% |
| Facility 'A' Bank Loan - Beginning: | £ M | 10.2 | 9.2 | 8.1 | 7.1 | 6.1 |
| (-) Amortisation: | £ M | (1.0) | (1.0) | (1.0) | (1.0) | (1.0) |
| **Facility 'A' Bank Loan - Ending:** | £ M | **9.2** | **8.1** | **7.1** | **6.1** | **5.1** |
| Facility 'A' Bank Loan - Interest: | £ M | 0.5 | 0.4 | 0.4 | 0.3 | 0.3 |
| Facility 'B' Bank Loan - Beginning: | £ M | 23.8 | 23.8 | 23.8 | 23.8 | 23.8 |
| (-) Amortisation: | £ M | - | - | - | - | - |
| **Facility 'B' Bank Loan - Ending:** | £ M | **23.8** | **23.8** | **23.8** | **23.8** | **23.8** |
| Facility 'B' Bank Loan - Interest: | £ M | 1.2 | 1.2 | 1.2 | 1.3 | 1.3 |
| Shareholder Loan - Beginning: | £ M | 5.0 | 5.5 | 6.1 | 6.7 | 7.3 |
| (-) Amortisation: | £ M | - | - | - | - | - |
| (+) PIK Interest: | £ M | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 |
| **Shareholder Loan - Ending:** | £ M | **5.5** | **6.1** | **6.7** | **7.3** | **8.1** |
| Cash - Interest Income: | £ M | 0.2 | 0.3 | 0.6 | 1.0 | 1.6 |

Based on the interest rates above and the Debt balance each year.

Based on the fixed 10% rate; increases each year since PIK Interest accrues to the loan principal.

Comes from the interest rate above and the company's Cash balance each year.

These are the only supporting schedules in this model, so we can move to the Cash Flow Statement and flesh out everything there.

You always start the Cash Flow Statement projections by linking to Net Income (or "Profit After Taxes") from the Income Statement.

Then, you record the non-cash adjustments – Depreciation, Amortization, and PIK Interest in this case – and the Changes in Working Capital, which we completed in the previous step.

Here's our Cash Flow Statement for the company:

| Cash Flow Statement: | Units: | Historical FY13 | FY14 | FY15 | Projected FY16 | FY17 | FY18 | FY19 | FY20 |
|---|---|---|---|---|---|---|---|---|---|
| **CASH FLOWS FROM OPERATING ACTIVITIES:** | | | | | | | | | |
| **Profit for the Year:** | £ M | | | | £ 14.6 | £ 21.5 | £ 27.0 | £ 31.5 | £ 34.6 |
| **Adjustments for Non-Cash Charges:** | | | | | | | | | |
| (+) Depreciation: | £ M | | | | 1.2 | 2.1 | 3.4 | 5.0 | 7.0 |
| (+) Amortisation: | £ M | | | | 2.8 | 3.8 | 5.3 | 7.3 | 9.8 |
| (+) PIK Interest: | £ M | | | | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 |
| **Changes in Operating Assets and Liabilities:** | | | | | | | | | |
| Accounts Receivable: | £ M | | | | (6.5) | (7.4) | (7.2) | (7.5) | (7.0) |
| Prepaid Expenses: | £ M | | | | (1.8) | (2.3) | (1.6) | (2.5) | (1.4) |
| Accounts Payable: | £ M | | | | 0.5 | 0.8 | 0.8 | 1.0 | 1.0 |
| Accrued Expenses: | £ M | | | | 3.0 | 3.8 | 3.2 | 4.4 | 3.3 |
| Other Liabilities: | £ M | | | | 1.1 | 1.5 | 0.8 | 1.6 | 1.7 |
| **Net Cash Flow from Operations:** | £ M | | | | **15.3** | **24.4** | **32.4** | **41.5** | **49.8** |
| **CASH FLOWS FROM INVESTING ACTIVITIES:** | | | | | | | | | |
| (-) CapEx: | £ M | | | | (1.5) | (2.5) | (3.9) | (5.7) | (7.9) |
| (-) Purchases of Intangibles: | £ M | | | | (5.0) | (5.0) | (10.0) | (10.0) | (15.0) |
| **Net Cash Flow from Investing:** | £ M | | | | **(6.5)** | **(7.5)** | **(13.9)** | **(15.7)** | **(22.9)** |
| **CASH FLOWS FROM FINANCING ACTIVITIES:** | | | | | | | | | |
| (-) Debt Repayments: | £ M | | | | (1.0) | (1.0) | (1.0) | (1.0) | (1.0) |
| **Net Cash Flow from Financing:** | £ M | | | | **(1.0)** | **(1.0)** | **(1.0)** | **(1.0)** | **(1.0)** |
| Change in Cash: | £ M | | | | 7.8 | 15.9 | 17.4 | 24.7 | 25.9 |
| Beginning Cash: | £ M | | | | 12.1 | 20.0 | 35.9 | 53.3 | 78.0 |
| **Ending Cash:** | £ M | | | | **£ 20.0** | **£ 35.9** | **£ 53.3** | **£ 78.0** | **£ 103.9** |

From the IS.

From the schedules above; all non-cash charges on the IS.

Schedules above.

The main takeaway is that this company **generates A LOT of extra Cash over the years.**

An analyst or investor looking at this Cash Flow Statement might ask, "What is the company planning to *do* with all that Cash? What *should* it be doing?"

## Step 5: Link the Interest on the IS and Everything on the BS

Finally, you return to the Income Statement and link in the Interest:

| Consolidated Profit and Loss Account: | Units: | Historical FY13 | FY14 | FY15 | Projected FY16 | FY17 | FY18 | FY19 | FY20 |
|---|---|---|---|---|---|---|---|---|---|
| **Turnover:** | £ M | £ 39.4 | £ 62.5 | £ 95.0 | £ 146.7 | £ 211.6 | £ 280.6 | £ 357.8 | £ 437.9 |
| *% Growth Rate:* | % | *N/A* | *58.6%* | *52.0%* | *54.5%* | *44.2%* | *32.6%* | *27.5%* | *22.4%* |
| **Net Fee Income (NFI):** | £ M | 20.2 | 30.0 | 46.0 | 70.4 | 99.5 | 129.1 | 161.0 | 192.7 |
| **Operating Expenses:** | | | | | | | | | |
| (+) Payroll Costs: | £ M | 10.0 | 16.4 | 25.6 | 40.3 | 58.8 | 78.8 | 101.6 | 125.7 |
| (+) Other SG&A: | £ M | 4.9 | 5.2 | 5.6 | 5.9 | 6.3 | 6.6 | 6.9 | 7.1 |
| **Total Operating Expenses:** | £ M | **14.9** | **21.6** | **31.2** | **46.3** | **65.0** | **85.4** | **108.5** | **132.9** |
| **EBITDA:** | £ M | **5.3** | **8.4** | **14.8** | **24.2** | **34.4** | **43.7** | **52.5** | **59.8** |
| (-) Depreciation & Amortisation: | £ M | (0.7) | (2.0) | (1.9) | (4.0) | (5.9) | (8.7) | (12.3) | (16.8) |
| (-) Interest Expense: | £ M | (1.2) | (3.1) | (3.4) | (2.1) | (2.2) | (2.2) | (2.3) | (2.3) |
| (+) Interest and Other Income: | £ M | 0.0 | 0.0 | - | 0.2 | 0.3 | 0.6 | 1.0 | 1.6 |
| (-) Provision For Income Taxes: | £ M | (0.6) | (1.2) | (2.8) | (3.6) | (5.1) | (6.3) | (7.4) | (7.6) |
| **Profit for the Year:** | £ M | £ 2.8 | £ 2.1 | £ 6.7 | £ 14.6 | £ 21.5 | £ 27.0 | £ 31.5 | £ 34.6 |

Go back to the Income Statement LAST and link in the Interest Expense and Interest Income from the other schedules.

You complete this step last because Interest depends on the company's Cash and Debt, and you need the Cash Flow Statement (and possibly a Debt Schedule) to project those balances.

Here's the final Balance Sheet for the company:

| | | Historical | | | Projected | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Statement of Financial Position:** | *Units:* | **FY13** | **FY14** | **FY15** | **FY16** | **FY17** | **FY18** | **FY19** | **FY20** |
| **ASSETS:** | | | | | | | | | |
| **Current Assets:** | | | | | | | | | |
| Cash & Equivalents: | £ M | £ 2.8 | £ 2.4 | £ 12.1 | £ 20.0 | £ 35.9 | £ 53.3 | £ 78.0 | £ 103.9 |
| Accounts Receivable: | £ M | 5.3 | 12.2 | 12.5 | 19.1 | 26.5 | 33.7 | 41.1 | 48.2 |
| Prepaid Expenses: | £ M | 2.0 | 3.9 | 3.7 | 5.6 | 7.8 | 9.4 | 11.9 | 13.3 |
| **Total Current Assets:** | £ M | **10.1** | **18.5** | **28.4** | **44.6** | **70.1** | **96.3** | **131.1** | **165.4** |
| **Non-Current Assets:** | | | | | | | | | |
| Net PP&E: | £ M | 0.5 | 0.9 | 0.9 | 1.2 | 1.6 | 2.1 | 2.9 | 3.7 |
| Other Intangible Assets: | £ M | 26.2 | 24.6 | 23.3 | 25.4 | 26.6 | 31.3 | 34.0 | 39.1 |
| **Total Non-Current Assets:** | £ M | **26.7** | **25.4** | **24.1** | **26.6** | **28.2** | **33.4** | **36.8** | **42.9** |
| **Total Assets:** | £ M | **£ 36.8** | **£ 43.9** | **£ 52.5** | **£ 71.2** | **£ 98.3** | **£ 129.8** | **£ 167.9** | **£ 208.2** |
| **LIABILITIES AND EQUITY:** | | | | | | | | | |
| **Current Liabilities:** | | | | | | | | | |
| Accounts Payable: | £ M | £ 0.7 | £ 0.7 | £ 1.4 | £ 1.9 | £ 2.7 | £ 3.5 | £ 4.5 | £ 5.5 |
| Accrued Expenses: | £ M | 1.9 | 5.3 | 6.3 | 9.3 | 13.0 | 16.2 | 20.6 | 23.9 |
| Other Current Liabilities: | £ M | 2.3 | 2.2 | 2.6 | 3.7 | 5.2 | 6.0 | 7.6 | 9.3 |
| **Total Current Liabilities:** | £ M | **5.0** | **8.2** | **10.3** | **14.9** | **20.9** | **25.7** | **32.7** | **38.7** |
| **Non-Current Liabilities:** | | | | | | | | | |
| Long-Term Debt: | £ M | 32.8 | 34.6 | 34.0 | 32.9 | 31.9 | 30.9 | 29.9 | 28.9 |
| Other Long-Term Liabilities: | £ M | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total Non-Current Liabilities:** | £ M | **32.9** | **34.6** | **34.0** | **33.0** | **32.0** | **30.9** | **29.9** | **28.9** |
| **Total Liabilities:** | £ M | **£ 37.9** | **£ 42.8** | **£ 44.2** | **£ 47.8** | **£ 52.9** | **£ 56.7** | **£ 62.6** | **£ 67.6** |
| **Equity Shareholders' Funds:** | £ M | **-£ 1.1** | **£ 1.1** | **£ 8.3** | **£ 23.4** | **£ 45.4** | **£ 73.1** | **£ 105.3** | **£ 140.6** |
| **Total Liabilities & Equity:** | £ M | **£ 36.8** | **£ 43.9** | **£ 52.5** | **£ 71.2** | **£ 98.3** | **£ 129.8** | **£ 167.9** | **£ 208.2** |
| *Balance Check:* | | *OK!* | *OK!* | *OK!* | *OK!* | *OK!* | *OK!* | *OK!* | *OK!* |

From the bottom of the CFS.

Old PP&E - Depreciation + CapEx.

Old Intangibles - Amortization + Purchases.

Old Debt - Repayments + New Issuances (if they exist).

Held constant at 0 here.

Old Equity + Net Income + Shareholder Loan Interest - Dividends (if they exist).

If you don't know how to link an item, **make it flow into Equity**.

*Every* item on the CFS must be linked to *something* on the Balance Sheet once and only once, so you can't "leave out" an item if you don't know where it goes.

If you do, the Balance Sheet will go out of balance.

The other rules covered in the Accounting guides apply to this process as well: On the Assets side, use negative signs when you link to items from the CFS, and on the L&E side, use positive signs when you link to items from the CFS.

One final note: In the example above, we added the PIK Interest on the CFS to Equity on the Balance Sheet.

**But that is NOT the normal treatment**. Instead, for most normal Debt, you should add the PIK Interest on the CFS to the corresponding Debt line item on the Balance Sheet.

It's different here because this Debt is a "Shareholder Loan," which is classified as Equity and which lets the equity investors in the company deduct the interest paid each year.

## Step 6: Create Summary Statistics

It's nice to build a complex, 3-statement model with 5,234 rows in Excel, but **senior people do not have time to read every last detail.**

To save them time and make your conclusions more concise, you may create a "model summary" at the end.

The information presented in this summary depends on the purpose of the model. A few examples:

- **Credit Analysis:** If you're assessing a company's ability to repay Debt, you might focus on credit statistics and ratios, such as Debt / EBITDA, EBITDA / Interest, and the Debt Service Coverage Ratio.

- **Equity Investment Analysis:** If you're analyzing a potential equity investment in a company, you'll focus on metrics such as the internal rate of return (IRR) and money-on-money (MoM) multiples.

- **Valuation:** You might focus on the company's revenue, EBITDA, cash flow, growth rates, and margins.

- **M&A Analysis:** You might focus on the company's growth rates, EPS, and other per-share metrics so you can assess how those metrics change in a deal.

The Frank Recruitment case study was based on a potential equity investment in the company, but we decided to show a mix of the metrics above:

| Summary & Returns: | Units: | Historical FY13 | FY14 | FY15 | Projected FY16 | FY17 | FY18 | FY19 | FY20 |
|---|---|---|---|---|---|---|---|---|---|
| **Financial Statistics and Credit Stats and Ratios:** | | | | | | | | | |
| Turnover: | £ M | £ 39.4 | £ 62.5 | £ 95.0 | £ 146.7 | £ 211.6 | £ 280.6 | £ 357.8 | £ 437.9 |
| *Growth Rate:* | % | *N/A* | *58.6%* | *52.0%* | *54.5%* | *44.2%* | *32.6%* | *27.5%* | *22.4%* |
| EBITDA: | £ M | 5.3 | 8.4 | 14.8 | 24.2 | 34.4 | 43.7 | 52.5 | 59.8 |
| *Growth Rate:* | % | *N/A* | *57.7%* | *76.8%* | *63.7%* | *42.3%* | *27.0%* | *20.2%* | *13.9%* |
| *Margin:* | % | *13.5%* | *13.4%* | *15.6%* | *16.5%* | *16.3%* | *15.6%* | *14.7%* | *13.7%* |
| Interest Expense: | £ M | 1.2 | 3.1 | 3.4 | 2.1 | 2.2 | 2.2 | 2.3 | 2.3 |
| Cash Interest Expense: | £ M | 1.2 | 3.1 | 3.4 | 1.6 | 1.7 | 1.6 | 1.6 | 1.6 |
| Total Debt: | £ M | 32.8 | 34.6 | 34.0 | 32.9 | 31.9 | 30.9 | 29.9 | 28.9 |
| Net Debt: | £ M | 30.0 | 32.2 | 21.8 | 13.0 | (4.0) | (22.4) | (48.1) | (75.0) |
| EBITDA / Interest: | x | 4.5 x | 2.7 x | 4.4 x | 11.3 x | 15.5 x | 19.6 x | 22.9 x | 25.5 x |
| EBITDA / Cash Interest: | x | 4.5 x | 2.7 x | 4.4 x | 14.7 x | 20.6 x | 27.0 x | 32.2 x | 37.1 x |
| Total Debt / EBITDA: | x | 6.2 x | 4.1 x | 2.3 x | 1.4 x | 0.9 x | 0.7 x | 0.6 x | 0.5 x |
| Net Debt / EBITDA: | x | 5.7 x | 3.8 x | 1.5 x | 0.5 x | (0.1 x) | (0.5 x) | (0.9 x) | (1.3 x) |
| **Money-on-Money (MoM) Multiples and Internal Rate of Return (IRR):** | | | | | | | | | |
| Exit Year EBITDA: | £ M | | | | | | 43.7 | 52.5 | 59.8 |
| (x) Assumed Exit Multiple: | x | | | | | | 10.0 x | 9.0 x | 8.0 x |
| **Exit Enterprise Value:** | £ M | | | | | | **436.8** | **472.7** | **478.5** |
| (-) Net Debt: | £ M | | | | | | 22.4 | 48.1 | 75.0 |
| **Exit Equity Value:** | £ M | | | | | | **459.2** | **520.8** | **553.5** |
| Investor Proceeds: | x | | | | | | 114.8 | 130.2 | 138.4 |
| MoM Multiple: | x | | | | | | 3.8 x | 4.3 x | 4.6 x |
| Internal Rate of Return (IRR): | % | | | | | | 56.4% | 44.3% | 35.8% |

Strong revenue growth, but it slows down over time.

Margins don't change dramatically.

And the company can easily "service" its Debt (i.e., pay Interest on it and repay the principal eventually).

These IRR and MoM metrics are extremely high, so an investment in the company *seems* like a good idea... if we believe the assumptions!

The next steps depend on a few factors.

First, what is the **purpose** of the model? If we built this projection model to answer a case study or complete a modeling test, then we're done.

But if we built it to analyze a real, potential investment, we'd go **into the numbers in more depth at this stage.**

For example, we might dig into the revenue growth and margin assumptions, see if we can come up with more detailed rationale, and find data from the industry and peer companies to support our assumptions.

If there aren't enough qualified sales reps for the company to grow at this pace, we might have to re-think that assumption.

If there's no way for the company to maintain its margins because no peer companies have done so as they've grown, we might have to re-think that assumption.

We would also **stress test** the model and create Downside scenarios to see how well the deal holds up in those cases.

For example, if the company's revenue growth falls to 10-15% in Year 1 and then declines to 5%, do we lose money on the deal? Or do we still earn at least a 1.0x multiple?

We might also think about the company's Cash Flow and the extra Cash it generates.

In this case, it's significant: Cash goes from £12 million GBP to over £100 million in the span of 5 years.

If the company isn't doing anything with that Cash, investors might view that as a wasted opportunity and encourage the company to return the Cash to shareholders, make acquisitions, or re-invest in the business.

Most of these "next steps" are more important in **buy-side roles** – ones where you're investing the firm's capital – because far more is at stake there.

In investment banking roles, you care the most about finishing the model, making sure the client likes it, and then moving on.

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## Interview Questions

Interview questions on these more advanced accounting and 3-statement modeling topics are **unlikely** unless you've had significant experience in investment banking or private equity.

But even if you have had that experience, you're more likely to receive *case studies* on these topics than interview questions.

If a bank wants to assess your ability to build a 3-statement model, they'll ask you to build one.

If a bank wants to see if you understand PIK Interest, they'll ask you to build an LBO Model that uses it.

Still, you could get questions on these topics – especially "How do the financial statements change with Advanced Accounting Change X?"-type scenarios.

So, we wanted to provide a brief set of questions and answers to guide your preparation.

### Three-Statement Projections

You're more likely to receive these questions in the context of case studies or modeling tests that you have to present and explain in interviews.

For example, bankers may ask how you projected revenue for a company or why you picked certain assumptions, and you must be able to justify your numbers.

**1. Do you always *need* to project the 3 financial statements for a company?**

No. You could easily project only the company's Free Cash Flow by forecasting its Income Statement and the top part of its Cash Flow Statement: Non-cash adjustments, Changes in Working Capital, and CapEx.

Those FCF projections drive a company's implied value and determine its Cash and Debt balances over time, so you don't need a "full" projection of all 3 statements.

Full projections help you to forecast certain items in more granular detail and observe the company's full capital structure over time.

**2. What's the main point of projecting a company's financial statements?**

You want to capture the company's cash flow and how that cash flow affects the company's Cash, Debt, and Equity over time.

Besides that, the purpose of the projections depends on the model: If you're valuing a company, the projections might be very simple and stop with FCF.

If you're evaluating the company's ability to raise and pay off Debt, you might focus on metrics such as Debt/EBITDA and EBITDA/Interest.

If you're looking at a potential equity investment in the company, you might focus on metrics such as the IRR and MoM multiple.

**3. How do you project a company's revenue?**

You could use a simple percentage growth rate assumption, base it on Units Sold * Average Unit Price, or base it on Market Share * Total Market Size.

The best method depends on the company's market and how much time and information you have.

For example, if the company discloses Units Sold and Average Unit Prices in its filings, you can use them to forecast its revenue.

But if the company sells hundreds of products at different prices, but operates in a market with a known size and 3-4 major players, you might use Market Share * Total Market Size.

**4. How do you project a company's expenses and margins?**

You could use simple percentages for all the expenses and link them to revenue; for example, COGS might be 50% of revenue and SG&A might be 20% of revenue.

Or, you could project expenses on a per-employee, per-location, per-unit, or per-factory basis.

For example, you might assume that each widget costs $10 and that costs are increasing by 4% per year.

And then you might assume that the company needs one employee for each $500K of revenue, link the employee count to that, and assume a growth rate for employee salaries and benefits.

Items such as rent, advertising, and administrative expenses may be linked to the company's internal business plans or historical growth rates.

**5. How do you project Working Capital items, such as Accounts Receivable, Inventory, and Accounts Payable?**

Normally, you assume that these are percentages of revenue, COGS, or operating expenses because most of them relate to a company's core business:

- **Accounts Receivable:** % of Revenue.
- **Prepaid Expense:** % of Operating Expenses.
- **Inventory:** % of COGS.
- **Deferred Revenue:** % of Revenue.
- **Accounts Payable:** % of COGS or Operating Expenses.
- **Accrued Expenses:** % of Operating Expenses.

Then, you assume a specific percentage for each one based on historical trends or averages.

You could also project these metrics using "Days." For example, Days Sales Outstanding = Accounts Receivable / Annual Revenue * 365. This figure represents how long it takes, on average, to collect Receivables from customers.

You might assume that it changes based on historical trends or averages and then calculate the AR number each year based on Days Sales Outstanding.

**6. How can you make sure your Working Capital assumptions are reasonable?**

You should look at the total Change in Working Capital and compare it to the company's Revenue and Change in Revenue.

The Change in Working Capital represents whether a company *generates* additional Cash or *needs* extra Cash to fund its growth. So, it should trend with the Change in Revenue.

If the Change in WC as a % of the Change in Revenue has been 5-10% historically, it should stay in that same range going forward.

You can also compare the Change in WC to the company's Total Revenue if Change in WC / Change in Revenue does not produce clean, consistent figures.

**7. How should you project Depreciation and Capital Expenditures?**

You could use several approaches:

- **Simplest:** Make each one a % of revenue.
- **Alternative:** Make Depreciation a % of revenue, but link CapEx to an absolute dollar increase or percentage change.
- **Complex:** Create a PP&E schedule. Estimate a CapEx increase each year based on management's plans, and then depreciate the existing PP&E using each asset's useful life. Depreciating the new CapEx spending right after it takes place. Sum up the total CapEx and total Depreciation each year.

**8. Why do you link in the Interest Income and Interest Expense on the Income Statement as the LAST part of the process when projecting the financial statements?**

You need the company's Cash and Debt balances to calculate the Interest Income and Interest Expense, so you need the rest of the financial statements first.

You might also use supporting schedules, such as a Debt Schedule, and you create those *after* finishing most of the model.

Finally, depending on the model setup, the Interest link may create a circular reference. Circular references make models more difficult to modify, so you should save this step until the end.

**9. What's the key output from a 3-statement projection model?**

Besides the company's Cash, Debt, and Equity figures, the key output varies based on the analysis.

If you're analyzing a potential equity investment in a company, the key output is the IRR and MoM multiples under different scenarios.

In a credit analysis, the credit stats and ratios (Debt/EBITDA, EBITDA/Interest, etc.) in different cases are most important.

You might also focus on the company's financial metrics and ratios, such as ROA, ROE, and ROIC, especially if you're doing a "quick assessment" of the company.

**10. How do quarterly projections differ from annual projections?**

The projection methodology is the same, but you have to use *Year-over-Year (YoY)* figures for the growth rates each quarter due to seasonality (e.g., sales might be the highest in Q4 and the lowest in Q1 each year).

You still make most CFS/BS line items percentages of Income Statement items, but you should base them on the *Last Twelve Months' (LTM)* figures instead.

For example, a company's AR balance at the end of Q2 should be linked to the company's revenue from Q3 of last year into Q2 of this year – *the past 4 quarters*.

It's misleading if you only link AR to revenue in Q2 of this year because the balance might also include much older receivables.

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