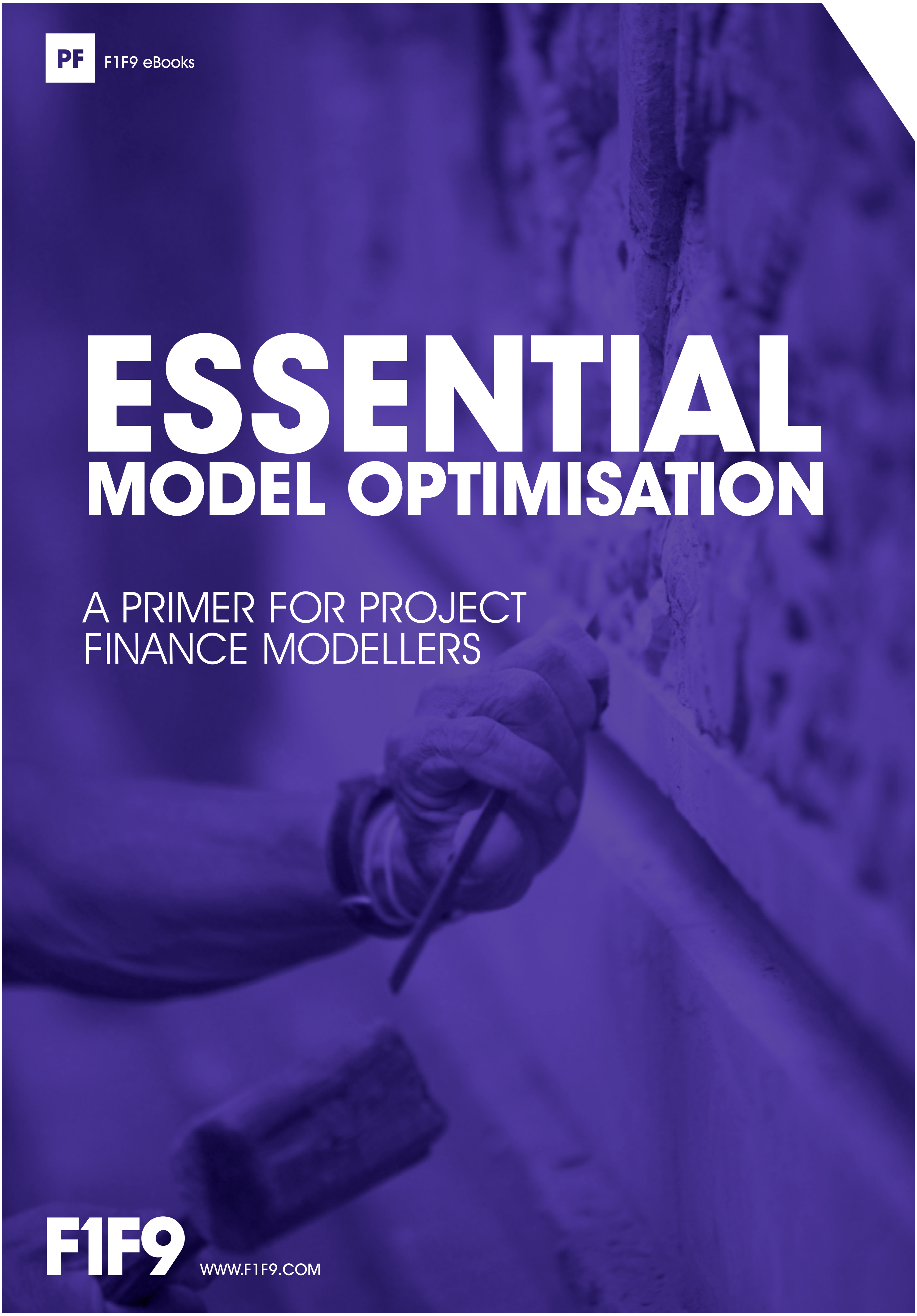

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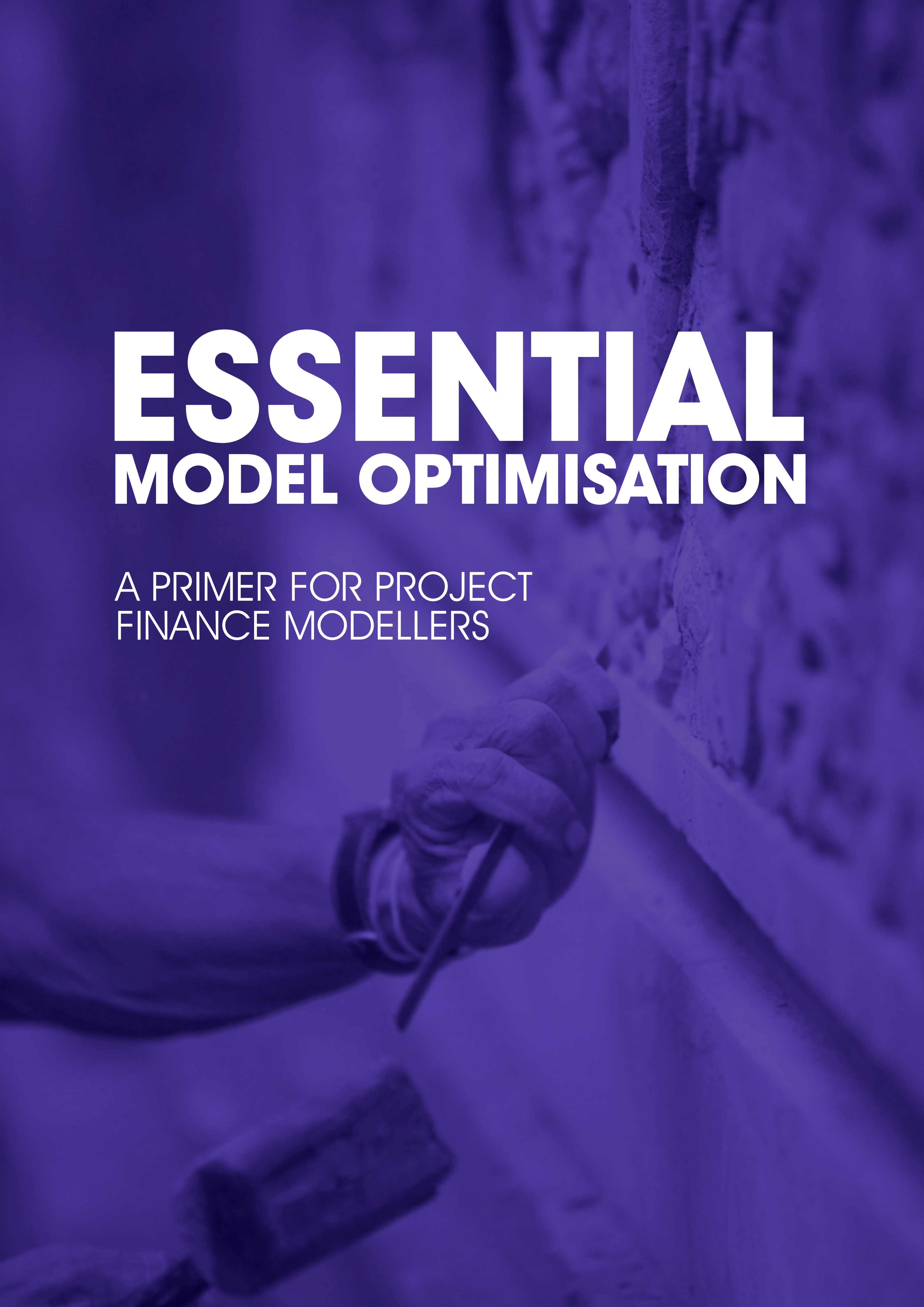
# CONTENTS

**WHEN I FIRST STARTED ENGAGING WITH PROJECT FINANCE MODELS, THE TERM "MODEL OPTIMISATION" WAS FREQUENTLY THROWN ABOUT IN CONVERSATION. IT WAS ONE OF THOSE THINGS THAT I DESPERATELY WANTED TO UNDERSTAND BUT I WAS EMBARRASSED TO ASK. *SHOULDN'T I KNOW THIS ALREADY?***

**BUT WHEN I DID BEGIN TO ASK, THE ANSWERS I GOT WERE UNSATISFACTORY. LOOKING BACK, I DON'T THINK ANYONE I ASKED COULD EXPLAIN IT CLEARLY...**



# ESSENTIAL MODEL OPTIMISATION

## A PRIMER FOR PROJECT FINANCE MODELLERS

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## ABOUT F1F9

F1F9 provides financial modelling and business forecasting support to blue chip clients and medium-sized corporates. We also teach financial modelling skills to companies around the world. Our clients have access to high quality, low cost modelling support delivered by 40 professional modellers.

F1F9 co-developed the FAST Standard that allows modellers and non-modellers to work together and understand financial models. Transparency is the core value that drives our modelling and our business activities.

## ABOUT THE AUTHOR

Andrew Berkley graduated with a degree in English Literature from Clare College, Cambridge. He then joined British Rail and was heavily involved in privatisation in the mid nineties. Andrew qualified as a Chartered Accountant in 1999 going on to join KPMG Corporate Finance where he worked on a series of advisory projects—many of them focused on government backed infrastructure investments under the PFI / PPP programme.

Andrew is a director at F1F9.

# GLOSSARY OF TERMS

| | |
|---|---|
| **Asset** | The property, plant and equipment that generates the project's revenue |
| **CFADS** | *Cash flow available for debt service* from which I pay my debt obligations |
| **Cash flow** | Cash generated by the project relating to a particular period |
| **DSCR** | *Debt service cover ratio*, a safety measure used by the debt investor |
| **Debt** | Interest bearing finance, often with an obligation to repay |
| **Debt covenant** | A contractual promise made by a borrower to a debt investor |
| **Debt interest** | Finance cost arising from debt |
| **Debt investor** | A lender or debt provider to the project |
| **Debt obligations** | Requirements to make payments under a loan agreement |
| **Debt principal** | The amount of debt invested in the project |
| **Debt principal repayments** | Cash payments made to reduce the amount of debt in the project |
| **Debt sculpted principal repayments** | Cash payments calculated as a fixed proportion of CFADS |
| **Debt sculpting** | The process of matching debt service with available CFADS |
| **Debt service** | Debt principal and debt interest |
| **Equity** | High risk finance, often subordinated to debt finance |
| **Equity investor** | A provider of equity finance to the project |
| **Financial model** | A dynamic forecast of the performance and viability of a project |
| **Financing requirement** | The gap between cash generated and cash spent in a project |
| **Financing solution** | The mix of debt and equity that meets the financing requirement |
| **Leverage** | The proportion of a financing solution that is provided by debt |
| **Loan agreement** | A contract between borrower and lender |
| **Model optimisation** | The process of satisfying the financial expectations of all stakeholders |
| **Price** | An assumption in the financial model upon which revenue forecasts are based |
| **Project** | The phases of design, build, finance and operations associated with an asset |

## INTRODUCTION:
# THIS IS A BOOK WRITTEN FOR MY YOUNGER SELF...

When I first started engaging with project finance models, the term "model optimisation" was frequently thrown about in conversation. It was one of those things that I desperately wanted to understand—I could tell that it was important from the people that talked about it. *But I was embarrassed to ask. Shouldn't I know this already?*

But when I did begin to ask, the answers I got were unsatisfactory. Looking back, I don't think anyone I asked could explain it clearly.

So, with the benefit of 10 years of corporate finance, accountancy and treasury teaching experience, I am attempting my own explanation. This is a book written for my younger self—and all others who are starting on the fascinating journey of designing financial structures that work.

The book is called Essential Model Optimisation and not Comprehensive Model Optimisation. It is a rough map, not Google Earth. More experienced modellers will find exceptions to the rule throughout this guide—and I apologise to them up front.

I hope all will find it of use. It plans out the journey using as simple a language as I dare. But like all journeys, the actual experience is very different from the plan.

# ON THE JOURNEY OF OPTIMISATION

1. CASH FLOW AVAILABLE FOR DEBT SERVICE (CFADS)
2. DEBT SERVICE (DS)
3. CHARTING CFADS & DS
4. BACK SOLVING DEBT PRINCIPAL PAYMENTS
5. BACK SOLVING TO PAY BACK 100% OF THE DEBT
6. TESTING AGAINST A HURDLE DSCR
7. EQUITY INVESTORS & WHAT THEY WANT
8. THE IMPACT OF DEBT ON EQUITY RATE OF RETURNS
9. PUSHING UP MY EQUITY RATE OF RETURNS
10. TWO LEVERS, TWO KEY METRICS
11. MODEL OPTIMISATION

# START WITH THE END IN MIND...

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# START WITH THE END IN MIND...

A large part of project finance modelling is about finding a financial solution that works. The optimisation process is an important part of finding that solution.

# THE PROJECT

Consider a project that will cost 1,000 to build an asset where I expect the asset to take 2 years to build. Once the asset is built, it will generate cash flows of 100 a year for 30 years.

I am forced to wait 2 years before my project generates cash flow. Since I need to invest 1,000 up front, this leads to a financing requirement of 1,000.

My financing solution will be a mix of debt and equity...
But what is the best mix? And how quickly should I pay it all back?

**So now we are ready to start. Let us start with the end in mind:**
**An optimised financial model will have a financing solution that:**

- achieves the keenest price in a competitive bid situation;
- meets my debt investor's requirements; and
- meets my equity investor's requirements.

**My debt investor's requirements are:**

- to invest no more than they are comfortable with; and
- for the project to have sufficient cash flow to pay all debt obligations.

My equity investors have a single, simple requirement. It is to make sure that they are compensated for the risk they are taking. They are looking for a minimum acceptable return on cash invested.

# CASH FLOW AVAILABLE FOR DEBT SERVICE

## Now we have identified our end point, let us work out how to reach it.

There are a number of places where we could begin – all of them useful. Because they are all useful, I need to make a choice. So I am going to start where F1F9's training courses start. F1F9's training courses start by modelling the asset that is built at the start of the project. Once up and running, this asset is expected to generate cash flow from revenue. That cash flow will be spent on a whole host of things to do with the project's operations, such as: purchases, staff costs, maintenance, more capital investment and taxation.

What is left over after all this has been paid for is called CFADS. CFADS (frequently pronounced "*see-fads*") stands for *cash flow available for debt service.*

**CFADS is stated:**

- after tax; but
- before any financing costs.

In other words, CFADS includes no payments that are related to the project's financing solution. So it is pretty difficult to push up CFADS by playing around with financing solutions. It is independent of our project's financing solution.

The way to increase CFADS is to boost sales, cut operating margins or find more efficient tax schemes. This is because CFADS is all to do with the operations of the project.

# EXAMPLE

I want to invest in a project that generates 100 each year in CFADS for 5 years. I agree to pay 500 to build the asset that is going to generate the CFADS.

Should I purchase the asset with a bond, share capital or use my credit card?

**Answer:** it doesn't matter how I finance the initial investment of 500. In a perfect world (ignoring tax and transaction costs for a moment), I would get the same CFADS if I issued a bond, share capital or used my credit card.

# THEORY

Modigliani and Miller – two Nobel Prize winning economists – captured this important concept in their theory of leverage (1958). They concluded that:

MVg = MVu

Where:

MVg is the market value of a company with debt in its capital structure (g = geared); and

MVu is the market value of an all equity financed company (u = ungeared).

In other words, stop worrying about how you should finance your business. It does not make the slightest difference to its market value (ignoring tax, transaction costs, assuming infinite projects in which to invest, assuming infinite capacity to raise money and a whole bunch of other simplifying—if unrealistic—assumptions. We did say it was theory.)

# DEBT SERVICE

## Now let us consider a second cash flow. This cash flow has nothing to do with the operational assumptions in the financial model and everything to do with its financing solution.

This second cash flow is called debt service. Debt service is the cash flow required to pay back debt obligations – and specifically:

- amounts required to pay back what was borrowed ("debt principal"); and
- amounts required to pay interest charges ("debt interest").

Debt service in any one period is influenced by:

- the period over which the debt principal is repaid;
- the percentage of debt principal paid back in any one period;
- the amount required to help fund the asset at the start of the project; and
- the cost of debt – the all-in rate quoted by the debt investor to be used in calculating debt interest payments.

Debt service is all to do with our project's financing solution. And much of it is up for negotiation with my debt investor.

Some things are difficult to negotiate. My debt investor is unlikely to accept less than 100 per cent of their money back, for example.

Other things are possible to negotiate through trades. It might be possible to reduce the all-in debt interest rate by accepting more onerous debt covenants in the loan agreement.

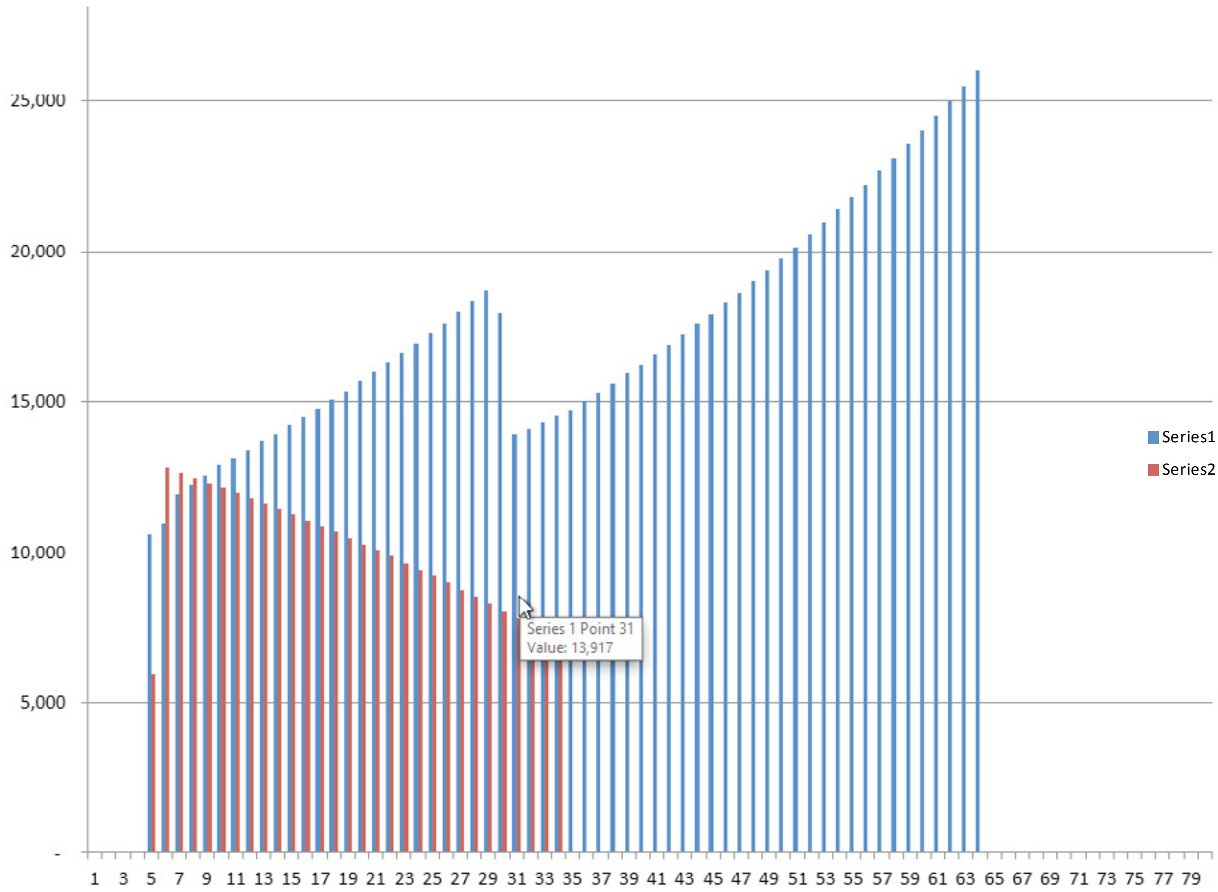
Other things are easier to negotiate – and a good financial model can be used to put a case to the debt investor. We are going to look at:

- how much debt principal we repay in any one period; and
- when we should repay the debt principal.

Negotiations with my debt investor "flow like water and set like concrete". Only once the loan agreement is signed does the concrete set. Up to that point, anything can be negotiated.

# CHARTING CFADS & DEBT SERVICE

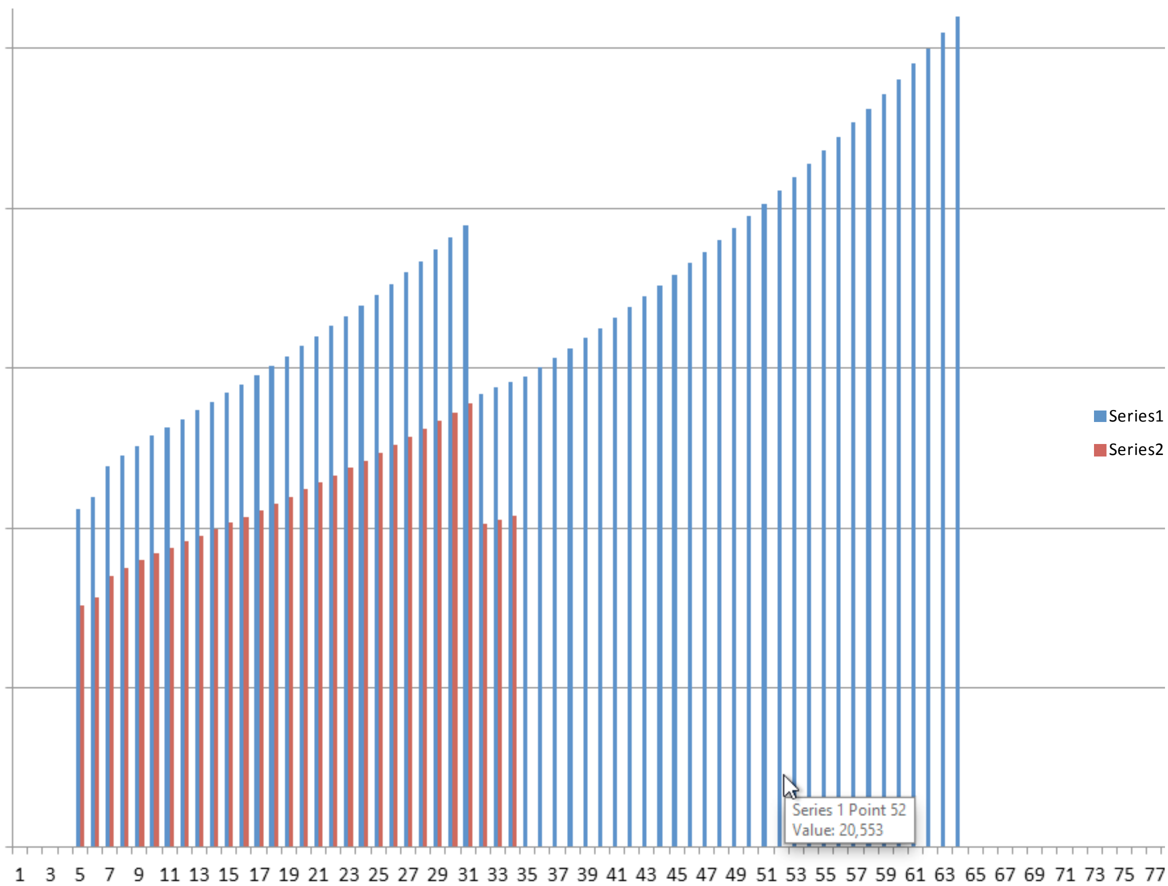
Here's an Excel quick chart (shortcut: F11) showing what you might expect CFADS and debt service to look like when you first model them. CFADS is in the blue; debt service is in the red.



If CFADS is higher than debt service then I have more than enough cash flow to keep my debt investor happy.

But, if CFADS is lower than debt service then I have a problem. There is a risk that I do not have sufficient cash flow to meet my debt obligations. What we seek is a smooth profile. This gives the debt investor confidence that the risk they are taking is equally spread across the period of exposure. There are no pinch points; nor are there periods of excessive surplus cash flow. Identifying the precise pattern of debt principal repayments that will lead to a smooth profile is known as *debt sculpting.*

Under the smoothed Excel quick chart, I have managed to match my debt service with my CFADS. Now, I always have enough CFADS to pay my debt obligations.




**So how do I do this?**

Go back to the list of things that influence debt service and think what you might negotiate easily. It is the debt principal repayment profile that we are going to look at. So long as:

- 100 per cent of the debt principal is paid back; and
- the debt principal repayment schedule is documented in the loan agreement

Any number of debt principal repayment profiles might be put to the debt investor as possible and appropriate.

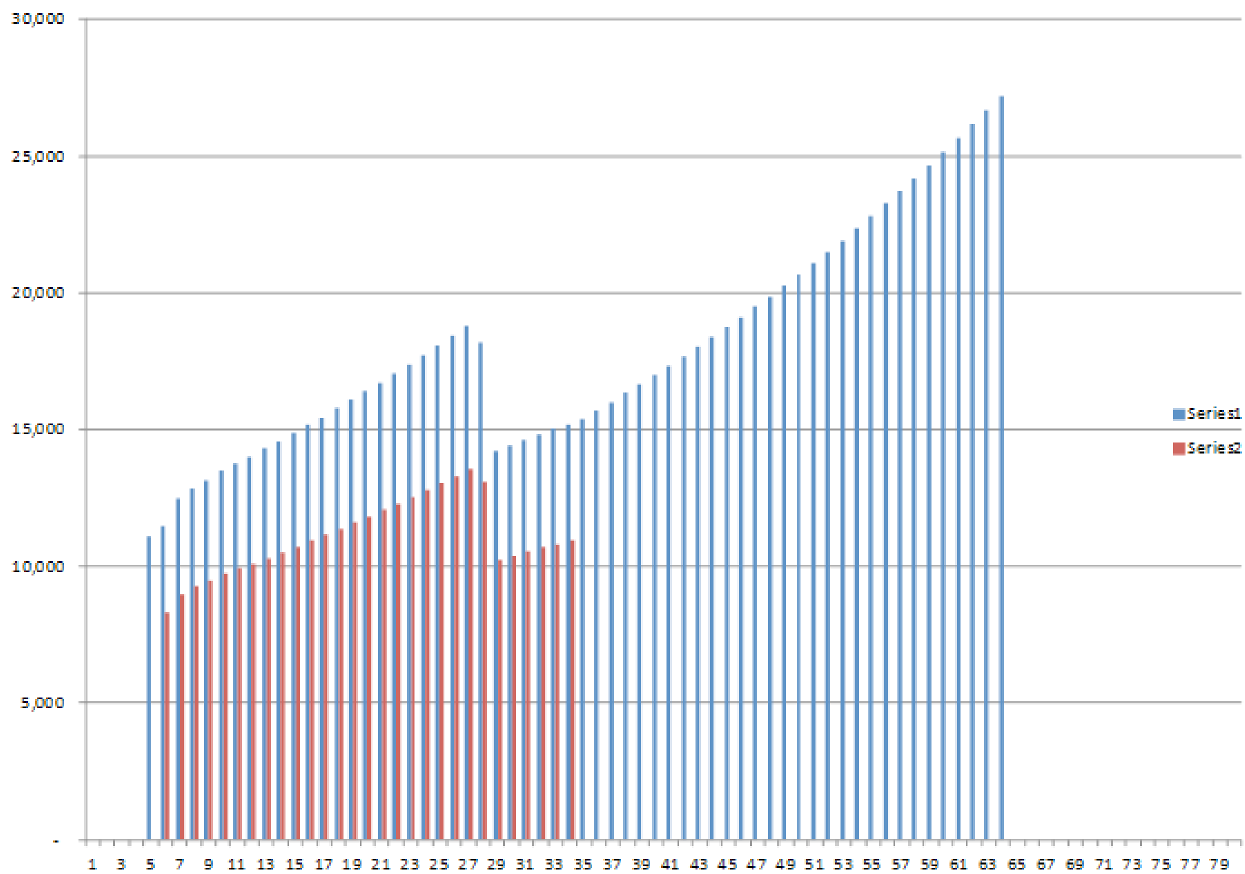
# EXAMPLE

Here are some examples of debt principal repayment profiles that might be negotiated with a debt investor and documented in the loan agreement:

- bullet repayment: 100 per cent of the debt principal paid in the final period;
- balloon repayment e.g. 2 per cent spread over 5 periods; 90 per cent in the final period;
- annuity repayment e.g. debt service is always equal in every period (so, given a constant debt interest rate, debt principal repayments will start low and increase over the period of the debt);
- equal debt principal repayments;
- equal debt principal repayments with a grace period; and
- debt sculpted principal repayments.

# BACK SOLVING DEBT PRINCIPAL REPAYMENTS

Let's go back to what we said earlier about debt sculpted principal repayments. The point about debt sculpted principal repayments is that the profile of debt service tracks the profile of CFADS.




How does this work in practice? This is best understood by calculating a ratio. The ratio that we are going to work with is the *debt service cover ratio* (DSCR):

DSCR = CFADS / debt service

The DSCR describes how much of a safety buffer we have in our CFADS. So long as the DSCR is greater than 1, we are avoiding pinch points when we might have difficulty in meeting our debt obligations.

We can achieve a constant DSCR by playing around with the debt principal repayment profile. We can back solve it so that the debt service chart tracks the CFADS chart.

# EXAMPLE

I am preparing a model for negotiation with the debt investor. In one model period, my CFADS is 100 and my debt service is 120 (made up by 80 in debt principal repayment and 40 in debt interest). I want to back solve my debt principal repayment so that I achieve a DSCR of 1.25. I cannot influence my CFADS since that is nothing to do with the project's financing solution. I cannot influence my debt interest since that has been priced by the debt investor with reference to the project's risk. It is not something that sits under my control.

But I can influence my debt principal repayment. If I back solve for this period then I should only repay debt principal of 40. My debt service would then be 40 + 40 = 80. Given a CFADS of 100, I would achieve the desired DSCR of 1.25.

# BACK SOLVING TO PAY BACK 100 PERCENT OF THE DEBT

We have reached a point where our debt service tracks our CFADS. And we know how to achieve the smoothed profile – by back solving or sculpting the debt principal repayments.

**But what is the correct DSCR to use?**
Any number of back solved DSCRs will give us a smoothed profile of CFADS and debt service. But only one DSCR will work for us. We need to test to see if our back solved DSCR leads to 100 per cent of the debt principal being repaid.

If the DSCR is set too high, then our resulting sculpted debt service will not be sufficient to meet debt interest and debt principal amounts. We will pay back less than 100 per cent of the debt principal.

If the DSCR is set too low, then our resulting sculpted debt service will be more than sufficient to meet debt interest and debt principal amounts. We will pay back more than 100 per cent of the debt principal.

We need to find the one DSCR that will result in 100 per cent of the debt principal being repaid.

**So there are two elements to our sculpting:**

- the first is to fix the debt principal repayment profile so that debt service tracks CFADS; and
- the second is to find the constant DSCR that leads to 100 per cent of the debt principal being repaid.

# TESTING AGAINST A HURDLE DSCR

Now let us bring the debt investor into the picture. For the debt investor, the DSCR is important enough to include as a debt covenant in the loan agreement. This is because it is a simple and effective way of measuring what risk they are taking.

My debt investor will specify a required DSCR and will specify when and how the project should test for compliance with the required DSCR.

If our back solved DSCR is greater than the required DSCR, then my debt investor will be happy but there may be unused debt capacity in the project (i.e. the project could borrow more debt and therefore leverage could be higher). Current arrangements might be inefficient for the project.

If our back solved DSCR is less than the required DSCR, then my debt investor will not be happy. There will be pinch points. Debt covenants in the loan agreement risk being breached. But if we borrow less to begin with (so we lower leverage) then debt service will be reduced and DSCRs will go up.

Our aim is for the back solved DSCR to equal the required DSCR at a point where 100 per cent of the debt principal is repaid over the term of the debt. We have also seen that we can influence the back solved DSCR by altering the amount we borrow in the first place – by changing the project's leverage.

**But this is only half the story. Now we must turn to equity.**

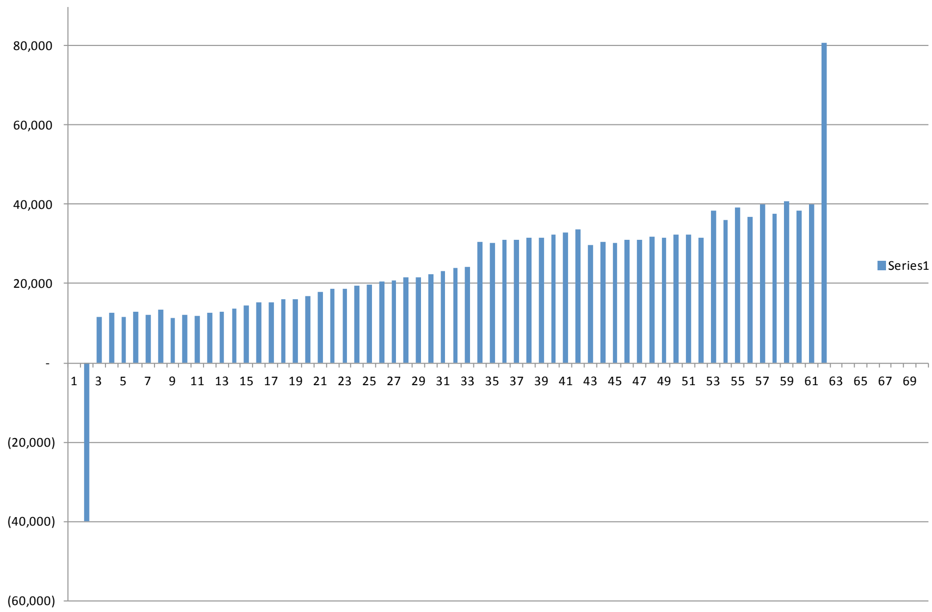
# EQUITY INVESTORS AND WHAT THEY WANT

## So we are going to leave my debt investor for a while and attend to my equity investor.

My equity investor seeks cash distributions from the project in return for the cash they invest. The blended equity rate of return – being the annual average actual return on cash invested by my equity investor – is a simple way of measuring what they might expect from their investment.

**Why *blended*?**
Because the blended equity rate of return considers all types of cash injected by my equity investor e.g. ordinary share capital, preference share capital and shareholder loans.

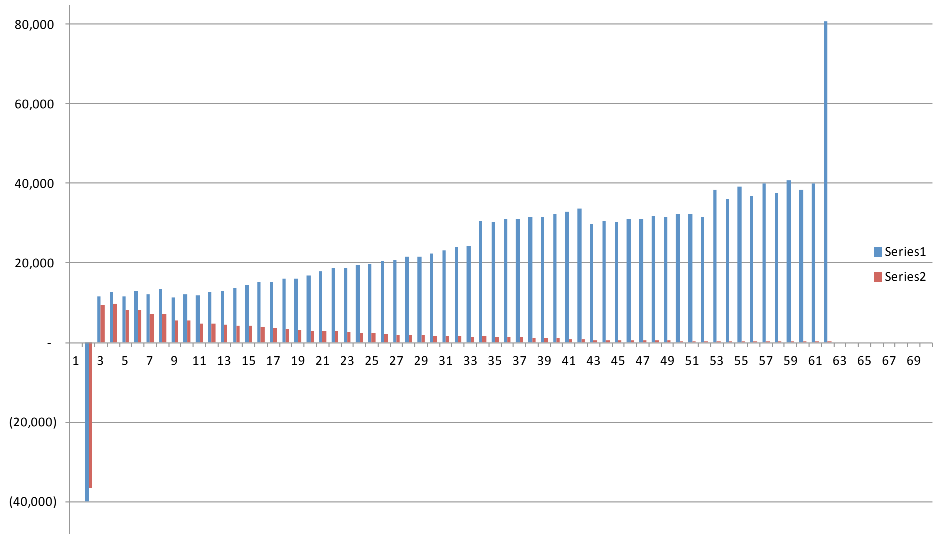
Let us look at an Excel quick chart of the cash flows from our project assuming an all equity financing solution:



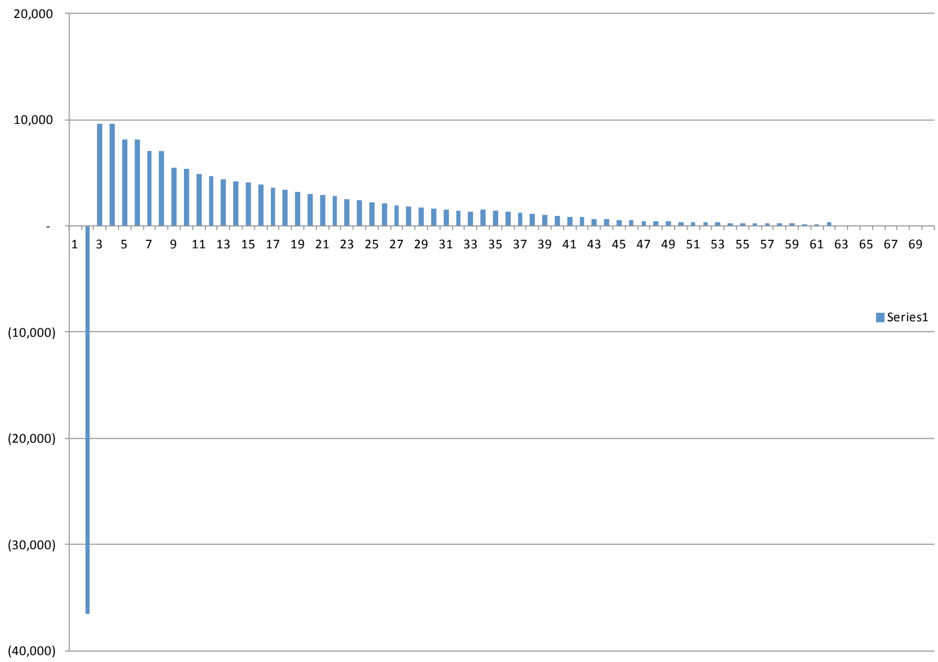
**Look out for:**

- the large initial equity investment;
- the train of cash distributions paid to equity investors over the period of the project; and
- the large single cash payment used to redeem equity when the project ends.

Now let us introduce discounting to the cash flows in our all equity financed project. With discounted cash flows, today's value of future cash flows decreases. The further we are from today; the less a cash flow will be worth to us.




Undiscounted cash flows are in the blue; discounted cash flows are in the red. Let us take a look at the discounted graph on its own:

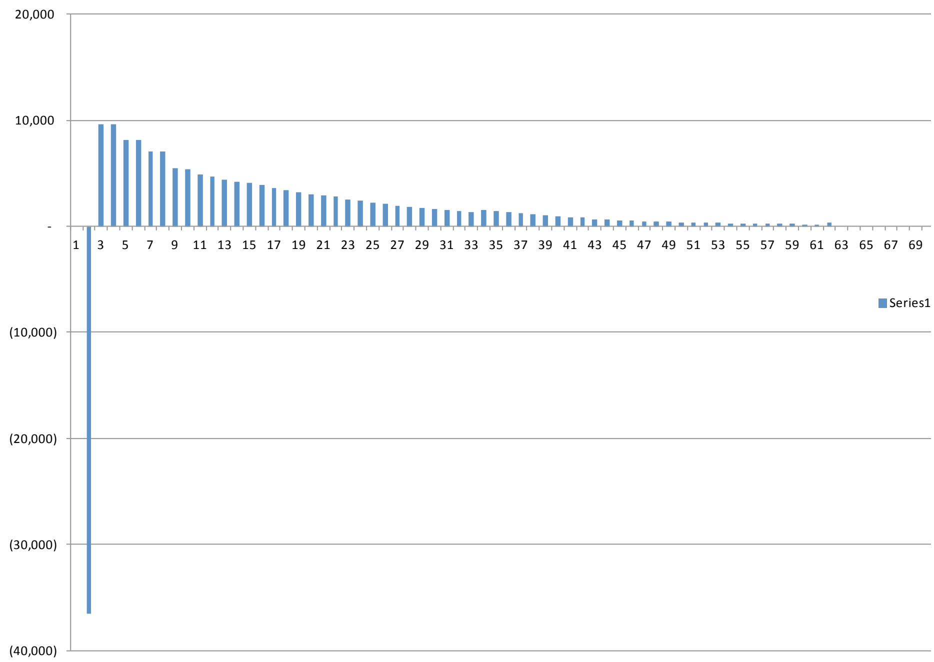



**Look out for:**

- the large-ish initial equity investment;
- the train of cash distributions diminishing rapidly over the period of the project as the time value of money takes its compounding effect; and
- the tiny single cash payment used to redeem equity when the project ends.

# THE IMPACT OF DEBT ON EQUITY RATE OF RETURN

Now think about what happens to the chart when I introduce debt to my project.




**I would expect:**

- the large-ish initial equity investment to decrease – a lot;
- the train of cash distributions to shrink – a little; and
- the small redemption of equity to decrease – a lot.

My equity investment decreases a lot because I am now financing the project with a significant amount of debt. My leverage increases. In some government backed projects, leverage has been known to reach 95 per cent of the financing requirement.

My train of cash distributions shrinks a little because of the impact of debt interest on both cash and profits available for distribution. My debt principal repayment profile may also have an impact on when cash distributions are made.

My tiny redemption of equity decreases because I put less equity in at the start of the project. But this figure – discounted – is now pretty insignificant.

In summary, increased leverage allows my equity investor:

- to put a lot less equity in at the start; and
- suffer only a marginal impact on what they get back.

The introduction of debt will push up significantly the equity investor's blended equity rate of return. It also increases their risk (owing to the additional, non discretionary debt obligations that must be paid out of CFADS).

# THEORY

Modigliani and Miller proved in 1958 that project value was independent of financing solutions. It did not matter whether you funded a project with equity, debt or credit card – there was no impact on CFADS.

But they were quite clear: the more debt you put in a project; the more an equity investor's rate of return should rise. This is because leverage increases project risk (you now have debt obligations that must be paid regardless) – risk that would be borne by the equity investor. Since rational investors would seek higher returns when risk increased, so equity returns should increase with increases in leverage.

In 1963, Modigliani and Miller considered the impact of tax on debt interest payments. So long as the return required by the debt investor was lower than the return required by equity investors, then:

- increasing debt levels would push up actual equity rates of return (because of risk); and
- the tax benefits associated with paying debt interest would increase the project's value.

You will see this expressed as another equation:

MVg = MVu + Dt

Where:

**MVg** is the market value of a company with debt in its capital structure (g = geared);

**MVu** is the market value of an all equity financed company (u = ungeared);

and

**Dt** is the present value of the tax relief obtained on debt interest payments.

# PUSHING UP MY EQUITY RATE OF RETURN

How do I achieve a higher blended equity rate of return for my equity investor? First, I could push up CFADS by squeezing operating margins further or pushing up the price. By the time I am at the stage of model optimisation, it is unlikely that there are further operational savings to be found – price is my only realistic lever at this late stage.

As an alternative, I could increase the leverage in my project. This would reduce the upfront initial equity investment significantly (and – as we have seen – equity investors get only marginally lower cash distributions as a result).

My equity investor will specify a required blended equity rate of return. This is set at a level that compensates them for the risk they are taking.

If my financial model's equity rate of return is greater than the required equity rate of return, then my equity investor will be happy but the price might be too high. In a bid situation, competitive pressures will increase the likelihood of another bidder winning the tender.

If my financial model's equity rate of return is lower than the required equity rate of return, then my equity investor will not be happy. They are not being compensated for the risk they are taking on and the financial model will be unacceptable to them.

I want my financial model's equity rate of return to equal the required equity rate of return. At this point, my equity investor will be happy and I will be responding in the best way to competitive pressure from the market.

And we have now seen 2 ways of pushing up my financial model's equity rate of return:

(i) Increase leverage to reduce the initial equity investment; and
(ii) Increase price to push up CFADS.

To reduce my financial model's equity rate of return, I reduce the leverage – or reduce the price.

# TWO LEVERS, TWO KEY METRICS

We can boil down everything we have done so far to four key metrics. We are close to understanding the relationships between them:

## LEVERS

**Price** - an input, assumed to be entirely under my control. My aim is to get price as low as I can in order to win the bid.

**Leverage** - an input, assumed to be under my control. My aim is to get leverage as high as I can (negotiating with the debt investor if I need to).

## METRICS

**DSCR** - a calculation, back solved so that (i) it is constant and (ii) 100 per cent of the debt is repaid). My aim is to match the debt investor's required DSCR.

**Blended equity rate of return** - a calculation, based on post tax, post financing cash flows. My aim is to match my equity investor's required rate of return.

We also know that there are 2 ways of changing the blended equity rate of return:
- change the price; and
- change the leverage

These two types of change will also affect the DSCR. We can work to manipulate both DSCR and blended equity rate of return at the same time. It looks like this:


1 If DSCR and the blended equity rate of return are both too high, then decrease the price. This reduces CFADS, so the blended equity rate of return goes down because future cash flows are lower. DSCR goes down because there is less CFADS available to pay debt obligations.

2 If DSCR and the blended equity rate of return are both too low, then increase the price. This increases CFADS, so the blended equity rate of return goes up because future cash flows are higher. DSCR goes up because there is more CFADS available to pay debt obligations.

3 If DSCR is too high and the blended equity rate of return is too low, then increase the leverage. This reduces the initial equity investment, so the blended equity rate of return goes up because a significant reduction in up front equity investment leads to only marginally lower future cash flows. DSCR goes down because the same CFADS is available to pay for an increased debt service.

4 If DSCR is too low and the blended equity rate of return is too high, then decrease the leverage. This increases the initial equity investment, so the blended equity rate of return goes down because a significant increase in up front equity investment leads to only marginally higher future cash flows. DSCR goes up because the same CFADS is available to pay for a decreased debt service.

# MODEL OPTIMISATION

Imagine a grid with price along the x-axis and leverage along the y-axis. I can complete the grid with the blended equity rates of return that result under each scenario.

| | | Price | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Equity IRR (%p.a.) | | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
| Leverage | 70% | 12% | 13% | 14% | 15% | 16% | 17% | 18% |
| | 75% | 13% | 14% | 15% | 16% | 17% | 18% | 19% |
| | 80% | 14% | 15% | 16% | 17% | 18% | 19% | 20% |
| | 85% | 15% | 16% | 17% | 18% | 19% | 20% | 21% |
| | 90% | 16% | 17% | 18% | 19% | 20% | 21% | 22% |
| | 95% | 17% | 18% | 19% | 20% | 21% | 22% | 23% |
| | 100% | 18% | 19% | 20% | 21% | 22% | 23% | 24% |

From this grid, I can see that as price increases so the blended equity rate of return increases (because of the increased CFADS and the extra cash distributions that are generated). And as leverage increases so my blended equity rate of return increases (because of the reduction in the initial equity investment).

I am also able to identify an efficient frontier where my blended equity rate of return matches my equity investor's required rate of return. The frontier runs from North East to South West.

### Let us assume a required rate of return of 15 per cent.

| Equity IRR (%p.a) | | Price 30 | 35 | 40 | 45 | 50 | 55 | 60 |
|---|---|---|---|---|---|---|---|---|
| Leverage | 70% | 12% | 13% | 14% | 15% | 16% | 17% | 18% |
| | 75% | 13% | 14% | 15% | 16% | 17% | 18% | 19% |
| | 80% | 14% | 15% | 16% | 17% | 18% | 19% | 20% |
| | 85% | 15% | 16% | 17% | 18% | 19% | 20% | 21% |
| | 90% | 16% | 17% | 18% | 19% | 20% | 21% | 22% |
| | 95% | 17% | 18% | 19% | 20% | 21% | 22% | 23% |
| | 100% | 18% | 19% | 20% | 21% | 22% | 23% | 24% |

Now imagine a second grid with price along the x axis and leverage along the y axis. I can complete this second grid with the DSCR that results under each scenario.

From this graph, I can see that as price increases so the DSCR increases (because of the increased CFADS and the extra buffer this generates over debt service). And as leverage increases, so the DSCR decreases (because of the additional debt service).

I can also identify an efficient frontier where my DSCR matches my debt investor's required DSCR. The frontier runs from North West to South East.

### Let us assume a minimum DSCR of 1.4.

| | DSCR | Price 30 | 35 | 40 | 45 | 50 | 55 | 60 |
|---|---|---|---|---|---|---|---|---|
| Leverage | 70% | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 |
| | 75% | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 |
| | 80% | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 |
| | 85% | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 |
| | 90% | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 |
| | 95% | 0.8 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 |
| | 100% | 0.7 | 0.8 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 |

And if I superimpose my second graph over my first graph – remember that the axes are common to both graphs – then you can see where the financial model is optimised.

| Equity IRR (%p.a) & DSCR | | Price 30 | 35 | 40 | 45 | 50 | 55 | 60 |
|---|---|---|---|---|---|---|---|---|
| Leverage | 70% | 12% | 13% | 14% | 15% 1.6 | 16% | 17% | 18% |
| | 75% | 13% | 14% | 15% 1.4 | 16% | 17% | 18% | 19% |
| | 80% | 14% | 15% | 16% | 17% 1.4 | 18% | 19% | 20% |
| | 85% | 15% | 16% | 17% | 18% | 19% 1.4 | 20% | 21% |
| | 90% | 16% | 17% | 18% | 19% | 20% | 21% 1.4 | 22% |
| | 95% | 17% | 18% | 19% | 20% | 21% | 22% | 23% 1.4 |
| | 100% | 18% | 19% | 20% | 21% | 22% | 23% | 24% |

An optimised financial model will work off a price and leverage level that means:

- **The blended equity rate of return is equal to the blended equity investor's required rate of return; and**
- **DSCR is equal to the debt investor's required DSCR**

# NEXT STEPS

I hope you have enjoyed reading *Essential Model Optimisation*. It is designed to be a useful point of reference and discussion as you work with financial models that need to be optimised.

But let me remind you of what I wrote at the start. This book is called ***Essential Model Optimisation***; it is not ***Comprehensive Model Optimisation***. It is a rough map, not Google Earth. You may already have found exceptions to the rule and you may decide that you need more to help you on your particular model optimisation journey.

Everything in this ebook is based on what we teach in **FAST financial modelling courses.**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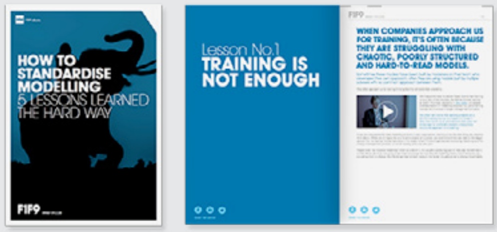


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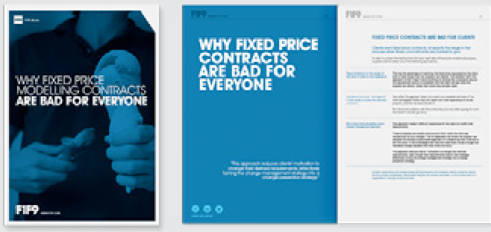


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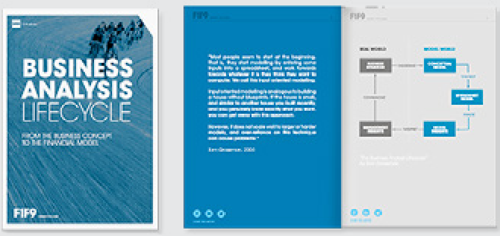


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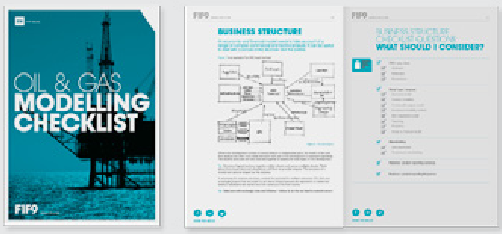


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