



VECTOR

Illuminating Financial Modelling



Knowledge / Project return

Project Finance lenders rely on the holy trinity of DSCR, LLCR and PLCR; however, developers and investors focus much more on the Project Return and Equity Return respectively. The Project Return allows Boards and Investment Committees the ability to compare one project to another, independent of gearing, cost of funds, impact on tax of deductible interest charges etc. This post introduces you to the Project Return, how to calculate it, how to present it and what to watch out for.



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Introduction

In this article, we introduce the concept of the Project Return and how to include it in a typical project finance financial model. We encourage you to read this with the accompanying Excel workbook so you can review the layout of the calculations and the actual formula - rather than just read about it.

If you find this useful and you want to understand more about the intention, interpretation and market nuances of either the Project or Equity Return and how it works in different situations then ask about our two day, 100% hands-on, case study based, Project Finance Analysis course, delivered in person by Nick Crawley.

The Project Return is an IRR calculation performed on the net cashflow resulting from the development expenditure and net operational cashflow generated from the project. It is essential that all aspects of the capital structure are removed from these lines and that all line items are cash based.

Briefly, the Equity Return, incorporates the leverage achieved through gearing, as such if it is economic to gear the project then it will return a higher comparative value than the Project Return.

Presenting the Project Return

The Project Return, like any IRR based value, is usually shown along with the NPV and also :

- Explicitly which lines are included in the calculation
- Is it Real or Nominal
- Is it Pre or Post Tax
- What discount rate has been used for the NPV
- What is the evaluation date
- Anything special the reader needs to know (inclusions / unexpected items)

Project return @ 31st March 2017
Nominal, post tax, discount = 10% p.a.

	XIRR()	XNPV()
	16.77%	11.631

Presenting the NPV and IRR together represent the "Project Return", at a given date, real/nominal basis and discount rate. First principles shown below.

Discount factor	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
Days in period	1-Jan-17	1-Apr-17	1-Jul-17	1-Oct-17	1-Jan-18	1-Apr-18	1-Jul-18	1-Oct-18	1-Jan-19	1-Apr-19	1-Jul-19	1-Oct-19	1-Jan-20	1-Apr-20	1-Jul-20	1-Oct-20		
Period counter	31-Mar-17	30-Jun-17	30-Sep-17	31-Dec-17	31-Mar-18	30-Jun-18	30-Sep-18	31-Dec-18	31-Mar-19	30-Jun-19	30-Sep-19	31-Dec-19	31-Mar-20	30-Jun-20	30-Sep-20	31-Dec-20		
Net cashflow (PV)	\$M	SUM()	1.000	1.024	1.049	1.074	1.100	1.126	1.154	1.182	1.210	1.239	1.269	1.300	1.331	1.363	1.397	1.430
			0.0	(24.4)	(23.8)	(23.3)	(22.7)	9.5	9.4	9.2	9.1	9.0	8.9	8.8	8.6	8.5	8.4	8.3

Include

"All cashflows associated with developing and operating the project that are not related to how it is funded."

- Capital expenditure
- Operating expenditure
- Tax (ungeared)
- Revenue (receipts)

Modelled quarter		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
Quarter end date		1-Jan-17	1-Apr-17	1-Jul-17	1-Oct-17	1-Jan-18	1-Apr-18	1-Jul-18	1-Oct-18	1-Jan-19	1-Apr-19	1-Jul-19	1-Oct-19	1-Jan-20	1-Apr-20	1-Jul-20	1-Oct-20	1-Jan-21	1-Apr-21
Construction	[1,0]																		
Construction end	[1,0]																		
Phase: Operations	[1,0]																		
Cashflows																			
Nominal cashflows indexed from 30-Jun-17																			
Revenue	\$M	241.0					19.00	19.19	19.38	19.58	19.77	19.97	20.17	20.37	20.57	20.78	20.99	21.20	
CapEx: Construction	\$M	100.0	25.00	25.00	25.00	25.00													
CapEx: Operations	\$M	12.0					1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Operating expenditure	\$M	67.8					5.20	5.28	5.36	5.44	5.52	5.60	5.69	5.77	5.86	5.95	6.03	6.13	
Tax	\$M	25.2					2.10	2.12	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
Project return																			
Revenue	\$M	-	-	-	-	19.0	19.2	19.4	19.6	19.8	20.0	20.2	20.4	20.6	20.8	21.0	21.2	-	
CapEx: Construction	\$M	(25.0)	(25.0)	(25.0)	(25.0)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CapEx: Operations	\$M	-	-	-	-	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)
Operating expenditure	\$M	-	-	-	-	(5.2)	(5.3)	(5.4)	(5.4)	(5.5)	(5.6)	(5.7)	(5.8)	(5.9)	(5.9)	(6.0)	(6.1)	-	-
Tax	\$M	-	-	-	-	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)
Net cashflow	\$M	0.0	(25.0)	(25.0)	(25.0)	(25.0)	10.7	10.8	10.9	11.0	11.2	11.3	11.4	11.5	11.6	11.7	11.9	12.0	-
XIRR																			
XNPV																			
Project return @ 31st March 2017																			
Nominal, post tax, discount = 10 % p.a.																			

Exclude

"Everything to do with financing, thinking through important secondary flow-on effects."

- Interest earned (unless you re-cut an ungeared version – hard work!)
- Interest paid (inc. Political Risk Insurance)
- Commitment fees / line fees
- Up-Front / establishment / refinancing fees
- Principal repayments
- DSRA initial funding and movements
- Dividends
- Grants
- Withholding tax
- Anything cash related to satisfy financiers - insurances, tax reserve accounts...

Advanced considerations

As is often the case there will be aspects that are not black-or-white and in these situations, it is important to make a call and be clear in your reporting of anything marginal. For example, tax losses that have been generated due to earlier financing, such as interest and fees. I would argue philosophically that once a loss has been recognised and is available it doesn't matter how it was generated but it is better to be clear than not!

Some other aspects to consider and be clear on are the treatment of

- A post tax Project return requires a duplicate of the tax calculations with no finance related deductions.
- Interest on cash balances that themselves include financial aspects
- Terminal values
- What is the 'initial value' for the IRR() calculation – default is 10%
- If there are multiple changes in sign of cashflow have you explored multiple IRRs?

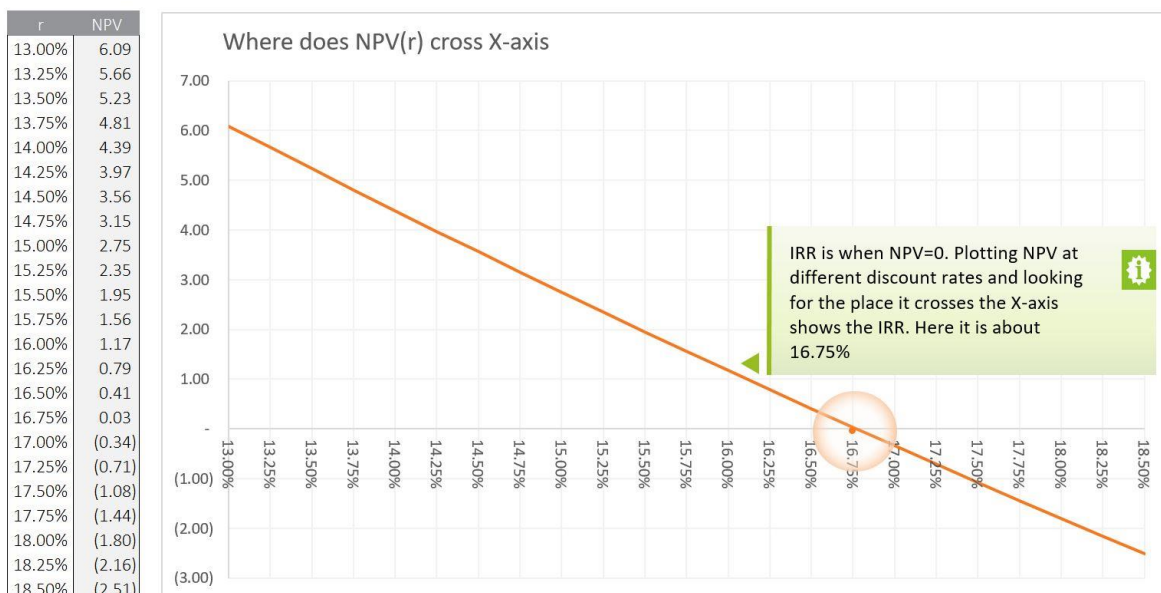
Real vs Nominal

Nominal cashflows include inflation. Real, do not. The factors subject to inflation are operational cashflows, interest rates and ultimately discount factors. There are major, global, project developers and investments who put more weight on real analysis, especially in the resources industry. I have always found this a challenging concept because if your argument is that inflation adds an unnecessary, uncertain and often (literally) inflationary factor to your analysis you are building important cashflows such as tax payments that will be higher than you are planning for. Adding in inflation / CPI / RPI etc is just one more assumption that requires due diligence and clarity. Either way - be very clear on the basis of the cashflows which you are performing a project return calculation over.

Nick's cheat sheet

Here are some of the first things I look for when analysing a project return - using this you find most errors annoying quickly!

- If I see a 'geared' Project Return then the alarm bells ring!
- Is the Project Return < Equity Return
- Does Project NPV = 0 if the NPV discount rate is replaced with the Project Return
- Does Project Return change when gearing changes, it shouldn't.
- Is the SUM(Net Project Cashflow) > SUM(Discounted net cashflow) over the project life? It should be.
- Is the project highly sensitive to discount rate - if it is then the science behind the discount rate needs to be bullet-proof. I like to plot NPV as a function of discount rate to understand this and also to hunt for multiple IRRs.



Common errors

The repeat offenders of errors in the project return in project finance financial models are:

- Inclusion of non-cash items.
- Including financial line-items.
- Tax includes a deduction for interest and fees (a separate tax calculation is needed).
- Inclusion of interest earned which includes DSRA interest earned.
- Using a nominal discount rate on real cashflows

Summary

When you get to the board room and are comparing two projects with different characteristics and are trying to benchmark a project or assess the benefit of gearing then Project Return is the starting point. To understand the fundamental viability of a project I analyse this metric over a range of key variables and scenarios; how it moves compared to the Base Case often reveals some of the biggest errors.

If you found this helpful and would like to learn about other aspects of Project Finance Modelling or Advanced Financial Modelling then you would love our training courses! Check them out here or just give us a call.

I hope that was useful – smooth and happy modelling!

