Valuing NHY

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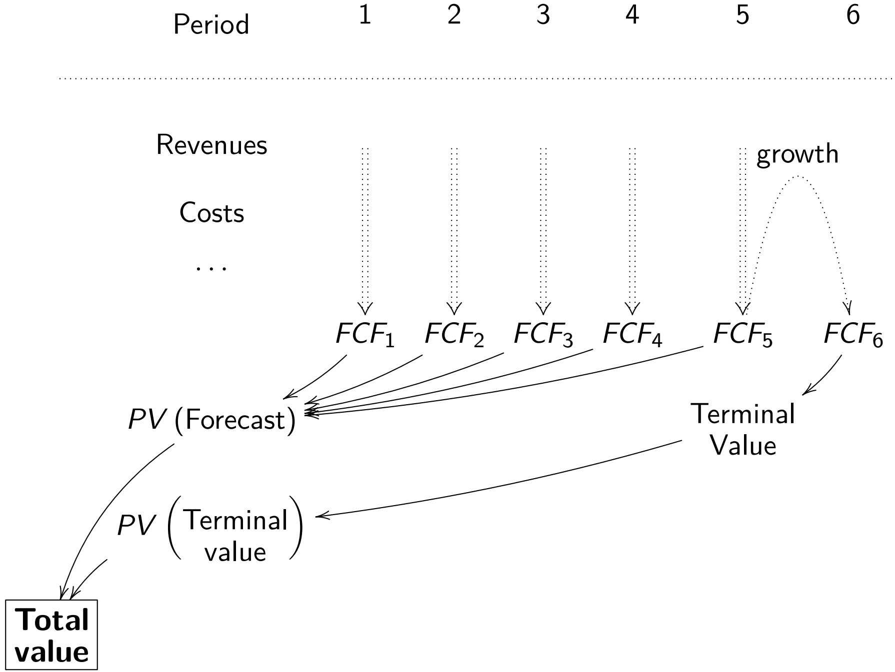
Go through how to approach a corporate valuation.
Very “rough and ready” valuation of Norsk Hydro (NHY).
Information: Historical accounts. Capital market data.
Standard starting point: Future cash flows
Short term forecasting, Long term simplified growth assumption


Period
1
2
3
4
5
6
Revenues
Costs
...
growth
FCF_1
FCF_2
FCF_3
FCF_4
FCF_5
FCF_6
PV (Forecast)
Terminal Value
$PV \begin{pmatrix} \text{Terminal} \\ \text{value} \end{pmatrix}$
Total value

Start with annual report 2019:

Hydro

Annual report
2019

Income statement

Year	2019	2018
Revenue	149,766	159,377
Share of the profit (loss) in equity accounted investments	241	765
Other income, net	1,000	772
Total revenue and income	151,007	160,913
Raw material and energy expense	97,474	102,523
Employee benefit expense	24,871	23,176
Depreciation and amortization expense	8,572	7,369
Impairment of non-current assets	912	-
Other expenses	18,678	19,324
Total expenses	150,508	152,391
Earnings before financial items and tax (EBIT)	499	8,522
Financial income (expense), net	(2,055)	(2,060)
Income (loss) before tax	(1,556)	6,462
Income taxes	(813)	(2,139)
Net income (loss)	(2,370)	4,323

Balance Sheet, assets

	2019	2018
Cash and cash equivalents	12,286	5,995
Short-term investments	969	975
Accounts receivables	18,959	20,744
Inventories	20,816	26,483
Other current assets	635	801
Total current assets	53,665	54,998
Property, plant and equipment	74,243	74,369
Intangible assets	11,501	11,443
Investments accounted for using the equity method	11,501	11,570
Prepaid pension	6,676	5,162
Other non-current assets	6,815	7,385
Total non-current assets	110,736	109,929
Total assets	164,401	164,928

Forecasting

But, simplifying: Suppose we just forecast *revenues*.
What has been the most recent revenue growth?

	Growth in revenue
2018-19	-6.03%
2017-18	45.92%
2016-17	24.97%
2015-16	-6.55%
2014-15	12.56%
average	14.17%

Costs, etc

Costs can be assumed to be driven by revenues, as a constant fraction:

	Expenses as fraction of revenue
2019	100.50%
2018	95.62%
2017	92.94%
2016	93.91%
2015	91.69%
2014	94.21%
Average	94.81%

Costs, etc

A couple of other estimations of

- how much depreciation is of costs (constant fraction)

	Depreciation as fraction of expenses
2019	5.70%
2018	4.84%
2017	6.07%
average	5.53%

- investment forecasts (grow at rate of revenue growth)

Give forecast parameters

	Forecast parameters
Growth in revenue	14.17%
Costs as fraction of revenue	94.81%
depreciation as fraction of expenses	5.53%
Investment in 2018	9,173
Investestement growth rate	14.17%
tax rate	33.00%
Long term economic growth	2.00%

Suppose we choose five years as horizon for short term forecast

Five year FCF forecast

Year	2020	2021	2022	2023	2024
Revenues	170,995	195,234	222,907	254,504	290,580
Costs	162,120	185,100	211,338	241,294	275,497
taxable income	8,875	10,133	11,570	13,210	15,082
tax	2,929	3,344	3,818	4,359	4,977
After-tax income	5,946	6,789	7,752	8,851	10,105
Add back depreciation	8,972	10,243	11,695	13,353	15,246
Subtract investments	10,473	11,958	13,653	15,588	17,798
Free Cash Flow (FCF)	4,445	5,075	5,794	6,616	7,553

Estimates of cost of capital

Interest rate long term debt	2.36%
book value of interest-bearing debt	25,015
Risk-free interest rate	2%
Beta of NHY equity	1.17
Market risk premium (MRP)	4%
Cost of equity capital	6.6%
Market capitalization of Norsk Hydro	67,532
WACC	5.3%

Estimate of value of NHY

	2020	2021	2022	2023	2024
FCF	4,445	5,075	5,794	6,616	7,553
Horizon value					233,340
Present value	205,198				
Book value debt	25,015				
Implied equity value	180,183				
Predicted share price	87				
Actual share price	32.64				

Equity value estimate

Comparing the predicted stock price: 87
with the actual stock price: 32.64
something iffy.
Obvious suspect: The high growth in revenues.
What growth in revenues for the next five years will produce a valuation of the company's equity that matches the current market valuation of equity?
Important: Design spreadsheet so that this is a single parameter.
Answer: Short term revenue growth: -3.5%:

What if?

Set growth in revenue $= -2.56\%$:

	2020	2021	2022	2023	2024
Revenues	144,435	139,293	134,334	129,552	124,940
Costs	136,938	132,063	127,361	122,827	118,455
Tax	2,474	2,386	2,301	2,219	2,140
After-tax income	5,023	4,844	4,672	4,505	4,345
Add back depreciation	7,578	7,308	7,048	6,797	6,555
Subtract investments	8,846	8,532	8,228	7,935	7,652
Free Cash Flow	3,754	3,621	3,492	3,368	3,248
Horizon value					100,328
Present value	92,559				
Debt	25,015				
Predicted share price	32.65				
Actual share price	32.64				

Lessons from example

Company valuation is really a straightforward exercise.
Need: some idea of the evolution of value-drivers of company.
In this example: Straight assumption of revenue growth.
In more realistic cases: Need more detailed corporate analysis:

- Strategic analysis
- Marketing plans
- Investment plans
- ...

The better understanding of the company, the better the quality of such forecasts.

Note

Number of more technical finance details "glossed over"

- Changes in working capital
- Treasury securities (adjustment of shares outstanding)
- Cash/financial assets
- Accounting judgments
- etc