

Notes:

IRR- Internal Rate of Return
NPV- Net Present Value
All- Alternium in Isolation
R&D- Research and Development
G&A- General and Administrative

The initial outflow in year 0 is a \$150 million for the research and development of code for Alternium. This cannot be recouped. We will assume that Universal Swap has decided to go ahead with their new pool Alternium.

For this they have to spend \$1 billion upfront in infrastructure expenses. As depreciation is calculated by straight line method, and the asset has a salvage value of \$200 million, depreciation is \$80 million per year which is at 8% yearly. To calculate the after-tax cash flow, depreciation must be added back to net income.

Growth rate of participants with and without Alternium is given in the data. As we are assuming that Alternium is functional, participants grow at a rate of 5% for US and Russia and 10% for other international users.

The flat rate is \$100 at year 0 and grows at the expected inflation rate of 1.5% per annum. By the end of the 10th year, the flat charges are \$116.05. The flat charges for users of All are half of those charged to others.

Alternium in Isolation (All) is priced at half the regular price and the cost of servicing its users is 60% of the cost of servicing other international users. Both these amounts grow at the inflation rate over 10 years.

The cost of infrastructure up front is 1 billion or 1000 million dollars. Since the salvage value is 200 million, depreciation over 10 years has amounted to 800 million. Depreciation is calculated by straight line method. This depreciation will be added back to net income while calculating after tax cash flow.

Since Universal Swap has 30 million international participants and is using 65% of server capacity, 100% capacity will be reached at 46.15 million participants (by interpolation). If the new pool is floated, the capacity will be reached between year 4 and year 5. The cost of creating the new server will be 636.82 million dollars. If the new pool is not floated then capacity will be reached between year 5 and year 6 and the cost of the new server will be 646.37 million dollars.

Question 1

For the first question we calculate cash outflow by adding R&D, infrastructure costs, depreciation, cost of new server, servicing costs, G&A Costs, Advertisement expenses, inventory, Accounts Payable and Interest paid on debt. Cash Inflow is calculate by adding flat charges for Universal Swap and All, accounts receivables and cost savings. Total income is calculated by subtracting outflow from inflow. Tax is then subtracted from inflow to give us the net positive inflow.

Question 2

For Question 2, the present value is calculated for each cash flow. It is then summed to give the net present value of the project for 10 years. For the last year, the salvage of value of the initial investment in infrastructure is subtracted. For working capital, if it decreases, the company has released cash and so this is reflected as an increase in cash in the NPV calculation. However as I was unsure of its treatment in this particular project, it is not reflected.

The IRR is calculated by two methods. Firstly by using the excel IRR function. Secondly by applying the manual formula to obtain net present value and then using the goal seek function of excel to find the IRR which makes the NPV 0. Both the methods give the result as 144.01%.

Question 3

For the third question, I calculated Net present value in perpetuity. This was done by taking an average of profits of the last 0 years and assuming it for an indefinite period. This was then divided by the cost of capital. There are other factors to consider such as the cost of new infrastructure that is needed when the capacity is reached, maintenance of infrastructure costs, growth rate of profit and inflation adjustment. However since I was unsure of its treatment in this project, they have not been reflected.