# Paper LBO model example





This type of paper LBO test is an interview exercise you will be facing, often multiple times, in the course of a Private Equity recruitment process. Make sure you are able to go through this exercise reasonably quickly and without the help of Excel or a calculator. Clearly state the simplifying assumptions you are making and their implications.

**Investment assumptions**

* The team is considering the purchase of a company on the 31st of December of Year 0;

* Entry multiple: 6.0x LTM EBITDA;

* Entry Debt quantum: 3.0x LTM EBITDA;

* Assuming no financing and transaction fees;

* Interest rate for the debt negotiated at 5%;

* Debt repaid as a bullet at the end of the investment period;

* Sales: $100m in Y0, growing at 10% year-over-year (y-o-y) for the next 5 years;

* EBITDA: historical margin at 40% of Sales;

* Depreciation & Amortization: $30 million per year, steady;

* Capital Expenditure: 15% of Sales;

* Net Working Capital (NWC) requirements expected to increase by $2 million each year;

* Marginal tax rate of 25%;

* Exit at the same entry EBITDA multiple, after 5 years.

NB: On most occurrences, you will not be given such a data set and will therefore be expected to either ask for some more information or come up with your own assumptions.

**Step-by-step model**

1. Transaction metrics

Start by calculating the firm value at entry, the debt quantum, and deduce the equity acquisition price. Sales for Year 0 were $100m with an EBITDA margin of 40%, which gives an LTM EBITDA of $40m and therefore an entry Firm Value of $240m. The quantum of debt is determined in a similar way, giving $120m. The equity cheque is therefore $120m.

Other interviewers will give a leverage ratio instead of a debt multiple; the debt is then computed directly from the Firm Value.

2. Sales and EBITDA

Use growth and margin assumptions to calculate the Sales, then EBITDA, for every year. Do not hesitate to ask your interviewer if rounding is acceptable; it will save you a lot of time, show that you are fully aware of the approximation you are making, and gives excellent results.

3. Interests & taxes

Apply the interest rate provided to the Debt nominal amount to calculate the yearly interest expense. Taking out the interest expense from the EBITDA leads to the EBT, from which taxes are calculated. This then leaves us with the Net Income.

4. Cash flows

The goal here is to come up with the cash flows available for debt repayment for every year. From the Net Income, all the cash expenses (here Capex and increase in NWC) should be taken out. Since D&A is a non-cash expense, it should be added back in.

5. Firm Value at exit

Applying the exit multiple to the year 5 EBITDA, we come up with the exit Firm Value. The debt at exit is the debt at entry, minus the cumulative cash flow available for debt repayment. Subtracting this new debt number from the firm value gives the exit Equity amount.

6. Cash multiple and IRR

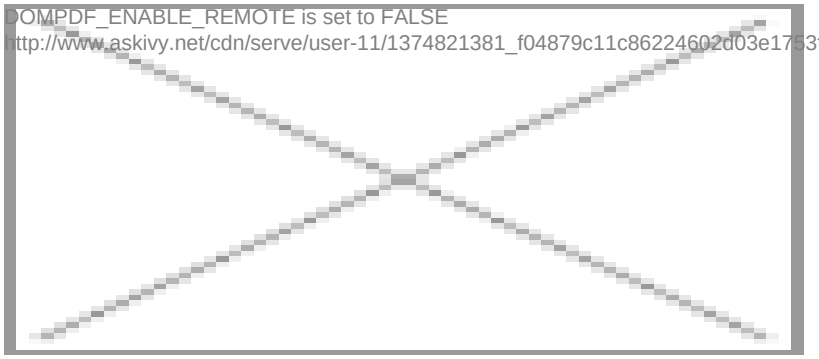
The cash multiple (also called money multiple) is defined as the ratio of exit to entry equity.

The IRR is the yearly return of the investment. This often requires a calculator, nevertheless, a few approximated figures are worth remembering, e.g. a cash multiple of 3x over 5 years is equivalent to a 25% IRR. For more accurate figures, have a look at the conversion table below.

**All done, congratulations!!**

Now, repeat this exercise with only a pen and paper and come up with new sets of assumptions. Train and train again until you are able to do all this by heart and fairly quickly.

For mode practice, check out our private equity case studies and modelling tests here.

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