Instructions for HBS Case: Jaguar plc 1984

NOTE: A spreadsheet template is on the website. You may also find data from previous problems sets useful. Use assumptions in this instruction sheet if they differ from those given in the case.

In July 1984, the British government was preparing to privatize Jaguar plc. Having a significant portion of its sales in the U.S. and all of its production in Britain, Jaguar’s cash flows appeared sensitive to exchange rate movements.

In mid 1984 the dollar was rather strong against sterling with respect to PPP and many people believe that the dollar must weaken over the medium term, despite the fact that U.S. inflation was expected to be lower than U.K. inflation over the near future. Others argued that the U.S. need for foreign capital would keep U.S. real interest rates high and thus lead to a continued strong dollar. Your job is amid all this uncertainty to determine a value that should be placed on Jaguar and to determine the exchange rate sensitivity of the investment.

Q1: a. Generate forecasts of exchange rate using i) IRP based upon LT interest rates, ii) Relative PPP based upon expected inflation, and iii) linear reversion to an Absolute PPP level by 1989.

b. For each set of XR forecasts, determine an estimate for how much Jaguar is worth in GBP as of the beginning of 1984 based upon the PV of its future expected cash flows.

To determine how much Jaguar is worth, consider the company’s 1983 cash flows as presented in the case. If these flows are projected into the future then a value for Jaguar can be determined. To do this you must estimate future expected free cash flow (FCF) and discount them back to the present to obtain a present value (beginning of 1984) that will represent the value of the firm at that time. To do this, use the sample spreadsheet on the webpage and construct estimates of these expected free cash flows (as the end of each year) from 1984 to 1989 based upon the 1983 values and forecasts for market growth and inflation. To finish the valuation you must also estimate the expected future cash flows beyond 1989. Calculate a terminal value for the investment based upon the assumption that the inflation-adjusted value of sterling cash flows for 1990 and beyond will be the same as in 1989. In other words, the 1989 cash flow will be the basis for a perpetuity growing at the GBP inflation rate for 1990 onwards.

The value you generate will be dependent upon estimates of future exchange rates. With over 53% of sales in the U.S. market, the USD/GBP rate will be crucial for valuing Jaguar. While currencies of other foreign competitors may also be important, we will focus on the USD/GBP rate. For simplicity use mid year rates in our analysis (mid year 1984 is already given as USD1.35/GBP. Produce forecasts for 1985 – 1989 using each of the three forecasting approaches mentioned above. This will result in three different value scenarios for Jaguar.

Thought must be given to how exchange rates will affect the pricing of Jaguar cars in the U.S. While in reality this would be a complicated calculation based upon demand elasticities and competitor reactions, as a simplifying assumption for this analysis assume that Jaguar sets its pass-through at 0. Thus, the USD price Jaguar charges only changes over time in line with the U.S. inflation rate and does not change with exchange rate movements.

In order to help you focus on important variables the following assumptions may be made about:

**Fixed Costs** R&D is assumed to be GBP18.0 million in 1984 and rises at the growth rate of total sales (in £). Distribution expenses rise with sales growth from their 1983 figure GBP13.3. Administrative expenses (assumed to be a fixed cost) rise at the inflation rate from their 1983 figure of GBP22.0m. Fixed assets are GBP112m at beginning of 1984, depreciation expense will be assumed to be 10% of the beginning of year fixed assets. Capital expenditure for 1984 is anticipated to have to be GBP25.1m and in subsequent years it will be the sum of the depreciation allowance for that year (replacement) plus an amount necessary to grow fixed assets by the simple average of the real growth rates of US and ROW output (i.e., with growth rates in output of 12.4% in 1984 fixed assets for 1984 will be 125.9 (112 – 11.2 + 25.1) so CapEx for 1985 will be 12.6 + (125.9 x (6% + 4%)/2) = 18.9).

**Variable Costs** All of the “costs of sales” in the income statement, net of depreciation are (arbitrarily) assumed to be variable costs. Variable costs/unit rise at the inflation rate. Note that the 1983 volume used to determine unit costs should be sales volume of 28,467, not production volume of 28,041.

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Instructions for Jaguar Case
Net Working Capital - NWC in 1983 is unrealistically low for a stand-alone company. Assume that the balance in the NWC account is topped up to GBP30 million in 1984 and then grows from this level at the growth rate of total revenues thereafter (the net addition each year from cash flow is the current balance times the % change in total sales).

Other assumptions - Assume a tax rate of 30%. A reasonable sterling discount rate for the GBP cash flows is 17%, based upon the expected inflation (5% per annum for the GBP). You may treat sales to the “rest of the world” as denominated in GBP so as to eliminate the need to directly model other non-USD currencies. The forecast service suggests that GBP inflation is forecast to average 5% per annum into the future and USD inflation is anticipated to average 3% per annum into the future. Although Jaguar has experienced significant unit sales growth over the past few years, estimates of future sales growth (quantities) for Jaguar in the USA cannot continue at this rate and are expected to be 6% in 1985 and 1986 and then 4% in 1987 and 1988 before falling to 2% in 1989 and thereafter (this is estimate of the long run growth rate of the luxury car market in the USA.). Similarly, the growth rate of Jaguar sales (quantity) in Britain, and the rest of the world, is anticipated to be 4% for 1985 and then fall to 3% for 1986 and 1987 and finally 2% for 1988 onwards. Jaguar, as a government-owned company basically has no debt. Thus, the PV of the cash flows represents the equity value of the firm.

Use the sample spreadsheet to structure your valuation. Information from the case has been inserted into the 1983 column and free cash flows have been calculated for that year as an example. You need to fill in across the rows using the assumptions about growth rates and most importantly, you exchange rate assumptions to determine free cash flow for each year. Treat the terminal value amount as proceeds received as of the end of 1989. Determine the PV as of the beginning of 1984 under the assumption that cash flows are valued at the end of each calendar year. Assume that the appropriate exchange rate for converting each years’ USD cash flows is the mid-year rate (end of QII). Take the mid year exchange rate for 1984 as given at $1.35/£.

QII: Determine the sensitivity of each of your estimates of the value of Jaguar from above to a change in your exchange rate assumptions by calculating a delta for the firm value. Once you have estimates of delta, determine the actual size of the exposure to the owners in USD terms for each case.

To estimate the delta, compare your scenarios to an alternative exchange rate scenario for each year. The best way to do this is to change all the exchange rates (1984 – 1989) in each scenario by a similar percentage (say 10%). If you prefer to change exchange rates by different amounts, you will need to calculate a (free cash flow) weighted average exchange rate change in order to obtain a delta for total value.

Remember the delta needs to be determined from a GBP investor’s point of view. So the GBP is the HC in the delta calculations— beware that the exchange rates are measured the right way before calculating the deltas.)

QIII: Finally, consider the delta of Jaguar to the USD/GBP rate for a USD based investor rather than a U.K. investor. What is the relation between the deltas for the USD-based owners and the deltas for the GBP-based investors above?

To do this, consider the values of the company in the base and alternative case in USD and determine the exposure. To compare it to the UK investors’ exposure think about the two parts to the exposure of a foreign operation of a parent firm.

Please produce answers answering the three questions with references to appropriate spreadsheets where the calculations are done. Please submit the Excel file with your group name attached to the filename.