Liability Management at General Motors – Case Questions

These questions should guide your answer. You do not need to specifically answer each question in sequence. Instead they should guide the way you think about the issues you should consider when answering the question: What risk management policy would you recommend for GM?

1) Objective of risk management. When managing interest rate risk what should GM's objective be? Some possible objectives would be for GM to ensure that changes in interest rates do not affect operating cash flow, the market value of the firm's assets, the market value of the firm's equity, or GM's ability to invest in new projects? Be prepared to discuss GM's stated policies (see pages 4-6 of case). Are they consistent with what you think should be the goals of GM's risk management program?

2) Interest rate exposure. How do changes in interest rates affect General Motors? To answer this question you should use both your intuition as well as the data provided in the case. According to the case, a one percent decrease in auto loans rates results in a 0.2% rise in sales revenues. This number was obtained by running the following regression.

$$\text{Ln}(\text{Sales revenue}) = \alpha_0 + \alpha_1 \text{Auto loan rate} + \varepsilon \quad (1)$$

The estimate of α_1 is -0.002 in this case.[1] To answer the question of how changes in interest rates affect general motors, you will need to run some regressions like equation (1). The necessary data is in Exhibit 3.[2]

3) Hedging GM's interest rate exposure. I want you to consider four alternatives for adjusting the interest rate sensitivity of the $400M five year note which GM is issuing. For each alternative you should decide how it alters GM's interest rate exposure. If it is useful you may want to consider the term structure for LIBOR. Revised Exhibit 7 (attached) contains the LIBOR rates as of February, 1992 for maturities of one to five years. The forward rates implied by these rates are also calculated. The four alternatives to consider are:

   A) Do nothing.

   B) A 5 year interest rate swap. GM will agree to pay LIBOR and receive a fixed rate.

   C) Sell a 9 percent cap on LIBOR.

   D) Purchase a bull spread.

[1] This assumes that the interest rate is written as 9.00 for nine percent and not 0.09. Ln(Sales Revenue) stands for the natural logarithm of sales revenue. The natural log is often used to transform the dependent variable of a regression. You saw this in your statistics class. Transforming the dependent variable in this way is useful if you are interested in percentage changes, as opposed to dollar changes, in the dependent variable. Thus the regression coefficient, α_1 reports the percentage change in sales when the interest rate changes by one percentage point (i.e. from 8 to 9).

[2] You can download Exhibits 2, 3, 5, and 7 from the course webpage.

I have intentionally restricted the number of instruments at which I want you to look, so you can examine how each affects GM's interest rate exposure. The mechanics of each transactions are described in the case and the prices of each instrument are described in Exhibit 8. The premium is the price at which you can buy or sell the instrument. Remember, you buy at the ask (the high price) and sell at the bid (the low price). This is how banks and traders make money.

When examining each of the hedging options (B-D), compare GM's borrowing cost under each alternative to the cost of the fixed rate debt instrument. The all-in cost of the fixed rate debt instrument is 7.76%, not 7.625%. Contrary to what it says in the case, assume that interest payments are made annually – not semi-annually.

$$\sum_{t=1}^{5} \frac{400 * 0.07625}{(1+r)^t} + \frac{400}{(1+r)^5} = 399.9 - 1.8 - 0.2 = 397.9 \quad \Rightarrow \quad r = 7.76\%$$

4) Policy recommendations. What should General Motors do? Given the goals of a risk management program and the effect of each alternative on the interest rate exposure of GM, what instrument would you recommend for GM? Assume that each of the instruments is fairly priced.

   A) Answer the question if you were Stephane Bello.

   B) Answer the question if you were Ms. Anne Armstrong, an outside director of GM.

Revised Exhibit 7: Current and Forward LIBOR, February 1992

	Years to Maturity				
	1	2	3	4	5
AA Rates	4.31%	5.63%	6.31%	6.70%	7.15%
Zero Rates	4.31%	5.67%	6.38%	6.80%	7.31%
Forward Rates	7.05%	7.81%	8.07%	9.37%	

Note: The row labeled AA Rates gives the rate on an N period fixed rate, non-amortizing loan to a borrower with a AA credit risk. Assume the loan makes annual interest payments of AA Rates * Face Value at the end of the first n - 1 years and (1 + AA Rates) * Face Value at maturity. The Zero Rates are derived from the AA Rates. They are rates an investor could earn on a zero coupon bond between now and maturity. These investments make payments only at maturity – there are no intermediate interest payments. If you don't understand the difference between the AA rates and the zero rates, do the supplementary bond pricing exercise that is available on the web under Lecture 2. The forward rates calculate the rate you can lock in today on a one period loan which starts in N years. Thus the loan runs from N to $N + 1$. These rates are calculated as follows:

$$r_{1\ year\ forward\ rate} = \frac{\left(1 + r_{0,N+1}\right)^{N+1}}{\left(1 + r_{0,N}\right)^{N}} - 1$$

For example, using the one and two year zero coupon rates today, you could lock in a one year rate beginning in one year of 7.05%. This is the rate at which you could invest one dollar starting in one year and maturity in two.

The fixed rate payer is known as the buyer of the swap, the floating rate payer is known as the seller, and the fixed rate of interest is known as the price of the swap. The period of time over which the interest payments are exchanged is called the swap maturity. The fixed rate of interest is set at the beginning of the swap and is not changed for the duration of the swap. The floating rate is usually reset with the same frequency as the swap coupon payments. Swap payments are usually payment-in-arrears. This means that the floating rate applicable on the next payment date is set equal to the value of the floating rate index on the current payment date. Since the current floating rate is 4.31%, this will be the rate used to calculate payments at the end of the first year.

