Assignment 4

The following question gets you to extract the yield curve from raw data (from the COUGAR's case) and to price a security. COUGARs were one of many such offerings by investment banks in the early 1980s. (I mentioned TIGR's from Merrill Lynch and CATS from Saloman Bros.) Issues of this sort have been superseded by the government's STRIPs program.

1) There is semi–annual compounding.

   a) The prices of the COUGARs are as of December 6, 1983. (The prospectus was issued ahead of time). Discount these back to November 16, 1983. To do so, determine the price on November 16 of $1 paid on December 6. You can uncover this from a Treasury Bill. The formula for the price of a T-Bill, given its discount yield, D, is :

$$P = 100 - \frac{n}{360} D$$

   where n is the maturity in days of the treasury bill. Hence, calculate the adjusted price as a percentage of face value and the adjusted yield to maturity of the COUGAR bonds. (There is an Excel file in my public directory that has the cougar prices (as they are in the case) called dat4.xls.)

   b) Draw the COUGAR yield curve.

   c) Uncover the yield curve from the coupon Treasury bonds. (Notice that the prices are not quoted with decimals, but 32ths.) The bonds with multiple maturity designations are callable and should not be used. Also notice that you don't have enough data to calculate the Coupon Yield curve for the whole time period — there are breaks in the data.

   d) Graph the Treasury Coupon yield curve.

   e) Calculate how much the company will earn by issuing these securities i.e. take an 11 7/8 of November 2003 and calculate how much they could sell it for if they decomposed it into the COUGAR's (price this stream off the COUGAR yield curve).