Assignment: Numeric Dynamic Programming.

Due by the beginning of class on Tuesday, February 16th. Please send me an e-mail with your assignment at miravete@eco.utexas.edu and cc a copy to Zhan Shi at michael.zhanshi@gmail.com. Feel free to work in groups of 2-3 but each one of you needs provide his/her own code and results.

The goal of this assignment is to perform numeric dnamic programming on the patent renewal problem in Pakes'86 paper.

- Use the parameter estimates for France, as reported in Table II.

- Use the average renewal fee schedule for France, as reported in Figure 3. (I know that it is not not very readable. Thus, just consider the following sequence:

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Fee		0	0	0	12.5	25	37.5	50	62.5	75	87.5	100	112.5	125	137.5	150	162.5	175	187.5	200

- Discretize the state space of returns from (say) 0 to 2000, with gaps of 20. You should experiment a little here (and report the results of your experimentation).

- Start from the final age=20, and approximate the value function for each age in the manner described in the lecture notes (first presentation, last few slides). For each age, graph the estimated value function, and report the "cutoff" values of *r* (below which a patent is allowed to expire).

- Repeat the analysis for the following "less-linear" schedule of fees:

2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
0	0	0	0.781	3.125	7.031	12.5	19.53	28.13	38.28	50	63.28	78.13	94.53	112.5	132	153.1	175.8	200

- Evaluate the differences of the two exercises and how the consequence of Assumption A.3.4 affects the sequence of optimal "cutoffs" when we move from a linear to a quadratic fee schedule.