

Microeconomics, Module 20: "The Demand for Factors of Production" (Chapter 15)

Homework

(The attached PDF file has better formatting.)

Actuaries are concerned that their salaries are not sufficient, and the society has several proposals to raise salaries. Explain the likely effects of each proposal on actuarial salaries.

(1) *Supply/Demand Proposal*: The actuarial society believes that a lower supply of actuaries would raise the equilibrium salary, just as restricted supply of physicians and lawyers (by restricted entrance to medical schools and law schools) keeps medical and legal salaries high. Presently, 200 new Fellows enter the society each year. The society reduces the pass rate on the exams from 35% to 15%. The number of students passing each exam decreases. Students get discouraged, and the overall student population drops. After a few years, only 20 new Fellows enter the society each year.

(2) *Labor Theory of Value Proposal*: The society believes that it is just as hard to become a Fellow as to become a surgeon or personal injury lawyer, but the prevailing salary for Fellows is \$100,000 per annum and the prevailing salary for surgeons and personal injury lawyers is \$250,000 per annum. It passes a Standard of Practice that requires Fellows not to accept jobs for less than the prevailing salaries of surgeons and personal injury lawyers.

(3) *Price Elasticity of Supply Proposal*: The society passes a Standard of Practice that requires actuaries to examine all possible financial and insurance scenarios when setting rates. They form a discipline committee to investigate cases of actuaries providing premium rate recommendations without due consideration of all possible scenarios. Assume that the increased responsibilities raises the time required by 75% for actuarial tasks. The price elasticity of *supply* for actuaries is 50%, so a 75% increase in supply requires a 150% increase in salaries.

In each scenario, does demand for actuaries increase, decrease, or stay the same? *Demand* is the demand curve, not the quantity demanded. The demand curve shows the quantity demanded along the horizontal axis and the wage along the vertical axis. The demand curve depends on the *abilities of actuaries*, wages and abilities of professionals who do similar work, the cost of EDP equipment that can perform actuarial tasks, and the need for actuarial functions. Actuarial tasks include loss reserving, benefit reserving, policy pricing, pension plan funding, and solvency monitoring.

For the likely effect on actuarial salaries, differentiate between the short term and the long-term. The very short term is before insurers can buy EDP equipment or hire others to perform actuarial tasks. The very long term is after others accommodate to actuarial tasks: e.g., university statistics departments provide training in ratemaking and reserving.

Question: Does this homework assignment imply there is no way to raise actuarial salaries?

Answer: Actuarial salaries can be raised two ways:

- Raise the marginal product of labor by improving actuarial education; that is, make the syllabus more useful to employers, not just longer. Similarly, raise the marginal product by having the societies provide additional continuing education that is useful to employers, or by having the societies develop EDP software that makes their members more useful to employers (if actuarial labor and capital are complements).
- Create government monopolies for actuarial labor by Statements of Actuarial Opinion.

Unless a profession has a monopoly, its wages depend on its marginal product. Each of these methods has other (primary) objectives, but both *may* also raise actuarial salaries.