Section 11: Health Insurance
Questions from chapters 15 and 16

15. The following question considers the possibility that employer-provided health insurance reduces job mobility—a phenomenon that has been termed job lock. Job lock prevents workers from transitioning to jobs in which their marginal productivity would be higher than at their current jobs.

Consider three workers with the following preferences:

$$U_{ij} = W_{ij} + (50 \times H_{ij})$$

$$U_{kj} = W_{kj} + (110 \times H_{kj})$$

$$U_{lj} = W_{lj} + (150 \times H_{lj})U_{lj}$$

where W_{ij} is the wage at job *j* for worker *i, H_{ij}* is an indicator variable (i.e., it takes on a value of one or zero) for whether or not employer-provided health insurance (EPHI) is offered to worker *i* at job *j*. Assume that there are no employee copayments for the insurance and that the labor market is perfectly competitive. Workers *i, k,* and *l* all have a marginal product of $200. There is an arbitrarily large number of firms in the economy, and they cannot offer worker-specific compensation packages. If they provide EPHI to one worker, they must provide it for all their workers. EPHI costs firms $100 per worker. Assume that there is full employment—all three workers will be employed.

a. What wage does each of these workers earn? Do they have EPHI? What is the compensating wage differential for EPHI (the labor-market-wide decrease in wages at a job that provides EPHI)?

Assume that each worker chooses to work at the firm that gives him or her the highest utility. Because it is a perfectly competitive market, firms pay a total compensation package of $200, the marginal product of each worker.

First consider the firms' options: they can either pay a wage of $200 and not offer insurance; or they can pay a wage of $100, and incur the $100 cost of insurance.

Now consider worker *i*: with insurance, he earns a wage of $100; the value of the insurance is 50 ×1, so total utility with insurance is 150. Without insurance, he earns a wage of $200. Worker *i* will choose the $200 wage and no insurance.

Consider worker *k*: with insurance, *k* earns a wage of $100; the value of the insurance is 110. Total utility at an insuring firm is 210, greater than the 200 that *k* would have at a firm with no insurance. Worker *k* chooses a wage of $100 plus insurance.

Consider worker *l*: With insurance, *l* has utility of 100 plus 150 = 250, quite a bit whigher than the 200 without insurance. Worker *l* chooses a wage of $100 plus insurance. The compensating wage differential is $100: workers at firms that provide health insurance receive $100 less in wages.

b. Now assume that there are two types of firms: type 1 and 2. Type 1's cost of providing EPHI is $200 per worker and type 2's cost of providing EPHI is $100. At which type of firm is each of the three workers employed? Why? Which workers have EPHI?

None of the workers value insurance enough to work for a firm that provides only insurance and no cash wage. Worker *i* continues to work for a firm that does not offer insurance. Workers *k* and *l* work for type 2 firms because their marginal utility from insurance, 110 and 150 respectively, is greater than the $100 wage reduction necessary for type 2 firms to provide the insurance.

c. Now assume that firms of type 1 develop a new technology that increases the marginal productivity of their workers to $230. At what firms do the workers work now? Are any of them suffering job lock?

Type 1 firms can now offer either of the following compensation packages: a $30 wage and a $200 health insurance package or a $230 wage without health insurance. Worker *i*, who doesn't much value health insurance, will find it optimal to work for a type 1 firm offering the higher $230 wage. Worker *k* will also find this optimal. His utility from this option is 230. His utility from a type 1 firm offering the $30 wage + health insurance package would be 30 + 110 = 140, and his utility from working for a type 2 firm (as before) is 210. Finally, worker *l* would not be affected by this innovation: his utility from the two new options would be 230 or 180, both of which are less than the utility of 250 he gets from working at a type 2 firms, where he gets insurance and a $100 wage.

There is a sense in which worker *k* suffers from job lock: he could have a higher productivity by working for firm 1, but he values insurance highly enough that he continues to work for firm 2. But this isn't necessarily "bad" job lock: yes, he would be more productive at a type 1 firm, but this would prevent him from getting health insurance efficiently. It would appear that in this toy world, social welfare is higher when job lock occurs.

15. The current government-provided system in the country of Puceland provides free health insurance for all children but for no adults. There are two types of adults in Puceland: high earners and low earners. All the 100,000 high earners receive insurance coverage through their employer, but only half of the 100,000 low earners do. The remaining adults are uninsured.

You are hired to analyze the effectiveness of a proposed plan to offer coverage to all low earners. You have read the economics literature in Puceland and your best estimates are as follows: (1) only 80% of uninsured workers who are offered government health insurance will choose to enroll; (2) 60% of currently insured low earners work at firms that will drop insurance coverage for them after the policy change; the other 40% will remain in their current employer-provided plan; (3) 10% of high earners will choose to become low earners (at firms who do not offer health insurance) and take up the government insurance once they can get it.

a. Estimate the increase in the number of insured adults.

The 100,000 original high earners will remain insured, since the 10,000 (10%) who become low earners will still take up government insurance. Of low earners, 50% are currently uninsured, and 60% of the other 50% will lose their coverage through work when the program is introduced. Hence, 80% (= 50% + 50% × 60%) of low earners will get no employer-provided coverage once the policy change is enacted. About 80% of these 80% of low earners will actually take up government insurance, for a total of 64,000 low earners receiving government-provided insurance. An additional 20,000 low earners will remain covered through their employers (40% of 50,000). So there will be a total of 184,000 = 100,000 + 64,000 + 20,000 adults with coverage once the policy is put in place, an increase of 34,000 over the original 150,000.

b. Estimate the dollar cost per additionally insured adult. Why is it so much higher than $5,000?

The cost per additionally covered adult is ($5,000 × 74,000 workers)/34,000 or about $10,880 per additional adult. It costs more than $5,000 per adult because many of the 74,000 workers the government pays for are not newly insured—they were crowded out of employer-provided plans.

c. Suppose that, without access to any insurance, each adult has a 5% chance of dying in a given year. Access to government-provided health insurance reduces the chance to 3%, and access to employer-provided health insurance reduces it to 2%. If it costs the government $5,000 per year to provide health insurance to an adult, estimate the dollar cost of the program per life saved.

The total number of adults in employer-provided health plans is currently 150,000, with 50,000 uncovered workers. If the plan is enacted, 110,000 will be covered through their employer (10,000 fewer high earners and 30,000 = 60% × 50,000 fewer low earners); 74,000 will be covered through the government health plan; and 16,000 will have no coverage. The expected number of deaths without the policy change is

$$2\% \times 150{,}000 + 5\% \times 50{,}000 = 5500.$$

The expected number of deaths under the government plan is

$$2\% \times 110{,}000 + 5\% \times 16{,}000 + 3\% \times 74{,}000 = 5{,}220.$$

The policy change thus saves 280 lives. The total cost to the government is $5,000 × 74,000 = $370 million. Hence, $370m/280 lives ≈ $1.3 million/life is the cost per life saved.