Chapter 10. Quantitative

1. Dr. Joel is a doctor in a large metropolitan city in the United States. He earns $100,000/year and plans on working three more years and then retiring. A remote, rural town in the state in which he resides is in desperate need of a doctor and offers Dr. Joel the job. If Dr. Joel moves, he will still only work for three years (thereby not adjusting his retirement plans). He would incur $15,000 in psychic costs if he moves due to the disutility he experiences from moving to such a remote location. Dr. Joel’s discount rate is 5%. What is the minimum annual salary that the remote town must pay Dr. Joel per year for him to accept its job offer?

2. Assume the labor demand for unskilled workers in a city in Texas is given by $L^d = 80 - 2\omega$. The labor supply curve of natives (i.e., non-immigrants) is given by $L' = -20 + 8\omega$, where $\omega$ is the hourly wage.
   
   (a) Calculate the equilibrium level of employment and wage rate if there are no immigrants.
   
   (b) Suppose the arrival of Mexican immigrants shifts out the labor supply curve to $L'' = -5 + 8\omega$. Calculate the new equilibrium level of employment and wage rate.
   
   (c) What has happened to the employment level of natives as a result of the immigrant arrival? What has happened to the unemployment rate of unskilled native workers?

3. Recall the previous question, where aggregate labor supply inclusive of the Mexican immigrants is $L' = -5 + 8\omega$ and aggregate labor demand was given as $L^d = 80 - 2\omega$. Suppose the arrival of the immigrants also results in greater demand for goods and services, thereby shifting out the labor demand curve as well. As such, the new aggregate labor demand curve is given by $L'' = 95 - 2\omega$.
   
   (a) Graph the aggregate labor supply and labor demand curves before and after the arrival of the immigrants. Label the initial and final equilibrium.
   
   (b) What is the final equilibrium wage and level of employment?

4. Sue Ellen works for a large computer company. She expects to work this period and next period, and then retire. Her current employer pays her $50,000/year. A rival firm offers her the same job at a salary of $56,000/year. However, Sue Ellen places a value of $10,000 on remaining with her current employer since she has many friends at her current company and does not enjoy meeting new people. Sue Ellen decides to reject the job offer. How much must Sue Ellen discount future benefits?

5. Ron and Nancy are married. Together they maximize their household utility function, $U(y) = y$, where $y$ is their combined income. Currently, the couple resides in Nevada. The couple knows it will work for only two periods and then retire. Nancy is offered a job as a dancer paying $40,000 each period. Ron is offered a job working as an actor in a Las Vegas show. His job pays $35,000 per year. However, Ron is also offered a prestigious, and very influential job, out east, paying an annual salary of $60,000 each period. Since Ron and Nancy both enjoy the Las Vegas lifestyle, they agree that they would pay $5,000 to remain in Las
Vegas. If the couple’s discount rate is 10%, how much of a salary reduction is Nancy willing to take out each period yet still consent to the move?