Practice Problem Set 4 (ANSWERS)

1. a) In a competitive economy, the wage would be the same in the two sectors, and its value would be such that the total labour demand $L_D = 2*(1,000,000-20wc)$ equals labour supply. The solution to the equation:

 $2*(1,000,000-20w_{C}) = 1,000,000$ is $w_{C}=$ \$25,000

If the union wage is set at \$30,000, the union sector will only demand 400,000 workers. The remaining 600,000 must be employed in the non-union sector. This number of people will be hired only if the wage rate in the non-union sector equals

(1,000,000 - 600,000)/20 =\$20,000

Hence the wage gap between the union and the non-union equals \$10,000, or 50% of the non-union wage.

b) Since the skills of all the workers have been assumed to be the same, this wage gap exactly equals the wage gain – a person chosen at random in the non-union sector and moved to the union sector would receive a 50% wage increase. The wage differential between union and non-union workers is attributed solely to where they work.

c) Finally, the wage in the non-union sector is \$5,000 lower (that is, 20 percent lower) than the competitive wage that would prevail economy-wide were it not for the union. This is the measure of the spillover effect of the presence of the union on non-union wages.

2. a)

$$100 \bullet 0.6 \bullet 1 = 60$$

Out of 100 people, 60% will exit after 1 month, so the total months unemployed after the first period will be 60 and 40 peole will remain unemployed into the second period. This calculation will continue:

 $40 \bullet 0.2 \bullet 2 = 16$ $32 \bullet 0.2 \bullet 3 = 18$ $26 \bullet 0.2 \bullet 4 = 20$ $21 \bullet 0.2 \bullet 5 = 20$ $17 \bullet 1.0 \bullet 6 = 102$ Total = 236 In the third period it is asumed that fractions of those remaining out of the initial 100 persons can't leave the market without the rest of the individual, there for the results are rounded down to the nearest whole person when calculating who can leave. This will also affect the total months unemployed for each period.

b) Looking at the previous calculations we see that in the start of period 5, 21 people were unemployed. While 4 of these people would escape unemployment at the end of the 5^{th} month, the 17 others go on to the 6^{th} month, so the total number of people unemployed either 5 or more months are 21.

c) Out of total unemployed months, 122/236 or just over half (0.51695) of these months are attributed to long term unemployed persons.

d) With nearly half of all unemployment months being attributed to long term unemployed persons in this economy, the largest problem would appear to be that there are too many long spells of unemployment. This would be a problem of the duration of unemployment. Incidental unemployment (shorter periods) could be explained by frictional or seasonal unemployment in the economy which would always exist and in some ways be benificial. It is worth waiting for the right employee for a particular job. It is likely that long-term unemployment indicates structural unemployment in the economy in which indicates that the demand for sectors that use the individual's skills is falling as demand shifts to other sectors. Unfortunately, high longterm unemployment would indicate that can not quickly adjust their skills to match the new sectoral demands and are being left behind.

3. a) Any factor that improves the flow of information regarding the availability of jobs will probably raise the marginal benefit of job search, given by a and b. When the labour market conditions are favourable (unfavourable), the benefits to job search increase (decrease). As the dispersion in the wage/job offers rises, the benefits to job search rise.

b) The provision of unemployment insurance lowers the marginal cost of job search, which is denoted by c and d. The provision of portable pensions also lowers the marginal cost of job search. See the subsection in the textbook labelled "Factors Determining Optimal Search."

c) Solving the equation algebraically yields $W^*=(a-c)/(d-b)$. If d increases, W^* falls, and the optimal search period becomes shorter. If b increases, W^* rises, and the optimal search period becomes longer. If either the marginal cost increases, through the d parameter, or the marginal benefit decreases, through the b parameter multiplied by -1, it does not pay to search for as long as what was previously the case.

4.a) Agree. Legislation that stops firms from hiring replacement workers during a strike will increase the firm's delay costs, which can also be thought of as the firm's opportunity costs associated with postponing a resolution to a worker dispute. In this case delay costs rise for the firm as they are prevented from making any production revenue during the strike. Each period of inactivity will increase the firm's opportunity cost from the lost revenue, compared to a situation where they can continue to operate during a strike. According to Rubinstein's Bargaining Theory, the difference in relative delay costs will weaken the firm's negotiating position since they stand to lose more than the union by delaying the acceptance of an offer. It is in their best interest to accept an offer earlier on in the process and will then accept resolutions that are potentially more favourable for the union after this legislation is enacted.

b) Agree. The basic idea is that matching the right person for the right job yields productivity benefits that are usually worth incurring a cost in the form of frictional unemployment. Provided that it is not too long, job search can be a very productive activity. The efficiency gains can benefit both society as a whole as well as the individual worker.

Society: The benefits of job search to society will come in the form of higher GDP. You can imagine a scenario in which a computer scientist finds herself out of work. If she does not incur the costs of job search and accepts the first job that comes along (let's say flipping burgers at McDonald's) there will be obvious opportunity costs. There are benefits to getting the right match between a worker's skills and his/her job.

Worker: The benefits to the worker are outlined in the optimal job search model presented in class and in your textbook. It would be inefficient from the individual worker's point of view to stop searching before the marginal benefits of search are equal to the marginal costs of search. The result would mean that the worker's skills or preferences would not be ideally matched with the job. It could also imply that the worker has taken a job with a lower wage than he/she could obtain by searching longer. (Note: you should include the optimal search model and diagram in your solution).

c) Agree. The critical issue in measuring unemployment is the distinction between those who are "out of the labour force" and those who are "unemployed". If an individual is observed to be working, she/he is classified as employed and there is little controversy. Some would argue that the official unemployment rate understates the "true" rate because of hidden unemployment. In particular, individuals who are jobless but not searching for a job because they believe that there are no jobs available (so-called discouraged workers) are counted in the official statistics as not in the labour force as opposed to unemployed. However, these workers may be quite attached to the labour market even though they are not searching for a job. It may be rational not to look if the probability of a match is low. The number of discouraged workers likely increases during recessions and contracts during booms. Thus, the official unemployment rate may understate the severity of a recession and it is important to understand what is driving increases or decreases in the rate.

There are other examples of hidden unemployment which we discussed in class. The underemployed – workers who are working too few hours relative to what they desire – are not included in the official unemployment rate. Finally, workers who are waiting to be recalled from layoff for a long period of time are considered out of the labour force even if it makes sense to wait.