Problem Set Number Eight Solutions

1. True. Given unemployment and the expected price level, an increase in unemployment benefits makes the prospect of unemployment less distressing. With efficiency wage considerations, the firm is required to raise wages to keep incentives to work operating in the direction of exerting effort.

2. False. Some workers classified as out of the labor force (O) are in fact very much like the unemployed; while they do not actively seek employment, they will take it if they find an attractive position. Therefore, it is useful to track the non-employment rate, which is the ratio of population minus employment to population, along with the unemployment rate.

3. False. Under perfectly competitive labor market conditions, a rise in output causes firms to hire more workers and pay all workers a higher wage, so the firm, given a fixed profit margin, will increase prices. The firm may also persuade existing workers to work overtime, which pays higher wages. This too will push up the price level. Under efficiency wage theory, a similar relation holds for a different reason. For example, under a possible 'shirking' condition in employment, a fall in unemployment means the threat of being fired is less costly. The workers may exert less effort unless the firm agrees to pay them a higher wage. Under both labor market conditions, then, the statement is false.

4. (a) Backward looking expectation formation is a standard assumption to make with respect to the setting of expected prices. This functional form is different because it assumes an expected price increase results from a difference in lagged values as well as the level of lagged values.

(b) Yes, the variables correlate in the way the model predicts.

(c) The scatter plot shows no obvious correlation. If any correlation exists, it seems to be that higher unemployment is correlated with an increase in nominal wages. A better plot would relate the real wage change, given the multidimensional vector, and the unemployment rate, as this is the relation we saw in class. In addition, this relationship is an aggregate supply relationship. We need an aggregate demand relationship to complete the model of the macroeconomic labor market. With these additions, we might be able to explain the plot of nominal wage changes and the unemployment rate.

5.

The problem set had a typo– in part B it should have said [... continues to work and gets B^s...]. You will receive extra points if you caught the typo. Otherwise, no worries.

(a) No shirking EPDV

$$B^e = z + \frac{z}{r} = (w - e) + \frac{w-e}{r}$$

(b) Shirking EPDV

$$B^s = (1 - p)(w + \frac{B^s}{1 + r}) + (p)(w + \frac{V^u}{1 + r}) \tag{1}$$

$$B^s = w + \frac{pV^u}{1 + r} + \frac{(1 - p)B^s}{1 + r} \tag{2}$$

$$B^s = (\frac{1 + r}{r + p})(w + \frac{pV^u}{1 + r}) \tag{3}$$

$$\tag{4}$$

(c) $B^e > B^s$

$$(\frac{1 + r}{r + p})w - w(\frac{1 + r}{r}) = -[e\frac{1 + r}{r} + \frac{pV^u}{r + p}] \tag{5}$$

$$w = e(\frac{r + p}{p}) + V^u(\frac{r}{1 + r}) \tag{6}$$

$$\tag{7}$$

(d) The firm must pay a higher wage for a job which requires more effort. Otherwise, the EPDV of working does down and the worker might be induced to shirk, if the EPDV of shirking is greater than the EPDV of working.

(e) A video camera means p will equal one. The firm can lower the wage, because the worker knows shirking will pay $w + V^u$. This expected value for shirking and certainly getting caught is less than the expected value the worker could receive for shirking and not certainly getting caught, that is, when p is less than one.

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(f) The firm has to pay the worker more if the government increases unemployment benefits, because the EPDV of shirking and getting caught is higher, so the constraint that the expected value of working be greater than the expected value of shirking is set at a higher cutoff level, pushing firms to pay higher wages to keep workers from shirking and possibly collecting the higher unemployment benefit.

(g) Higher 'efficiency' wages will be paid in industries where productivity or work effort depends on the wages paid. The industries such as Clocks and Autos and Mining, which require a highly skilled work force and low turnover to operate efficiently, will pay efficiency wages, in an effort to motivate and retain skill and reduce training costs. Industries like department stores do not require a skilled work force and, therefore, will not pay efficiency wages.

Effort, or skill, would presumably be highest in Clocks, Autos, and Mining, and lowest in Department Stores. The probability of getting fired for shirking, or putting in little effort, would be lowest in Clocks and Mining, as both do not offer opportunities for direct supervision. The assembly line in Autos and the department store floor of the Department Store jobs are easier to monitor require few skills and, therefore, workers have a higher probability of getting fired and more difficulty finding other employment. These values, when placed in the equations computed in (c), would produce the wage differentials observed in the table. In addition, department store employees and miners probably have lower V^u.