Problem Set #4
Solutions

1 Question 1 (Problem #1, p. 131)

(a) FALSE: women have been moving out of the non-participant pool into the labor market steadily over the past four decades.

(b) EITHER: the table on page 115 shows that approximately 3% of employed workers become unemployed or exit the labor force. This seems small to me, however, the book considers this large. Either answer was sufficient for me.

(c) EITHER: that figure is a more accurate description of monthly flows, although it could be extended to yearly data as well (if 1/3 of people find jobs every month, it would stand to reason that yearly figures would similarly be described by that statistic).

(d) TRUE: the graph of page 119 demonstrates this, although there is some persistence in unemployment beyond the range of dates for each recession.

(e) FALSE: the workers may have bargaining power (because of a high opportunity cost of working, unions, or other mechanisms) or may be paid efficiency wages to induce higher effort.

(f) FLASE: they may have good outside options (high unemployment insurance) or specialized skills that enhance his or her bargaining position.

(g) TRUE: efficiency wages may be paid to provide incentives for employees to work hard.

(h) FALSE: if policy were able to affect the markups, this would have a direct affect; additionally, unemployment insurance or other mechanisms that influence the "z" variable in the bargaining equation may be able to influence the natural rate of unemployment.

2 Question 2 (Problem #6, p. 131)

(a) One month $= \frac{2}{3}$; Two months $= \frac{2}{3} \times \frac{2}{3} = \frac{4}{9}$; Six months: $(\frac{2}{3})^6 = 0.0878$.

(b) Probability that they are unemployed for six months or more is equal to one minus the probability that they found a job in 5 months time.

In the first month, $\frac{1}{3} \times 1$ percent of the unemployed leave. In the second month one-third of the remaining two-thirds of the people, $\frac{1}{3} \times \frac{2}{3}$, leave. In the third month, one-third of the two-thirds squared remaning people leave unemployment, and so on. So $1-(\frac{1}{3})-(\frac{1}{3})(\frac{2}{3})-(\frac{1}{3})(\frac{2}{3})^2-(\frac{1}{3})(\frac{2}{3})^3-(\frac{1}{3})(\frac{2}{3})^4 = \frac{32}{243} = 0.131\,69$ (depending on interpretation of the question, you might have also gotten 8.87% as well if you considered one more period).

(c) The figures from the report are:

Year	Total Unemployment	6+ Month	Percent
1990	7,047	703	9.98
1991	8,628	1,111	12.88
1992	9,613	1,954	20.33
1993	8,940	1,798	20.11
1994	7,996	1,623	20.30
1995	7,404	1,278	17.26
1996	7,236	1,262	17.44
1997	6,739	1,067	15.83
1998	6,210	875	14.09
1999	5,880	725	12.33

Clearly the figures here are a bit higher. The difference is that the calculations in part (a) and part (b) assume that everybody has an equal chance of leaving the unemployment pool. If prolonged unemployment were percieved as a signal of the quality of the worker, he might have a lower probability of getting a job. So negative correlation between chance of getting a job and unemployed tenure would generate a larger pool of long-term unemployed workers.

3 Question 3 (Problem #7, p. 131)

(a) In December 2004, there were 148,203,000 civilians in the labor force. Of them, 8,047,000 were unemployed. The total unemployment rate for all workers was 5.4%.

(b) In the same period, 140,156,000 were employed.

(c) In table A.1, seasonally adjusted figures:

Employed: 138,409 (Dec. 03) 140,156 (Dec. 04)

Unemployed: 8,399 (Dec. 03) 8,047 (Dec. 04)

There are definitely more people in the labor force, some of the newly employed people are those exiting unemployment as well.

Note that the most common error (for example, if you got a 102,000 change in unemployment) was to mix the seasonally and non-seasonally adjusted data.