Econ 463 R. Butler 2005 Lecture 20—Unemployment and Unemployment Insurance

I. Unemployment defined

Recall our definitions from lecture 2 of employment, unemployment, and the labor force. Here are some statistics by age and race on the unemployment rate. While the year-end unemployment rate in 1998 was low by historical standards, work was not evenly distributed by demographic group as indicated in Tables 1 and 2, nor is it evenly distributed over time (Table 3 below). In particular, unemployment is much higher for teenage workers, and for blacks than it is for whites.[i]

Table 1. Unemployment by Race and Age in November, 1998.

age\race	white	black
Overall	3.8	8.7
16-19 years old	13.0	28.4

However, some of the age and race differences observed in Table 1 are due to human capital differences. Blacks historically have lower educational attainment than whites; and teenage job seekers have--by virtue of their age--lower educational attainment than older job seekers. Table 2 indicates that the unemployment rate varies substantially with workers' human capital (educational attainment).

Table 2 Unemployment Rates for Demographic and Educational Attainment

education	sex/ race	unemployment rates for the year: '90	'91	'92	'93	'94	'95	'96	'97
Less than four years of high school	male	9.6	13.4	14.8	14.1	12.8	10.9	11.0	9.9
	female	9.5	10.7	11.4	11.2	12.4	8.6	10.7	11.3
	white	8.3	11.6	12.9	12.4	11.7	9.2	10.2	9.4
	black	15.9	15.9	17.2	17.3	17.4	13.7	15.3	16.6
four years of high school only	male	5.3	7.7	8.8	8.7	7.2	5.7	6.4	5.6
	female	4.6	5.5	6.5	5.8	6.2	4.6	4.4	4.5
	white	4.4	6.2	6.8	6.5	5.8	4.6	4.6	4.6
	black	8.6	10.3	14.1	12.4	12.2	8.4	10.8	8.2
one to three Years in college	male	3.9	5.2	6.4	6.3	5.3	4.4	4.5	4.0
	female	3.5	4.8	5.3	4.6	4.7	4.5	3.8	3.8
	white	3.3	4.6	5.3	5.0	4.5	4.2	3.7	3.4
	black	6.5	8.0	10.7	8.7	8.3	6.3	6.9	6.1
four or more years in college	male	2.1	3.2	3.2	3.4	2.9	2.6	2.3	2.1
	female	1.7	2.5	2.5	2.9	2.9	2.4	2.1	2.0
	white	1.8	2.7	2.7	3.1	2.6	2.3	2.1	1.8
	black	1.9	5.2	4.8	4.1	4.9	4.1	3.3	4.4

Source: Handbook of Labor Statistics, 1997.

Human capital is extraordinarily important to unemployment outcomes: within race and gender groups the unemployment rate falls as educational attainment increases, so that those without high school degrees have unemployment rates that are 3 to 5 times higher than those with at least a college degree. For example, in 1997 the unemployment rate for males without a high school degree is 9.9 percent; with only a high school degree, 5.6 percent; with only some college, 4.0 percent; and those with at least a college degree, 2.1 percent. The same pattern of declining unemployment rates as human capital increases holds for other demographic groups.

Gender and race differences are evident as well. Females in the 1990s have generally had lower rates of unemployment than males have had, no matter what level of educational attainment is used to make the comparison. Blacks have consistently had higher levels of unemployment than whites, although the ratio of black unemployment to white unemployment has generally been between 1.5 and 2 in Table 2, when controlling for educational attainment, while the black to white unemployment ratio in Table 1 is 2.3. These differences are typical: the black-white unemployment differential is reduced when educational attainment is held constant, but it doesn't disappear.

Table 3 indicates the cyclical nature of unemployment: across all age groups (the 16 year olds and older group), the young (16-19 years of age) and prime age (45-54 year old) workers, unemployment fluctuates over the business cycle. The unemployment

Table 3: Unemployment Rate over Time

	unemployment rates:				unemployment rates:		
year	16 yrs &over	16-19 yrs	45-54 yrs	year	16 yrs &over	16-19 yrs	45-54 yrs
1948	3.8	9.2	2.7	1973	4.9	14.5	2.5
1949	5.9	13.4	4.2	1974	5.6	16.0	2.9
1950	5.3	12.2	4.2	1975	8.5	19.9	5.2
1951	3.3	8.2	2.7	1976	7.7	19.0	4.5
1952	3.0	8.5	2.3	1977	7.1	17.8	3.9
1953	2.9	7.6	2.3	1978	6.1	16.4	3.3
1954	5.5	23.6	4.4	1979	5.8	16.1	3.2
1955	4.4	11.0	3.4	1980	7.1	17.8	4.0
1956	4.1	11.1	3.2	1981	7.6	19.6	4.2
1957	4.3	11.6	3.3	1982	9.7	23.2	5.7
1958	6.8	15.9	5.2	1983	9.6	22.4	6.2
1959	5.5	14.6	4.2	1984	7.5	18.9	4.9
1960	5.5	14.7	4.1	1985	7.2	18.6	4.7
1961	6.7	16.8	5.0	1986	7.0	18.3	4.5
1962	5.5	14.7	4.0	1987	6.2	16.9	4.0
1963	5.7	17.2	3.8	1988	5.5	15.3	3.4

1964	5.2	16.2	3.5	1989	5.3	15.0	3.2
1965	4.5	14.8	2.8	1990	5.6	15.5	3.6
1966	3.8	12.8	2.3	1991	6.8	18.7	4.5
1967	3.8	12.9	2.4	1992	7.5	20.1	5.1
1968	3.6	12.7	1.9	1993	6.9	19.0	4.8
1969	3.5	12.2	1.9	1994	6.1	17.6	4.0
1970	4.9	15.3	2.8	1995	5.6	17.3	3.3
1971	5.9	16.9	3.4	1996	5.4	16.7	3.3
1972	5.6	16.2	3.0	1997	4.9	16.0	3.0

Source: Handbook of Labor Statistics, 1998

rate of the 16-19 year olds rose in the early 1980s as the recession began, and at the same time the unemployment rate of the 45 to 54 year olds rose as well. Both young and prime age unemployment rates peaked in 1983 and 1984, and fell thereafter. Indeed, over the whole 50-year period from 1948 to 1997, unemployment across age groups moved up and down together. And although the trends are roughly similar in their peaks and troughs, the differences in the level of unemployment between teenage workers and the rest of the labor force is substantial: teen unemployment is from 2 to 6 times higher than unemployment for the rest of the population. Much of this is due to differences in human capital as suggested in Table 2; the 16-19 year olds in the labor force have relatively little human capital relative to prime age workers.

There are two useful, complementary ways to think about unemployment. One is to account for the mechanics of unemployment, by explicitly following the flows between work, unemployment, and out of the labor force. The second approach is to ask what generates these flows: what is their "cause." We examine each of these approaches in turn.

The "flows" approach examines the movement between the three employment status groups described above: the employed, the unemployed, and those not in the labor market. For example, suppose that among 100 potential workers, 70 are employed, 5 are unemployed in that they have lost their job even though 1 of them is on layoff (so that the unemployment rate is 5/75 or 6.7 percent), and 25 are out of the labor force. If five new entrants came into the labor force (without jobs) the unemployment rate rises from 6.7 percent to 12.5 percent (10/80=.125), though the number of employed workers would stay the same. Additionally, if one worker voluntarily quit his job to look for a new job, the unemployment rate would rise again to 13.75 percent (11/80=13.75).

In this example, the flows described changed the distribution of employment status so that there are now 69 employed, 20 out of the labor force, and 11 unemployed. Of the 11 unemployed, 4 (or 36 percent of the unemployed) would be classified as job losers not on layoff, one would be a job loser on layoff (or 9 percent of the unemployed), 5 would be new or reentrants (or 45 percent), and one would be a job leaver (or 9 percent of the unemployed). Although actual flows are more complex than those in our simple example here, the distribution of unemployment in the example is fairly typical. The actual distribution of unemployment in November, 1998, was as follows: 31.2 percent were job losers not on layoff, 13.8 percent were job losers on layoff, 44.3 percent were new entrants or reentrants into the labor force, and 10.7 percent were job leavers[ii].

Understanding the flows between employment status groups provides insights into the mechanics of unemployment at any point in time. The unemployment may raise because of seasonal fluctuations (job losers on layoff, that expect to be recalled soon) or new entrants moving into the labor market, rather than an increase in the number of job losers not on layoff because of structural changes in the economy. On the other hand, the unemployment rate may fall not because more jobs are being created, but because unemployed workers have become discouraged and are no longer looking for work. Hence, which flows are contributing most to the changing unemployment picture is a useful supplement to understanding why those flows are taking place. The "why those flows are occurring" brings us to the "causal" description of unemployment. There are six "causes" of unemployment that we will discuss. These are:

a) new workers are entering, leaving, and changing jobs in the labor market constantly, so even those with jobs sometimes have to **wait for the job to begin** or to be recalled to work,

b) those without jobs and those who quit to find better jobs have to **search for the best offer**s, a process that is sometimes time consuming,

c) **seasonal workers** in construction, farming and fishing often are laid off in winter months when it is more difficult to work,

d) the human capital skills in sectors of the economy that are shrinking (such as steel manufacturing) may not be readily transferred to other industries (such as computer programming), that is, there is a **skills mis-match**,

e) the economy as a whole may be in **recession** in the sense that the supply of workers far outstrips the demand for workers, or

f) **moral hazard responses** to insurance coverage.

Because firms and workers are constantly coming into or going out of the market, there will always be some **frictional unemployment** such as types a and b above. Hence, we never expect the unemployment rate to be zero even if the economy is relatively efficient and the number of job vacancies exactly equaled the number of those looking for jobs. It takes time and other resources to match job offers with job seekers. There will always be some frictional unemployment in a dynamic economy. Also, until we can insulate ourselves from seasonal variations in the weather or year round fluctuations in manufacturing runs, there will always be some seasonal unemployment.

Structural unemployment, such as types d and e, is considered much more serious both because structural unemployment is often unanticipated and because it almost always has a profound impact on the value of workers' human capital. Public policy decisions and private employment insurance arrangements dealing with unemployment are often geared towards preventing structural unemployment (through fiscal and monetary policy), or ameliorating its impact (through schemes to compensate or train unemployed workers), rather than attempting to prevent frictional or seasonal unemployment.

One solution for dealing with unemployment spells is to provide wage replacement for unemployed workers through unemployment insurance. This would help any of those suffering unemployment for any of the first five (that is, a through e) reasons listed above. However, once insurance against wage loss is established, workers may change their job search and job acceptance behavior in ways that change the frequency and

duration of unemployment spells. Hence, this is a sixth type of unemployment: moral hazard unemployment. Workers know a lot more about their job search efforts, and realistic job offers, then those who administer the insurance program do. The asymmetric information allows for opportunistic behavior on the part of the unemployed. We discuss the empirical evidence for this below, after first discussing other types of unemployment in more detail, and the unemployment insurance program.

a. Waiting-to-Start-Work Unemployment. This type of unemployment arises when someone has a job (say, just after graduation or just before the firm expands production), but has not yet started to work. The worker is not searching for a job, because he has one already, but is nonetheless counted among the unemployed. This type of unemployment occurs frequently for those in transition between school and employment, or simply changing job careers or job locations.

b. Search (for the best offer) Unemployment. This is another type of frictional unemployment. Given his human capital skills, the potential worker who is searching knows that jobs exist in the labor market, and has a pretty good idea about what the wage offers look like for someone with his skills. And although he knows a lot about the market in general, he doesn't know which firms are offering which wages. This uncertainty can only be resolved with search. So he has to search to find out about job opportunities, and since search is costly (in terms of forgone wages and job application expenses), he has to have a "rule" to know when to stop searching.

Suppose that the *distribution of wage offers* is given in Table 4.

Table 4 Hypothetical Wage Offers

wage offer	\$6	\$8	\$10	\$12	\$14
number of firms	10	30	40	15	5
fraction of firms	.10	.30	.40	.15	.05

The worker knows that these wage offers exist, but doesn't know which firms will offer him an hourly wage \$6, which will offer him \$8, etc. He has to apply for a position to find out. If he interviews at only one firm, chosen at random, his expected wage will be:

$$\text{expected wage} = .1 \times \$6 + .3 \times \$8 + .4 \times \$10 + .15 \times \$12 + .05 \times \$14 = \$9.50$$

Note that \$9.50 is not a wage that is actually offered by any firm, but it is the average of all offers that a worker would get if he repeatedly interviewed firms at random. We discuss job search rules: the fixed sample size rule, and the reservation wage rule.

Fixed sample size rule. One search rule is choose the *number* of firms to interview in advance, and take the best wage offer from that sampled group. Adding to the sample increases the likelihood of finding a better wage, but each additional interview is expensive. So the rule needs to balance the potential wage increase from adding another firm to the sample, against the cost of doing so.

The gain from increasing the sample size is the opportunity to always take the largest wage offer among all the firms sampled. If only one firm is sampled, then there is only one offer to choose, and the expected offer is simply the expected wage, \$9.50. But

when two or more firms are sampled, the worker chooses the best offer among each set of offers. When sampling from two firms, if one firm has a $6 wage offer, and another sampled firm's offer is $10, then the $10 offer is taken. Since the probability of getting a $6 is .1, and the probability of getting a $10 offer is .4, the probability of drawing a $6 offer from the first firm and a $10 offer from the second firm is $.1 \times .4 = .04$, or four percent. Since the searcher could also have drawn a $10 offer from the first firm, and a $6 offer from the second firm, there are two ways to get the "$6, $10" offer pair and each has a chance of .04, the chance for drawing such a pair is .08[iii]. And when the "$6, $10" pair is drawn, the $10 job will always be taken. A few other choices and the resulting outcome are indicated in Table 5 for the 2-firm size sample.

Table 5 Sampling When Two Offers Are Randomly Taken

pairs	$6, $6	$6, $8	$6, $10	..	$12,$14	$14, $14
probability	.1*.1	2*.1*.3	2*.1*.4	..	2*.15*.05	.05*.05
maximum	$6	$8	$10	..	$14	$14

Adding all the possible offers from each distinct offer pair (there are 15, we have only listed 5 of them in Table 5) and weighting these by the likelihood of their occurrence (in the second row of Table 5) we find that the expected value of the maximum wage offer when we sample 2 firms is $10.58. By going through a similar exercise, we can calculate the expected (maximum) wage offer when the sample size is 3, 4, 5, etc. These are illustrated in Table 6 in the second row. We assume that the search costs for each firm sampled are equivalent to$.55 calculated on a discounted, hour of work basis.

Table 6 Fixed Sample Rule Outcomes

sample size	1	2	3	4	5	6	7
expected offer	$9.50	$10.58	$11.13	$11.50	$11.78	$12.00	$12.18
search costs	$.55	$1.10	$1.65	$2.20	$2.75	$3.30	$3.85
net benefit	$8.95	$9.48	$9.98	$9.30	$9.03	$8.70	$8.32

To maximize the value of search, the worker chooses that sample where the difference between the search benefits (given in row two) and search costs (given in row three) are greatest. As indicated in the fourth row, this is achieved when 3 firms are sampled. The worker using the fixed sample rule, facing this distribution and these sampling costs, would choose to sample 3 firms at random and then accept the highest wage offer from among these three.

Sequential Decision Rule. The fixed sample rule was the first model used to explain labor search behavior, but is currently used less than the sequential search model. The reason is simple: suppose that the worker chooses the fixed sample rule and decides to sample 3 firms as in the previous example, but gets offered a $14-job on his first interview. The fixed sample rule has him proceeding with two more interviews, and incurring those extra interview costs, even though the worker knows that he cannot possible do any better than he has already done by the end of the first interview. (He knows what the distribution of wages looks like, and knows that the $14 is the highest wage that he could receive. He just didn't know which firm would offer it to him.)

The sequential rule is built around the notion that search should stop once a particularly good offer comes up. So instead of deciding in advance upon the number of searches, the sequential rule seeks to find a minimum wage, or *reservation wage*, such that the first wage offer that meets or exceeds this reservation wage is accepted. The higher the reservation wage, the more low wage offers the worker will discard. As a result, a higher reservation will lead to a higher expected wage once you find a job. On the other hand, but the worker discarded so many lower wage offers, the probability of finding a job falls as the reservation wage increases. The trick is to find the optimal reservation wage, that is, find the reservation wage that maximizes the expected net benefits of search.

We illustrate this model under some useful simplifying assumptions. We assume that the worker is searching for a job for just the current period, and that the search involves a monetary cost, m ($.55), but no time costs (search happens instantaneously). If the reservation wage is set at $10, wage offers of $10, $12 or $14 would be accepted and the search stopped. Wage offers of $6 or $8 would be rejected, and search would resume. On the initial draw, the worker has a 60 percent chance of accepting an offer because 60 percent of the wages are $10 or higher, and a 40 percent chance of continuing to search. Let V(r) be the value of search when the reservation wage has a value, r. We want to find that value of r that maximizes the return from search.

The expected benefit from searching is the probability of finding a wage offer greater than the reservation wage ("Prob(W$\geq$ r)," so search ends since the reservation rule is satisfied), times the expected wage gain when the searcher does find such a wage ("E(W when W$\geq$ r)"):

search ends gain: Prob(W$\geq$ r) $\times$ E(W when W$\geq$ r),

plus--if the wage is less than the reservation wage--the probability of continuing to search, times the value of continued search:

search continues gain: [1 - Prob(W$\geq$ r)] $\times$ V(r)

These gains from search are measured against the cost of extra search, m. Hence, the potential worker chooses r to maximize:

$$V(r) = \text{Prob}(W \geq r) \times E(W \text{ when } W \geq r) + [1 - \text{Prob}(W \geq r)] \times V(r) - m$$

Manipulating this equation so that V(r) is only on the left hand side, we rewrite the value of search equation as:

$$V(r) = E(W \text{ when } W \geq r) - m/\text{Prob}(W \geq r)$$

From the wage distribution in Table 4, we can calculate the two unknown terms on the right hand side of this last equation. "Prob(W $\geq$ r)" is the probability of finding a wage greater than or equal to r. As explained above, Prob(W $\geq$ $10) = .60 in our example. Prob(W $\geq$ $12) = .20, as another example. If the reservation wage was set at $12, what would be E(W when W$\geq$ $12)? It would $12, times the likelihood of getting a $12 offer if the worker only consider offers of $12 and above. This would happen three

fourths of the time (.15/(.15 + .05) = .75), and the only fourth of the time (when you restrict offers to $12 or more) the worker would get $14. Hence:

E(W when W ≥ $12) = [.15/(.15 + .05)] × $12 + [.05/(.15+.05)] × $14 = $12.50.

Similar calculations are made for other values of the reservation wage in Table 7, where the monetary costs of search, m, are assumed to be $.55.

Table 7. Sequential Rule Outcomes

reservation wage	$6	$8	$10	$12	$14
Prob(W ≥ r)	1	.9	.6	.2	.05
E(W given W ≥ r)	$9.50	$9.89	$10.83	$12.50	$14.00
m/[Prob(W ≥ r)]	$.55	$.61	$.92	$2.75	$11.00
V(r)	$8.95	$9.28	$9.91	$9.75	$3.00

Given the wage offer distribution and the assumed costs of search, the optimal reservation wage for this model is $10, as can be seen in the last line of Table 7: a reservation wage of $10 maximizes the net value of search.

c. Seasonal Unemployment. Seasonal unemployment is the result of anticipated, recurring drops in the demand for labor in certain sectors of society. The demand for construction workers in Alaska, for example, falls in the winter months, as does the demand for agricultural workers after the harvest. The demand for blue collar workers falls in some industries when firms are retooling their plants to handle the new model changes.

d. Sectoral-Shift (or Skills-Mismatch) Unemployment. In a dynamic economy, some sectors (such as steel manufacturing) may be declining, while other sectors (such as computer software) may be increasing. So even though the numbers of layoffs is matched by the number of job vacancies, the skills in the declining sectors may not be readily transferable to those in the growing sector of the economy. Laid-off steelworkers may not be very good computer programmers. Hence, the steel workers will have to retool their skills before they can expect to get a new job. While the government could pursue a policy of providing retraining for workers, the economic incentives for older workers to do so may not be very great. Human capital investments frequently take considerable time and effort, and if the subsequent expected career in the new job is not very long, it may be that those investment costs will not be recovered.

e. Demand-Deficit Unemployment. This happens when there are no suitable job offers because of a down turn in the business cycle. Workers cannot apply their human capital towards productive market activity, so their human capital potential is underutilized. Generally this is believed to occur when prices are "sticky," and fail to decline when there is a decrease in the aggregate demand for labor. This is pictured in Figure 1.

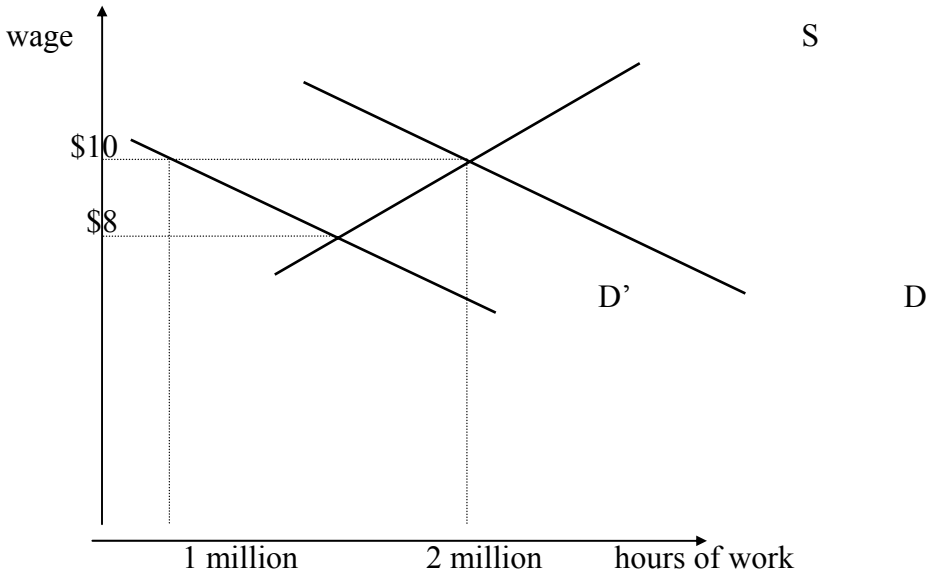

Figure 1

From an initial equilibrium, there is a decline in the aggregate demand for labor from D to D', which normally would result in a decline in the wage from $10 to $8 in order to achieve market equilibrium again. However, if the wages are "sticky" and don't decline, but remain at $10 per hour, workers collectively want to work 2 million hours but firms are only willing to hire 1 million hours of work. The difference in hours could be achieved by cutting everyone's work hours in half, or by reducing the number of workers by half while keeping hours per worker constant, or by a combination of the two. Typically, what happens is that the number of employed workers fall much more than do hours of work per employee.

Declines in the aggregate demand for labor, as in Figure 1, then generate two, related empirical questions: 1) Why are wages relatively rigid (so that aggregate hours of work declines more than hourly wages)?, and 2) Why are some workers laid off rather than reducing all workers hours? Minimum wages could be one explanation, but only for the lowest wage workers such as teenage workers. Unions could be another explanation, but unions represent less than a fifth of the labor force, and so are not likely to account for the sizable non-union, "rigid-wage and relatively fixed hours" empirical regularities. Other explanations hinge on the importance of firm-specific human capital, or on the incentives generated by imperfect experience rating under the unemployment insurance system (discussed below).

With firm-specific human capital, firms would like to minimize voluntary turnover among their most skilled workers. Layoffs of the least skilled (most recently hired) workers maintains the firms' human capital investments, whereas a wage-cut (or reduction in hours of work) for both the skilled and the less skilled employees would increase everyone's likelihood of quitting equally. Moreover, the more senior/most skilled employees may be risk averse and prefer a relatively rigid wage/rigid hour arrangement that results in less fluctuations in their wage income over one that is

sensitive to changes in demand. This shifts the income risk to younger workers, then presumably they will have to be compensated for this extra risk. Presumably, that extra compensation will be less than the cost of losing skilled, experienced workers.

Note also that human capital risk management approaches discussed in Chapter 4, aimed at reducing human capital risk, may actually make it easier to reduce some skilled workers when there is a decline in the firm's demand for skilled services. In particular, the risk management techniques of redundant hiring, cross training in skilled positions, and outsourcing jobs all make it easier to reduce employment when output falls.

Demand deficient unemployment has less to do with searching or waiting for a job, or having the wrong set of skills for current technological requirements than it has to do with the simple absence of suitable job offers at the going wages. Policy prescriptions, therefore, have little to do with helping workers find jobs or retraining workers so they have the appropriate skills. This is the old Keynesian model: policy prescriptions are to stimulate demand (and move it back from D' to D in Figure 9.1) through government spending, increased business investment, or increased household consumption. Unemployment insurance, which gives households more income to spend when unemployment increases, is seen as a potential automatic stabilizer in that it increases household consumption just when wage incomes are falling.

f. Moral Hazard Unemployment. Unemployment insurance benefits are meant for those suffering wage loss because of involuntary unemployment. However, the benefits themselves, once provided, may change the behavior of those in the labor force in the presence of asymmetric information. Therefore, a sixth type of unemployment is moral hazard unemployment--the extra claims, or extra weeks on an unemployment, that arise because of the unemployment insurance coverage. This is discussed at greater length below.

II. Unemployment Insurance Benefits and Eligibility

Benefits and eligibility are designed to partially replace lost income for those who are involuntarily unemployed. Hence, the UI system has several features that are designed to limit moral hazard behavior and encourage return to work. Some of these include funding features, such as experience rating, are meant to improve the firm's incentives, and will be discussed below. But many of these features are aimed at the unemployed worker, and fall into one of three general categories.

These three employee-eligibility categories aimed at limiting moral hazard and adverse selection (with respect to the whole population) include:

1. Only insuring those who have exhibited some **labor force attachment.** You have to work a "while" before you are eligible for UI benefits, just as underwriters for group employee-benefit policies often restrict eligibility to avoid adverse selection: coverage for employer-provided group benefits often only apply to full time workers, and only after they have passed a probationary period of employment. Insurance, whether mandated by law such as UI benefits, or privately provided such as life insurance or dental benefits, is meant to be incidental to work. Insurers want to avoid situations where workers only work so they can qualify for a particular type of insurance coverage or insurance benefit. So although the UI program covers virtually all workers (and there

should be no adverse selection *among the working population* in the sense that the coverage is exhaustive), the "labor force attachment" requirement is to help ensure that those entering the labor market are not doing so only to qualify for UI benefits. If individuals could qualify for unemployment insurance benefits immediately upon beginning work, then those with high separation probabilities might be attracted into the labor force solely to qualify for UI benefits.[iv] This could be a problem since there is asymmetric information concerning "job separations: the public agency knows less about the job separation than the employer and employee do. By insuring a worker who has at least a specified level of earnings or number of weeks worked, his labor force attachment is assured and self selection into the labor force solely to garner UI benefits is minimized.

The work minimums for UI eligibility are usually measured over a "base period," usually the first four of the last five quarters before the unemployment claim was filed. During this period, the claimant's must reach some specified minimum amount and/or he must work some specified number of weeks. Again, these minimum work requirements vary from state to state.

2. Limiting the **types of non-employment spells** that are covered. The reason for the job separation is important: layoffs are seen as "involuntary" and are covered by UI insurance, but if a worker quits without good cause or is discharged for gross misconduct, then the unemployment is not seen as involuntary and is not covered. Also, if a worker refuses an offer of suitable work (which includes a recognition of the work location and the workers ability to perform the tasks in the offered job), then he is disqualified from UI benefits. Also, unemployment because of a labor stoppage maybe not be compensable depending on the circumstances.

UI benefits are limited in duration, but can be lengthened in some circumstances by the extended UI benefits program. This extension of benefits is only granted under this Federal-state program (up to 39 weeks) when the state's unemployment rate is sufficiently high and reaches a trigger rate. Again, this is to ensure that those participating are more likely to be "involuntarily unemployed."

3. **Partial insurance** coverage that shifts some of the income risk to the worker. In this sense, UI benefits are structured very much like workers' compensation (WC) benefits. Like WC, there is a waiting period of usually a week, during which no benefits are paid. Like WC, once the UI benefits begin, they only cover part (usually 50 percent) of the loss wages, subject to a state weekly maximum UI benefit. Moreover, the duration of the benefits are limited (usually to 26 weeks). Also, states are allowed the option to reduce UI benefits if the claimants are receiving certain retirement benefits.

III. UI Benefits and Program costs

expected costs per employee=probability@duration@benefits

C=P@D@B

$$\frac{\Delta lnC}{\Delta lnB} = \frac{\Delta lnP}{\Delta lnB} + \frac{\Delta lnD}{\Delta lnB} + 1 \quad (1)$$

If the claims rate (the first term on the right hand side) and duration (the second term on the right hand side) elasticities are zero (that is, as UI benefits increase there is no change

either in the likelihood that a UI claim will be filed nor in the average duration of such claims), then the increase in costs will be easy to forecast as benefits rise. A ten percent increase in the benefits will yield a 10 percent increase in the cost of UI claims.
As an empirical matter, these elasticities are not zero (as the Keynesian model of demand determined unemployment would suggest). The Benjamin and Kochin article is one example of many articles that attempt to estimate the claims rate elasticity. They have a kind of search theory view of unemployment (in what way does search theory suggest that both of these elasticities should be positive?)

In this sense, the UI system may itself artificially inflate the observed unemployment rate. Other ways by which the unemployment rate might be inflated include:
1) It might encourage firms to make more temporary layoffs--in a real sense, subsidizing the costs of making implicit contracts between the firm and the workers that say that layoffs are better than wage reductions. (Why isn't this the case if there is perfect experience rating?)
2) Workers may be more willing to take jobs in seasonal and cyclical industries (construction, or road work) when UI is available. The cost of the layoff to the worker is lowered. Cyclical and seasonal industries are larger than they would otherwise be.
(How do the Benjamin and Kochin linkages between UI insurance and UI benefits compare with those listed immediately above?)

BENJAMIN & KOCHIN Journal of Political Economy, June 1979 (get to the article through JSTOR at BYU:

1. go to BYU home page, click Libraries, click Lee Library
2. click electronic journals, then click JSTOR
3. click "enter JSTOR" and either *browse* your way to the article (economics, then Journal of Political Economy) or *search* directly for the article (title or authors)

The unusually the high rate of unemployment between WWI and WWII in Great Britain is hard to explain since the growth in real income was comparable with any other period in British history. Benjamin and Kochin attribute the high rate of unemployment to the UI system of Great Britain, relative to the US:
a. Coverage was about the same as in the US--agricultural and domestic workers where the principle excluded groups
b. In Britain, a worker who had worked for 30 weeks at any time in his career could draw benefits for an unlimited period. And after the first 30 weeks, the worker never had to requalify by working a certain number of weeks (differing markedly from the US system).
c. There were no experience rated taxes in Britain
d. Benefits were not tied to wages. Some (low wage) workers received benefits as large as their previous earnings
e. Spells of unemployment could be arranged so that there was no waiting period
f. Benefits were high relative to average wages
g. Britain had dependents' allowances

Their data and a Shazam program to estimate their model follows:

```
*uk_unemp.sha -- interwar great britain example on unemployment rate
sample 1 19
read year ur ben_wg NNP
1920 3.9 .15 3426
1921 17.0 .24 3242
1922 14.3 .37 3384
1923 11.7 .40 3514
1924 10.3 .42 3622
1925 11.3 .48 3840
1926 12.5 .48 3656
1927 9.7 .48 3927
1928 10.8 .50 4003
1929 10.4 .50 4097
1930 16.1 .53 4082
1931 21.3 .54 3832
1932 22.1 .50 3828
1933 19.9 .51 3899
1934 16.7 .53 4196
1935 15.5 .55 4365
1936 13.1 .57 4498
1937 10.8 .56 4665
1938 12.9 .56 4807
genr lnur = log(ur)
genr lnben_wg = log(ben_wg)
genr lnnnp = log(nnp)
genr trend = year - 1919
ols ur ben_wg lnnnp
ols ur ben_wg trend lnnnp
stop
```

---

[i] The unemployment rate for white males over 20 years of age is 3.0 percent, only slightly larger than the unemployment rate for white females over 20. These data, and the data from the text, are readily available at http://www.bls.gov.

[ii] Again, unless otherwise specified, these and other data come from the bls data Website described above.

[iii] Since we assume that offers are sampled randomly with replacement, then the probability of getting an offer is just the probability of drawing the first offer times the probability of drawing the second offer.

[iv] This appears to have been the case in Great Britain between World War I and World War II: there was no experience rating of the benefits (so firms had no incentive to monitor claims), and one could draw benefits for an unlimited period after 30 weeks of employment during any point in his working career. Benjamin and Kochin () provide evidence that many were attracted into the labor force just long enough to qualify for benefits, and then effectively left the labor market.