

Economics 460: Labor Economics
 Department of Economics, Finance and Legal Studies
 University of Alabama

Problem Set #1

1. The following is actual data from 1996:

Variable	Twin Cities	Minnesota	Minnesota excluding the Twin Cities
Total Civilian Labor Force	a	2,511,300	e
Total Civilian Employment	1,554,400	c	f
Number Unemployed	45,100	d	g
Unemployment Rate	b	3.4%	h

- (a) Using the formulas from class, fill in the values for a-h.
- (b) What effect do discourage workers have on the unemployment rate?
2. Briefly discuss two reasons why the official unemployment rate may understate ‘true’ unemployment.
3. Consider the labor supply of an individual college student. Initially, the student had free room and board due to a scholarship (think of it as non-labor income in the amount M which exactly covers room and board). During this time, the student was offered a job at \$10/hr, but decided not to work. At the end of the semester, the student’s scholarship was mysteriously taken away, leaving the student to pay room and board in the amount of \$125/wk. Because the student had no other source of income, the student accepted the old job offer and now worked L^* hours per week at \$10/hr.
- (a) Depict this student’s situation graphically before and after the scholarship is taken away.
- (b) Explain the income and substitution effects after the scholarship is removed.
4. Indicate in each of the following cases if an individual’s labor supply would increase or decrease:
- (a) w^* increases, and the substitution effect dominates
- (b) w^* decreases, and the income effect dominates
- (c) w^* decreases, and the substitution effect dominates
- (d) w^* increases, and the income effect dominates

5. Use the labor/leisure model to illustrate the impact of increasing the implicit tax rate t in the AFDC/TANF (welfare) program, from $t = 0.67$ to $t = 1$ on the labor supply of the following groups:
 - (a) those people working zero hours
 - (b) those people receiving some benefits, but also working a few hours a week
6. If an income maintenance program entails a \$3,000 basic benefit and an implicit tax rate of $t = 0.3$, what will be the size of the income transfer received by a household which earns \$2,000 per year? What will be the household's total income? What is the breakeven level of income implied by this program?
7. Consider the model of welfare discussed in class, where individuals are guaranteed at least a minimum income of \bar{y} and there is an implicit tax, t , applied to earnings.
 - (a) Graph an individual's budget constraint under the welfare program, assuming the individual has no other non-labor income and could potentially earn a wage, w , if he/she chooses to work. Be sure to label all aspects of the graph, including the slopes of the budget line segments, the axes, and the values of income at the various 'kink' points on the budget line.
 - (b) If the lump sum component of welfare is reduced (from $\bar{y} \rightarrow \bar{y}'$) and the implicit tax is also reduced (from $t \rightarrow t'$) such that the breakeven level of income remains unchanged, what is the effect on the time allocation of an individual initially working only a few hours? Be sure to discuss the income and substitution effects.
 - (c) If $\bar{y} = 100$, $t = 0.5$, and $\bar{y}' = 50$, what must the new implicit tax rate, t' , be such that the breakeven level is unchanged?
8. From the handout shown in class, we were given the following parameters for the Earned Income Tax Credit in 1998:

NUMBER OF CHILDREN	CREDIT RATE (t_0)	PHASE-IN RANGE	MAXIMUM CREDIT	PHASE-OUT RATE (t_1)	PHASE-OUT RANGE
0	7.65	0-4,460	341	7.65	5,570-10,030
1	34	0-6,680	2,271	15.98	12,260-26,473

- (a) Graph the budget constraint for a woman with no children and a woman with one child on a single graph, being sure to label all axes, lines, slopes, and income values where kink points exist.
- (b) What is the breakeven level of income for each type of woman?
- (c) Let's think about Mary. Mary is a single, childless woman who currently is working part-time, earning \$4000 per year working, and taking advantage of her tax credit under the plan. If Mary has a child, but remains single and collects no child support from the father, will she adjust her labor supply? Be sure to explain the income and substitution effects.