

Labor Supply Theory - extensions

Recall the many assumptions in the simple model we first analysed, including:

- people don't enjoy their work (work is a "bad")
- worker chooses hours freely
- the hourly wage is independent of the number of hours worked
- no taxes, no income support programs

In this section of the course we examine:

- ! modifications to the basic theory that address these complications
- ! testable implications for labor supply behavior of each modification

Plan:

A. Making the Basic LS Model more Realistic

1. Enjoyable Work
2. Hours Constraints and Underemployment
3. Wage Rates that Depend on Hours Worked
4. Fixed Costs of Working
5. Taxes

B. Income Support Programs (generic examples)

1. Demogrant
2. Wage Subsidy
3. "Classic" Welfare
4. Negative Income Tax (NIT)
5. Unemployment Insurance

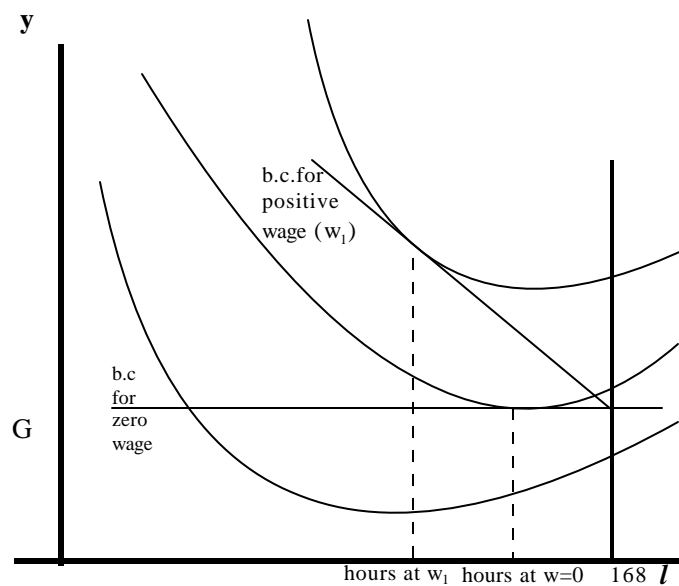
C. Income Support Programs: Current Cases and Empirical Evidence

1. Earned Income Tax Credit (EITC)
2. Social Security Earnings Test
3. Family and Medical Leave Act (FMLA)

A. Making the Basic Labor Supply Model more Realistic

1) Enjoyable Work

Suppose that, at 168 hours a week of “leisure”, some additional work is actually a “good” (positively-sloped indifference curves)

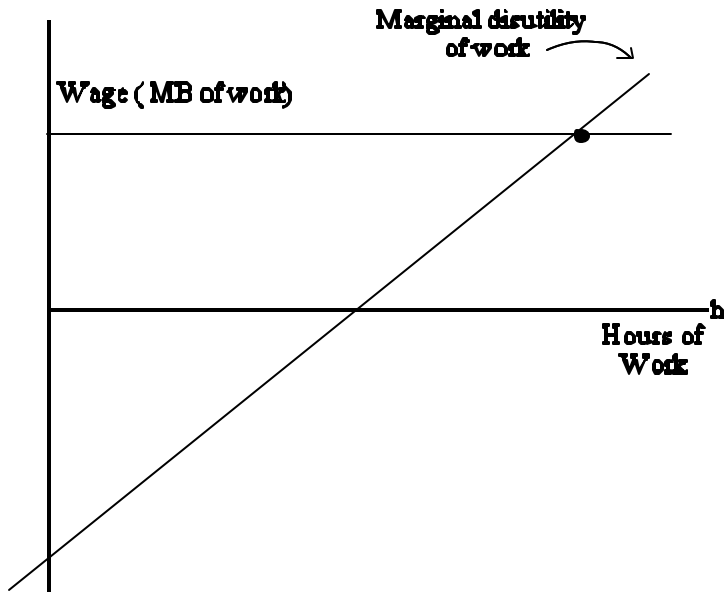


results: -if the only

available wage is zero, some volunteer work will be chosen

- as long as $w > 0$ (the wage is positive), leisure is always a “good” (and thus, labor “bad”) at individual’s optimal point. I.e. the indifference curves have a positive slope at the chosen point.

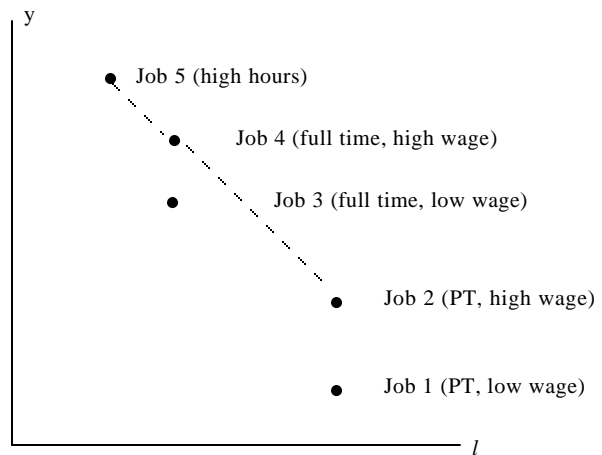
Another way of showing this:



Example: Suppose you love eating chocolates and someone offers you \$50 per piece today. The very last chocolate you choose to eat will cause you some *disutility*.

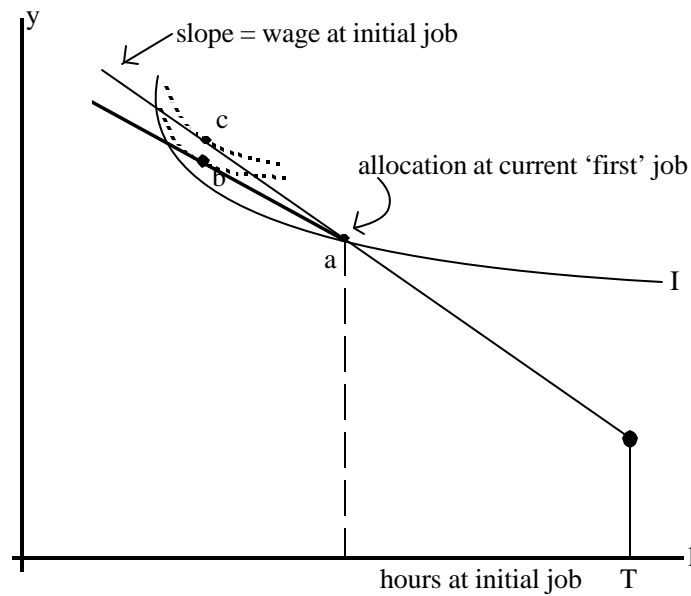
2) Limits on the Choice of Hours

! in what sense do we believe there is unrestricted choice of hours?
 ! certainly not literally, within jobs. Most jobs have a fixed number of hours.



! but think of each available job as a “wage-hours bundle” (a point in (w, l) space. - then, looking across jobs available to a given individual, a fairly complete menu may be available.

! In the short run, however, individuals may be underemployed:



! If the person’s indiff. curve thru (a) looks like I, s/he is underemployed at that job.

Implications:

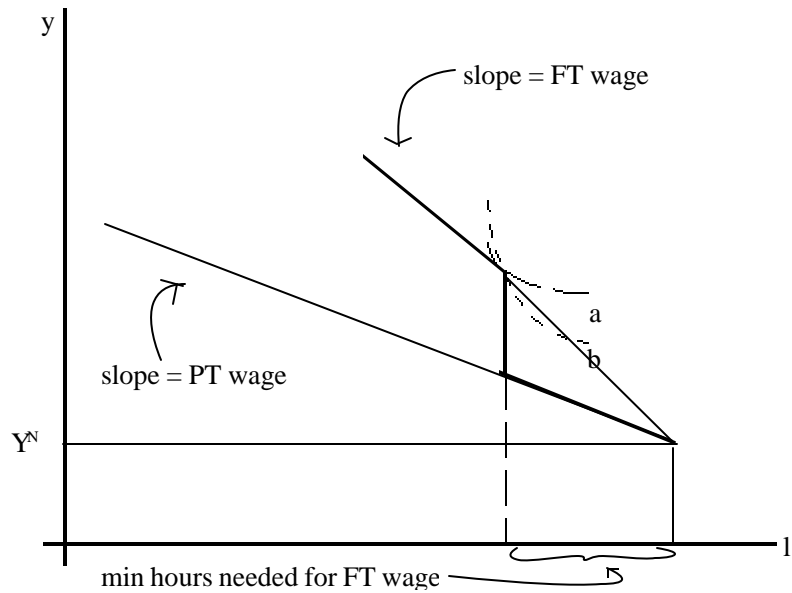
- ! person will look for a better bundle, closer to (c)
- ! in meantime, they will accept extra work at lower pay (b) (“moonlighting”)

3) The wage rate can vary with hours of work

Example a: wages per hour higher in FT than PT jobs (overall budget constraint in **bold**)

Implications:

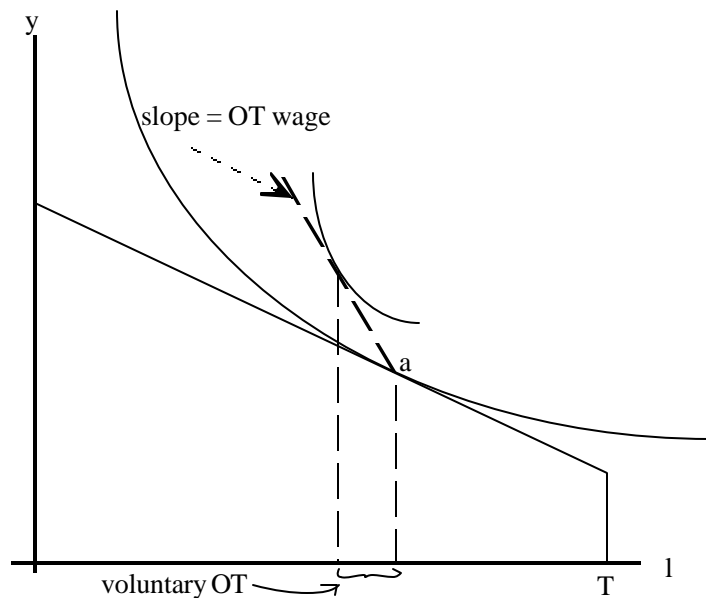
-“bunching” of workers at min hours needed to get FT wage
 For example, a and b are indifference curves belonging to different individuals (because they cross). But both people pick the same optimal point, at the corner.



- also “discontinuities”: a small increase in the FT wage can lead to a big jump in hours

Example b: Overtime premia

Implication: to induce a worker who is well-matched to his current job (a) to voluntarily accept more hours, a higher wage for those extra hours must be offered.



4) Fixed Costs

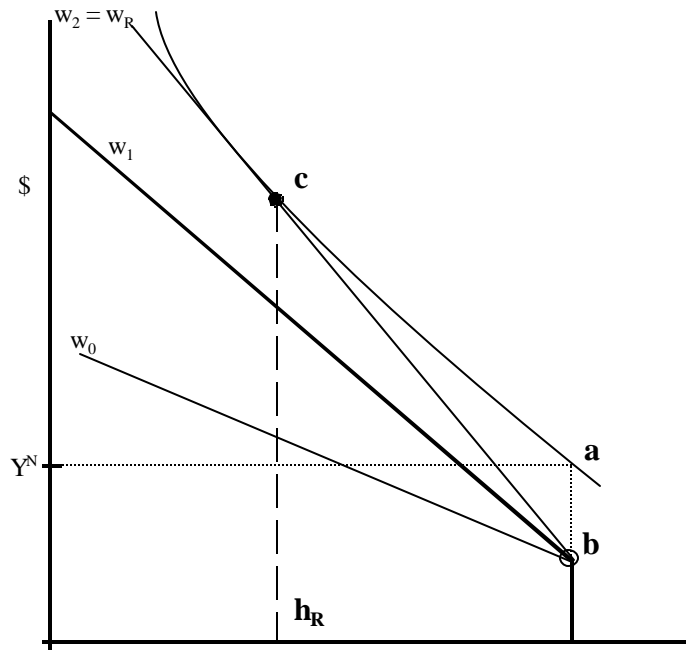
Example a: Fixed Money Costs
(e.g. work clothes, bus fare)

-at a wage of w_0 , the b.c. consists of the point **a**, plus the line segment bw_0 .

The individual prefers not to work (point a).

-same at the wage w_1 .

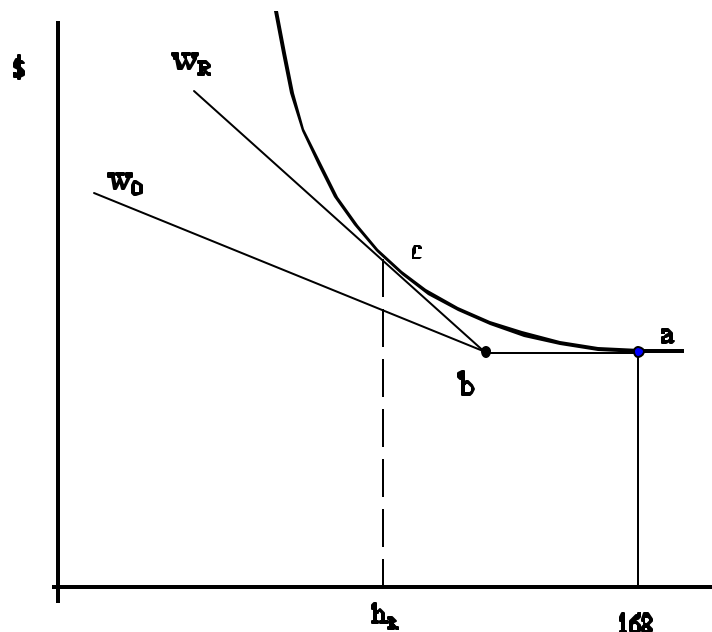
-a wage of w_R is just sufficient to induce labor force entry. At this wage, labor supply “jumps” up from zero to h_R . (individual is indifferent between **a** and **c**) w_R is called the “reservation wage”.



Example b:
Fixed time costs
(e.g. commuting time)

-at a wage of w_0 , the b.c. goes along abw_0 . The individual prefers not to work (point a).

-a wage of w_R is just sufficient to induce labor force entry. At this wage, labor supply “jumps” up from zero to h_R . (individual is indifferent between **a** and **c**) w_R is the “reservation wage”.

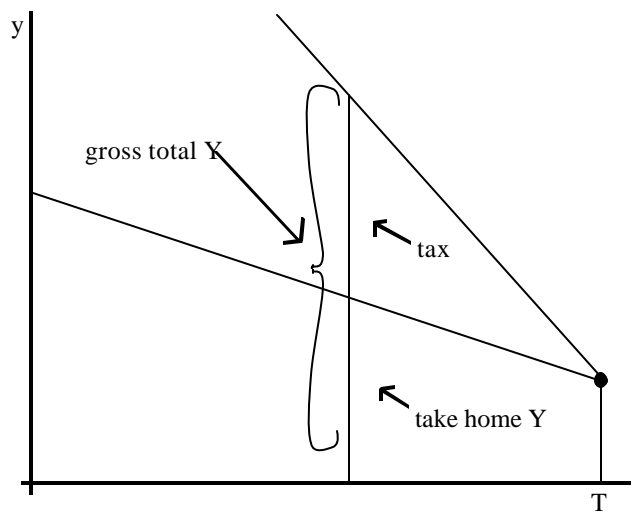


5) Taxes

Example a: Proportional Income Tax (on labor income only)

$$\begin{aligned}
 \text{B.C. without tax: } Y &= G + wh \\
 &= G + w(T - l) \\
 &= (G + wT) - wl
 \end{aligned}$$

$$\begin{aligned}
 \text{B.C. with tax: } Y &= G + wh - t(wh) \\
 &= G + w(T - l) - tw(T - l) \\
 &= G + wT(1 - t) - w(1 - t)l
 \end{aligned}$$

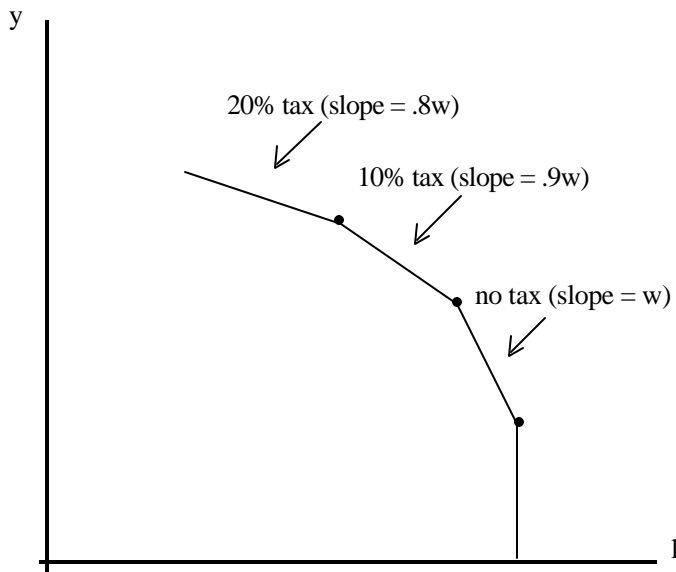


Implications:

A proportional income tax is just like a wage reduction. Depending on income versus substitution effects, it can raise or lower labor supply.

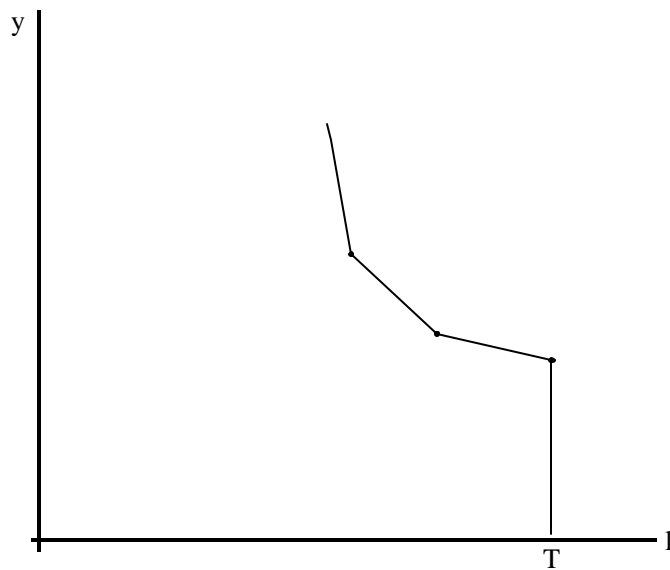
(Exercise: Show that, if the proceeds of the income tax are refunded to the worker as a lump sum transfer payment, labor supply will fall for sure).

Example b: Progressive Income Tax (L income only)



Implications: should see some “bunching” of individuals at “kink” points.

Example c: Regressive Income Tax:



Implication: As for the case of “fixed costs”, we can get “jumps” in L^S (this is a general result when the budget constraint is not concave to the origin)

B. Income Support Programs (generic examples)

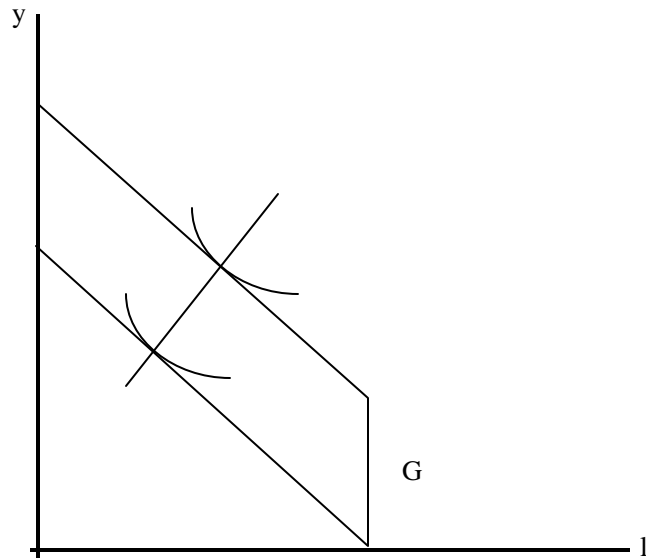
! consider a person with no non-wage income or a low wage; and the government wants to make them better off. Compare 5 “generic” schemes:

1. Demogrant
2. Wage Subsidy
3. “Classic” Welfare
4. Negative Income Tax (NIT)
5. Unemployment Insurance

1. Demogrant

Effect:

- if leisure is a normal good, will work less
- individual better off
- cost = G .
- “target efficiency” not great since everyone gets it

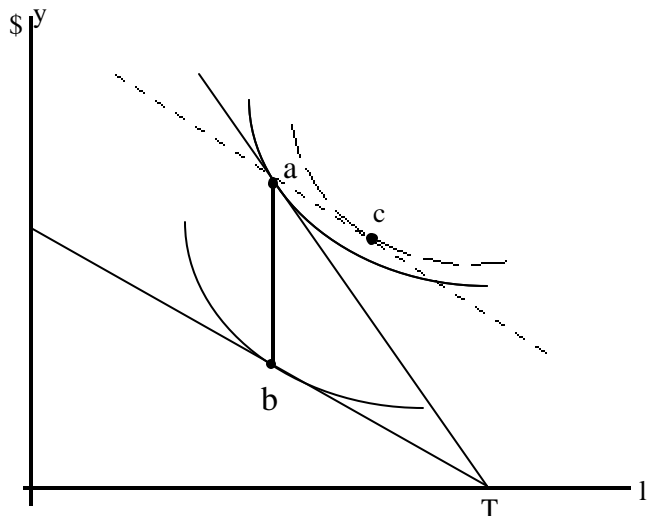


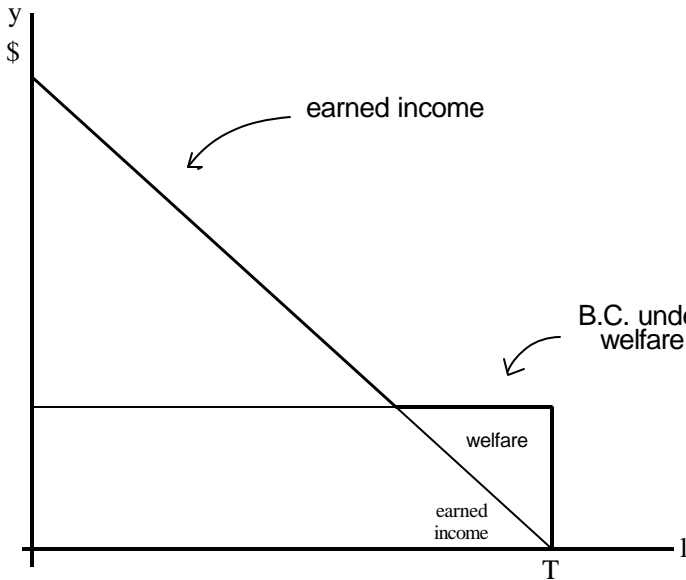
2. Wage subsidy

- just like a wage increase

Results:

- effects on L^S are ambiguous (less likely to be negative than demogrant)
- worker better off
- cost = ab
- individual could be made better off at same cost to government via a demogrant. This, however, reduces L^S more at point c .





3. "Classic" Welfare

- attempts to cut cost of demogrant by gearing payout to worker's income

- "Classic" Welfare is the extreme case where implicit tax on earned income = 100%

Effects of "Classic" Welfare: (assuming people play by the rules) depend on the individual's earning ability. Consider 3 cases:

Case (i): Person with very low earning ability
(pre-welfare earnings less than welfare)

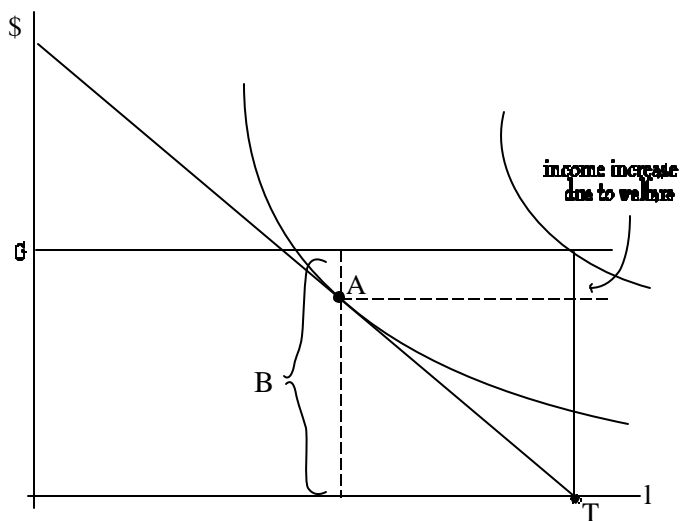
! increased income, lower L^S , worker better off

! income increase due to welfare=A

! amount spent by the government=B

! Moffit: to raise income by \$1.00 via welfare, about \$1.60 must be spent

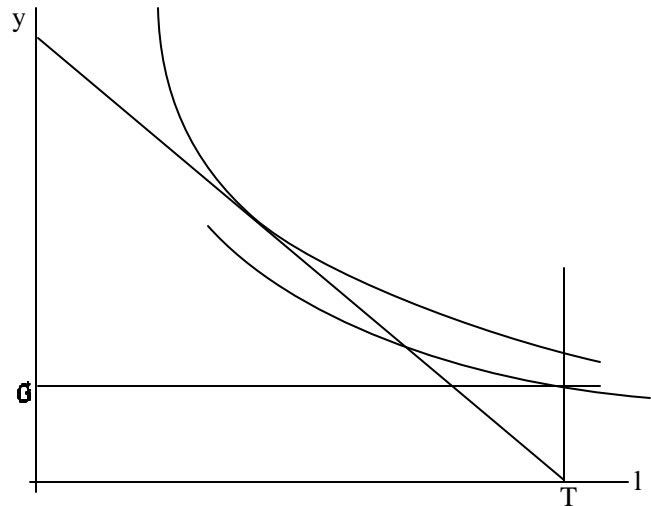
! ie. $B/A = 1.6$ ("leaky bucket")



Case (ii): Middle and higher earning ability person
(pre-welfare income substantially above the welfare “guarantee”)

- no effect on choices or utility

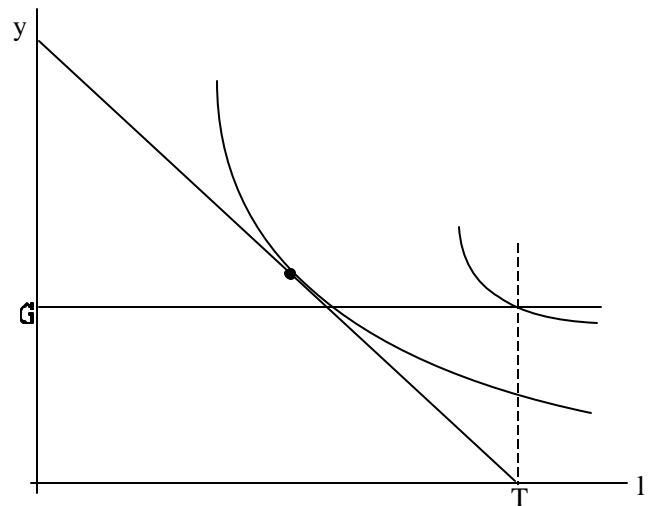
-this reflects the greater “target efficiency” of welfare compared to a demogrant: middle-class people voluntarily opt out of it.



Case (iii): Person with “borderline-low” earnings ability
(pre-welfare income slightly above the welfare guarantee)

! decrease in income, decrease in L^S , worker better off

! as poverty rates are measured by the fraction of the population with incomes below a certain threshold (this threshold is typically *above* the welfare guarantee), in this case welfare can work to *raise* the measured poverty rate.

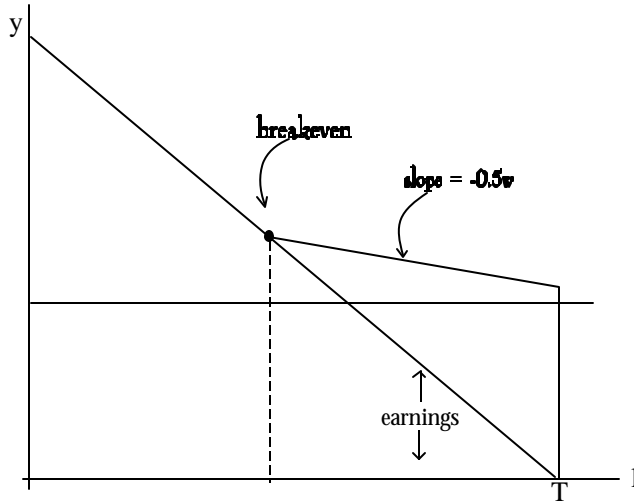


! Moffit claims this phenomenon was at most 5% of total caseload in US.

Summarizing Welfare effects (across all three cases): Overall, if there is an effect on L^S it will be negative because welfare (a) lowers the net wage (negative sub. effect), and (b) adds some non-labor income (negative income effect)

What if people don’t “play by the rules”? If people don’t report welfare income, it’s like a demogrant, just an increase in G . The likely effect now is a decrease in L^S but not to zero

4. Negative Income Tax (NIT)



! attempt to reduce disincentive effects of straight welfare (offers a partial tax-break)

! eg. every \$1 of earned income reduces benefits by 50¢ till total benefit is \$0

! programs with NIT features:

- Earned Income Tax Credit
- most experimental programs
- many current state TANF programs
- social security between ages 65-69.

! The promise of NIT: income support with less work disincentives

! The main problem with NIT:

- if the tax back rate is reduced without reducing the guarantee, then you start giving money to people with reasonably high income - expensive

- if you cut the guarantee, then you no longer give adequate subsistence support to those unable to work to live

5. Unemployment Insurance

- ! administered by the states, subject to some federal regulation
- ! established in 1930's
- ! basic idea was a kind of insurance that the private sector couldn't supply due to adverse selection

- ! consider the choice of weeks in a year to work and assume you can get work if you want
- ! consider the following (stylized) UI system (US standard):
 - if you work less than 26 weeks in a year, no UI
 - if you work 26 weeks, or more you can collect UI at 50% of previous weekly wage for all weeks in the year not worked (think about full-time workers only).

Thus:

if weeks worked < 26:

$$\text{income} = (\text{wage}) \times (\text{weeks worked})$$

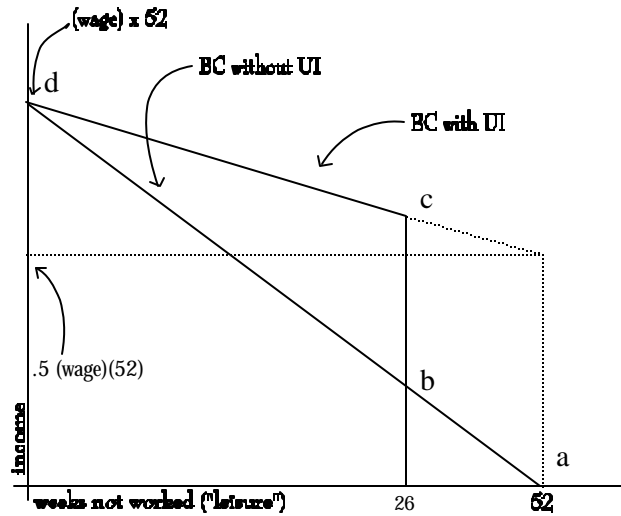
if weeks \geq 26:

$$\text{income} = (\text{wage}) \times (\text{weeks worked}) + .5 (\text{wage}) \times (52 - \text{weeks worked})$$

$$= .5 (\text{wage}) \times 52 + .5 (\text{wage}) (\text{weeks worked})$$

Thus, b.c without a UI program is **abd**

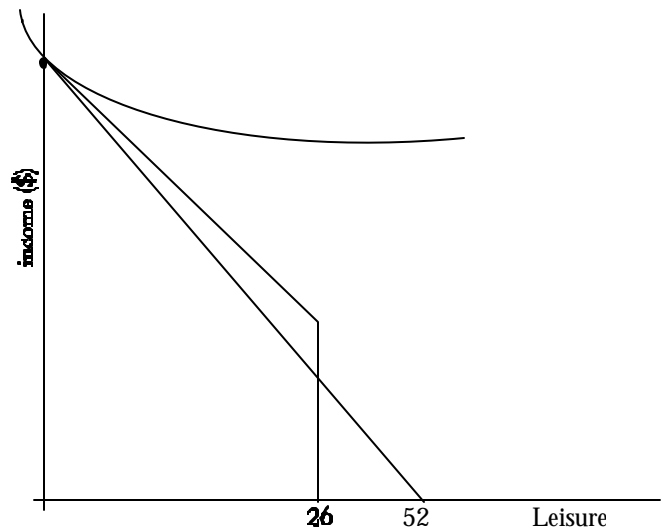
b.c with a UI program is **abcd**. Beyond c, the net weekly wage is half what your employer pays you.



Effects of UI on labor supply:
Again, it depends in earnings ability and tastes. Consider three cases:

Case (i) individuals initially working full year [high wages, low preference for leisure]

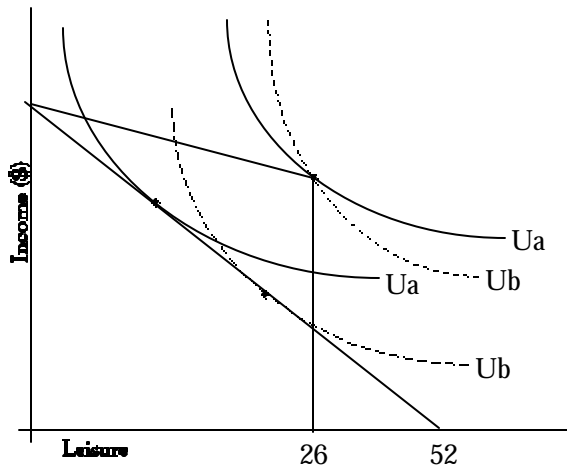
Result: No change in weeks worked



Case (ii) individuals initially working between 26 and 52 weeks [moderate wages, moderate preferences for leisure]

Result: Decrease in weeks worked

! note that many individuals who, in absence of UI, would have worked different numbers of weeks, all tend to work the same # of weeks (min qualifying level). Persons a and b work different weeks per year in the absence of a UI program; work the same annual weeks in the presence of UI.

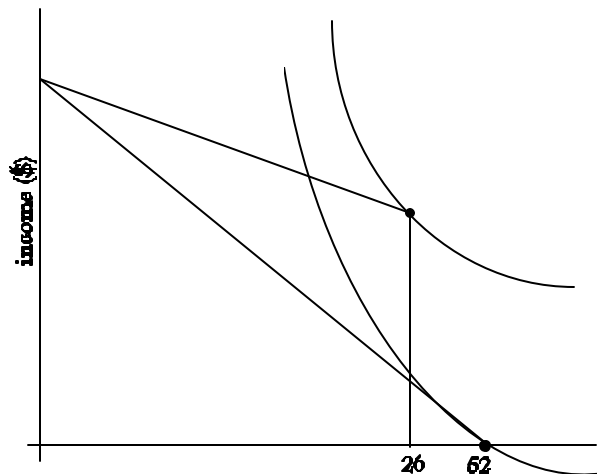


(thus, again, we have “bunching”)

Case (iii) individuals initially working 0-26 weeks [low wages, high preferences for leisure]

Result: *Increase* in weeks worked

In this case, UI can increase both employment and unemployment, by drawing people into the labor force and also into short term jobs.



In sum (across all three cases), unemployment insurance (unlike welfare or NIT) has an ambiguous

predicted effect on labor supply. While it is predicted to reduce annual weeks of work among persons initially working more than half a year, it may also raise weeks of work among those initially working less. It may even draw new entrants into the labor market. If people really have substantial control over their annual weeks of work, we should also see a clustering, or “bunching” of individuals at the “corner” or “kink” point: working exactly the minimum number of weeks needed to qualify.