

ECON 381

LABOUR ECONOMICS

Dr. Jane Friesen

# Course website

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[www.sfu.ca/~friesen](http://www.sfu.ca/~friesen)

Go to website for lecture notes, tutorial questions, course outline, announcements, etc.

Check it regularly.

Note: We are not using WebCT

# Why do we have a whole course on labour? Why not a course on watermelons?

Watermelons are not very important. Why is labour important?

- ▣ Watermelons are a consumption good, with lots of substitutes. Labour is an important input into both market and non-market production of goods and services. *Examples of non-market production?*
- ▣ Employment is an important source of most people's incomes (See Table 1.1 in text)

Okay, but we already know how markets determine prices and quantity. Why do we need a whole course on this?

# Why a whole course on labour?

- Because labour is an important input into market production, labour market efficiency is important.  
*What do we mean by efficiency?*
- Not all labour markets are perfect – sometimes there are small numbers of buyers and sellers, lots of imperfection information.
- You can buy watermelons, but you can't buy people.  
*What can you buy in the labour market?* This can lead to problems with respect to labour market efficiency.

# Why a whole course on labour?

- Because labour is important to people's income, we care about *equity* in the labour market. *What do we mean by equity?*
- Workers care about working conditions. Watermelons care about growing conditions, but they don't vote and don't have constitutional protection. Lots of non-wage characteristics of jobs matter to workers. *Examples?*
- This leads to lots of labour market regulation. *Examples?*

# Why a whole course on labour?

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- Not all labour is the same – workers differ by preferences, skill, location, etc.

# Why a whole course on labour?

- Like industrial organization, economic development, public finance, etc., labour economics is an *applied* field. This means that we use economic theory and empirical evidence to analyze questions and related policy issues.
- Empirical evidence – generated through quantitative analysis of real-world data; used to test theories, measure important relationships

# Learning objectives

In this course, you will:

- ▣ learn how to apply intermediate microeconomic theory and empirical evidence to understand how labour markets work
- ▣ learn how to evaluate labour market programs, policies and regulations from the perspective of equity and efficiency
- ▣ gain an understanding of the relationship between economic theory and empirical evidence, and the role of empirical evidence in economic analysis
- ▣ learn about the issues and evidence surrounding a number of specific labour market policies



# Grades and grading policy

Grades will be calculated according to the following weights: Midterm 25%, Assignments 25%, Final 50%.

- Midterm is October 20, two hours.
- If you miss the midterm and provide a medical note, the weight for the midterm will be added to the weight for your final exam.
- Final is December 8, three hours

# Grades and grading policy

- Assignments are due in class at the beginning of the lecture on the dates indicated.
- Assignment 2 will be graded; two other randomly selected assignments will be graded at the end of the semester.
- Solutions to assignments will be discussed in tutorials. They will NOT be provided in writing.
- Some assignment questions will appear on the midterm and final.

# Important dates

September 8	First lecture.
September 15	First tutorial. Assignment 1 due (may be graded)
September 22	Assignment 2 due (will be graded)
October 20	MIDTERM EXAM 8:30-10:20
December 1	Last lecture. No assignment due.
December 8	FINAL EXAM 8:30-11:30

NOTE: No tutorials this week.

# ECON 381

## Individual Labour Supply

# The allocation of time

- Ultimately, the individual's decision about whether and how much to work is a decision about how to spend one's time
  
- Four major categories of things we can do with our time:
  1. Work (for pay)
  2. Leisure
  3. Household production (raising children, cooking, home repair, growing vegetables, etc.)
  4. Investing in “human capital” (i.e., acquiring skills/knowledge that increase future earning capacity)
  
- In time, we' ll consider all of these. To begin, we' ll develop a simple model where individuals choose between **work** and **leisure**.

# Labour vs. Leisure

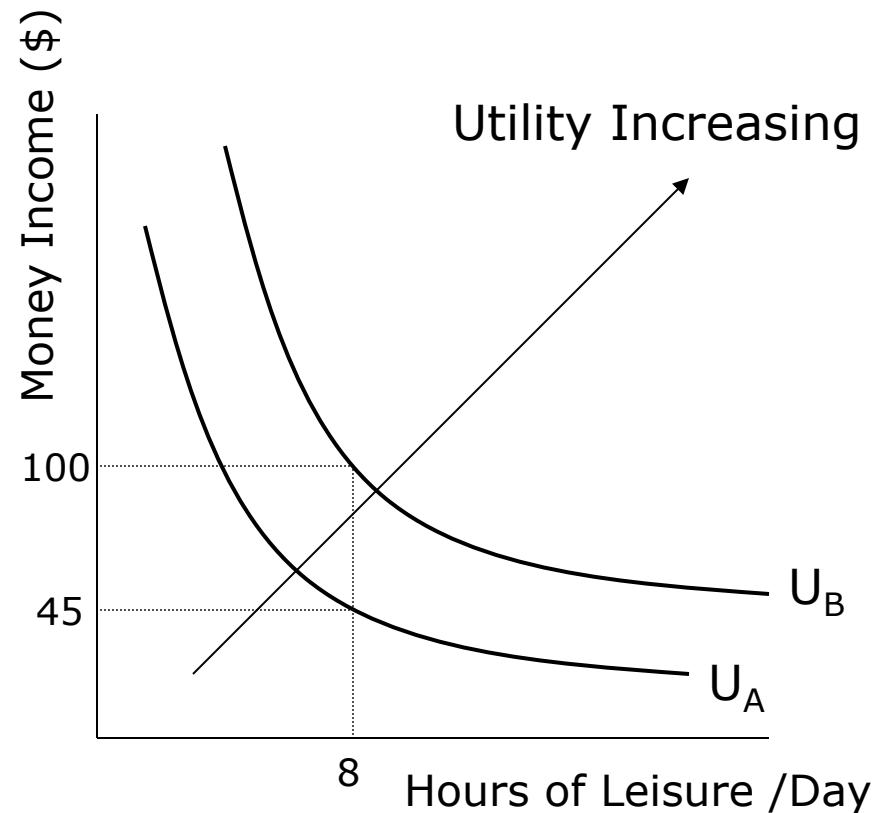
- **Assume** people can allocate their time between two activities: work (labour) and leisure
  - $T$  = total discretionary time (net of sleeping, eating, etc.)
  - $L$  = hours of leisure
  - $H = T - L$  = hours of work
- Choosing to work  $T - L$  hours at a given wage (i.e., labour supply) is equivalent to choosing to consume  $L$  hours of leisure
- So we can model **either** individual leisure demand **or** individual labour supply. They're two sides of the same coin.
- We will model as leisure demand. Allows us to use all of our theory of consumer demand from ECON 301.

# What we assume about preferences

- **Assume** there are two categories of goods that people like:
  - Leisure
  - Consumption goods – things you can buy with money
  
- **Assume** price of consumption goods is **fixed**
  - ⇒ Can compress all consumption goods into a single index measured by money income
  - ⇒ With price of consumption goods fixed, more money income means you can consume more goods
  
- We can represent preferences by an indifference curve

# Properties of indifference curves

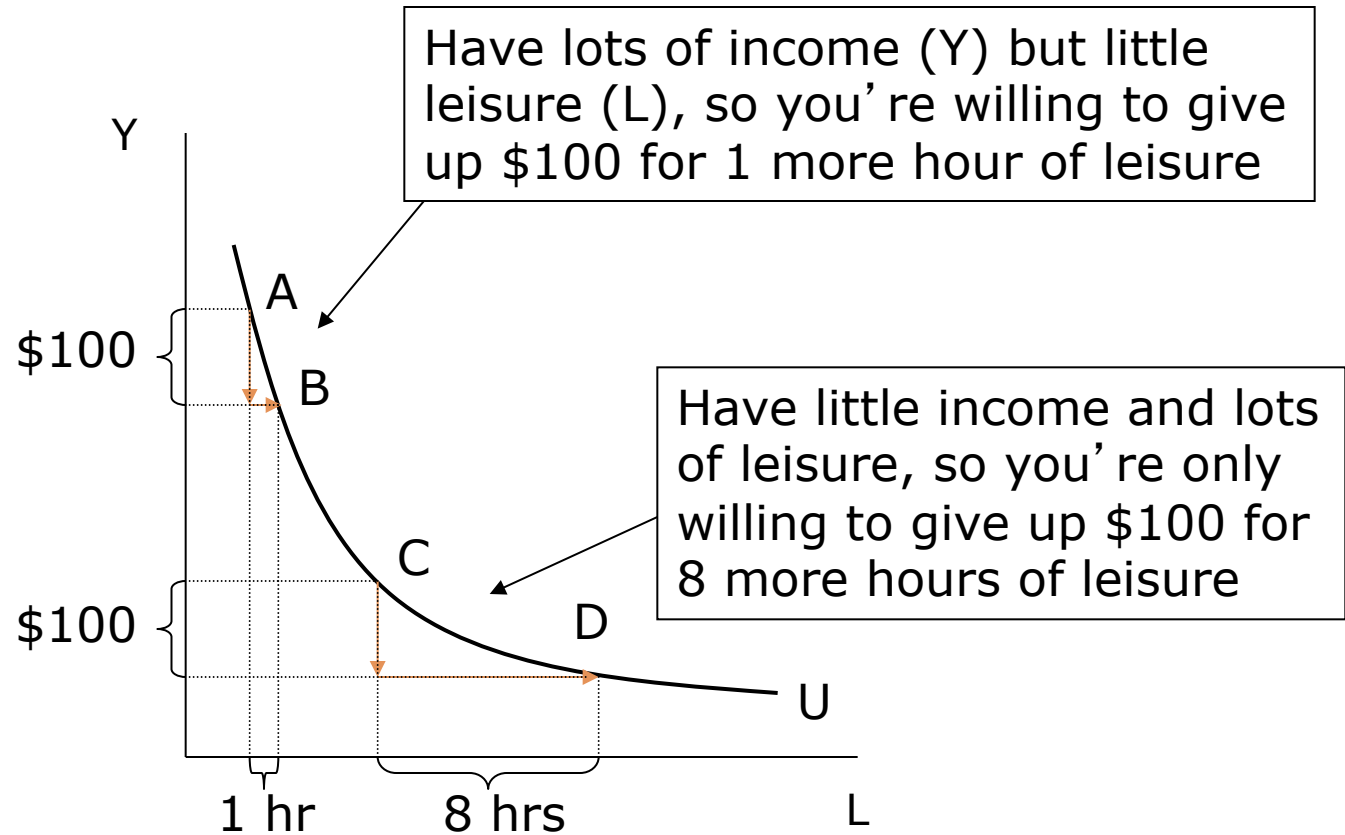
- All points along an indifference curve generate the same level of utility
- Indifference curves have a negative slope
  - ▣ If money income decreases, leisure must increase to keep utility constant
- More is better (these are “goods”, local non-satiation) implies utility level  $U_B$  represents more happiness than  $U_A$
- Indifference curves do not intersect (transitivity)



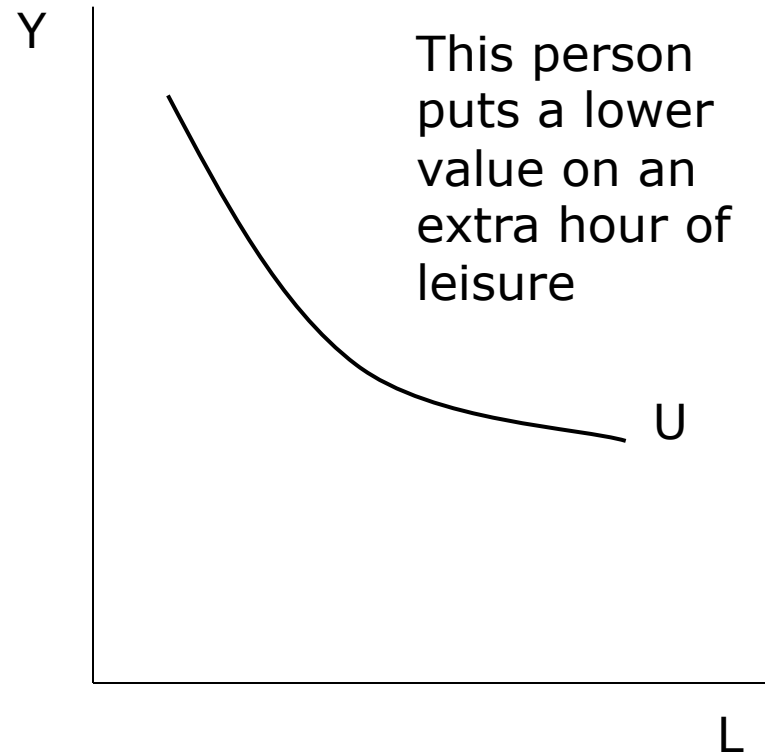
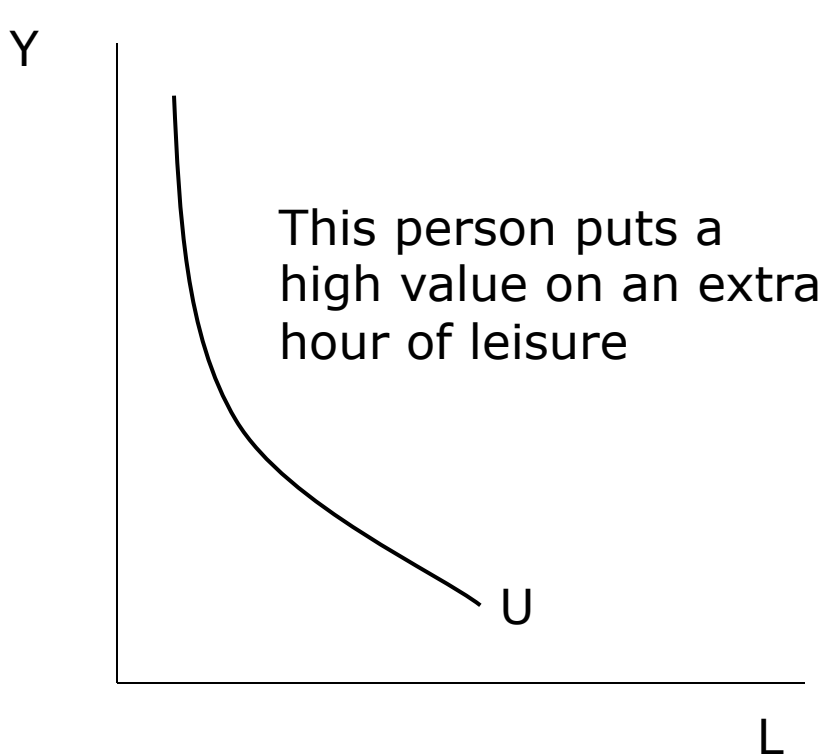


# Indifference curves are convex

The slope of the indifference curve is the marginal rate of substitution between L and Y – the rate at which you're willing to trade off L vs. Y and maintain your level of utility.



# Preferences are heterogeneous



# The budget constraint

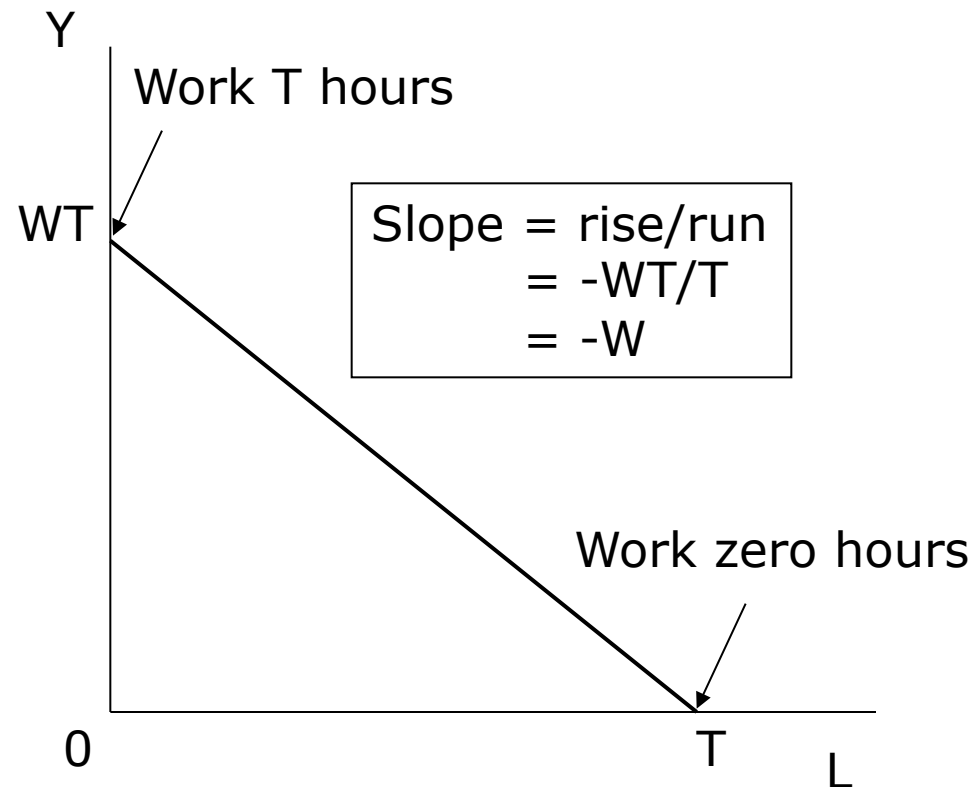
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- Our decision-maker faces a budget constraint
- It defines the set of feasible allocations of consumption goods (or money income,  $Y$ ) and leisure ( $L$ )

# The budget constraint

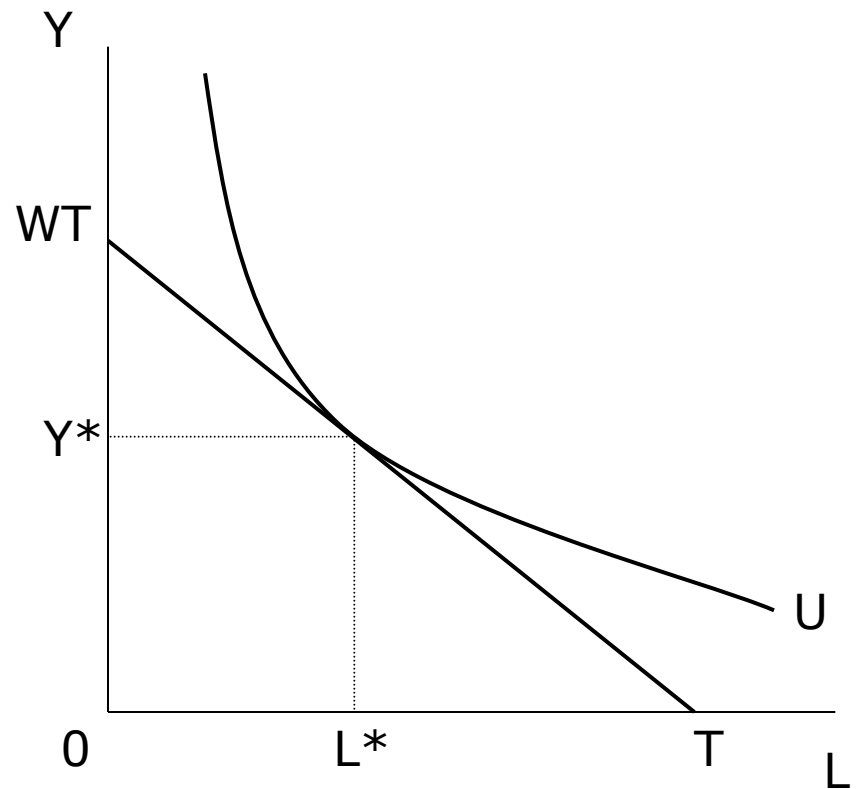
- Assume our decision maker has no non-labour income
- Recall  $T$  is total discretionary time (can be allocated to leisure or work,  $T = L + H$ )
- If you work zero hours,  $L = T$ , and  $Y = 0$
- If you work  $T$  hours,  $L=0$ , and  $Y = WT$

$$\text{Wage Rate} = W = \frac{\Delta Y}{\Delta H}$$

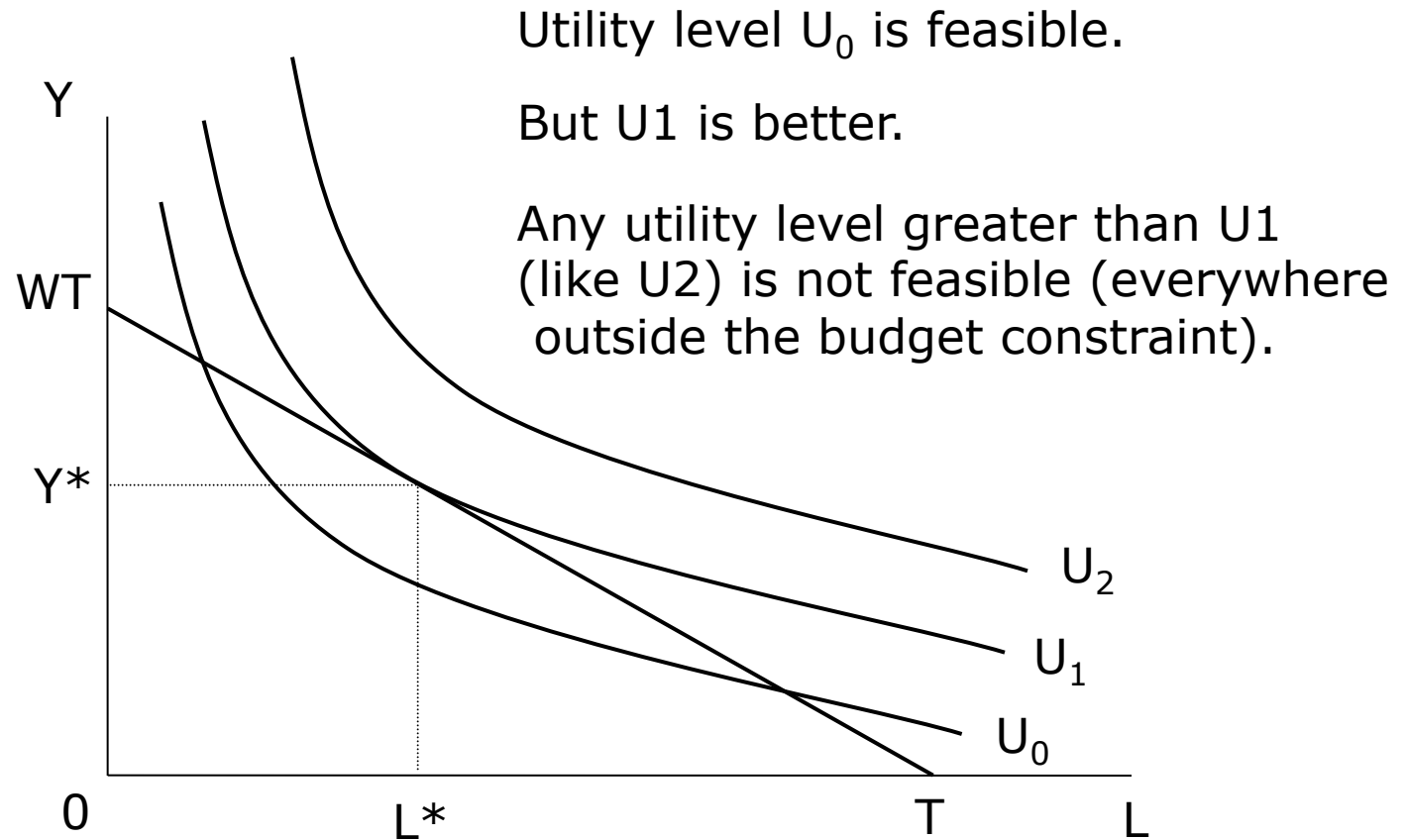


# The optimal allocation

- Just like in the theory of consumer choice, the optimal allocation occurs at a **tangency** between the budget constraint and the indifference curve
- At this point, the rate at which you are **willing** to trade off leisure and consumption equals the rate at which you are **able** to trade them off ( $MRS = W$ )



# Why is this an optimum?

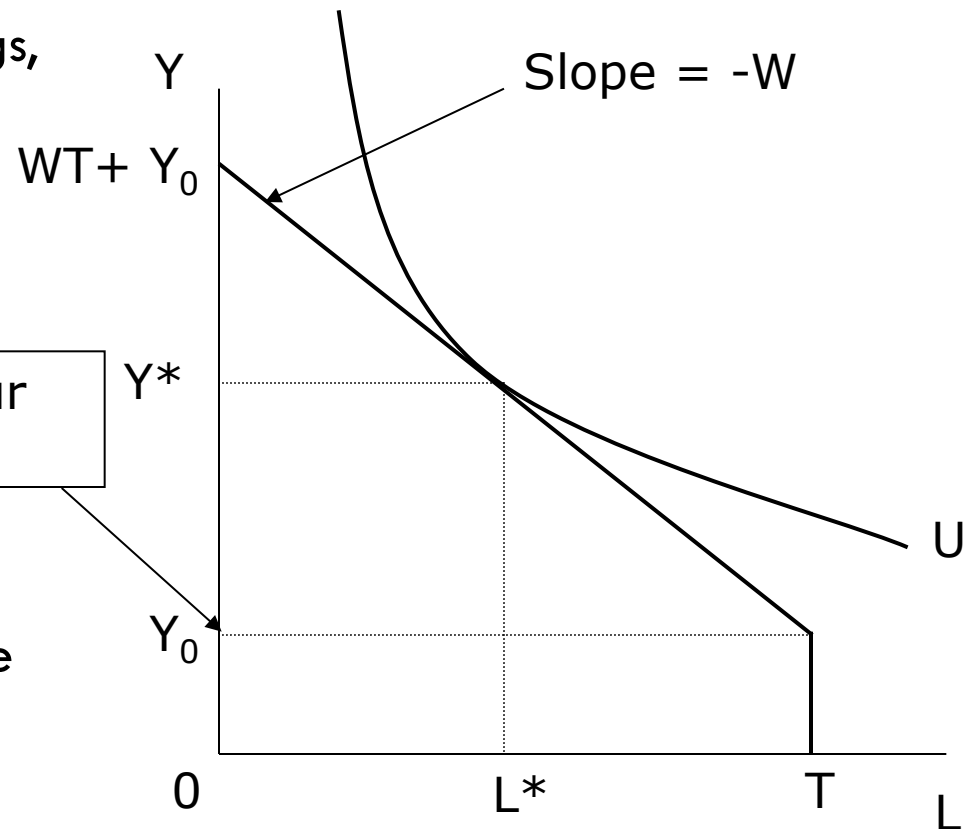


# Non-labour income

- Property income, investment income, alimony, lottery winnings, etc.
- Any income received from sources other than work

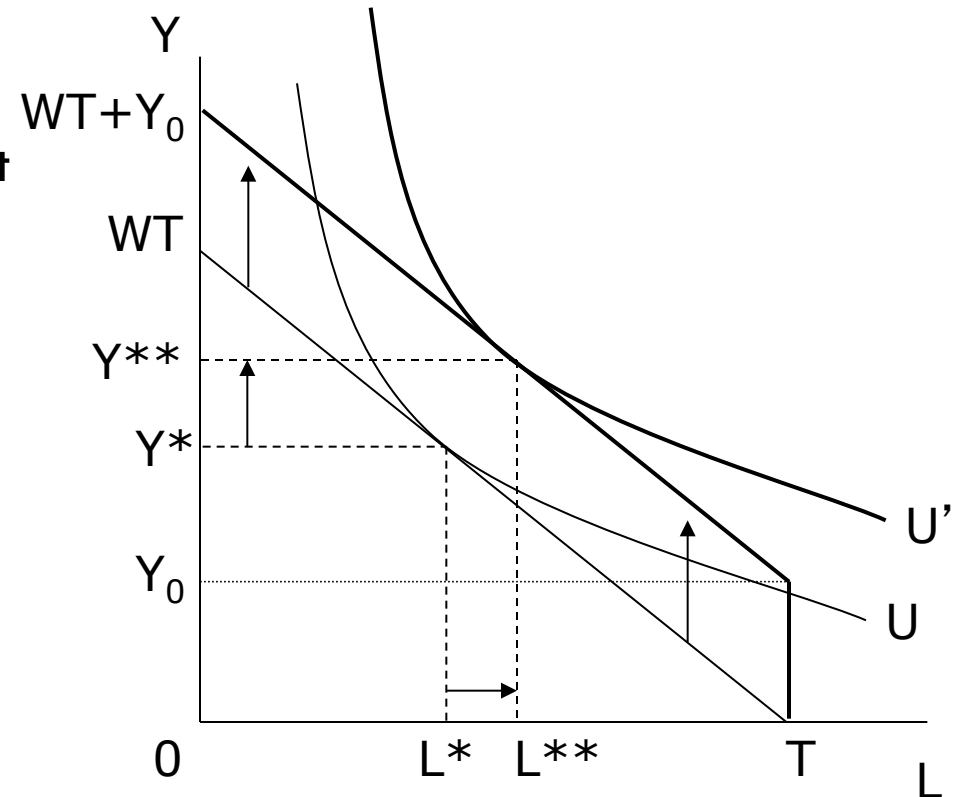
Non-labour income  $Y_0$

- Changes the set of feasible allocations, but leaves the slope of the budget constraint unchanged



# An increase in non-labour income generates a pure income effect

- Suppose Sarah is initially at an optimum  $(Y^*, L^*)$  with no non-labour income
- Then she inherits investments that generate  $Y_0$  dollars of income
- This generates a **pure income effect**
- Consume more of all normal goods, including leisure
- she reduces her hours of work
- She's better off ( $U' > U$ )





# Changing the wage rate

- Wage changes generate both income and substitution effects
  - Income effect:  $\Delta$  in hours worked due to  $\Delta$  in income, holding wages (price of leisure) and preferences constant
    - $W \uparrow \Rightarrow \text{income} \uparrow \Rightarrow \text{consume more leisure because it's a normal good}$
  - Substitution effect:  $\Delta$  in hours worked due to change in  $W$  (price of leisure), holding income and preferences constant
    - $W \uparrow \Rightarrow \text{price of leisure} \uparrow \Rightarrow \text{consume less leisure}$
- Theory doesn't tell us which one dominates
  - When  $W \uparrow$ ,  $H$  (and  $L=T-H$ ) can rise or fall
- Can we isolate these effects graphically?

# A wage increase where the **substitution** effect dominates

## The observed change

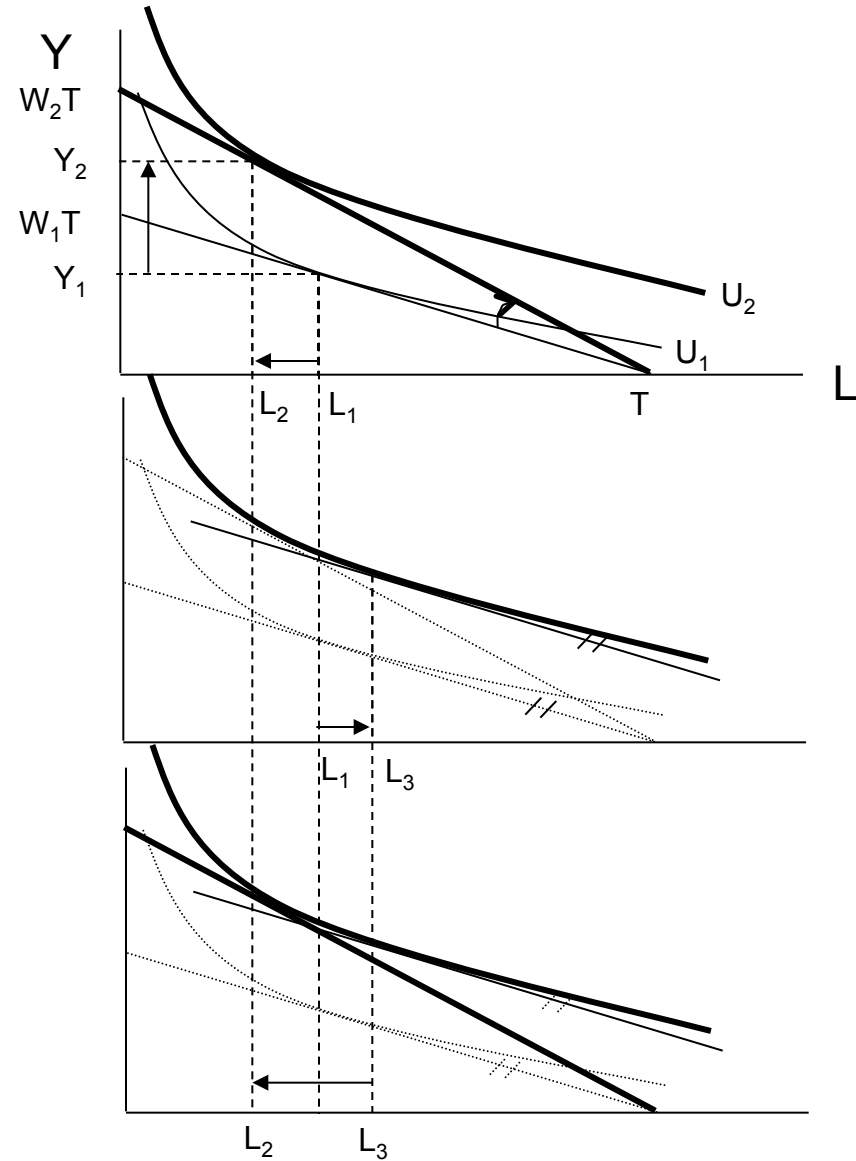
(total effect of wage change from  $W_1$  to  $W_2$ )

## The income effect

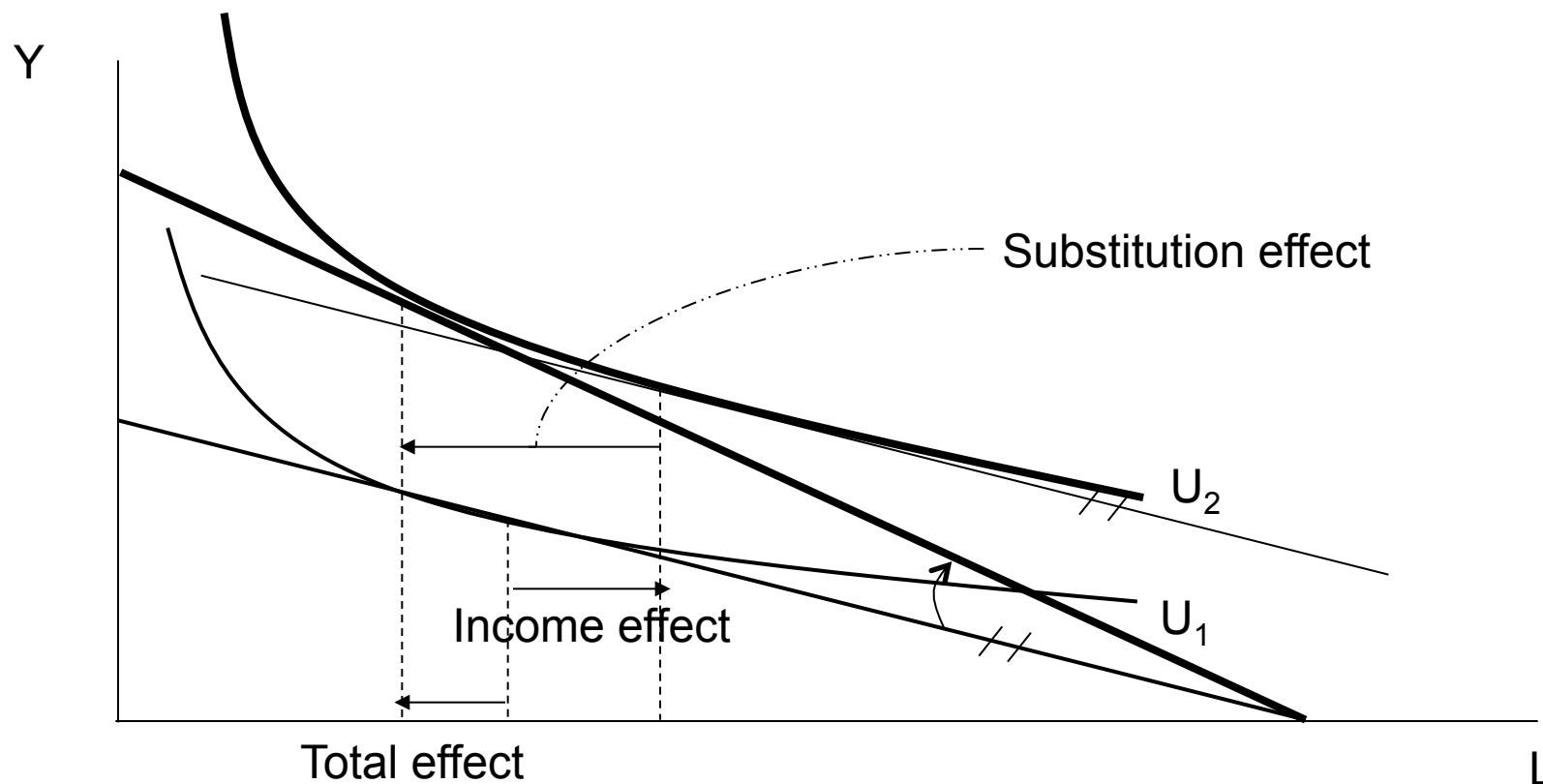
(response to change in income, holding  $W$  and preferences constant)

## The substitution effect

(response to change in price of leisure, holding income and preferences constant)



# Isolating income and substitution effects: when the substitution effect dominates

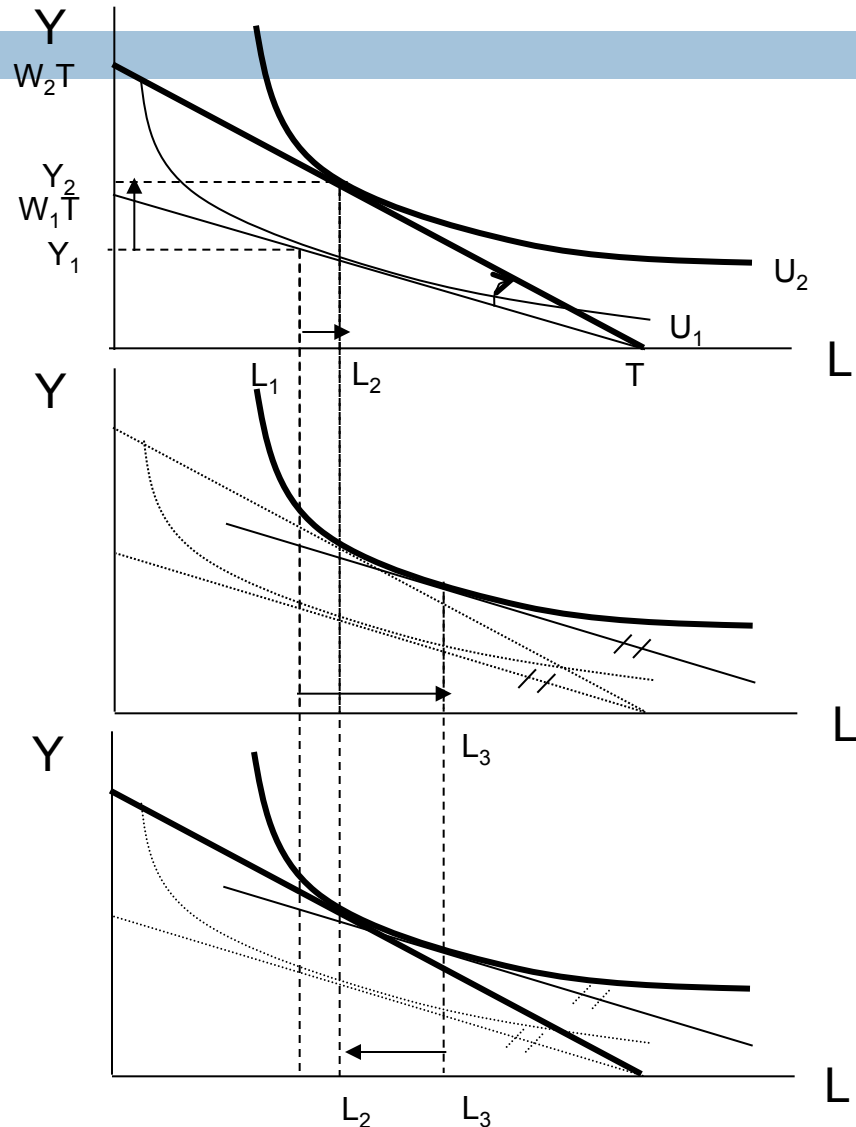


# A wage increase where the **income** effect dominates

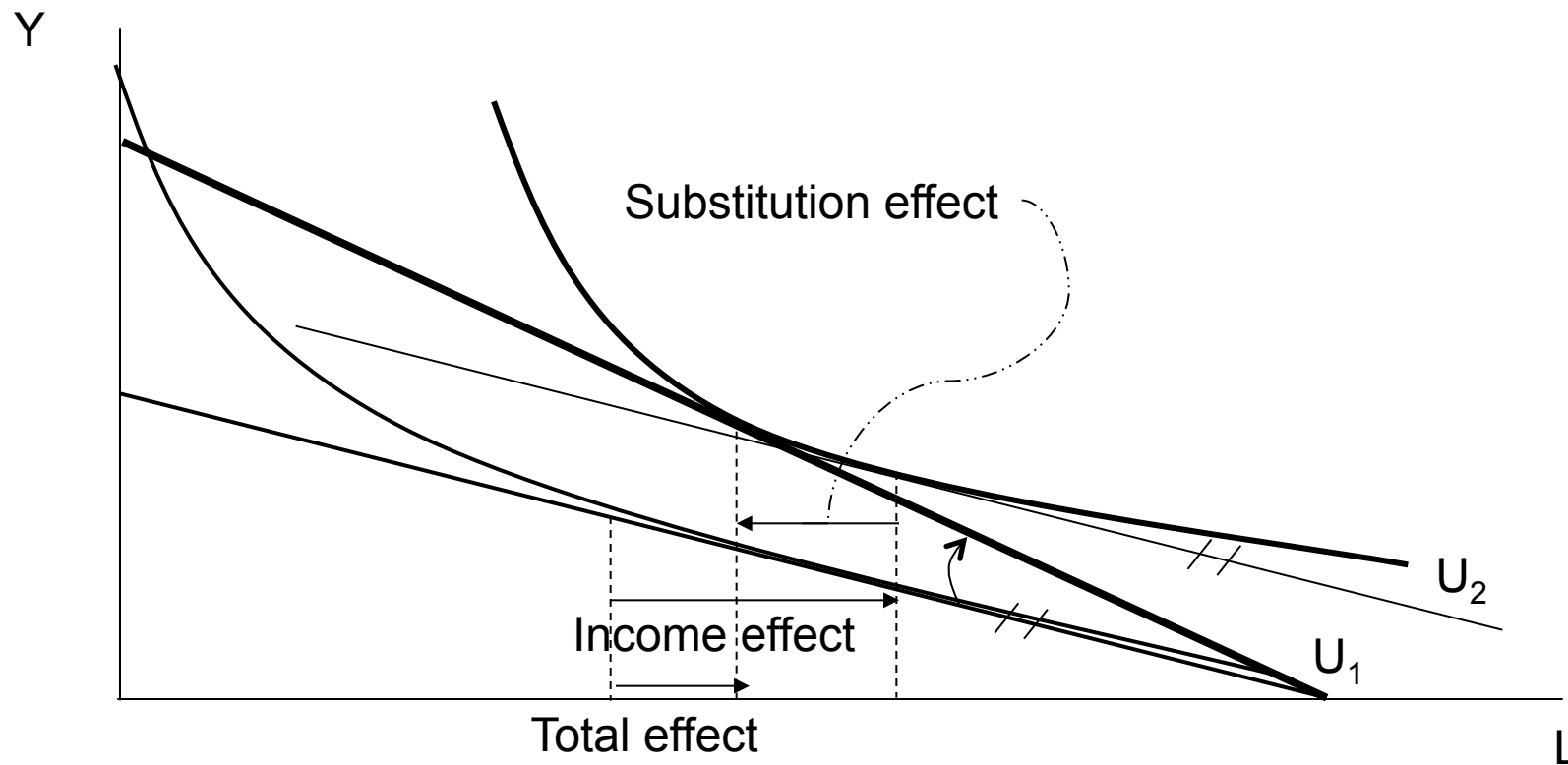
The observed change  
(total effect)

The income effect  
(response to change in income, holding  $W$  and preferences constant)

The substitution effect  
(response to change in price of leisure, holding income and preferences constant)



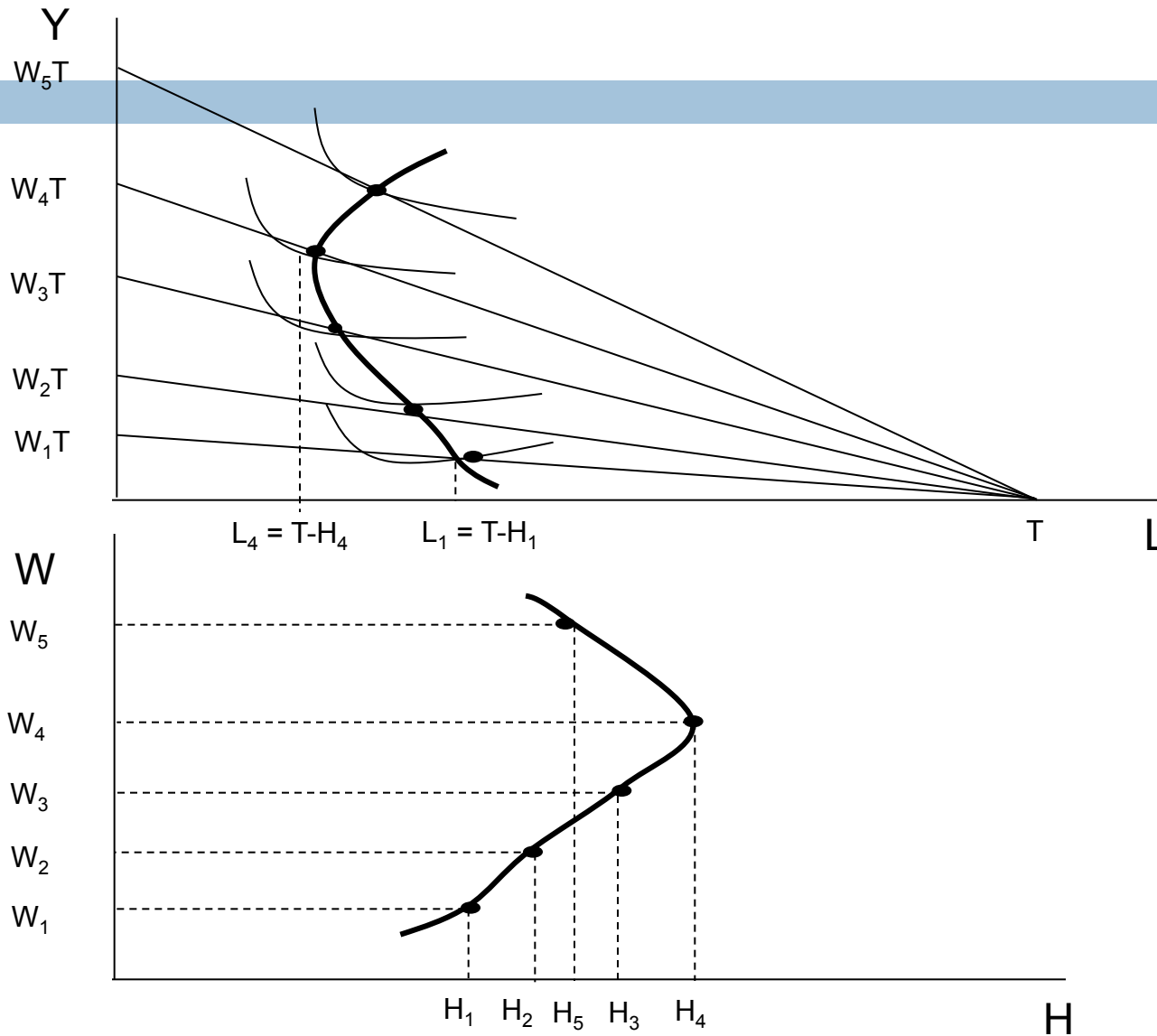
# Isolating income and substitution effects: when the income effect dominates



# Tracing out the individual labour supply curve

- Goal: identify the relationship between an individual's desired hours of work and the wage
- Use our theory of leisure-consumption choice
  - ▣ Look at hours chosen at different wage rates & connect the dots

# Deriving individual labour supply

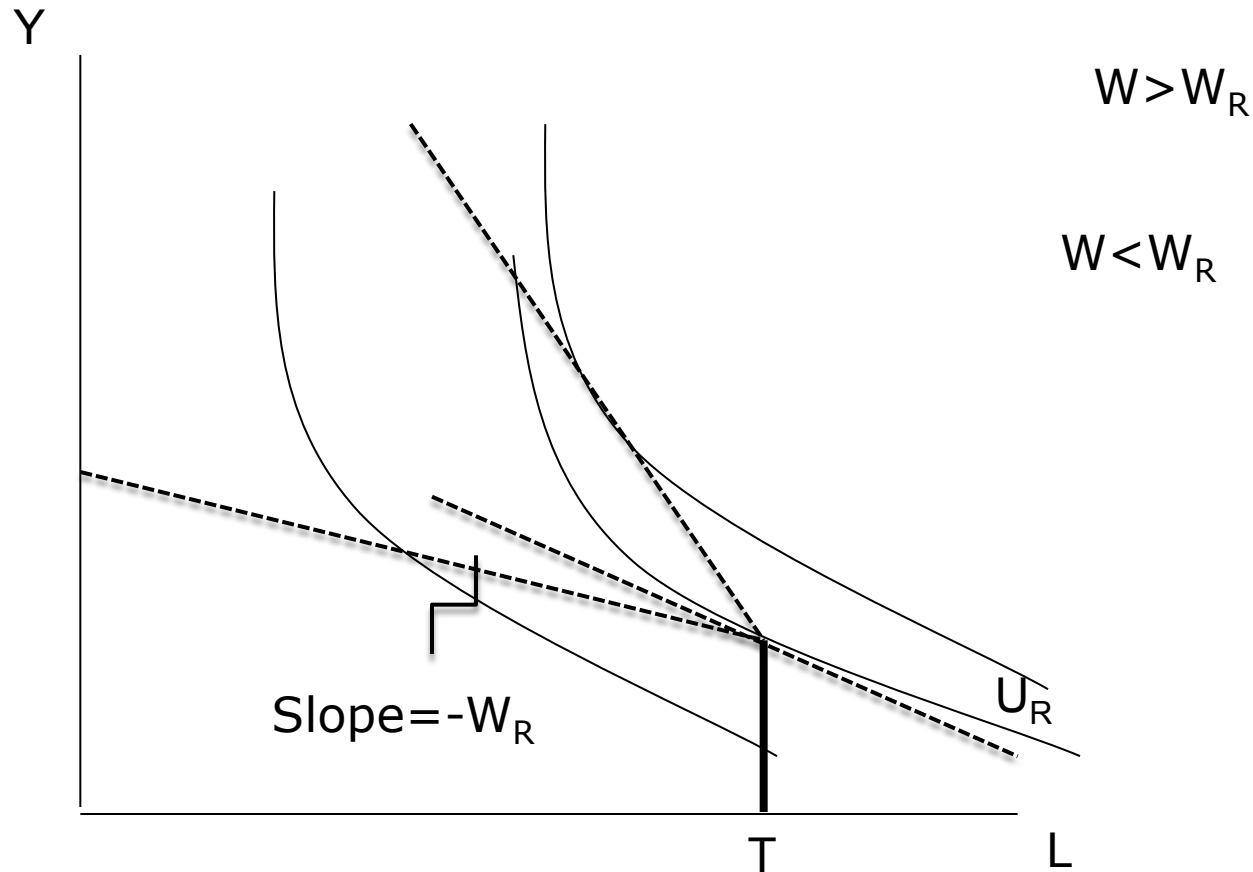


# The participation decision

- Some people choose not to work at the offered wage  $W$  because the MU from one more hour of leisure exceeds the MU of  $W$  dollars of consumption
- ⇒ If a person who is not working puts a value of  $\$X$  on an extra hour of leisure, they will only work if  $W > X$ .
  - We say that  $\$X$  is this person's **reservation wage**: the lowest wage at which they are willing to work, denoted  $W_R$



# Showing the reservation wage graphically



# Empirical Evidence

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The textbook provides a good discussion on the empirical evidence with respect to labour supply. Please make sure that you are familiar with it.

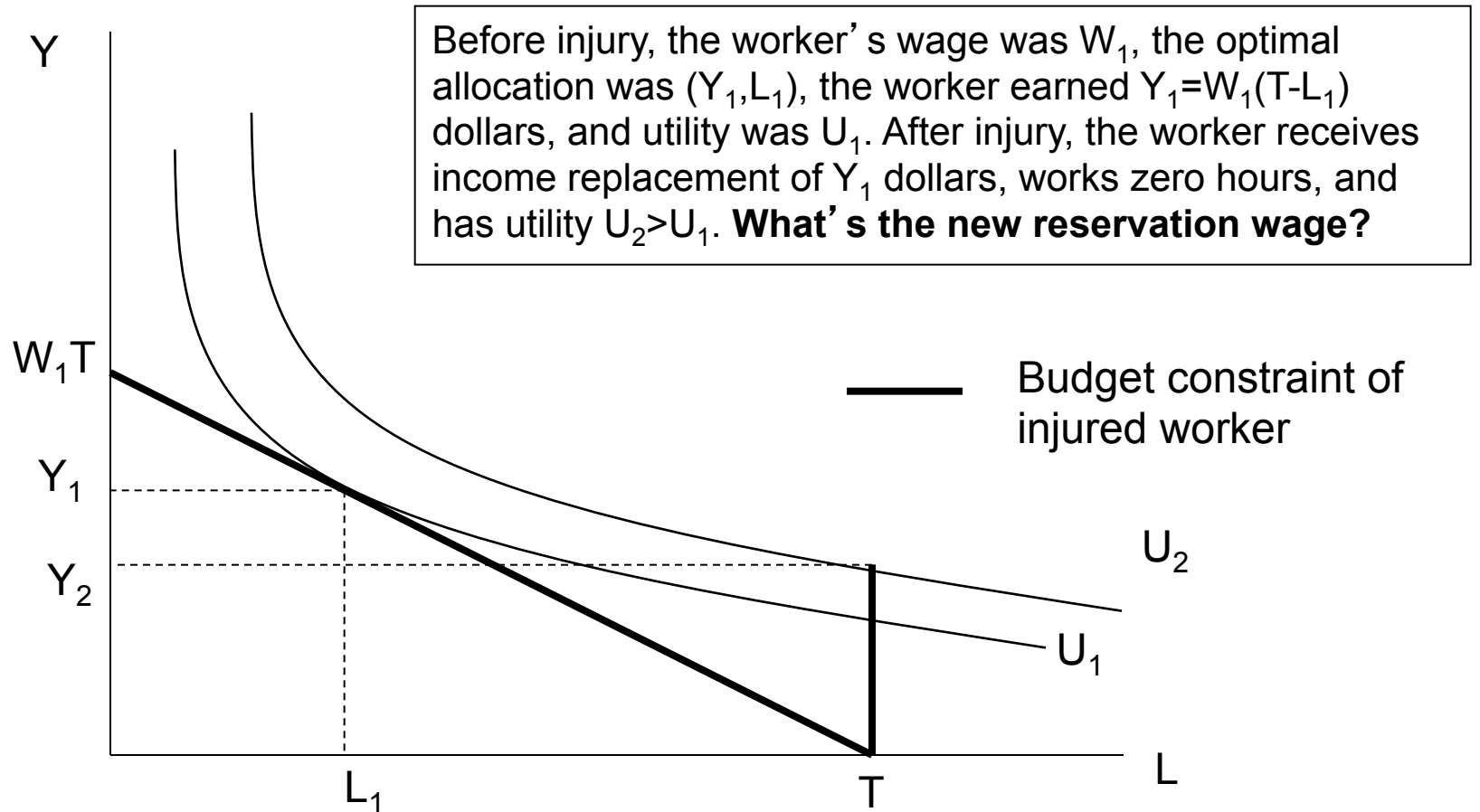
# Policy Applications

- Many government programs (taxes, transfers, etc.) affect the labour supply of individuals
  - ▣ E.g., income taxes, payroll taxes, EI, worker's compensation, etc.
- We can analyze the labour supply response to such policies using the leisure-consumption choice model
- In general, policies affect the worker's budget constraint, not preferences

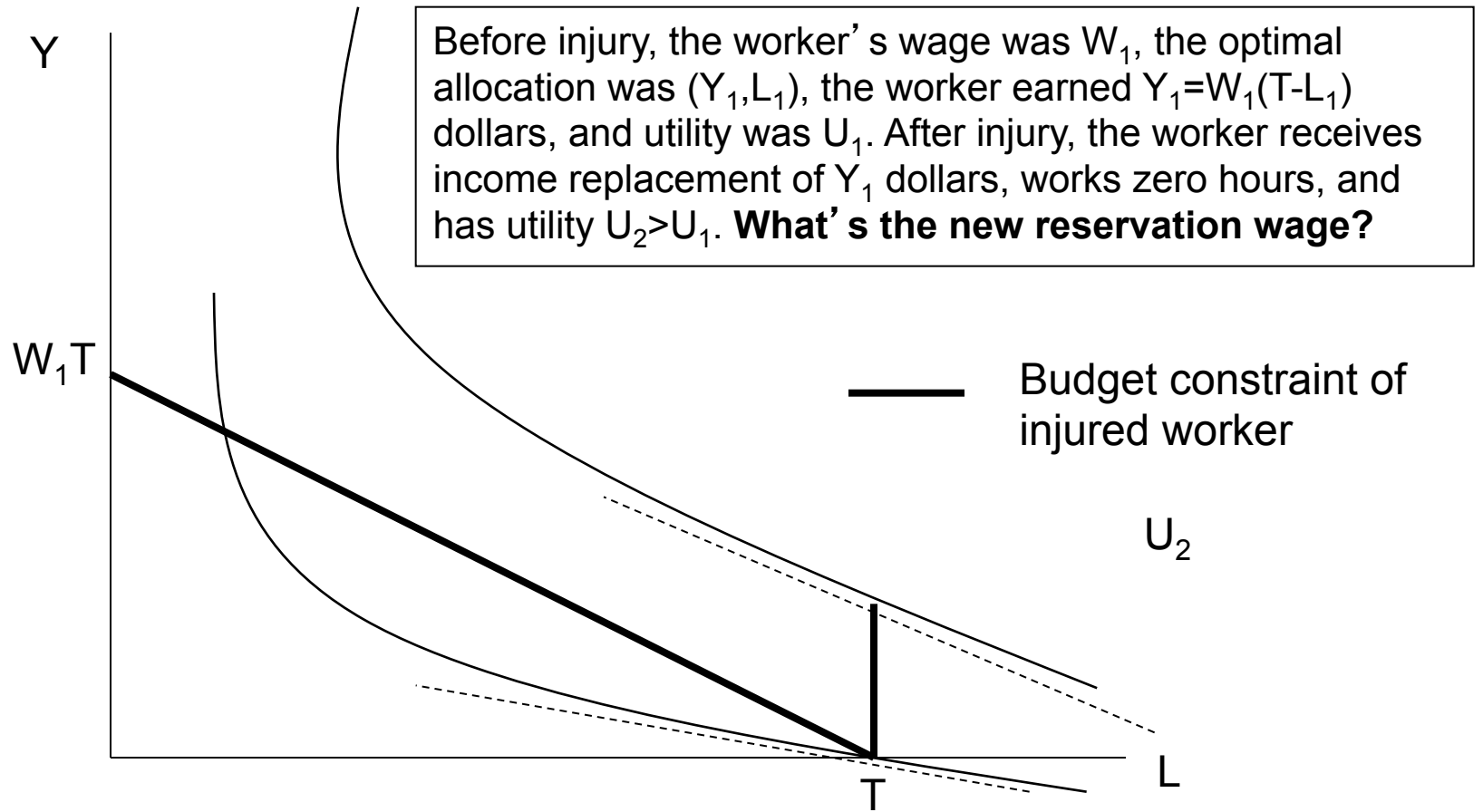
# Budget constraints with “spikes”

- Some policies compensate individuals who are unable to work
  - EI: replace (some) lost earnings due to layoff
  - Worker’s compensation: replace (some) lost earnings due to injury/disability
- We call these **income replacement** programs
- They only pay benefits to those who are not working
  - Creates a “spike” in the budget constraint
- Example: consider a workers’ compensation program that pays injured workers 100% of their pre-injury earnings if they are unable to work (work zero hours), but pays them \$0 if they work even 1 hour.
- How does this affect the incentive to return to work?
- Can we change the program to improve incentives?

# A very generous worker's compensation program



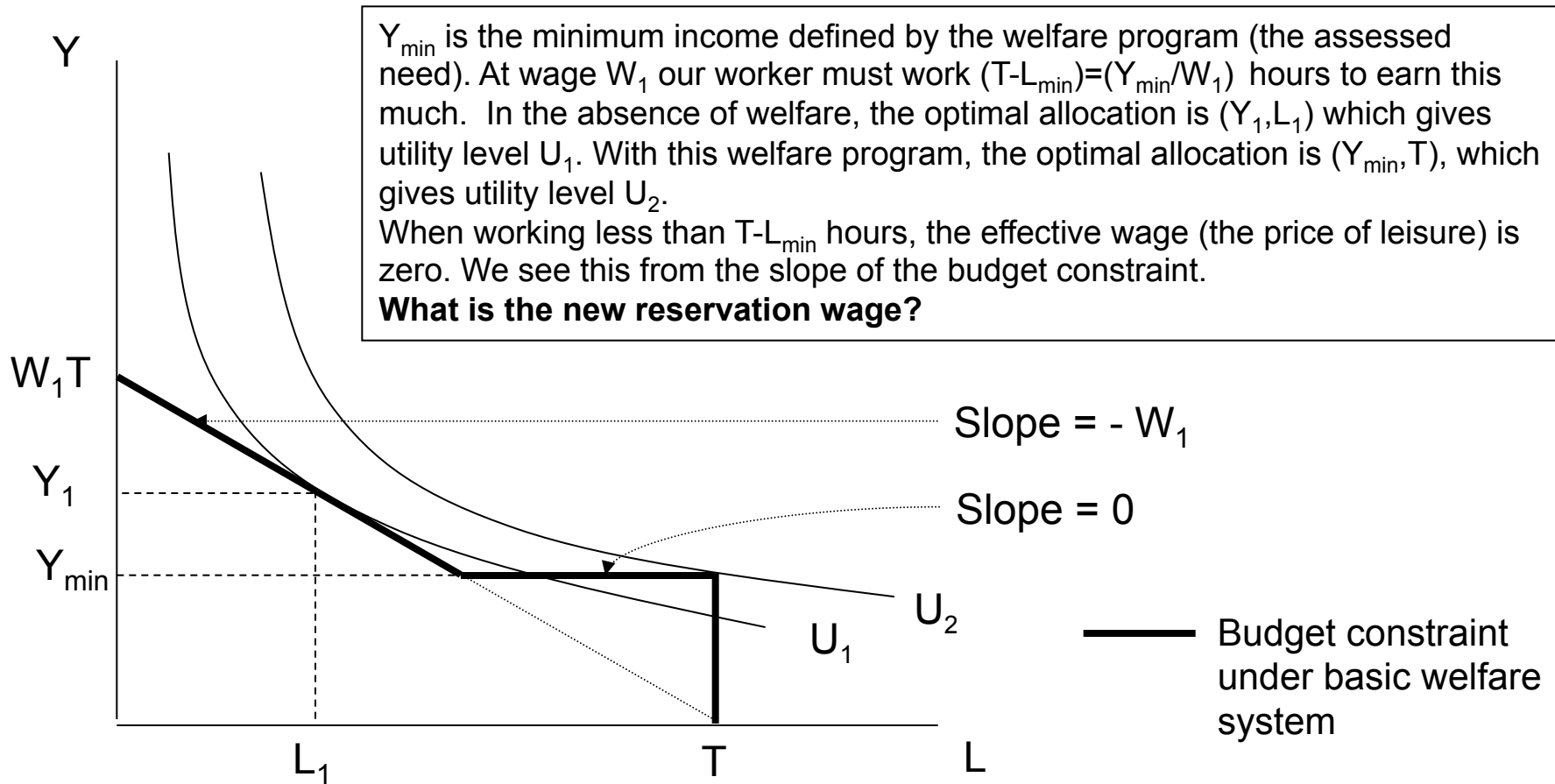
# A very generous worker's compensation program



# Programs with a zero effective wage

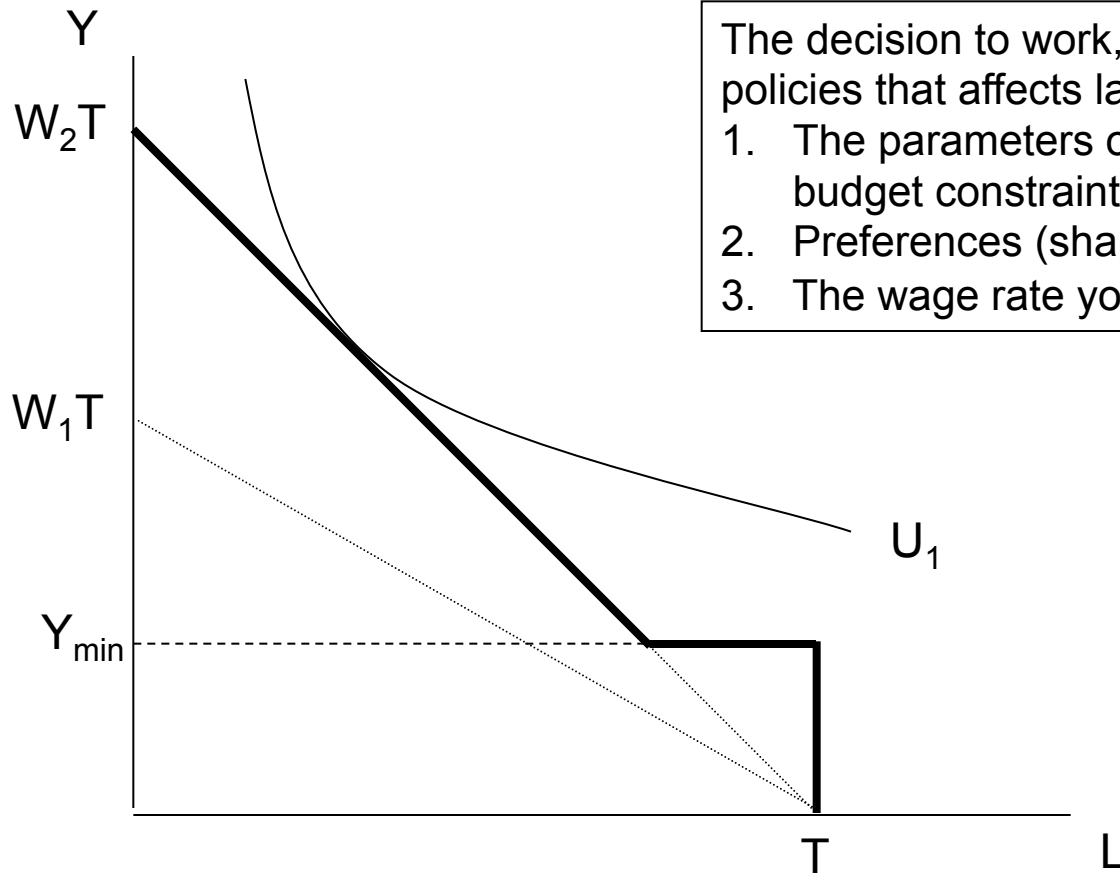
- Some government programs (e.g., **welfare** or **income assistance**) are designed to guarantee a minimum level of income
- Minimum is based on assessed need (depends on if you're married/not, have kids, how many, etc.)
- If you are eligible, welfare pays:  
     $\text{benefit} = \text{need} - \text{earnings}$
- If you earn less than your assessed need, your effective wage rate is zero
  - ▣ If earn \$1 from working, you receive \$1 less in welfare benefits
  - ▣ Makes price of leisure **zero**
- We call the dollar-for-dollar reduction in welfare benefits when you work a 100% **clawback**

# A basic welfare system



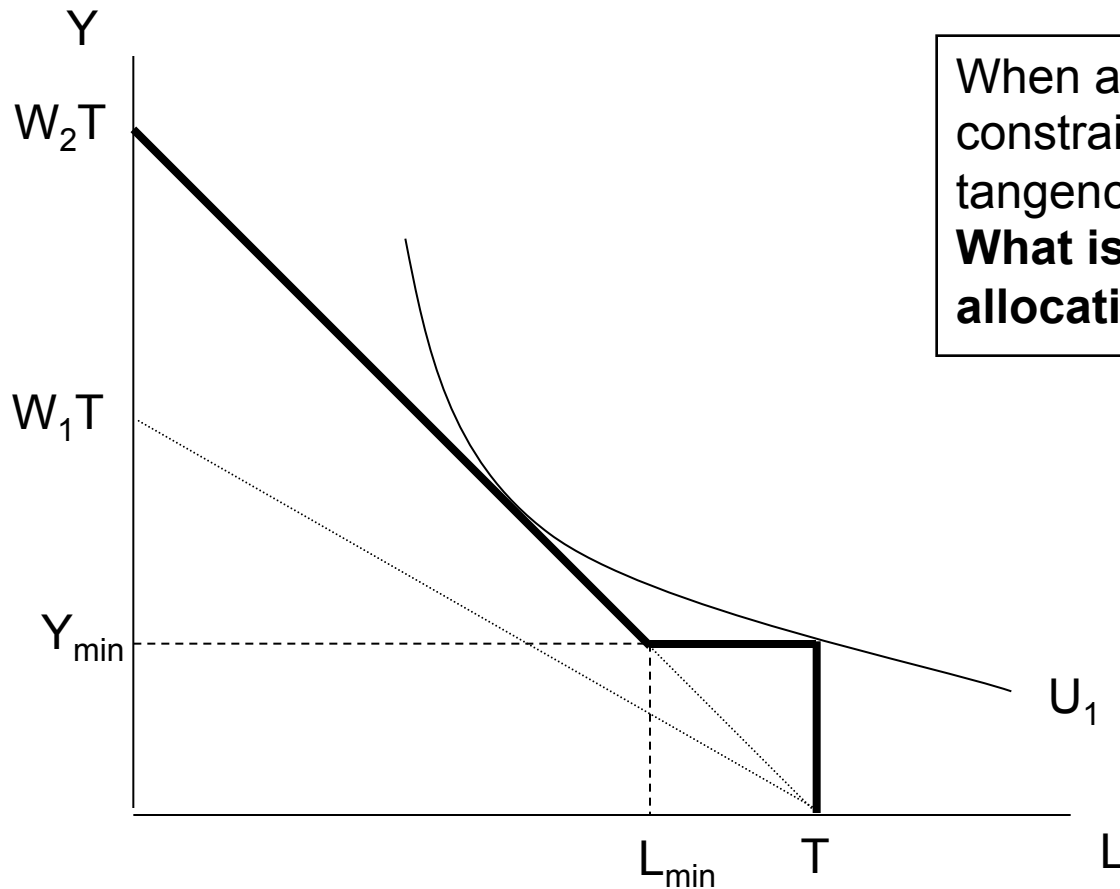


# But some people work, right?



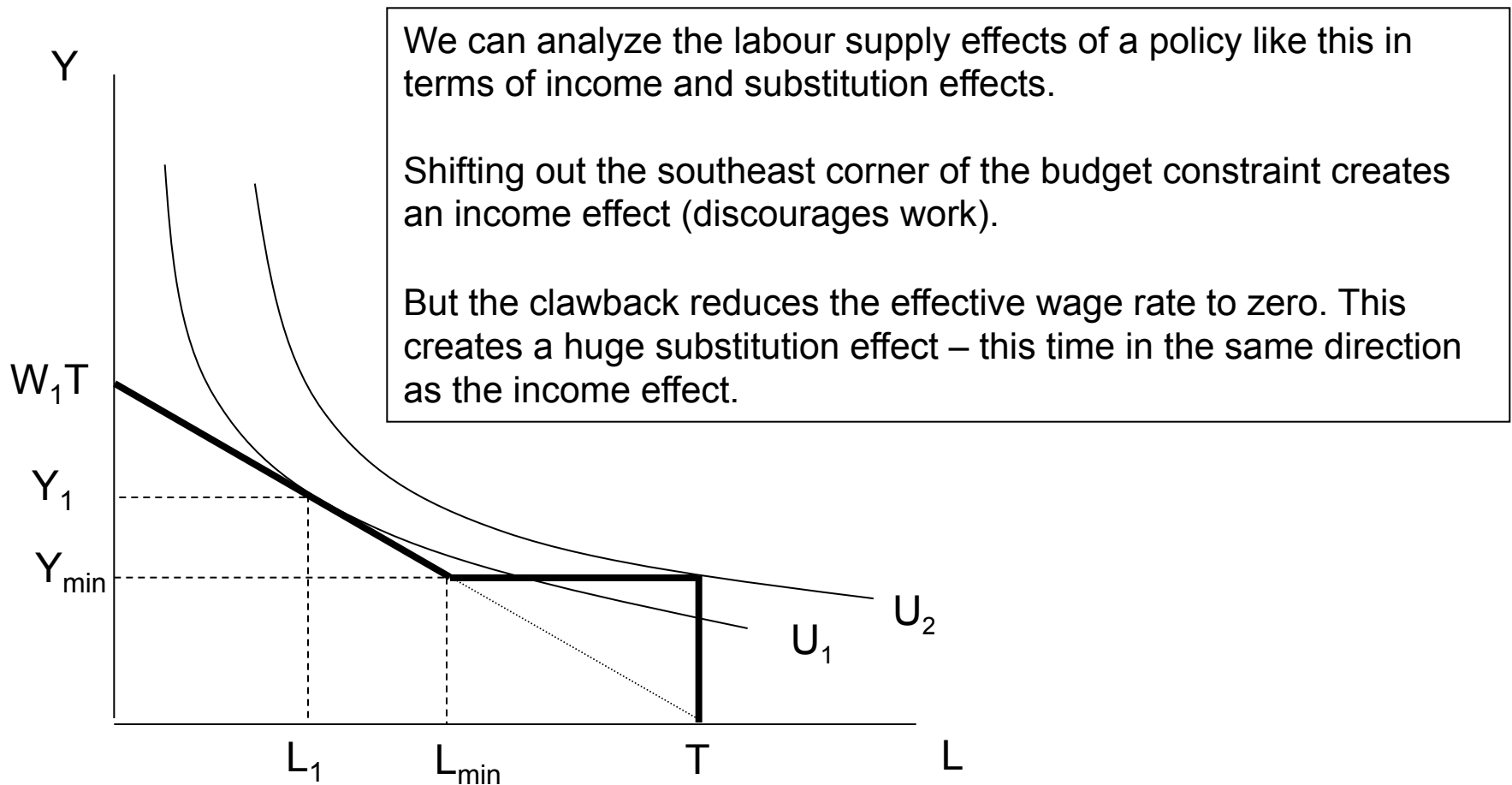
- The decision to work, under ANY set of policies that affects labour supply, depends on:
1. The parameters of the policy (i.e., shape of the budget constraint)
  2. Preferences (shape of indifference curve)
  3. The wage rate you can earn ( $W_1$  vs.  $W_2$ )

# An aside: convex budget constraints make for multiple optima



When a policy makes the budget constraint convex, then multiple tangencies are possible.  
**What is the optimal allocation?**

# Income and substitution effects from a welfare program



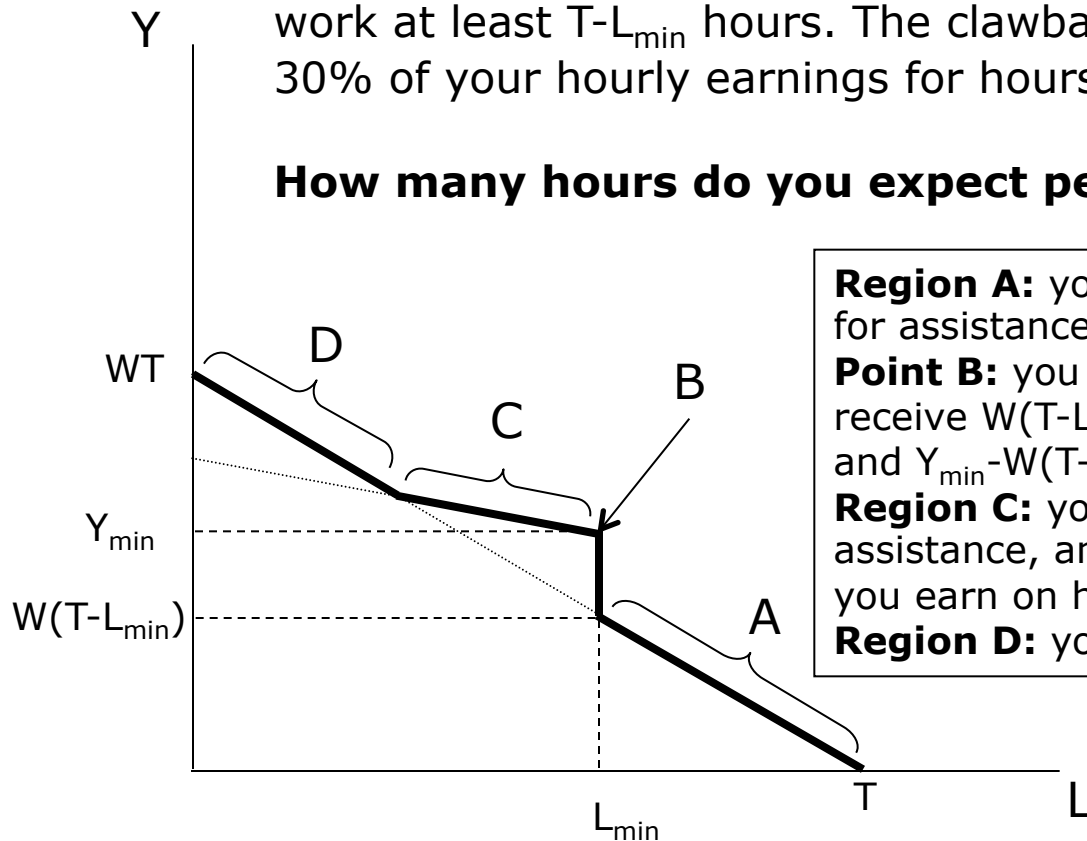
# Welfare Reform

- Basic welfare programs create big disincentives to work
- This has prompted governments to explore welfare reform: changes that reduce the disincentives to work

# Welfare reform

Here, the assessed need is  $Y_{\min}$ . To qualify for assistance, you have to work at least  $T-L_{\min}$  hours. The clawback rate is 70% (you get to keep 30% of your hourly earnings for hours beyond  $T-L_{\min}$ )

**How many hours do you expect people to work?**



**Region A:** you don't work enough hours to qualify for assistance. Slope =  $-W$ .

**Point B:** you work exactly  $T-L_{\min}$  hours, receive  $W(T-L_{\min})$  dollars from work, and  $Y_{\min}-W(T-L_{\min})$  dollars in assistance.

**Region C:** you work more than  $T-L_{\min}$  hours, receive assistance, and get to keep 30 cents of each dollar you earn on hours in beyond  $T-L_{\min}$ . Slope =  $-(0.3)W$

**Region D:** you opt out of the program. Slope =  $-W$ .

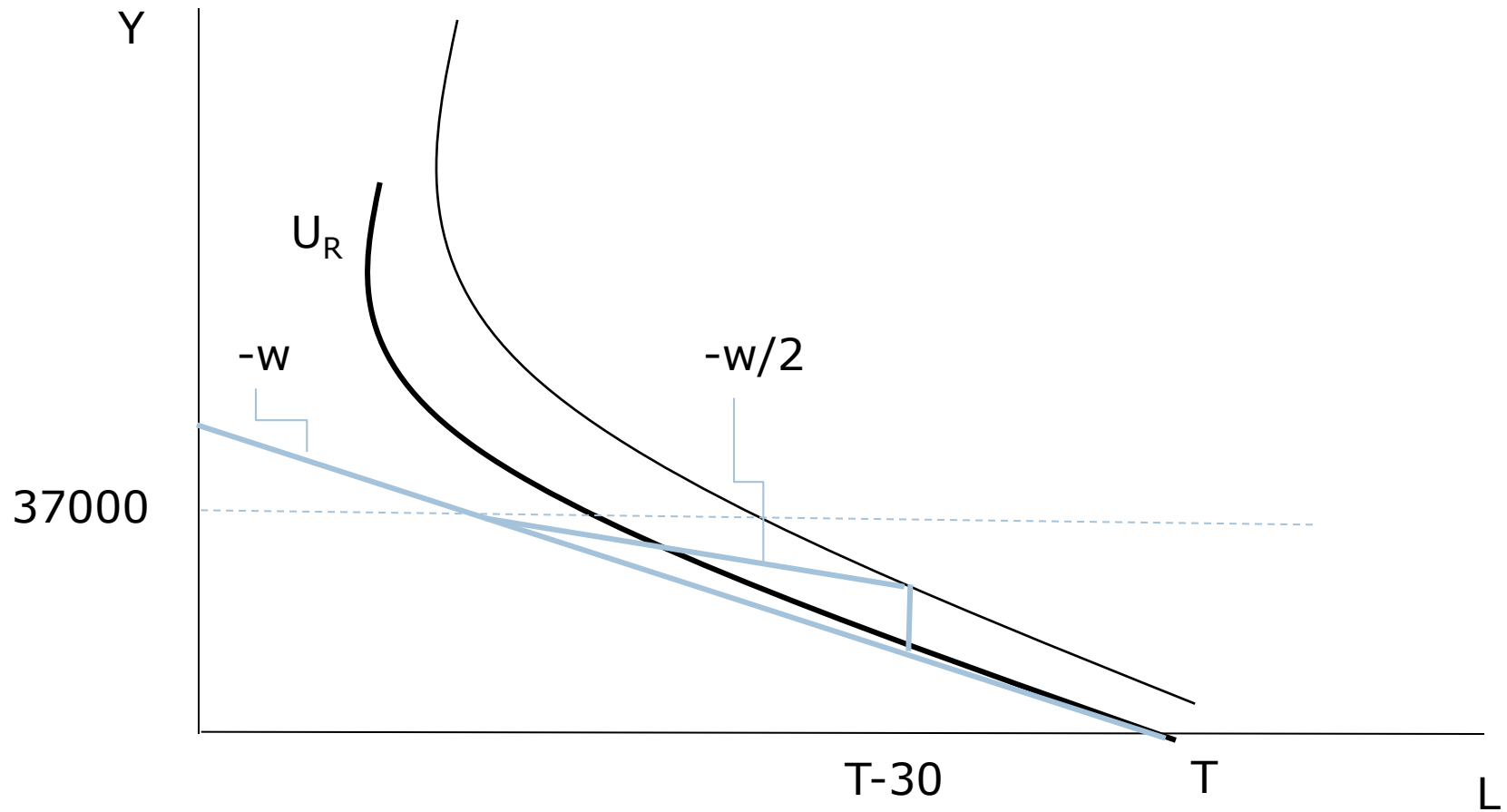
# The Self-Sufficiency Project

- Started in 1991 in Vancouver and rural New Brunswick
- Created a list of long-term (at least 1 year) single parent welfare recipients, randomly selected half for a work subsidy program, that provided a temporary, generous earnings supplement
- To be eligible for supplement, participants had to begin working full time (30+ hours/week) within a year of the offer
- Eligibility lasted for up to three years after finding full time work

# Supplement value

- Supplement  $= (37000 - \text{earnings}) / 2$
- Example: Single parent with 2 children in Vancouver received \$17111 annually in welfare in 1991.
- If they obtained a job working 35 hours at \$7 an hour and worked 52 weeks, they earned \$12,740.
- The work subsidy is \$12,130, giving them total earnings of \$24,870.
- In general, most participants faced incomes \$3-\$7,000 higher with the subsidy, compared to welfare.

# The self-sufficiency project





# How did the program affect labour supply?

- Only 30% of those treated switch to working full time, compared to 15% of the control group during the first year of the study.
- Why do you think so many in the treatment group did not take up the program?
- By the time the subsidy was removed, the treatment group had no different employment rates than the control group.
- It seems that the overall effect of the program was to increase the speed at which welfare parents took up FT employment.

# Should this program be adopted?

## Compare costs and benefits

- Total cost of subsidy was less than welfare would have been.
- But, the program also subsidizes individuals who would have started FT work anyway (windfall recipients).
- The 5 year per program group member cost was \$40k for the treatment group and \$37k for the control group (not including admin costs). Might be able to justify the program
- Could lower costs if did a better job targeting those who would have stayed on welfare otherwise.

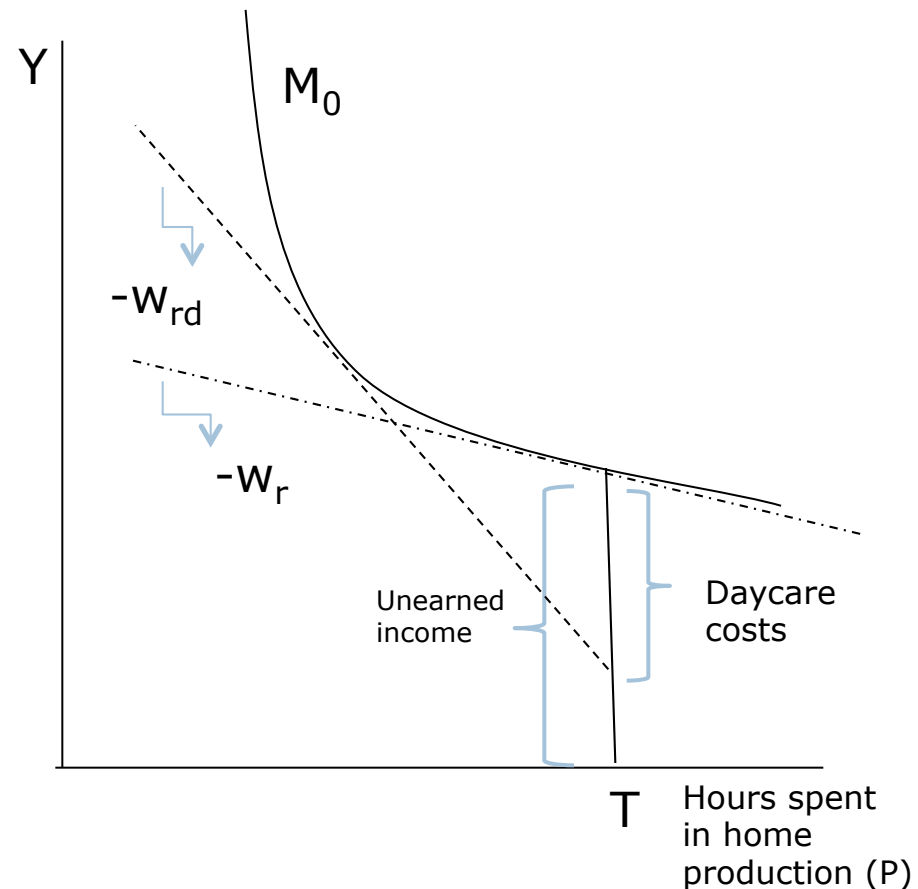
# Daycare costs (fixed)

We can model daycare costs as a fixed cost or a variable cost.

Here we have modeled it as a fixed cost.

Fixed daycare costs increase the reservation wage – makes it less likely that an individual will participate in the market.

Daycare subsidy reduces daycare costs – makes it more likely individual will participate.



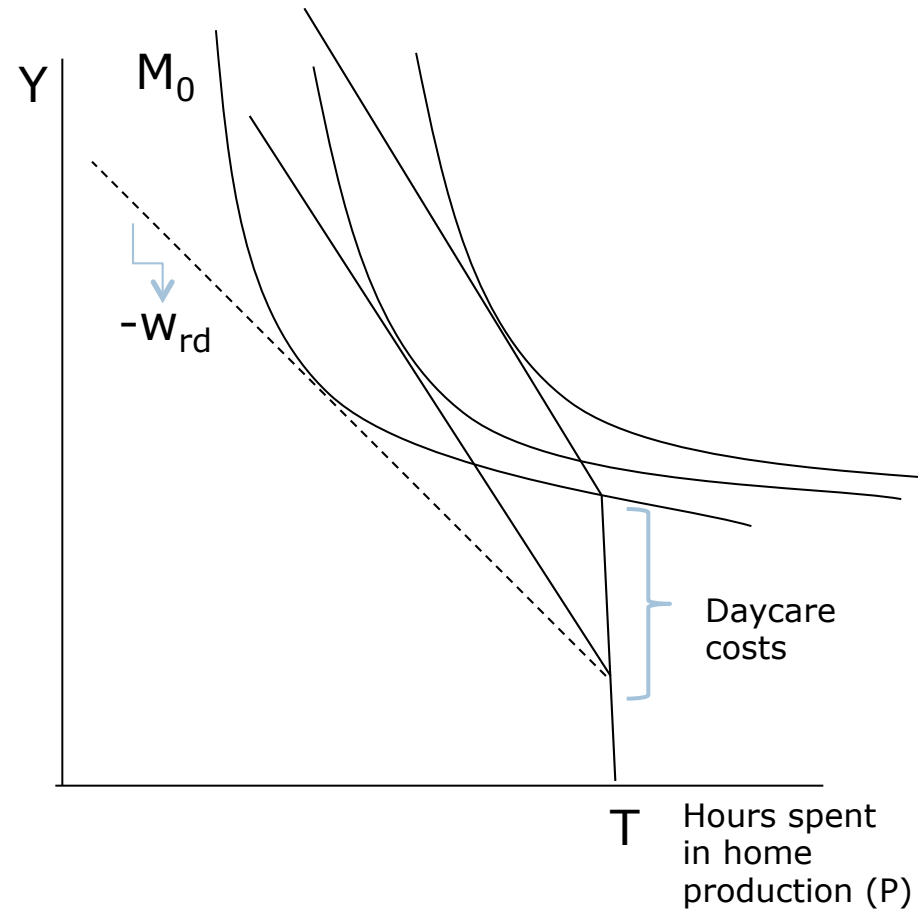
# Daycare subsidies (fixed cost)

In this example, the individual choose to work – offered wage is greater than reservation wage.

What is the effect of a daycare subsidy?

Pure income effect: work less.

What happens to consumption of goods?



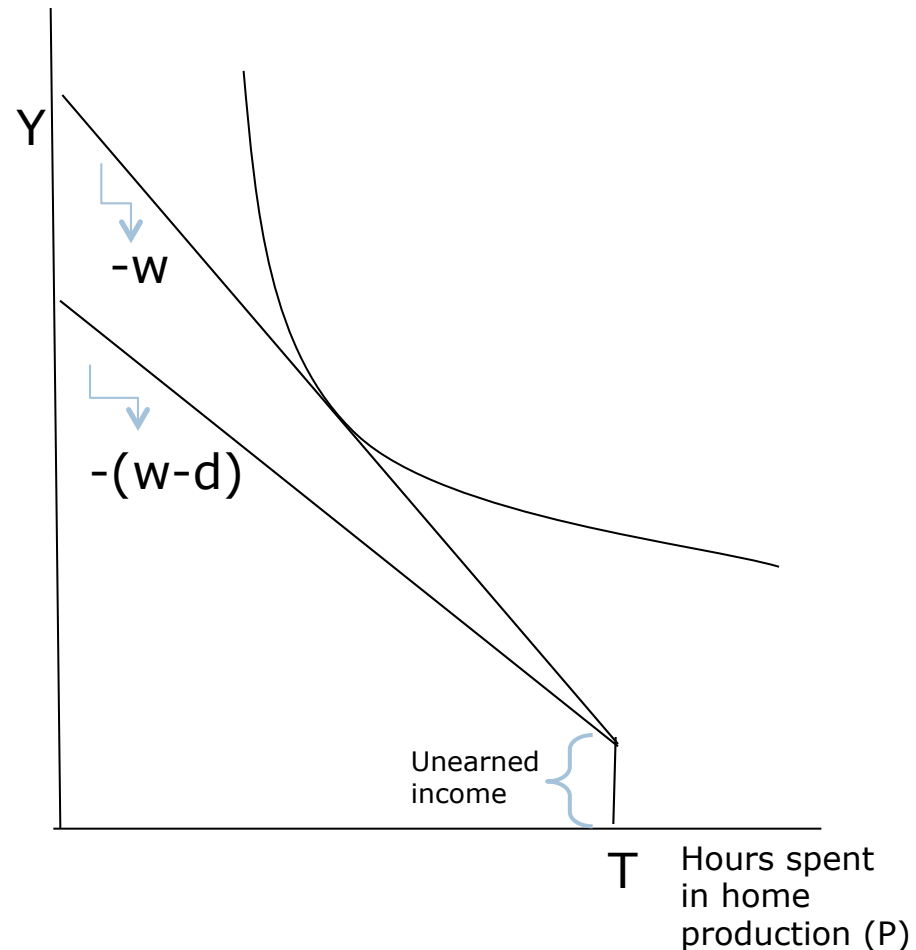
# Daycare costs (variable)

Here we have modeled daycare costs as variable -  $\$d$  per hour.

Variable daycare costs do not affect the reservation wage. They do affect the (after daycare costs) offered wage.

Will have income and substitution effects. Effect on labour supply is ambiguous.

Daycare subsidy will reduce “ $d$ ”; effect on labour supply is ambiguous.



# Quebec's \$5/day child care program

- Subsidized care introduced in September, 1997.
- Phased in over period 1997-2000.
- No income test; universal program.
- Increased labour force participation of women in two-person families with children aged 0-4 by 7.7 percentage points
- Also find that children are worse off in a variety of behavioral and health dimensions, ranging from aggression to motor-social skills to illness.