Household decision-making

Budget constraint: for a given income, the amount of good x and good y the consumer can buy at given prices

- $Y = p_1x + p_2y$

Indifference curve: bundles of goods between which a consumer is indifferent
- That is, gives the same level of utility for the consumer
- Represents consumer preferences
- There are infinitely many indifference curves
- Higher indifference curves are preferred because they imply a higher level of consumption (assumption)
- Indifference curves never cross and are bowed inwards (another assumption)

Marginal rate of substitution (MRS)
- Slope of the indifference curve
- Defined as the rate at which the consumer is willing to trade goods
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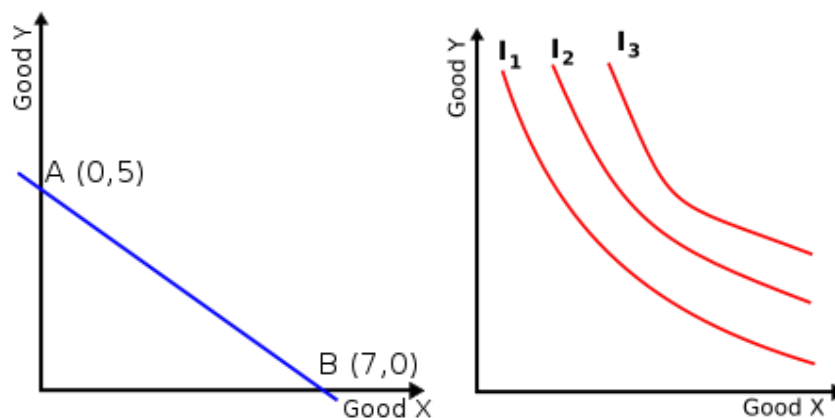
The household's problem is to maximize their utility (indifference curves) subject to their budget constraint. The household consumes at the point where an indifference curve is tangent to their budget constraint.
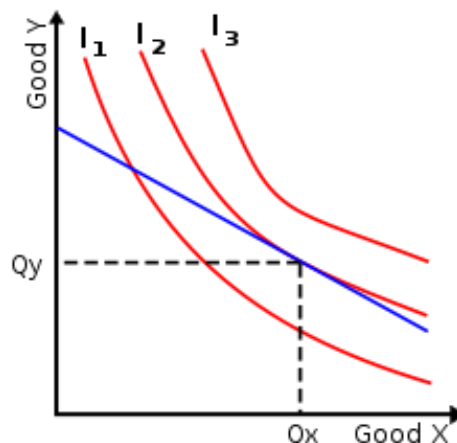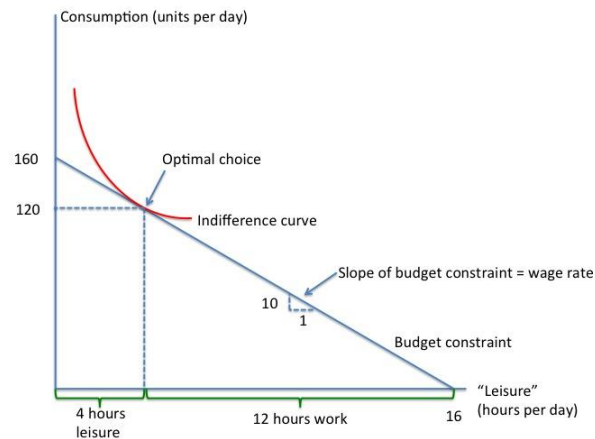

Budget constraints can change due to change in income or change in prices.
- A change in income (but no change in prices) shifts the budget constraint but the slope stays the same (why? Hint: use the equation for the budget constraint)
- A change in the price of goods leads to a change in slope of the budget constraint
- Price changes have income and substitution effects (to be covered next recitation)

Income and Substitution effects in the labor market

The leisure-labor decision is typically characterized by a graph with leisure on the x axis and consumption or income on the y-axis. Moving to the right on the x axis means that the household is choosing more leisure, moving to the left means that the household is working more hours. The optimal decision for the household is where the household's budget constraint intersects with the household's indifference curve.

Consumption (units per day)

160

120
Optimal choice

Indifference curve

Slope of budget constraint = wage rate

10
1

Budget constraint

"Leisure"
(hours per day)

4 hours
leisure

12 hours work

16

Note that the budget constraint is a function of the wage rate, and is negatively sloped. More leisure means less work, and less work means less money to spend on consumption.

Suppose there is an increase in the wage rate. To determine the effect on the number of hours worked, that is, the amount of leisure demanded, we need to consider two effects: income and substitution effects.

Income effects are changes in consumption due to a change in income. This effect is dependent upon whether the good in question (in our case leisure) is normal or inferior.

Recall that for normal goods, an increase in income leads to an increase in demand for that good. With inferior goods, an increase in income leads to a decrease in demand for that good. Let's assume that leisure is a normal good. (Perhaps you might like to repeat this exercise treating leisure as an inferior good.)

If wages increase, then the household will experience an increase in their income. This leads to an increase in consumption of all normal goods. Since leisure is normal, households will choose to demand more leisure. The income effect in this case has caused the household to *work less.* In the graph below, it is represented by the change from point A to point C.

Substitution effects are due to relative price changes, in this case, the relative price of leisure. With an increase in wages, leisure becomes relatively more expensive. Households will substitute away from leisure and choose a higher quantity of labor. The substitution effect has caused the household to *work more.* In the graph below, it is represented by the change from point C to point B.

The total effect of the increase in wages is the sum of the income and substitution effects. When leisure is a normal good, the total effect is ambiguous and depends on household preferences. The household represented by the graph below has a larger substitution effect than income effect, and therefore allocates more time to working. A wage increase for this household has led to the household *working more.*
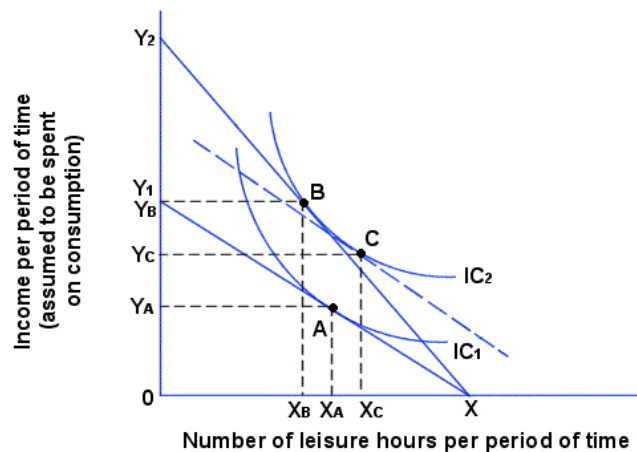
However, it is also entirely plausible that a household will have a larger income effect than substitution effect. In this case, the household will allocate more time to leisure. A wage increase for this household has led to the household *working less.* The movement from A to B in the following graph depicts this:
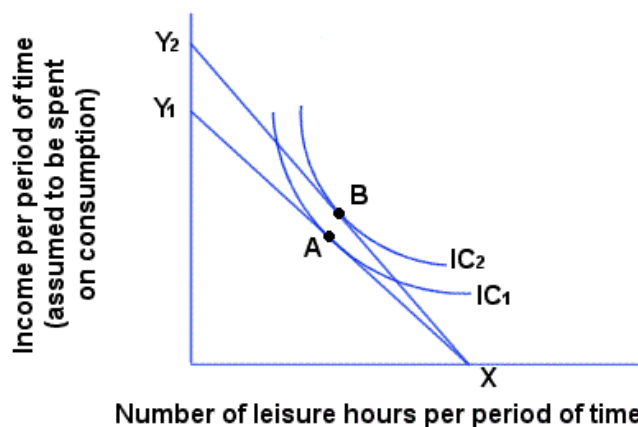
How can we relate the household labor-leisure decision to the labor supply curve? Recall that when leisure is a normal good, and when the substitution effect is greater than the income effect, the household demands more work when wages increase. That is, the labor supply curve is sloping upwards.

When a household has a larger income effect than substitution effect than substitution effect, the household demands less work when wages increase. That is, the labor supply curve is sloping downwards (as we see in Chapter 1)

In reality, it's likely that many households have an upward sloping labor supply curve up until some wage rate, then a decreasing labor supply curve (as in the graph below). Perhaps you're like me: I'm happy to increase my work hours for higher wages if I start off not

making as much money as I would like. Once I work enough to reach a level of income I'm happy with, further increases in my wage will probably lead me to enjoy my weekends and nights rather than work all the time. Of course, households can have differing labor supply curves to this one.