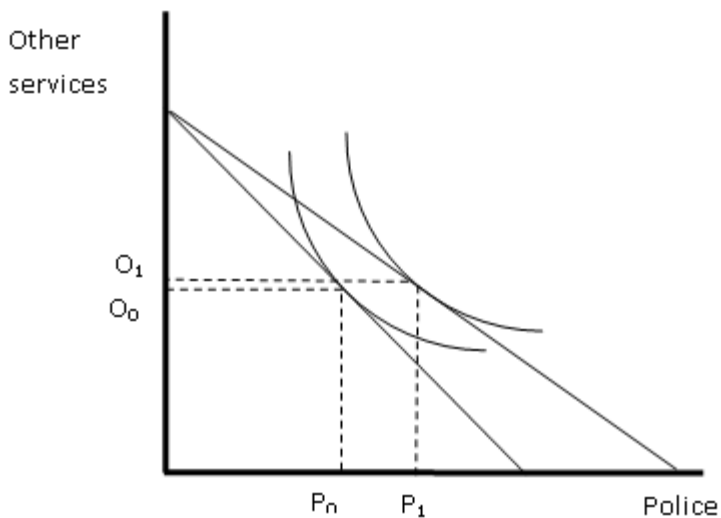


Lecture # 10 -- Applications of Utility Maximization

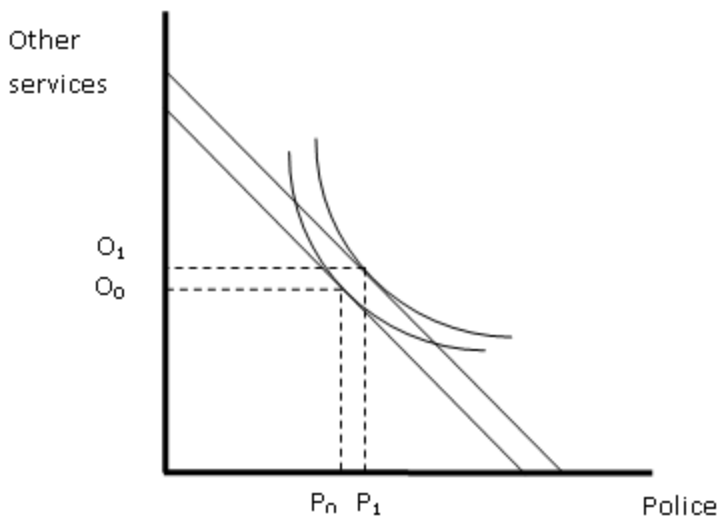
NOTE: We will begin class on Monday with the example comparing in-kind transfers to subsidies that were in the notes for lecture #9.

I. Matching vs. Non-matching Grants

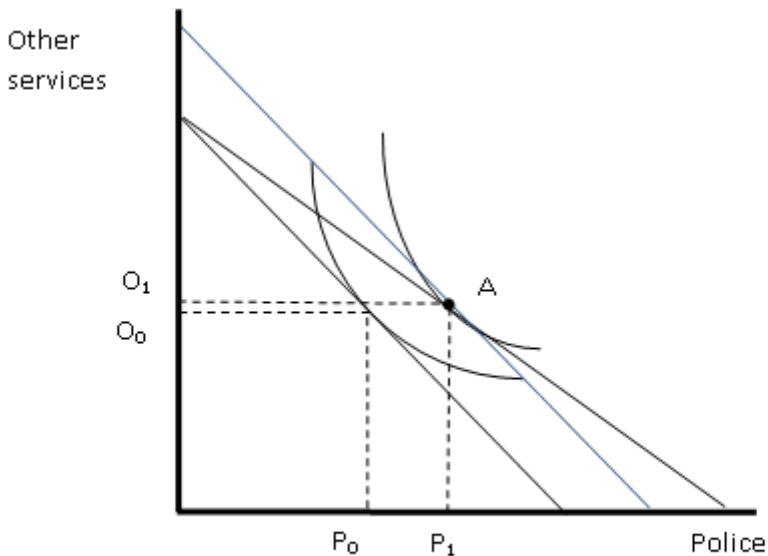
- Here we consider how direct aid compares to a subsidy.
- Matching grants – the federal government subsidizes local spending. For example, for every \$2 the local government spends, the federal government adds \$1.
 - The figure below illustrates a subsidy for police services.



- Non-matching grants – the federal government gives the local government money to spend without restriction.
 - To simply when we combine graphs, the figure below assumes absolutely no restriction. Since we are not examining a community near the corner solution, this is not a problem.
 - More common would be a tied grant, in which the federal government gives the local government money to spend on a specific use, but provides a fixed amount no matter what the local government spends on its own. This would be similar to our education voucher example from the last class.
 - Note that, while spending for police protection does increase, so does spending for other services. The community is able to reallocate some of what it previously spent on police to other services.



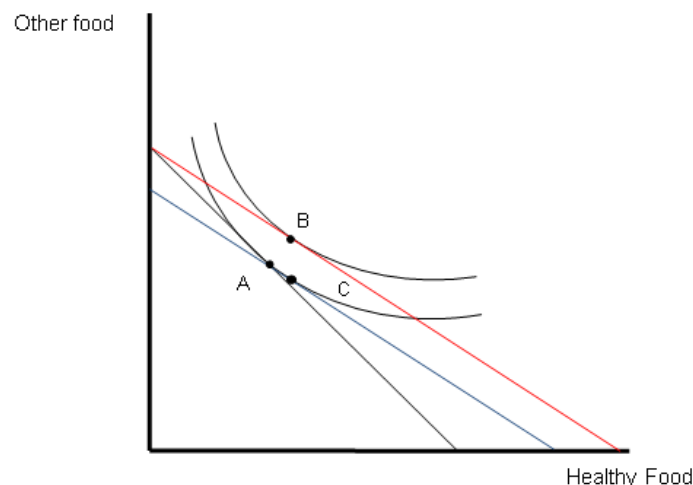
- When we combine both on a single graph, we see that, for a given expenditure level, utility is higher with the non-matching grant.
 - The blue line represents a block grant that costs as much as the matching grant.
 - We know the costs are the same because point A is on both budget lines.
 - Because the blue line goes through the indifference curve, a higher indifference curve (e.g. higher utility) is possible with the non-matching grant.
 - *That is, there is a tradeoff between encouraging a particular change in expenditure and achieving the highest level of satisfaction for a given expenditure.*
 - Also note that, with the non-matching grant, when the constraint does not influence behavior, consumption of both goods will increase.



II. Income and Substitution Effects

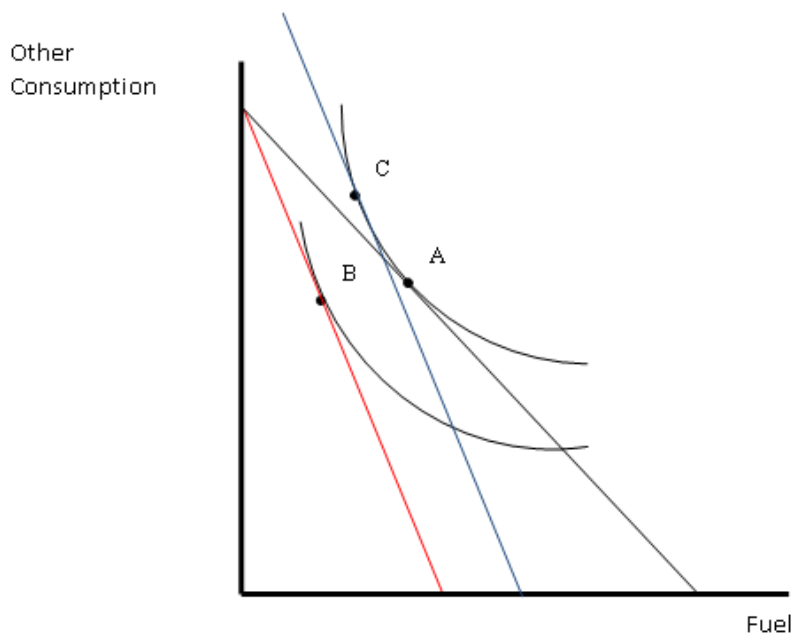
- The intuition of what happens depends on two effects. When prices change, two things happen:
 - The purchasing power of the consumer changes (real income changes).
 - For example, if prices fall, you can buy the same bundle that you had before for less money. The money left over is your added purchasing power.
 - Relative prices change (slope of budget constraint changes).
 - Consume more of the cheaper good, less of the expensive good.
- The income effect is the change in the quantity demanded of a good due to the change in purchasing power resulting from a price change.
- The substitution effect is the change in the quantity demanded due **solely** to the change in relative prices.
 - Found by changing the person's income to hold **utility constant** and ask what bundle they will now consume.
 - The substitution effect always goes in the opposite direction of the price change.
- In the example above, the block grant has only an income effect.
- In contrast, the matching grant has both an income effect and a substitution effect.
 - This substitution effect encourages the recipient to choose more of the favored good

- The figure below illustrates substitution and income effects, using an example from a recent study on food subsidies.
 - The study tested a pilot program where families were given subsidies to purchase healthy foods.
 - For high income families, the share of healthy food in their diet increased.
 - However, for low income families, the share of healthy food decreased.
 - Instead, they used their extra income to purchase more of the foods they liked best, even if they weren't healthy.
 - Thus, the income effect dominated the substitution effect.
 - The graph below illustrates. Here, a family chooses between healthy food and other food.
 - The family starts at point A.
 - The subsidy lowers the cost of healthy food. The budget constraint rotates out, as shown by the red line below.
 - The total change in consumption goes from A to B. Consumption of both types of food increases, but there is a larger increase in non-healthy food.
 - If we took away the extra income provided by the subsidies, families would face the blue budget line. This returns their utility to the original level, but represents the new lower cost of healthy food.
 - Thus, the substitution effect (A to C) does cause families to choose more healthy food.
 - However, the income effect (C to B) causes families to go in the opposite direction. Families use their extra purchasing power to purchase more of the types of food they like best.



- The key point of this example is that the income effect could work against the intended effect of your policy. Thus, it is important to understand what the income effect might be, and if it works against you, how big it might be.

- A second example considers what happens if a government *removes* subsidies on fuel, but also gives families extra income to compensate.
 - Removing the fuel subsidy is like a price increase. The budget line rotates from the black line to the red line.
 - Consumption changes from point A to point B. This would be the *total effect* of the price increase. Note that both consumption of fuel and other goods falls.
 - To compensate people for higher prices, suppose the government gave citizens income. If this income perfectly compensated them for the price increase, the new budget constraint would be tangent to their original indifference curve. This is the blue line on the graph.
 - Consumption ends at point C. Going from A to C is the *substitution effect*. Because the blue line compensates people for lost purchasing power, it is the change in consumption due solely to the change in prices. Higher prices encourage people to conserve fuel.
 - Going from C to B is the *income effect*. These are the points on the two parallel lines. It is the change in consumption due solely to the change in purchasing power.
 - Note that it isn't necessary to give the family enough money to be able to once again purchase point A. That would require more money, and would make the family better off, as in the matching/non-matching grant example above.
 - The intuition is that, even if we gave the family enough money to purchase bundle A, they would no longer choose that bundle.
 - Since prices are now higher, they would use some of the extra income to purchase other goods instead.



III. Behavioral Economics

- Behavioral economics combines psychology and economics, and notes cases where observed behavior differs from what traditional economic models predict
- Systematic biases create a difference between decision utility and experienced utility.
 - Decision utility is the utility consumers maximize at the time of choice
 - Experienced utility is the utility consumers later realize as a result of a prior decision
 - Behavioral anomalies that lead to a difference between decision utility and experienced utility are behavioral failures
 - Behavioral economics provides examples where people make predictable errors, rather than just random errors.
- Note that if preferences are not stable over time, using consumer decisions to infer utility will lead to incorrect predictions.
- This will lead into our discussion of the role that policy could play to help correct the bias in actual decisions.