Lecture 8(ii)

Office Hours Today:
1:30-3:25
4-135 Hanson

Lecture

Public Goods

Consumer Theory

1. Budget Constraint
2. Preferences: Perfect Substitutes
3. Preferences: Perfect Complements
4. Preferences: In between
5. Choice

Public Goods

Econland

The Widget, a private good.

New words:

Rivalrous in consumption

I eat it, you can't.

Excludable

People can be prevented from consuming it.

These are the two characteristics of a private good.

Nonrivalrous in consumption

One person consuming the good doesn't take anything away from another's ability to consume it.

- Tornado siren. I hear it, you can still hear it.
- Watching a TV show

Nonexcludable

Can't prevent people from consuming the good.

- Tornado siren. Can't set it up so that only those paying for the service get to hear it. (Unless make it work through cell phones)
- TV programming? Once was not excludable (old fashioned over the air). But now can be excludable with pay-for-view, etc.

Public Good

- Nonrivalrous
- Nonexcludable

Examples:

Tornado Sirens,
Street lamp
National Defense

Research (if no patent system)

Music and Film
(if no intellectual property production)

Efficient Provision
of Public Goods
vs.
Efficient Provision of Private
Goods

Private Good: rule: should make another unit of output and give it to a person if that person's marginal willingness to pay exceeds the marginal cost.

D1: values a widget $9
S1: can produce at $1.
Make the widget!

Different story with public goods.

I never told you this, but Econland has no sun! (So dark all the time)

Proposal: Build an artificial sun, will light all of Econland.

Cost of project is $20.

What is willingness to pay?

:

Name	would pay	Name	would pay
D1	9	S1	0
D2	8	S2	0
D3	7	S3	0
D4	6	S4	0
D5	5	S5	0
D6	4	S6	0
D7	3	S7	0
D8	2	S8	0
D9	1	S9	0
D10	0	S10	0

If this were a private good at a cost of $20 per unit, the efficient amount would be zero.

Public good: Add the willingness to pay of each together.

If the artificial sun is built, all get to enjoy it.

Social Marginal Benefit from building the artificial sun is:

9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 + 0

= $45.

Greater than $20.

So socially efficient to build the artificial sun.

In the free market, there is a:

free rider problem.

Beneficial on net for society as a whole, but no one willing to put up the whole amount to do it themselves.

Have a role for government.

Gov't were to tax D1-D4 $5 each, there would be a Pareto improvement

One last point: because of technological change things can become excludable that before were not excludable, and the other way.

Suppose can build an artificial sun where you need a certain kind of sunglasses to see the light.

Entrepreneur build the artificial sun, sell sunglasses to people for $5

D1-D5 buy, get $25 in revenue. Pays for the $20 investment.

The good is now excludable.

Key point: in this case will need intellectual property protection to get the innovation.

If someone can sell bootleg sunglasses, then the entrepreneur unlikely to be able to make a go of it.

So won't get the investment in the first place.

Economic Logic of intellectual property protection like patents and copyrights

Common Resources

- Nonexcludable
- Rivalrous

Example world fishing stocks

- Can be difficult to exclude people from fishing the oceans.
- Certainly rivalrous as overfishing has depleted important fish stocks.

"Tragedy of the Commons"

Another example: people using iPad to watch movies in hotels

Consumer Theory

- Out with widgets!
- Out with fish and coconuts!
- In with beer and pizza!
- Similar to fish and coconuts, use new graph with two goods.
- Use the graph to see how demand changes when any of the following change:
  - Price of Beer
  - Price of Pizza
  - Income

Budget Constraint

Suppose:

- Goldy has income: I = $24
- Price of pizza: P_{pizza} = $4 slice
- Price of beer: P_{beer} = $2 bottle

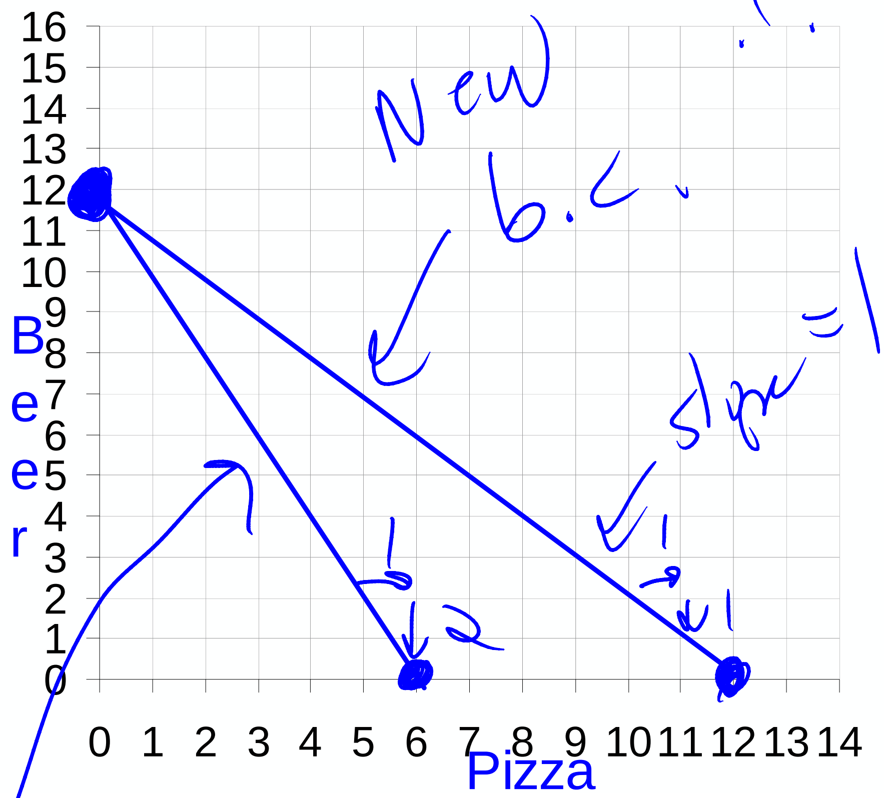
Make a table of what Goldy can afford.

Pizza	Beer
0	12
1	10
2	8
3	6
4	4
5	2
6	0

$24 / $2

$24 / $4 = 6

Plot Budget Constraint (b.c)



- Horizontal intercept = I/P_{pizza}
- Vertical intercept = I/P_{beer}
- Slope = $P_{pizza}/P_{beer} = 4/2 = 2$

original b.c.

Key thing to know:

Slope of budget constraint is

Opportunity Cost 1 more pizza (in terms of beer)

1 more slice of pizza costs:

2 bottles of beer.

What happens when price of pizza falls to $P_{pizza} = \$2$.

New budget constraint.

New b.c. in figure

Opportunity cost of one pizza slice?

one beer

Budget constraint tells us what the consumer can do.

What does the consumer want to do?

Depends on the preferences of the consumer.

(indifference curves (i.e.))

Consumer will get different utility from different combinations of pizza and beer.

Will make the choice that maximizes utility. We will call this choice the optimal consumption bundle.

o.c.b

Going to go around

.

Assume the mascots consume only pizza and beer.

All the mascots have the same income and face the same prices.

But differ in preferences.
We will explain their preferences and then look at their choices.

Case 1: Hawkeye (Perfect Substitutes)

Hawkeye gets utility from calories (the more the better).

Suppose pizza 200 calories and beer is 200 calories

$Utility = 200*Q_{pizza} + 200*Q_{beer}$

What bundle maximizes utility?

12 beer 0 pizza

Remember $P_{beer} = 2$, $P_{pizza} = 4$.

Calculate utility per dollar spent on each good:

Pizza: $\frac{200 \text{ cal}}{\$4} = 50$ calories per \$

Beer: $\frac{200 \text{ cal}}{\$2} = 100$ calories per \$

Beer is the best value (at these prices) in terms of utility per dollar spent.

Hawkeye will spend all his money on beer. $Q_{beer} = 12$

$Q_{pizza} = 0$

What is point of the picture?

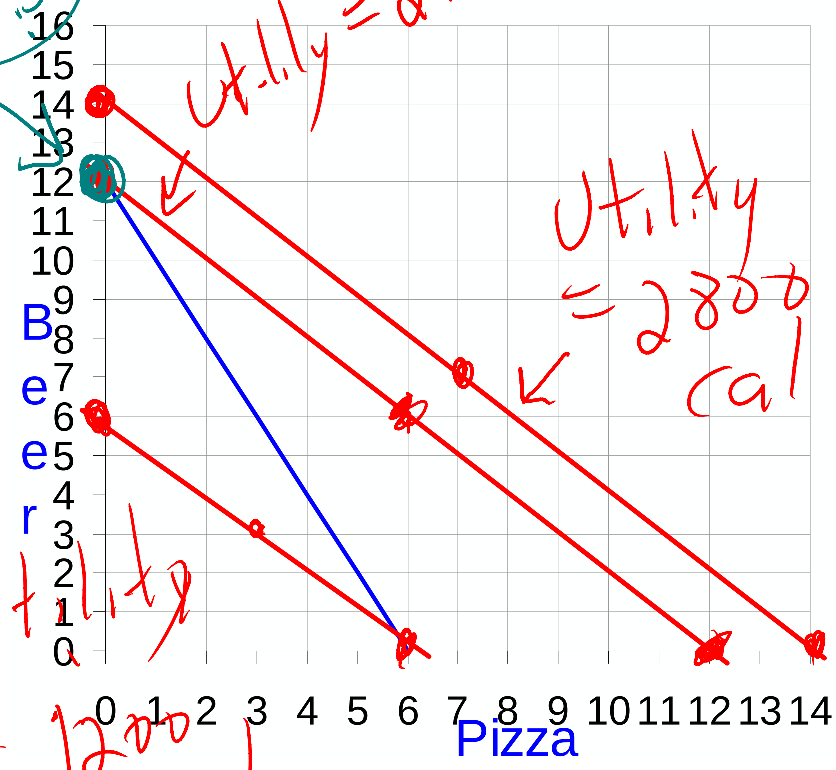
Gives us another way to figure out the optimal consumption bundle.

Introduce concept of:

Indifference curves:
Combinations of beer and pizza that give the same utility (the consumer is indifferent.

Indifference curve through $Q_{beer} = 12$ and $Q_{pizza} = 0$

Utility = $200*Q_{pizza} + 200*Q_{beer}$
Get 200 each way, so trade off one-for-one.



What about?

Indifference curve through
Q_{beer} = 14 and Q_{pizza} = 0

Indifference curve through
Q_{beer} = 6 and Q_{pizza} = 0

Rule: pick the bundle on the budget constraint that gets to the highest indifference curve

The slope of indifference curve is The Marginal Rate of Substitution

Here one for one. (value of one more pizza slice in terms of beer).

Look again at
Q_{beer} = 12 and Q_{pizza} = 0 on the budget constraint. At this point:

Value of one more unit of pizza:
one beer

Cost of one more unit of pizza:
two beers