Econ 1101
Spring 2013
Week 10

Section 038

3/27/2013

Announcements

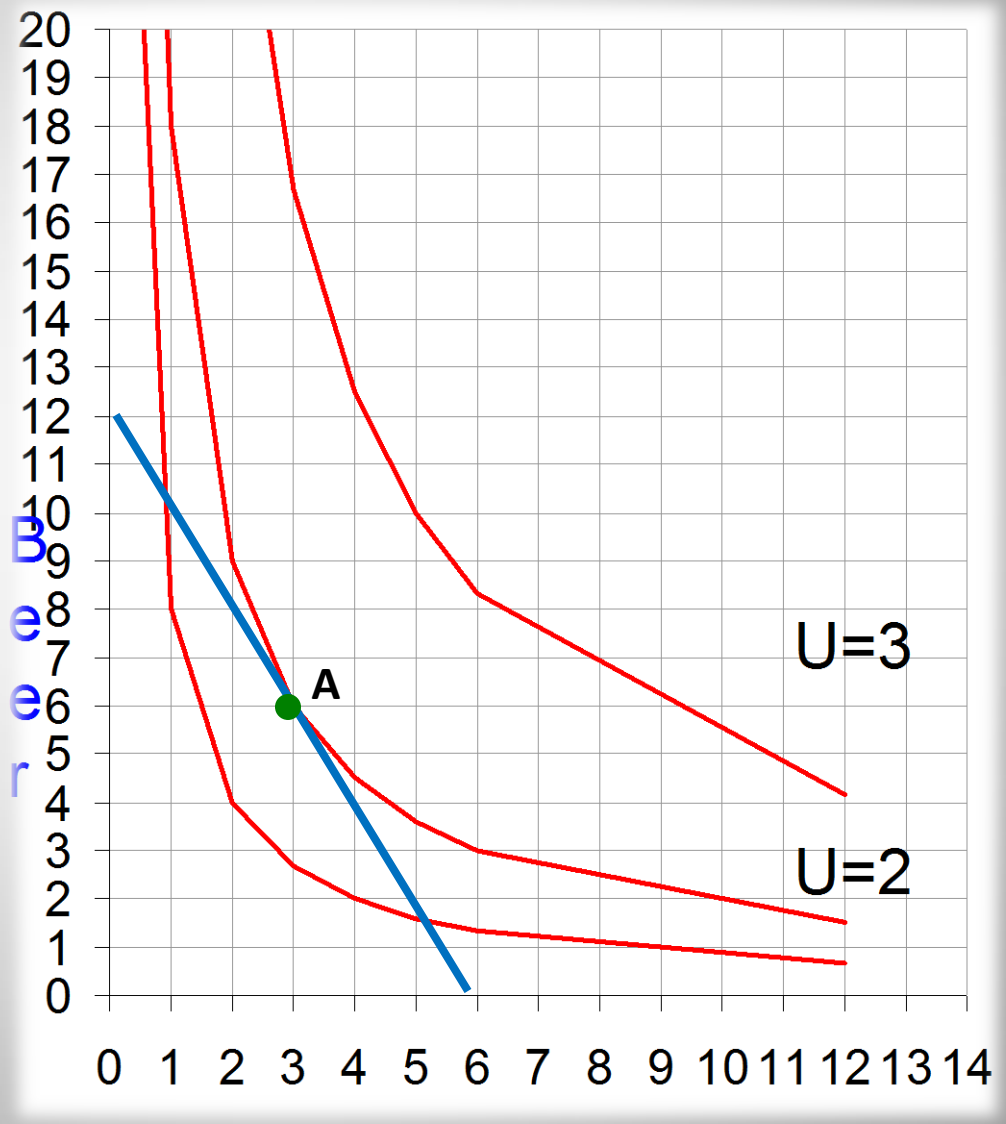
- Homework due on Aplia this Friday!
- In recitation this week: Consumer theory worksheet that is very helpful for understanding consumer theory.
- Midterm 2 is coming up (April 8th, 7:30-8:30)! Review sessions next week Wednesday, April 3rd
  - First one: 4-5:30pm (Anderson 350)
  - Second one: 6-7:30pm (Anderson 250)
- Sample midterms already posted, with solution guides!
- Sign up for makeup midterm by April 1st, 4pm. (email headgrader@gmail.com with documentation).
- Students who need accommodations through Disability Services should also sign up at least a week before the midterm.

Agenda for today

- Connecting consumer theory back to the demand curve
- What happens to the optimal consumption bundle if income changes?
- What happens to the optimal consumption bundle if price changes?
  - Substitution effect
  - Income effect

Recap

The green point is our Optimal Consumption Bundle, determined by the consumer's budget constraint (blue line) and the highest indifference curve (meaning most happy) that the consumer can be on given that budget.



What are we doing here? -> Constructing Demand Curves

Demand for pizza depends upon?

- Own price (here $4)
- Price of other stuff (here price of beer= $2)
- Income (here $24)
- Preferences (Here Louie)

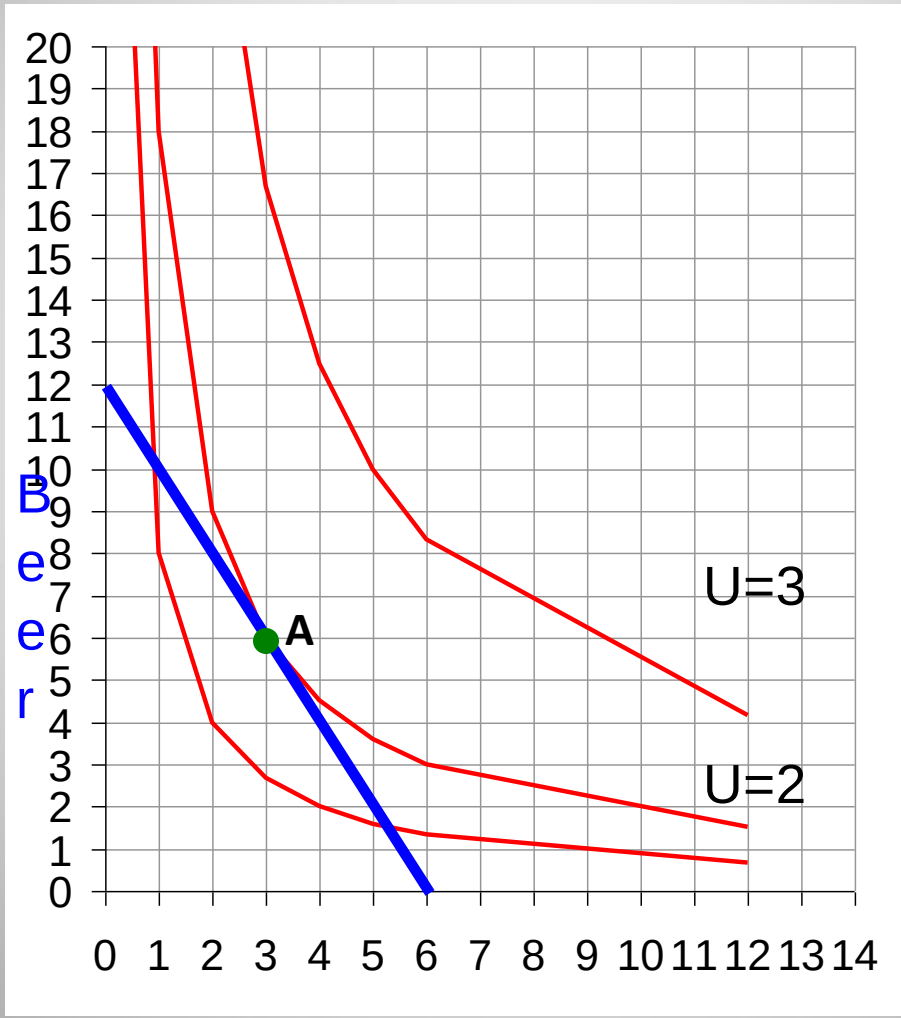
Put this together, get point A

- Quantity demanded = 3 Pizza (and 6 beers)

Point where:

(1) On budget constraint

(2) MRS = P_{pizza}/P_{beer}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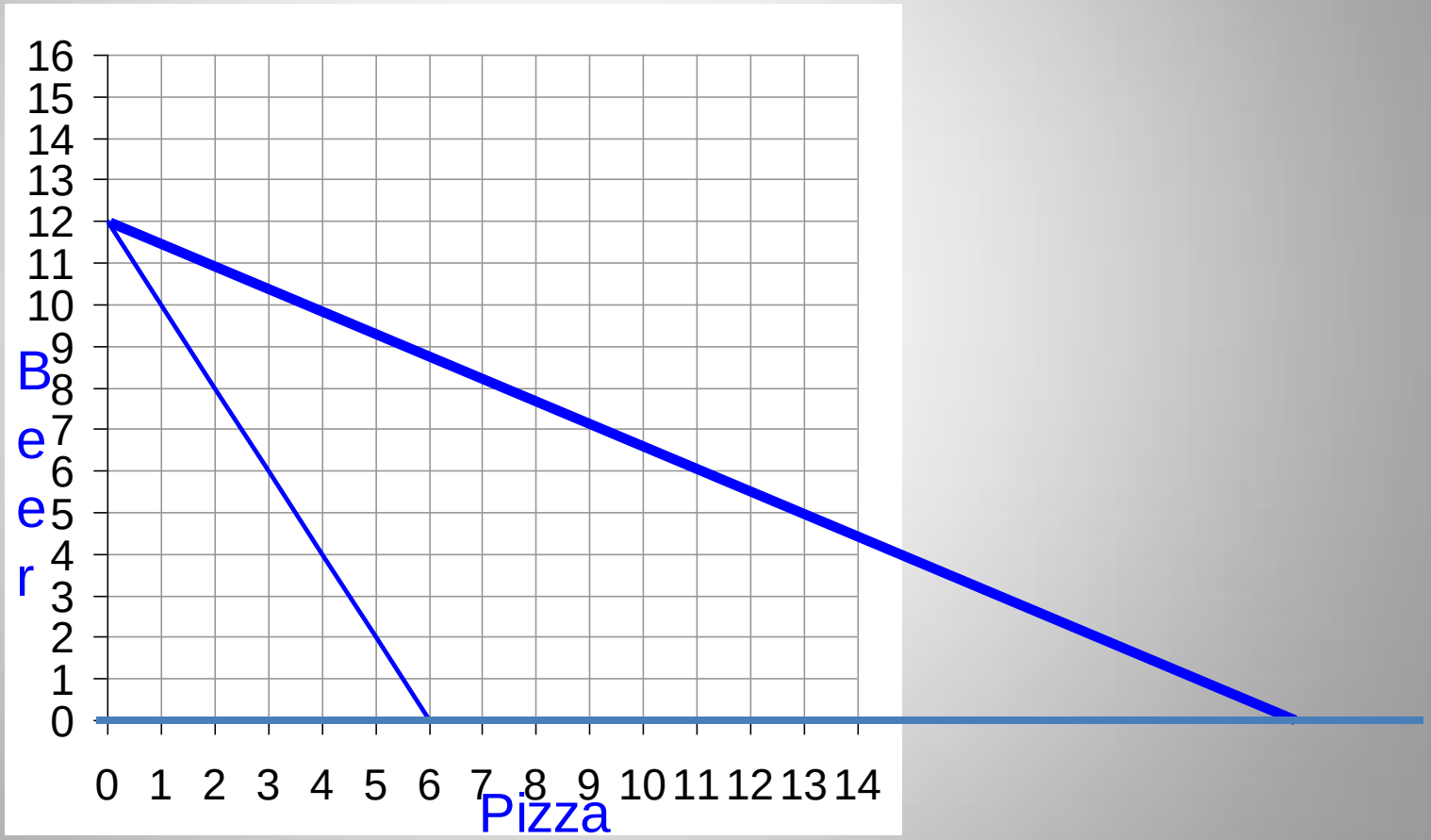
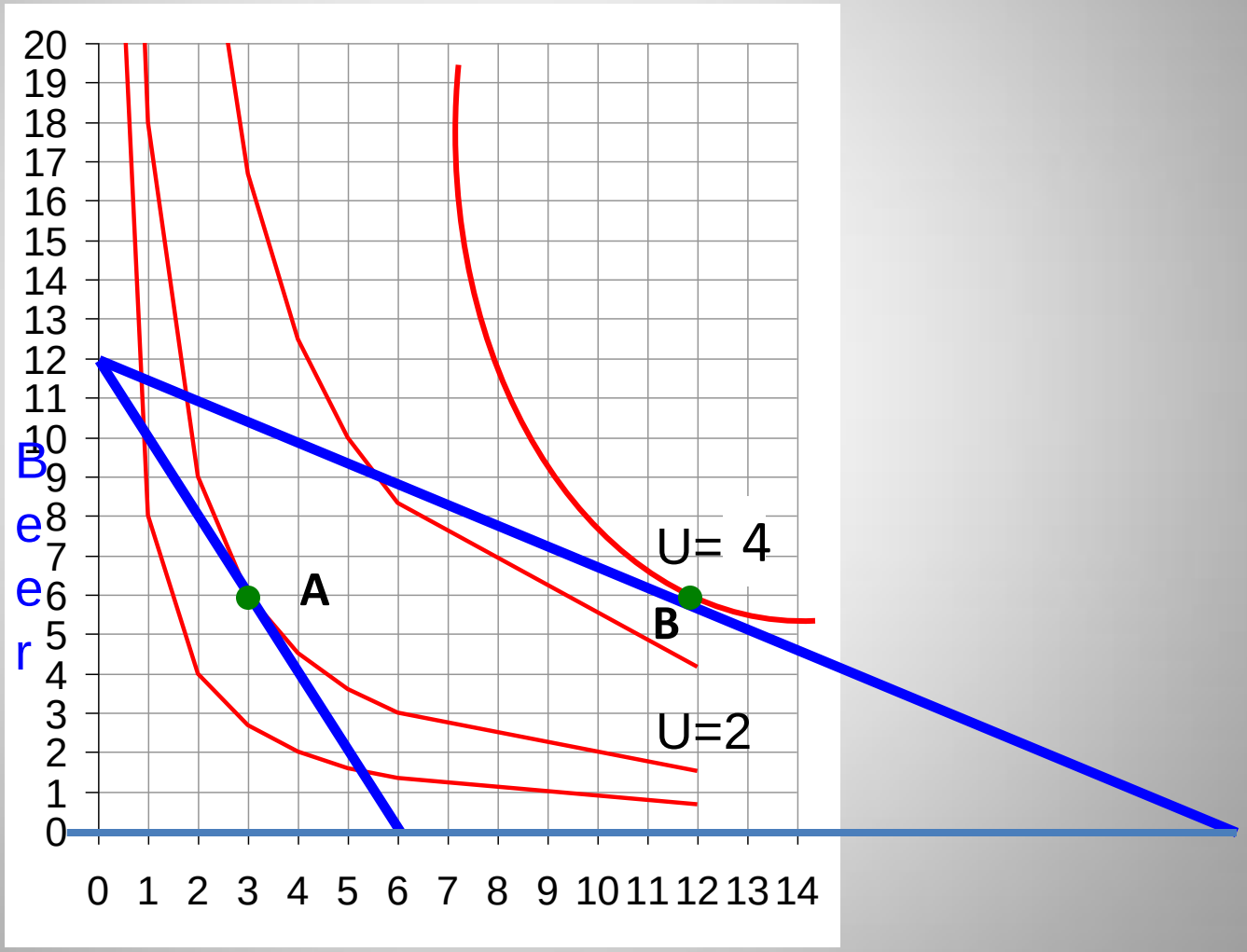
A
U=3
U=2

If the price of pizza is now $1, then we would expect Louie to be able to buy 24 pizzas if he spends all his money on pizzas (so the X intercept is 24)

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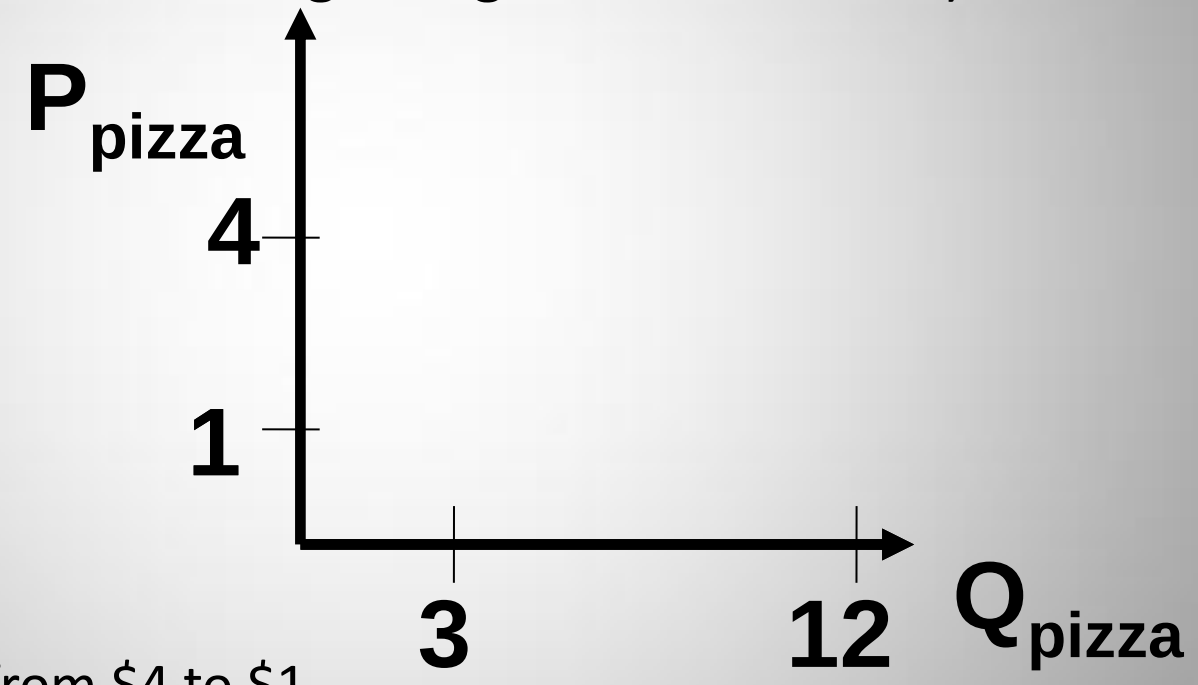
A
B
U= 4
U=2

Connecting the dots

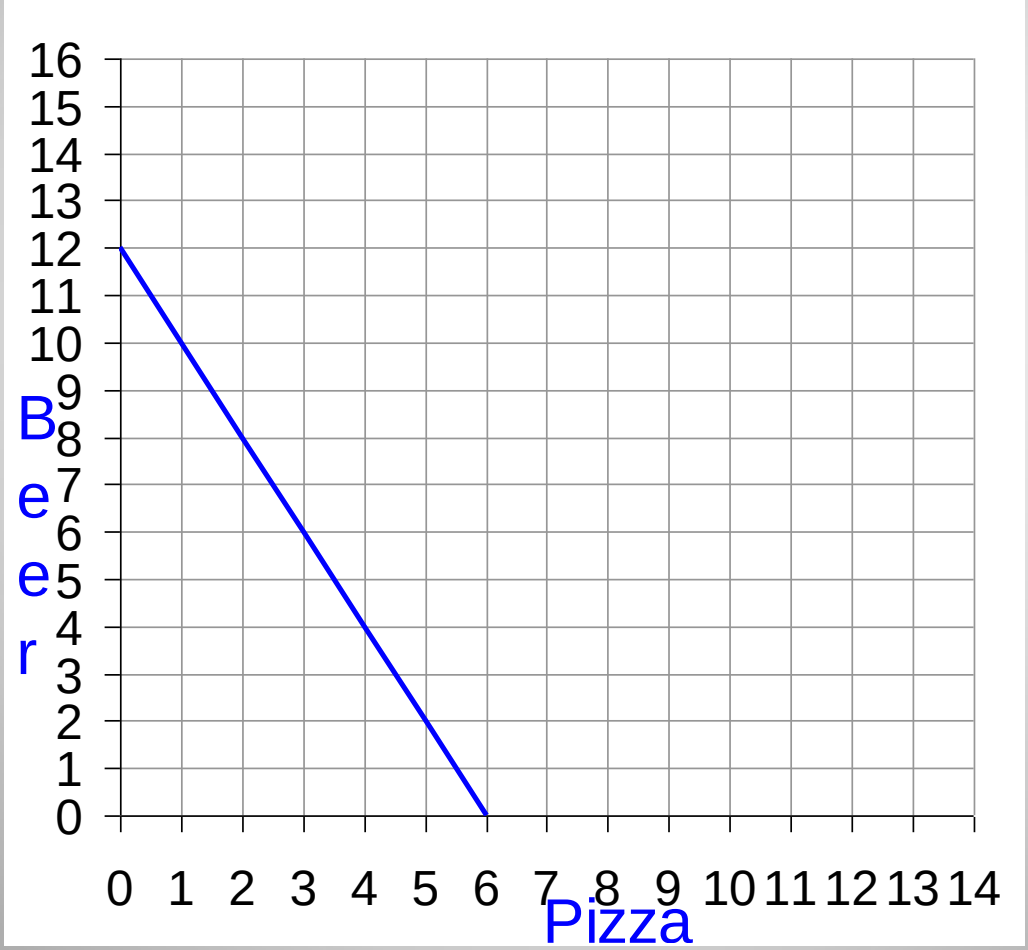
We use the new graph to determine our old graph (Demand Curve from the beginning of the semester)



- Lower the price from $4 to $1
  - move along demand

Income Change

Suppose income increases to $40… what happens?



Income Change

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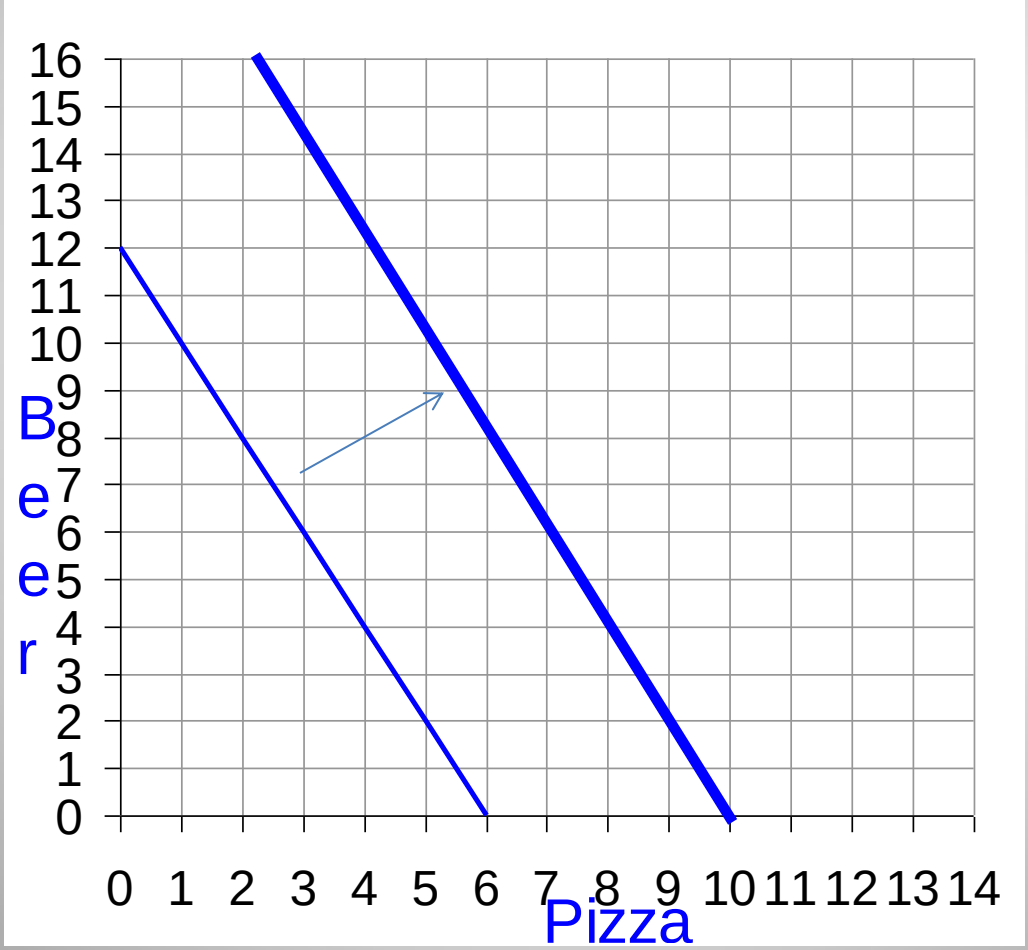
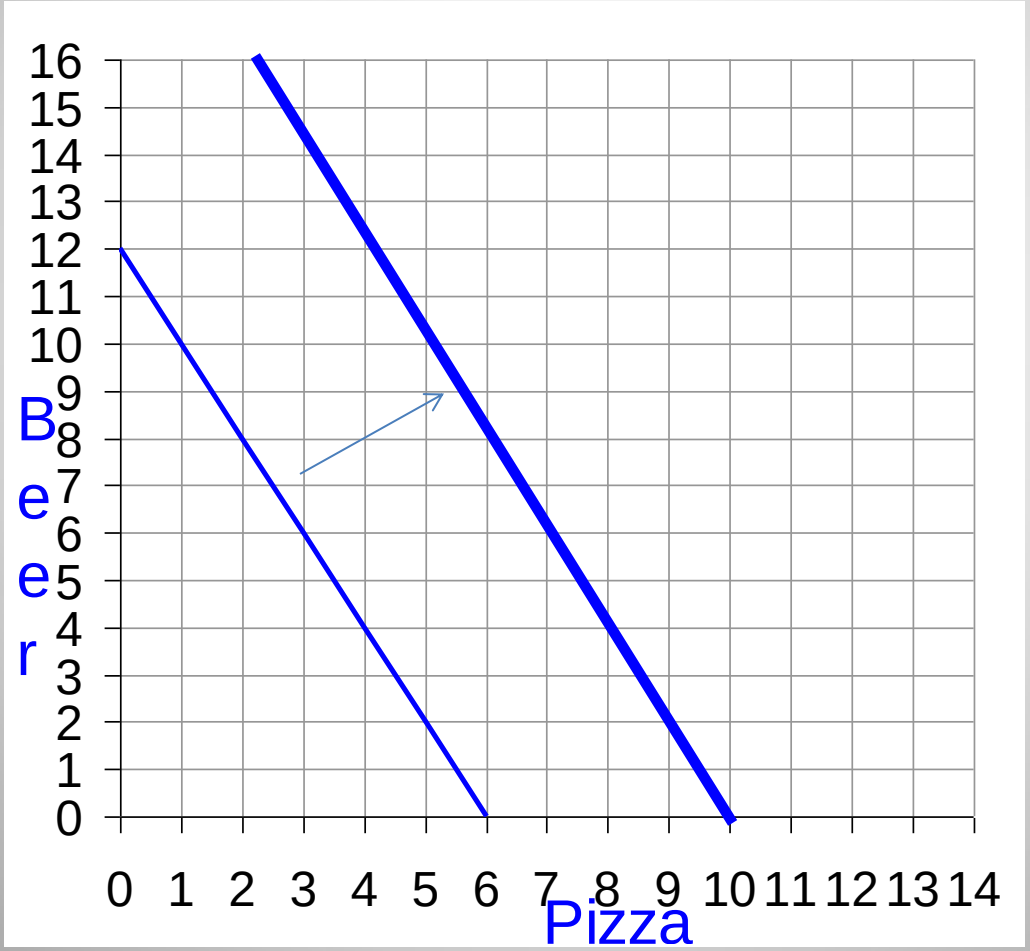
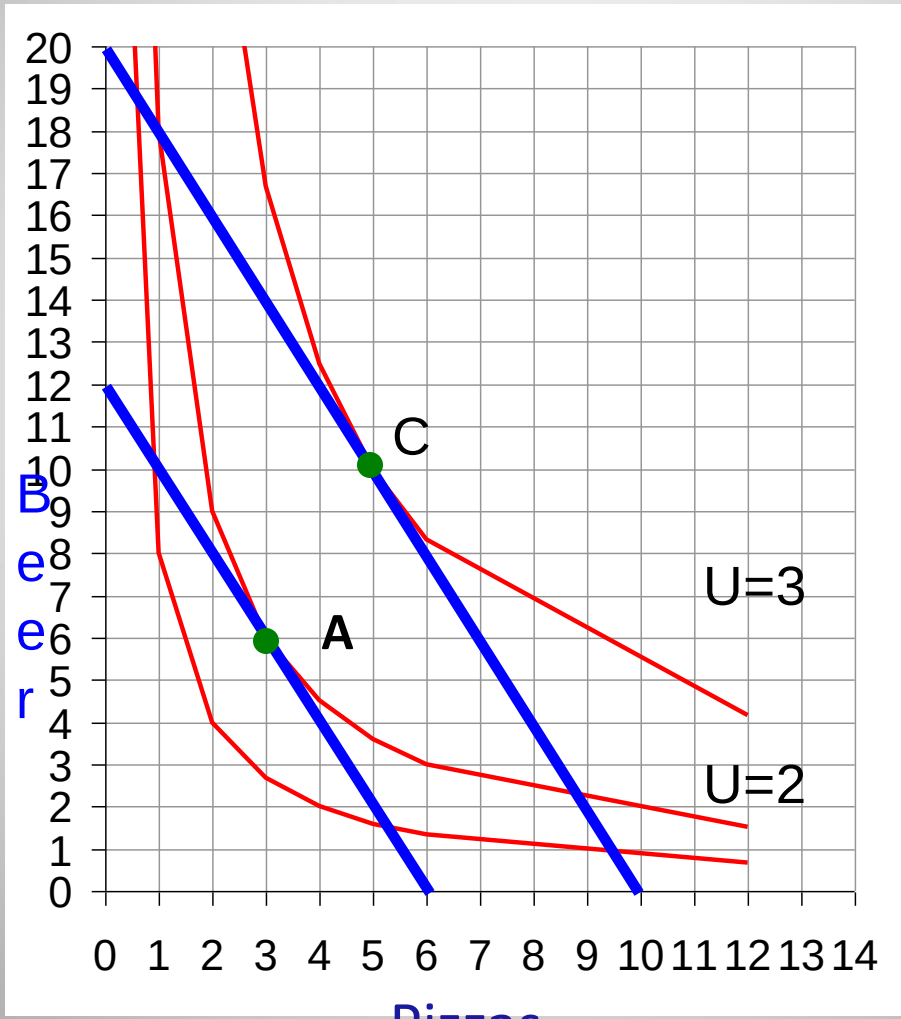


Now Louie can buy 10 pizzas or 20 bottles of beer if he spends all his money on either. The BC shifts out.

Income Change

Quick “see if you understand” question: What changed/didn’t change?

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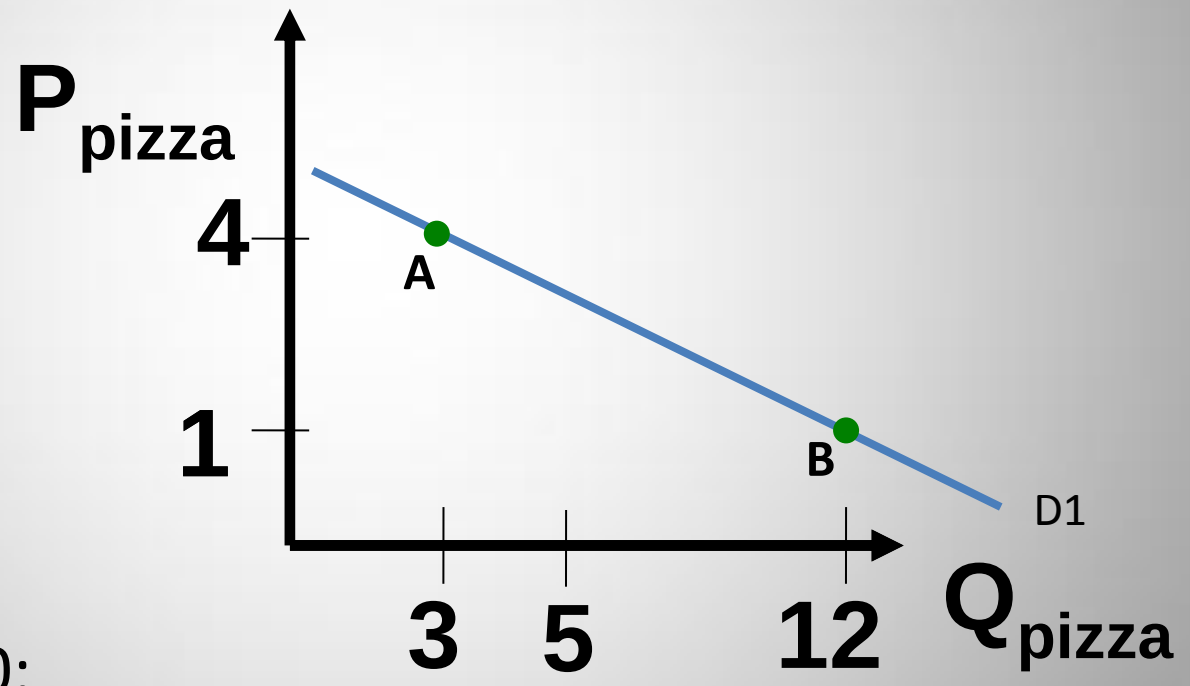
Pizzas
C
A
U=3
U=2

Change in income, shift in demand



At Income = $40:

- We need to pick the new optimal consumption bundle

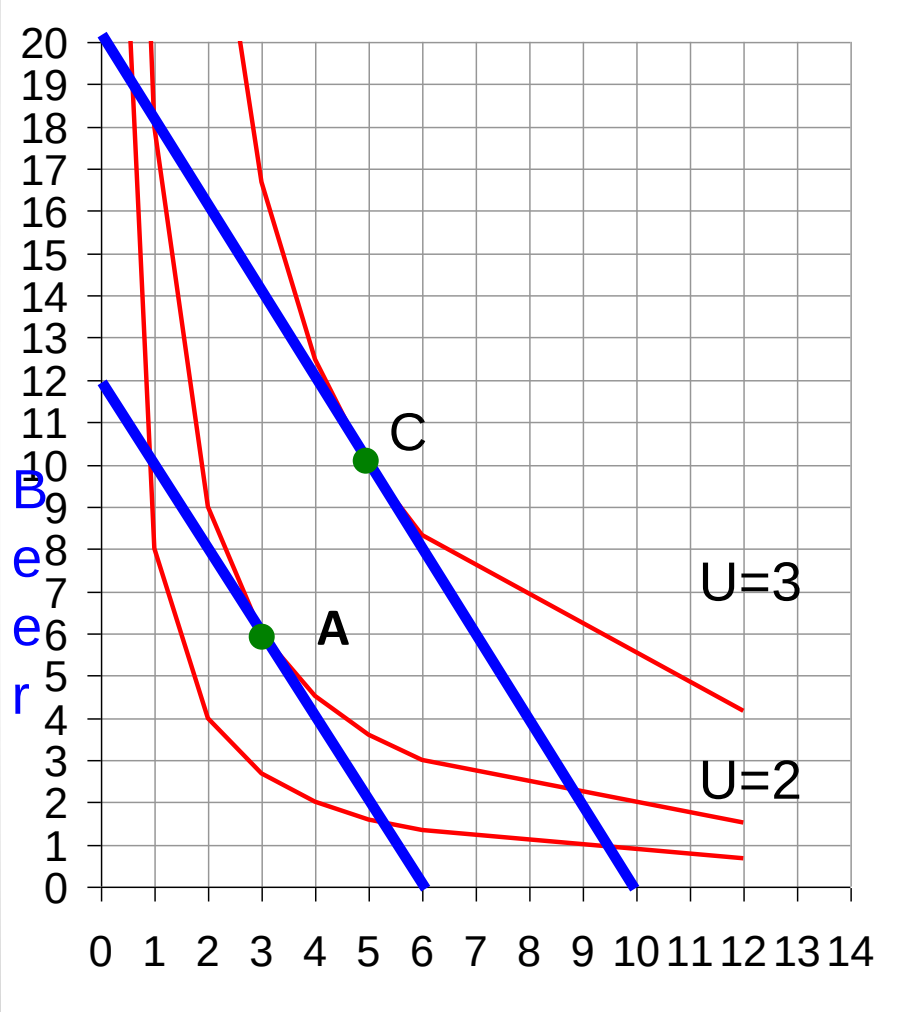
At Income = $40, Goldy consumes:

____ Pizza

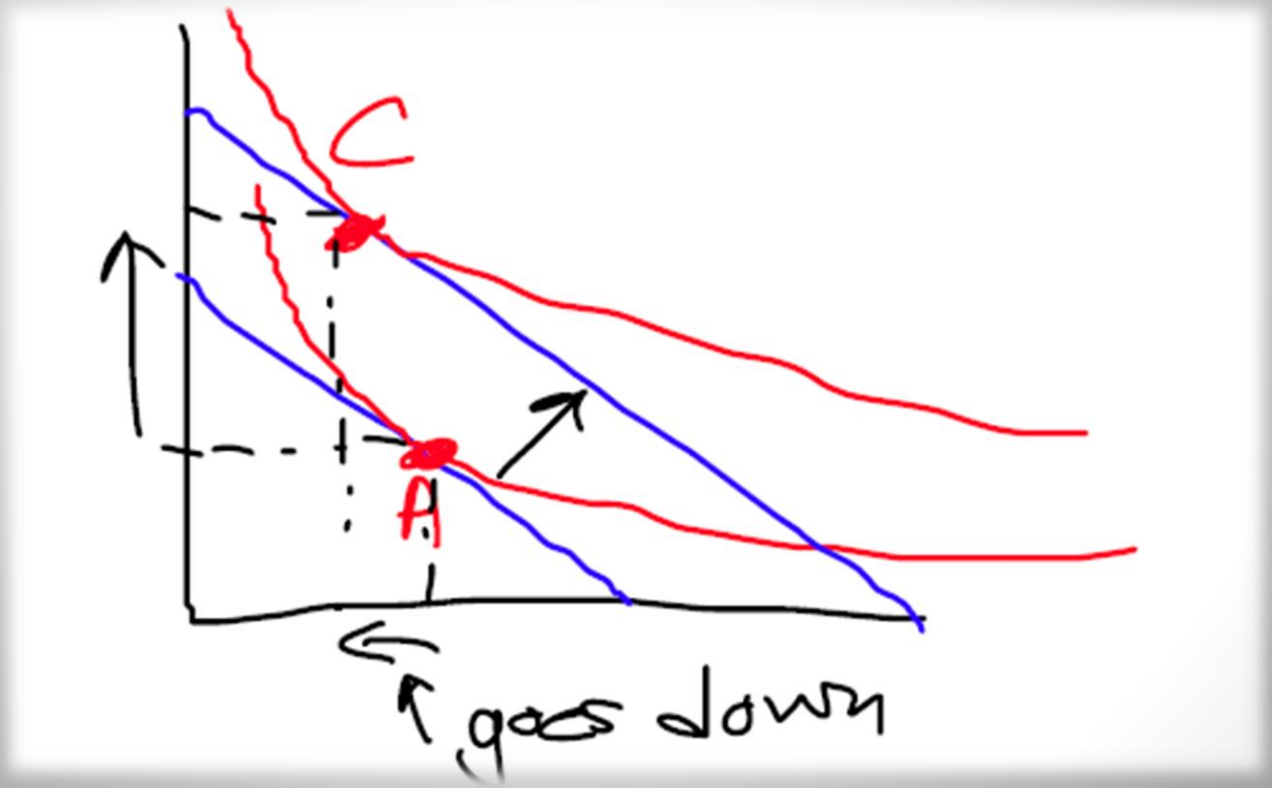
____ Beer

Pizza and beer

are _____ goods



What if one good was an inferior good? (note, we can't have the case where both goods are inferior goods in this diagram)



Price Change

Effect of Price Change (for example, a price decrease of a good)
Complicated because two things are going on:
(1) opportunity cost going down (BC slope changes)
(2) plus something like getting more income

Remember at

- $I = \$24$, $P_{beer} = \$2$, $P_{pizza} = \$4$

the optimal consumption bundle is $Q_{beer} = 6$, $Q_{pizza} = 3$.

Suppose P_{pizza} falls to \$1.

If we stick with same consumption bundle then we have 3*\$3=\$9 (save \$3 per pizza, and at the bundle, consume 3 pizzas) extra in wallet.

Substitution and Income Effects

Formally:

To understand how individuals react to a price change, economists break it down to two pieces:

1. Substitution effect: Effect of change in opportunity cost (by holding spending power fixed, which we do by staying on the same indifference curve as before the price change. In other words, keeping the same level of utility)

   Example: When price of pizza decreases, you would want to substitute away from beer into pizza, because pizza is now relatively cheaper than before. When the price changes, opportunity cost changes. Let's use the new opportunity cost but let's keep utility the same: what is the new OCB? The change in the amount of pizzas demanded between the old OCB and this new OCB is the substitution effect.

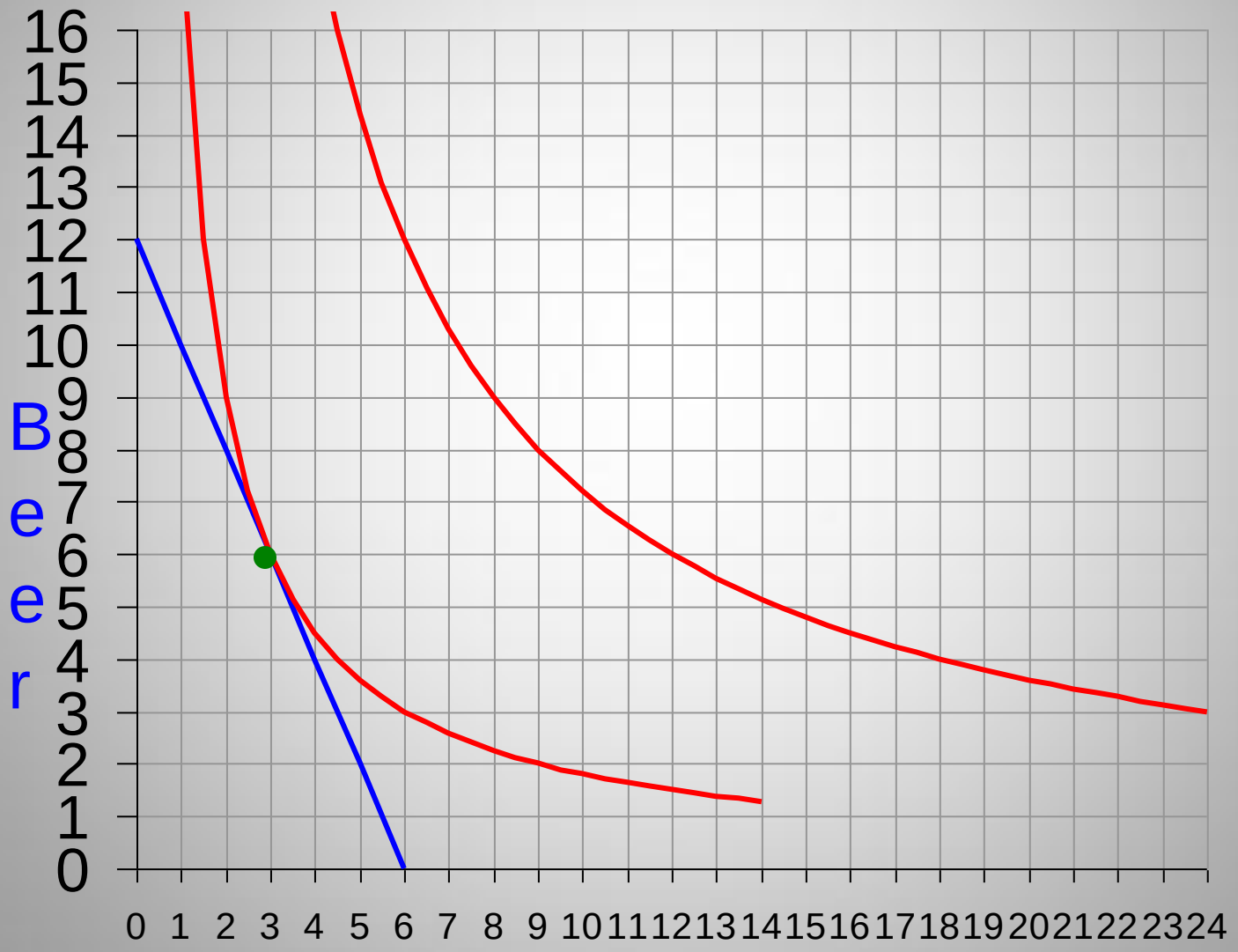
2. Income effect: The effect of change in income holding opportunity cost fixed at the new level.

   Example: When the price of pizza decreases, it's as if your income increased because you can buy more of both goods (even if your income level actually stayed the same). You have more buying power, and so the change in the amount of pizza you can buy because of this pseudo-income change is the income effect. (think of original OCB not being on new BC)

But let's start with the **total effect (substitution + income effect)**. That should be easy.

I = \$24 and P_{Beer}=\$2 fixed

P_{Pizza} = \$4: Label OCB **A**
P_{Pizza} = \$1: Label OCB **C**



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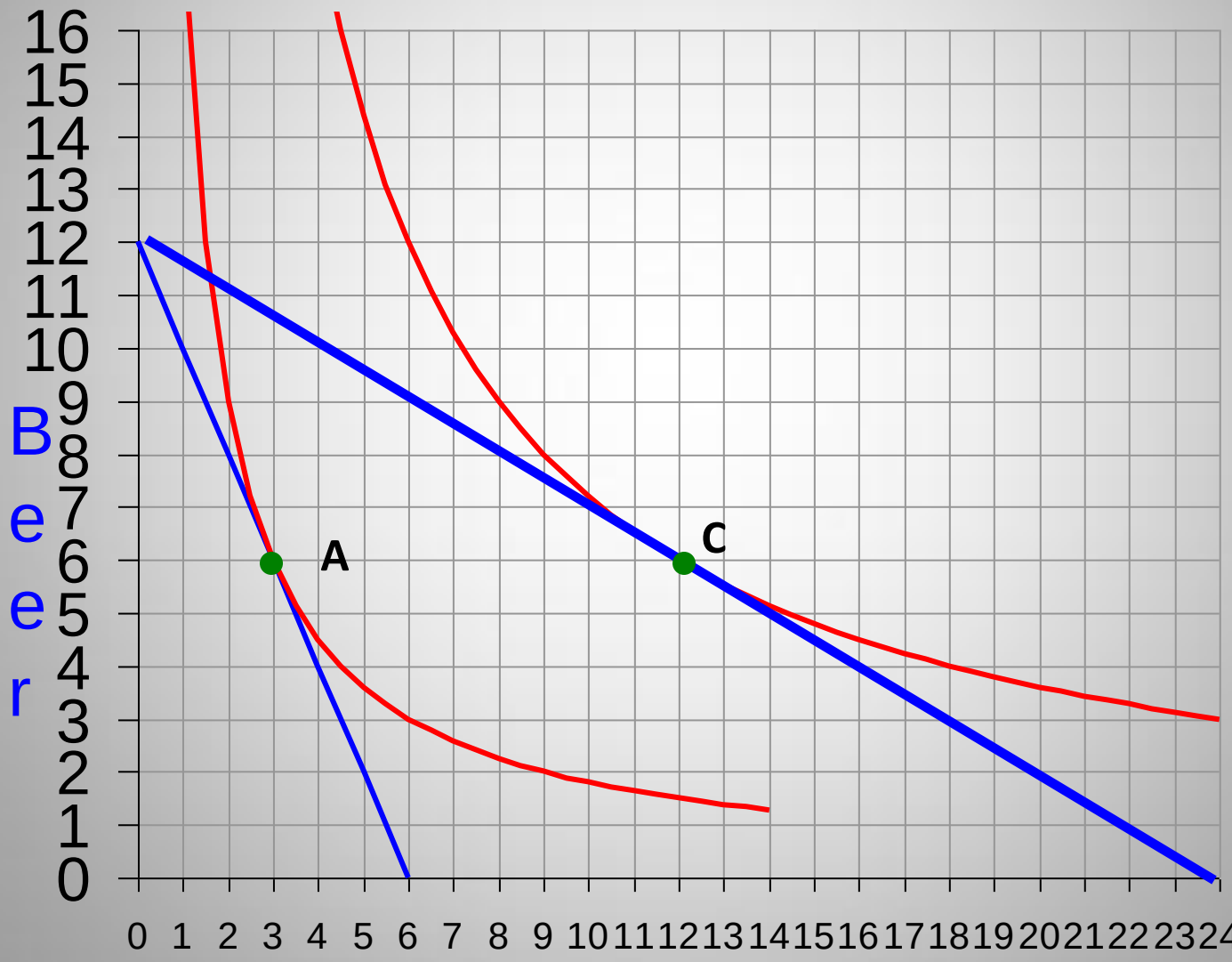


To separate the income and substitution effect, remember that when price changes:

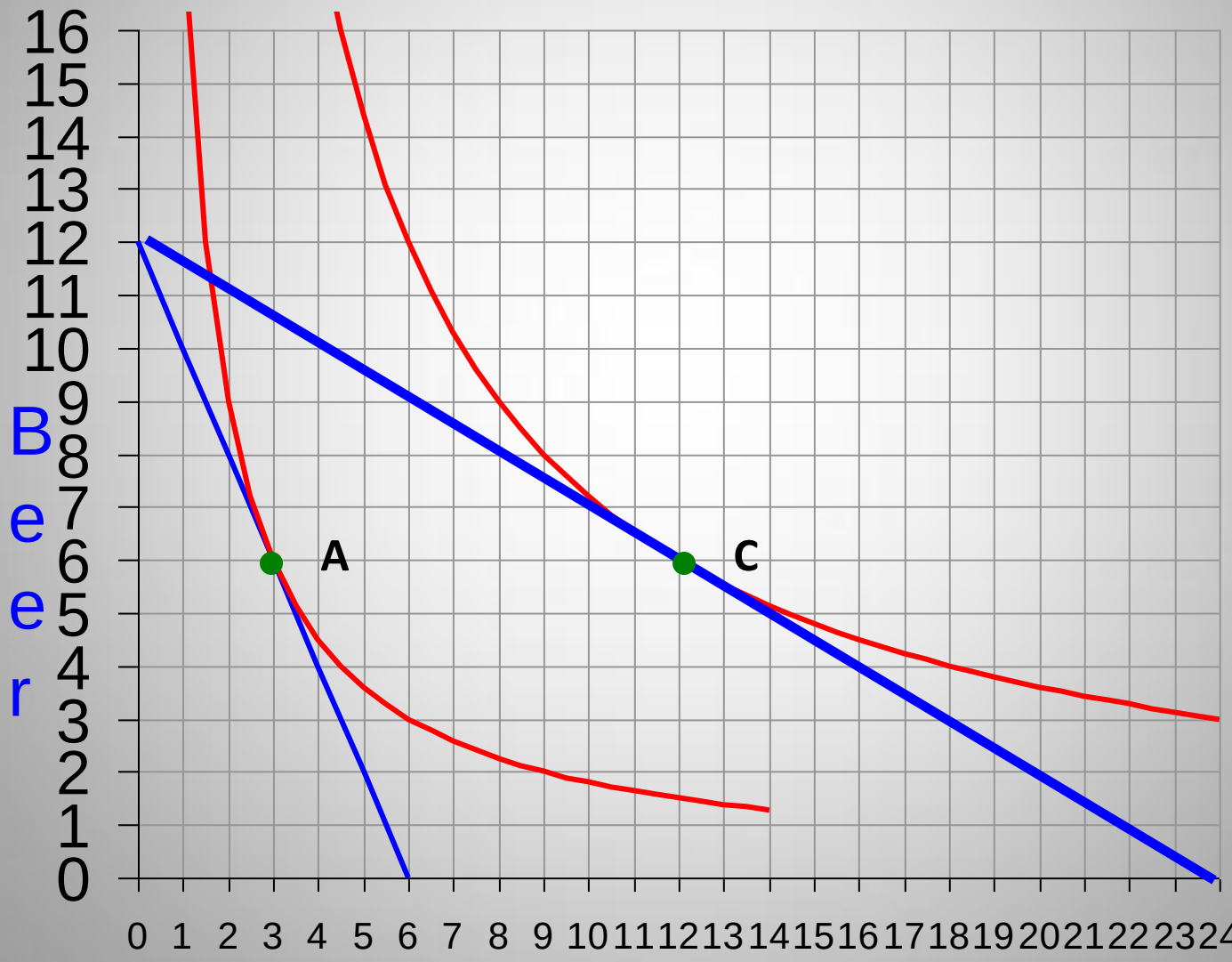
- opportunity cost changes
- your purchasing power (or income) changes

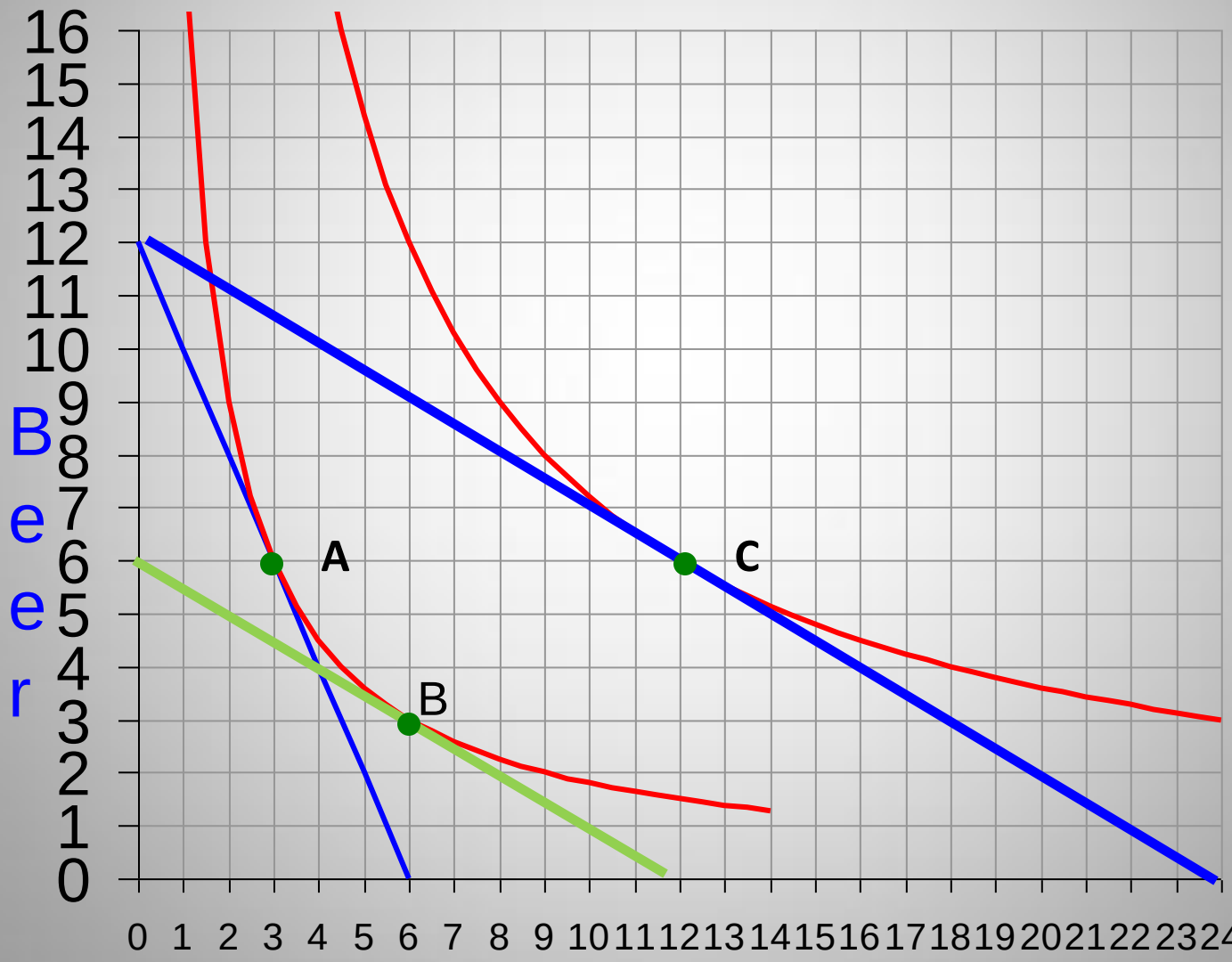
We want to take the new opportunity cost (the slope of the new BC), and see what the consumer would have consumed if he was forced to stay on his original indifference curve.

To do so, we create a budget constraint **(the green line two slides from this one)** that is parallel to the new one (the one that point C is on) AND tangent to the old indifference curve.

I = \$24 and P_{Beer}=\$2 fixed

P_{Pizza} = \$4: Label OCB **A**
P_{Pizza} = \$1: Label OCB **C**

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A
B
C

Movement **A** to **C** is total effect of price decrease.

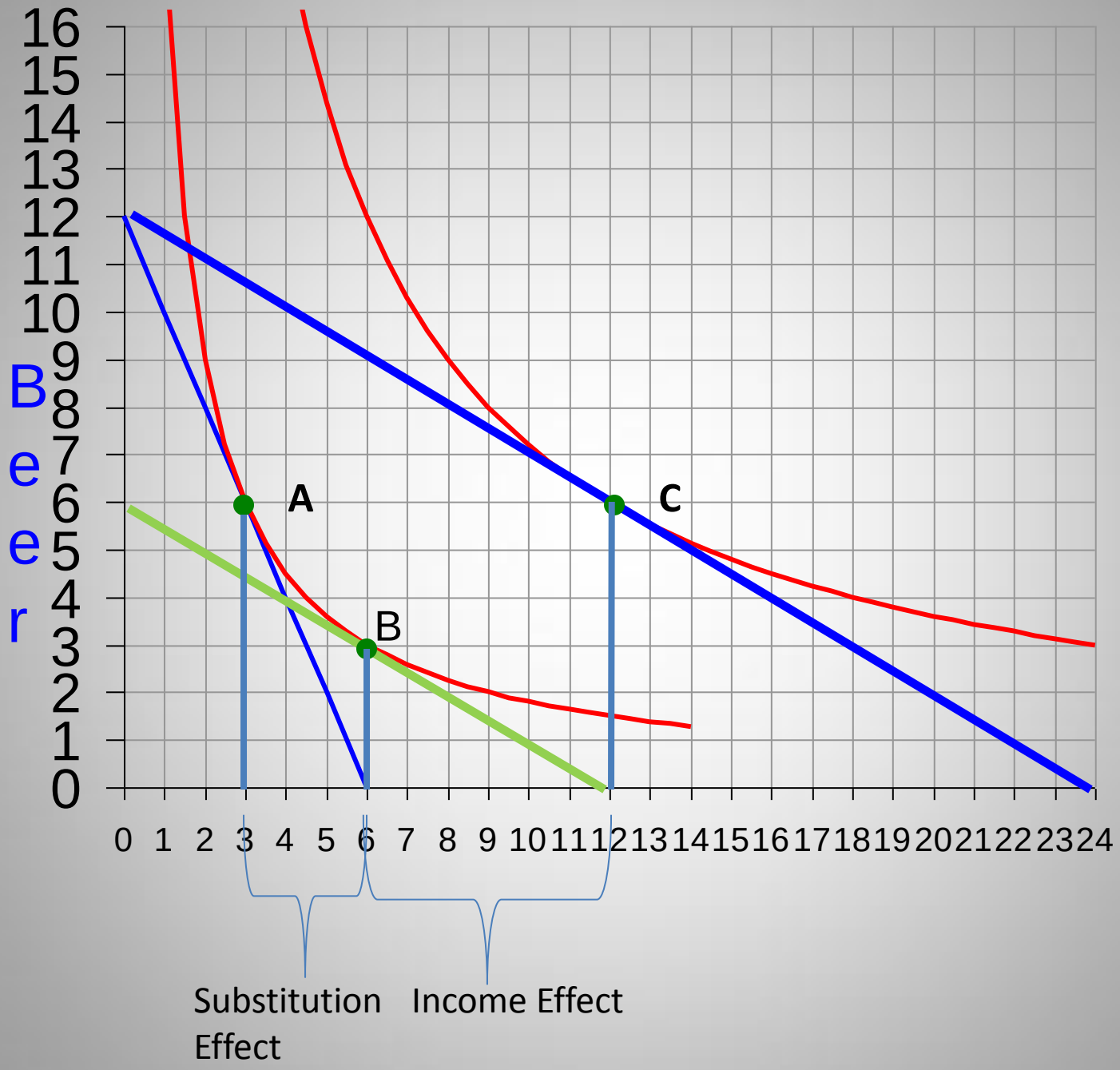
Breakdown to substitution effect:

New opportunity cost, but original indifference curve.

We labeled this **B.**

Substitution Effect is movement from **A** to **B.**

Income Effect is movement from **B** to **C**.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Substitution Effect
Income Effect

When price of good A falls:

Substitution effect: buy more of good A (because opportunity cost is lower), but that means buy less of good B

Income effect (since original bundle is cheaper than before so have income left over)

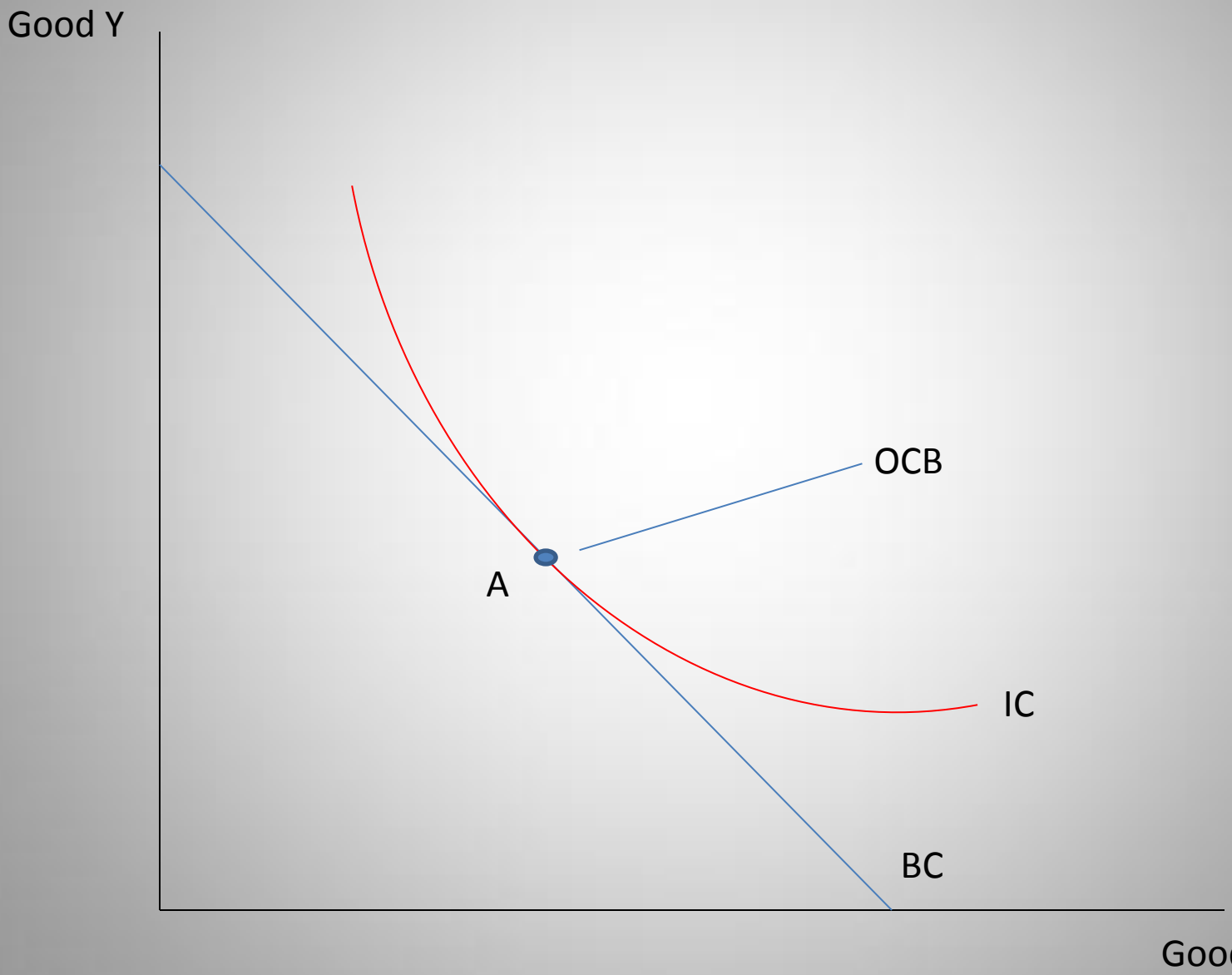
- normal good: buy more
- inferior good: buy less

For Good A:

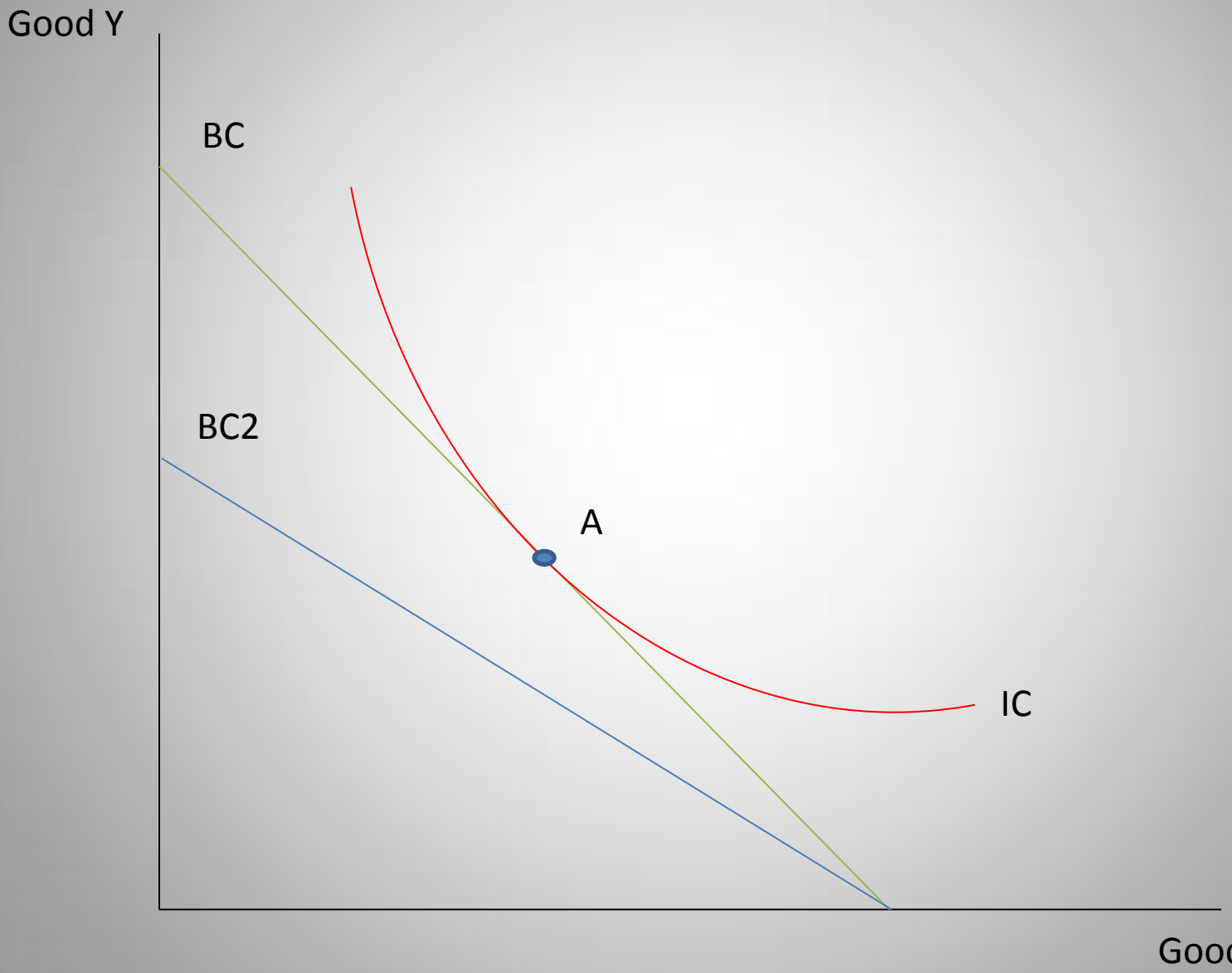
If normal, substitution effect and income effect work same way

If inferior, substitution effect and income effect go different ways.

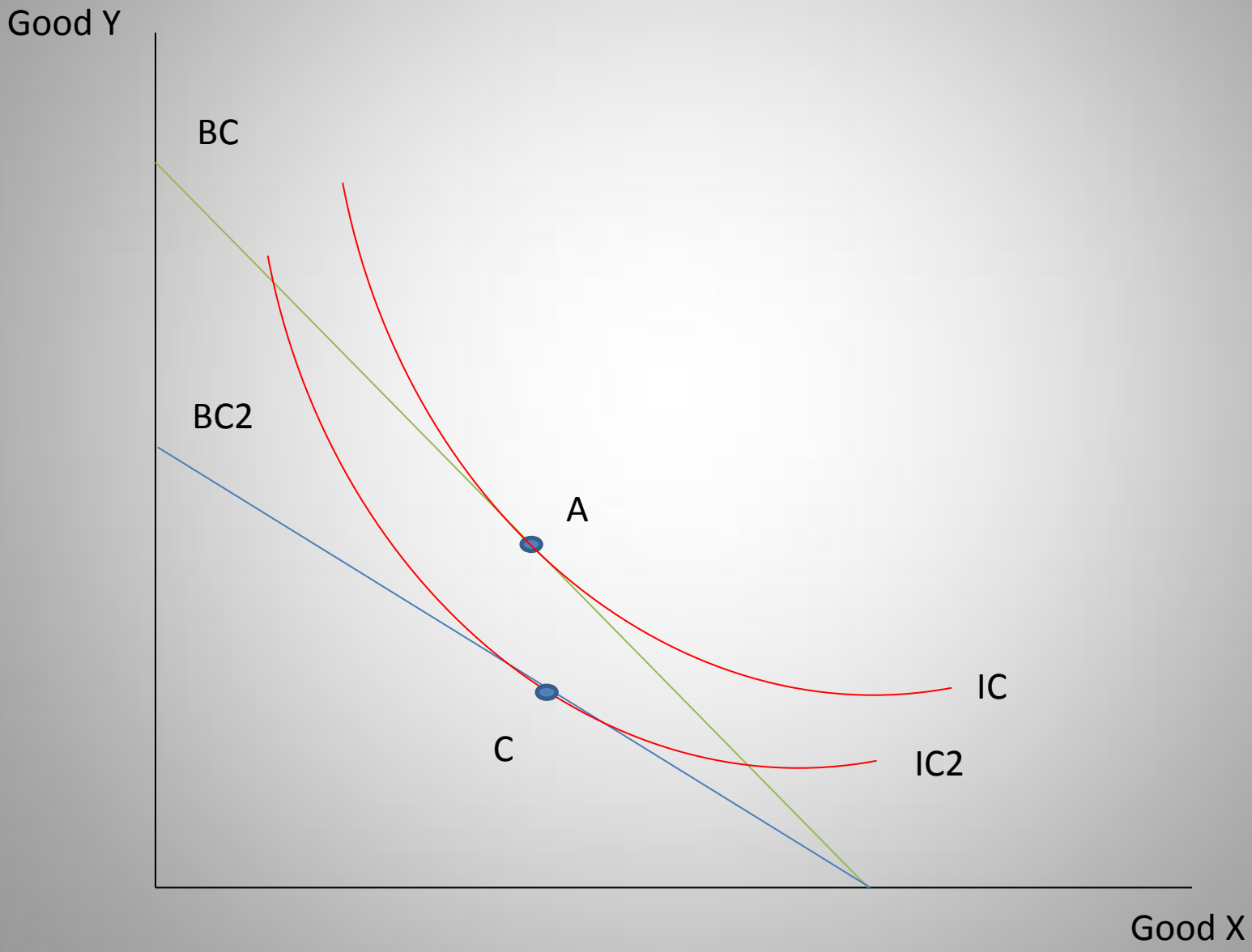
More Examples



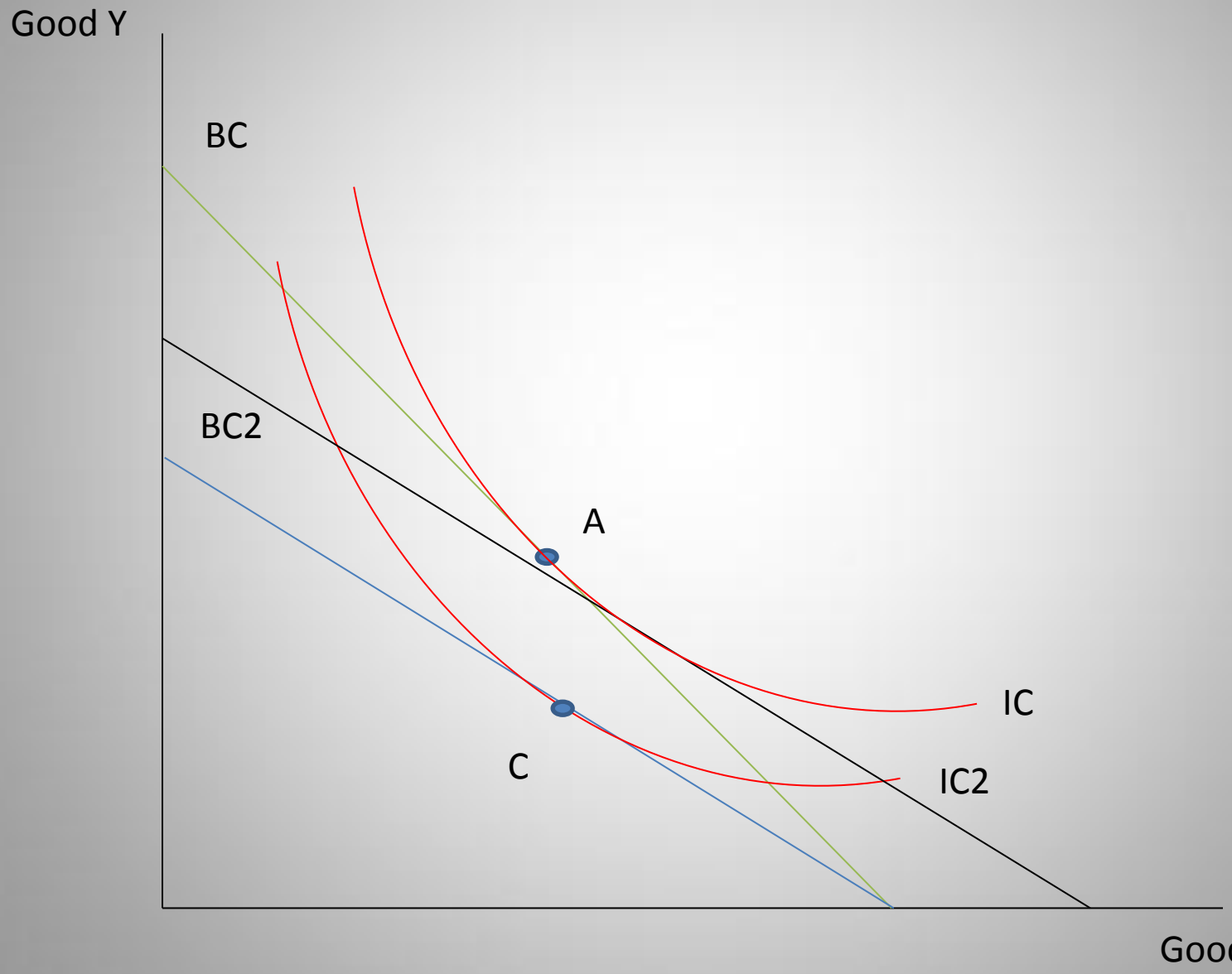
Price of Good Y increases



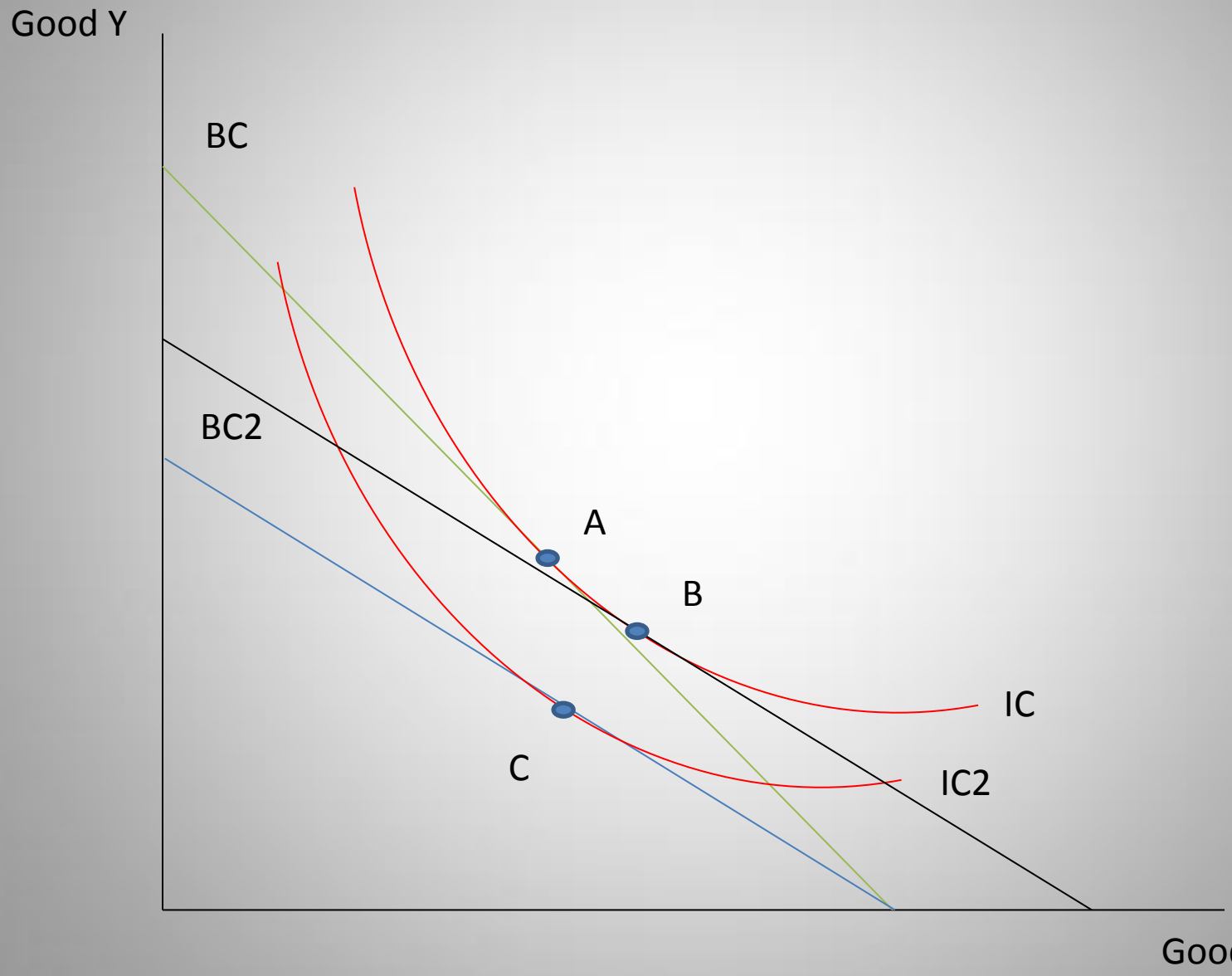
Find the new OCB (total effect)



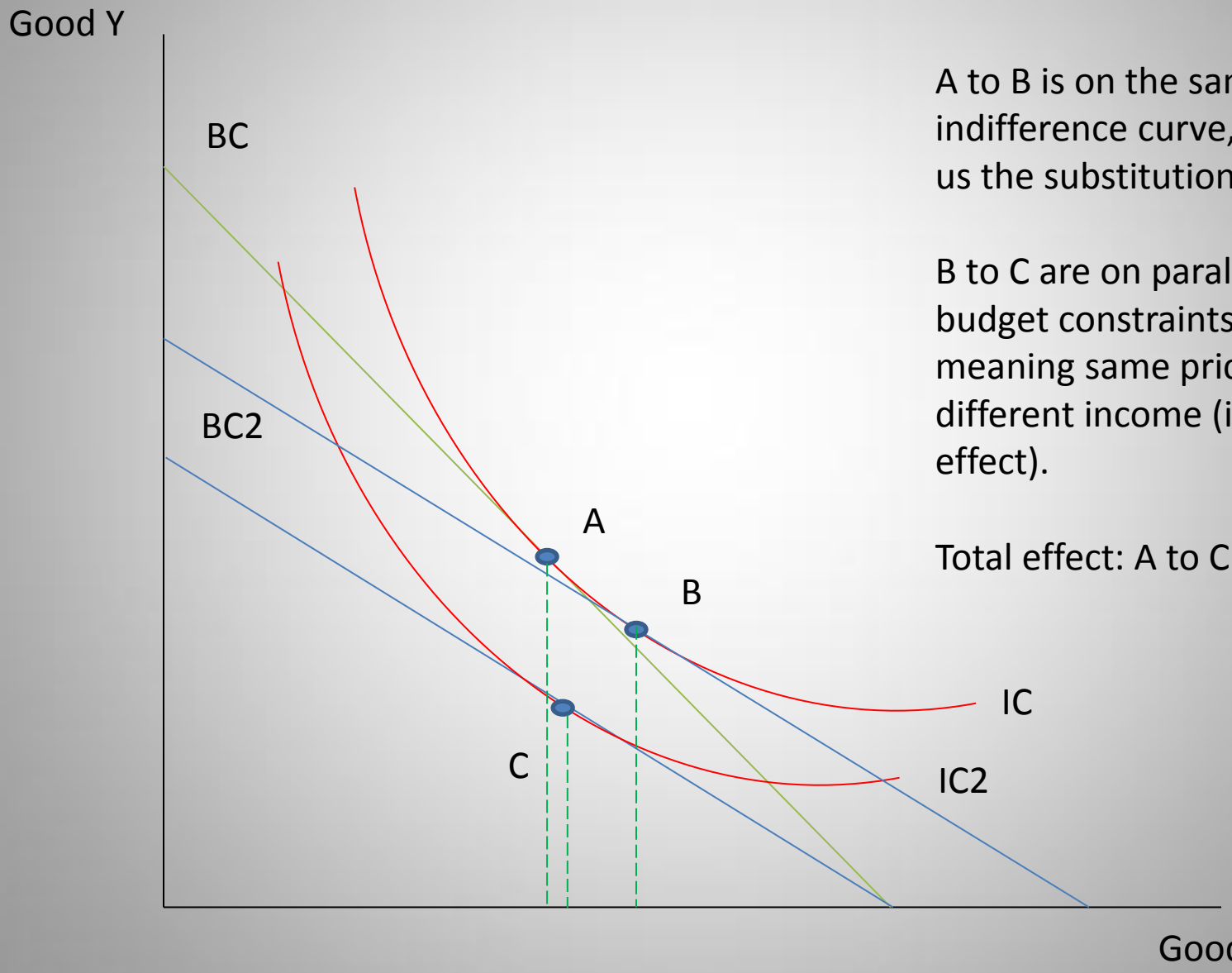
Sketch a parallel BC to stay on the previous indifference curve



Find the OCB resulting from substitution on the same indifference curve



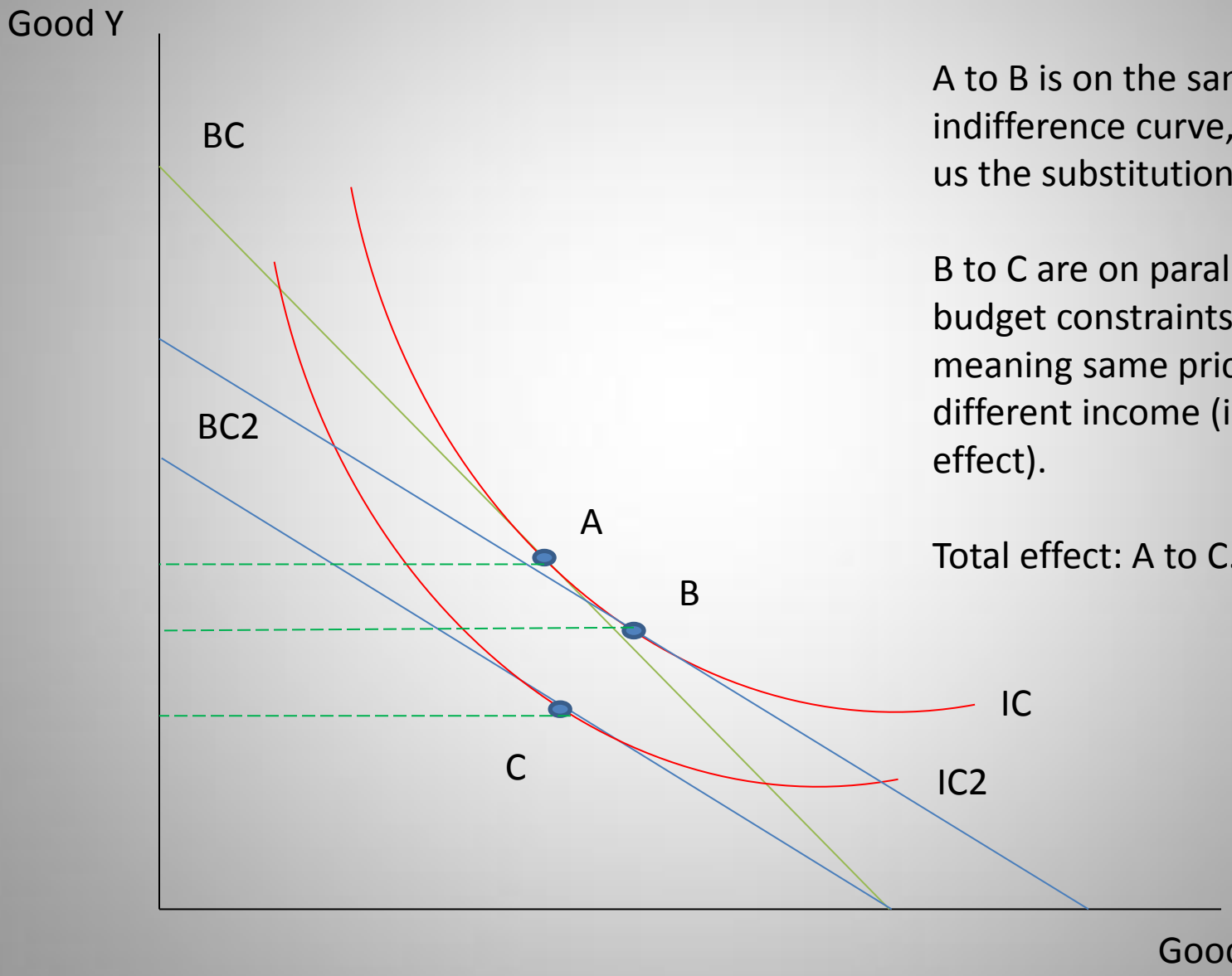
Find the income effect



A to B is on the same indifference curve, telling us the substitution effect.

B to C are on parallel budget constraints, meaning same prices but different income (income effect).

Total effect: A to C

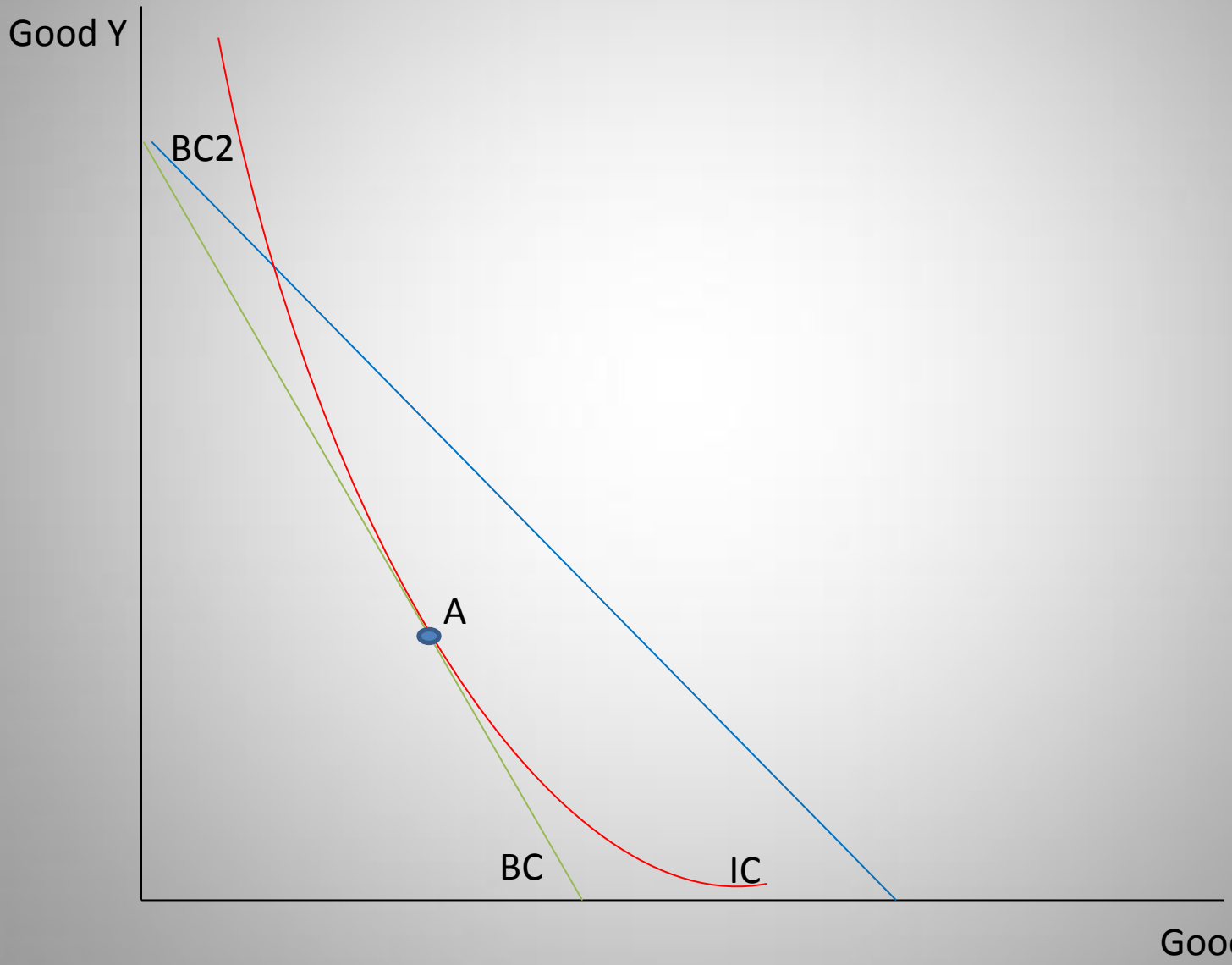


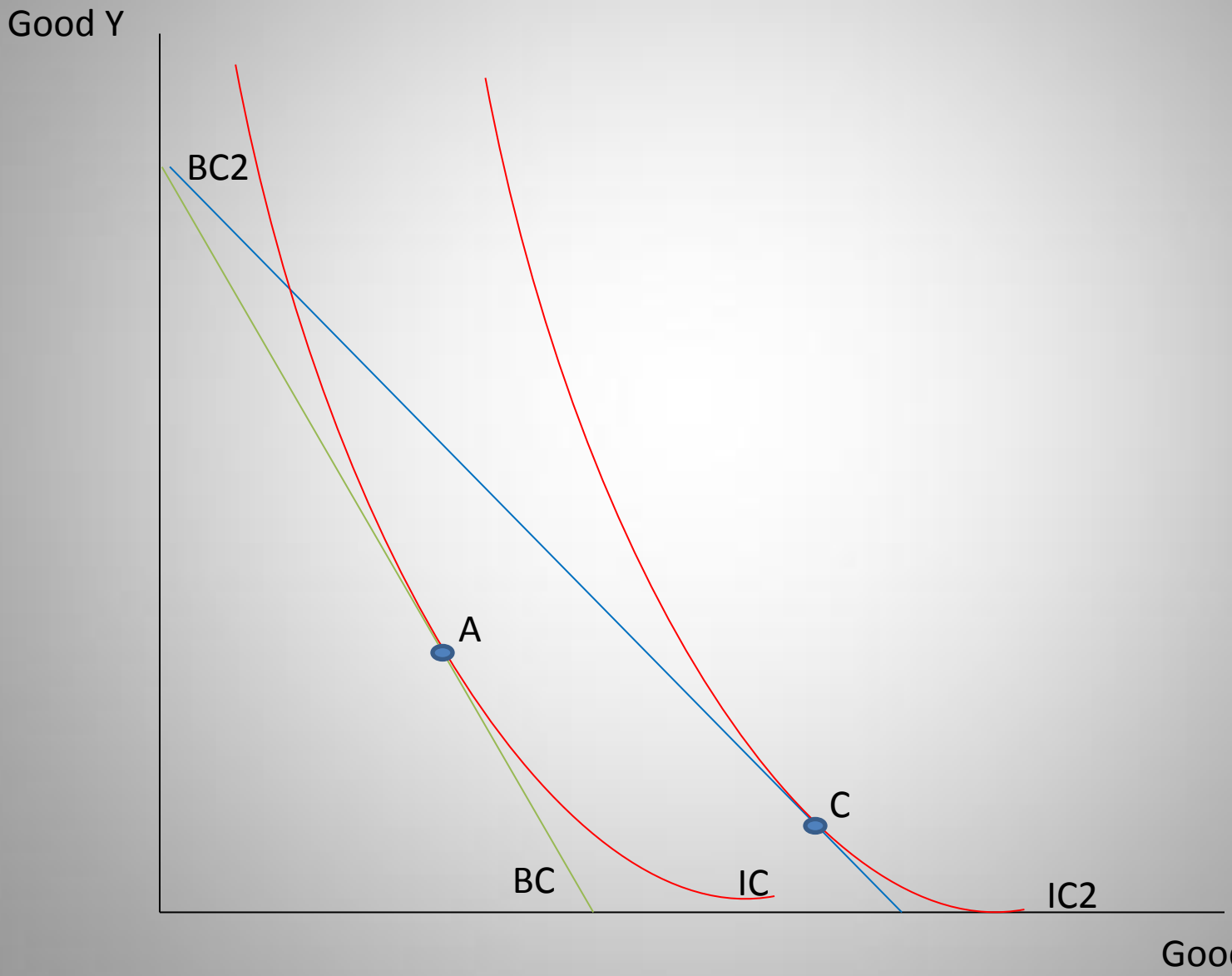
A to B is on the same indifference curve, telling us the substitution effect.

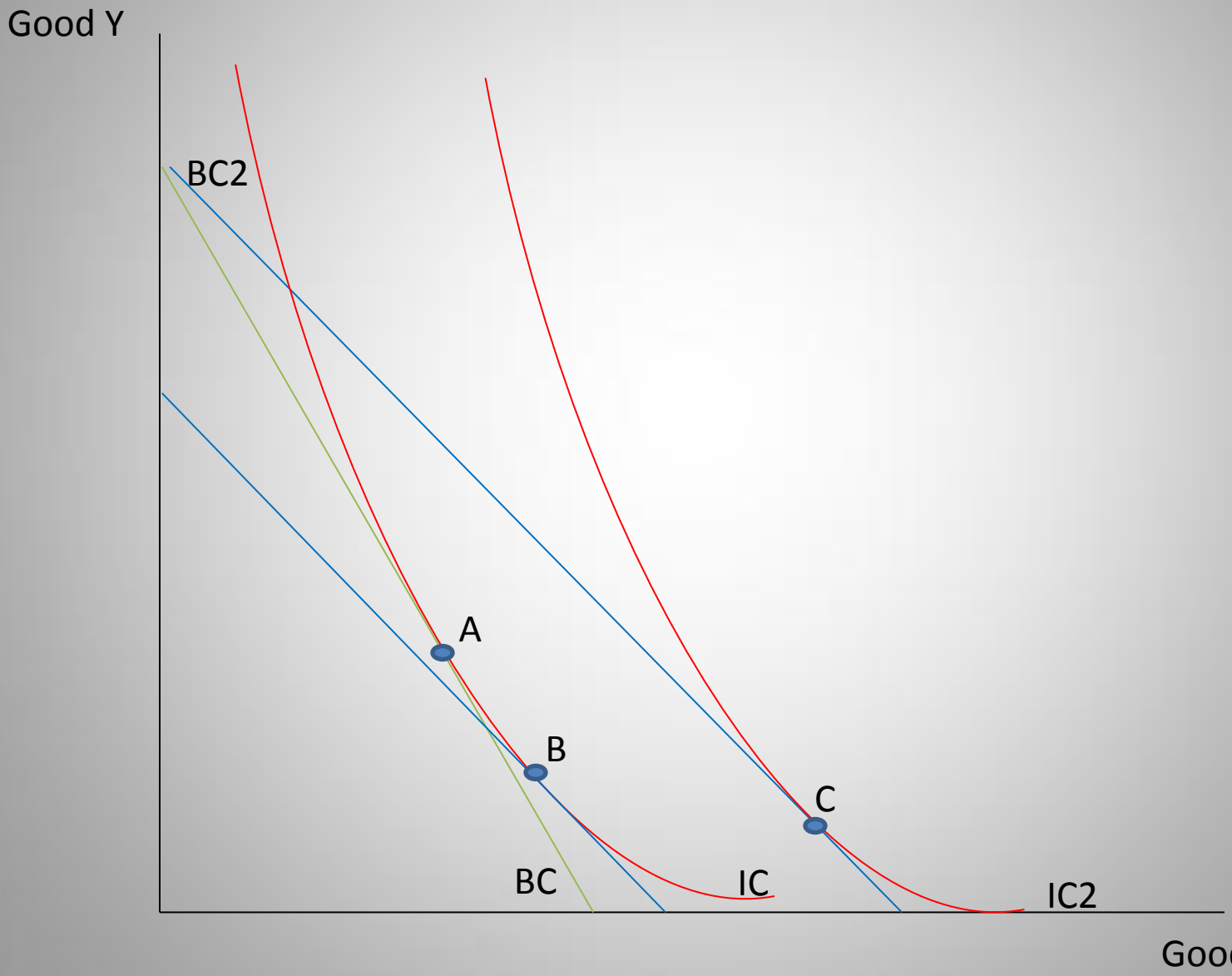
B to C are on parallel budget constraints, meaning same prices but different income (income effect).

Total effect: A to C.

Price of Good X decreases




Good Y
BC2
A
C
BC
IC
IC2
Good X


Good Y
BC2
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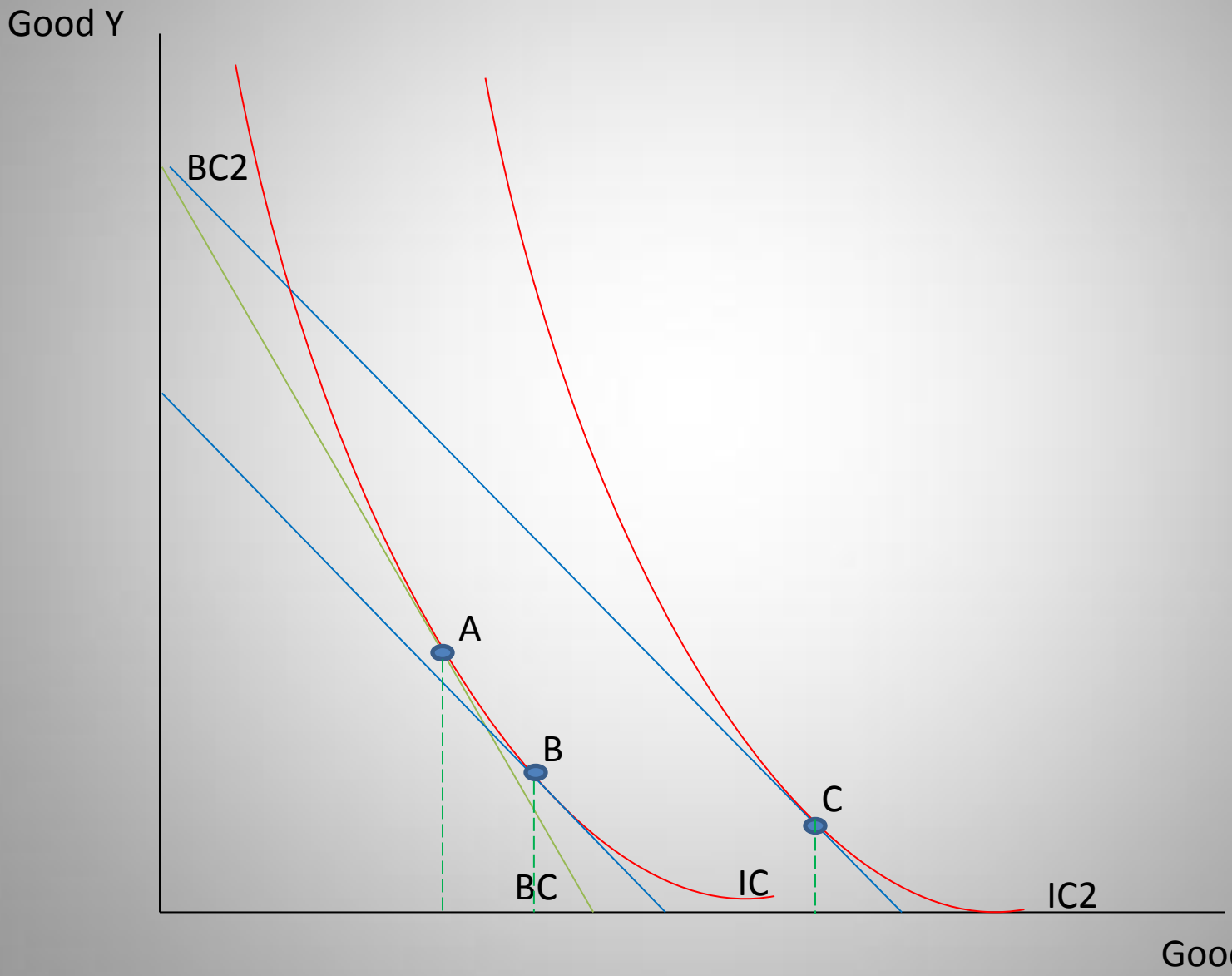
Good X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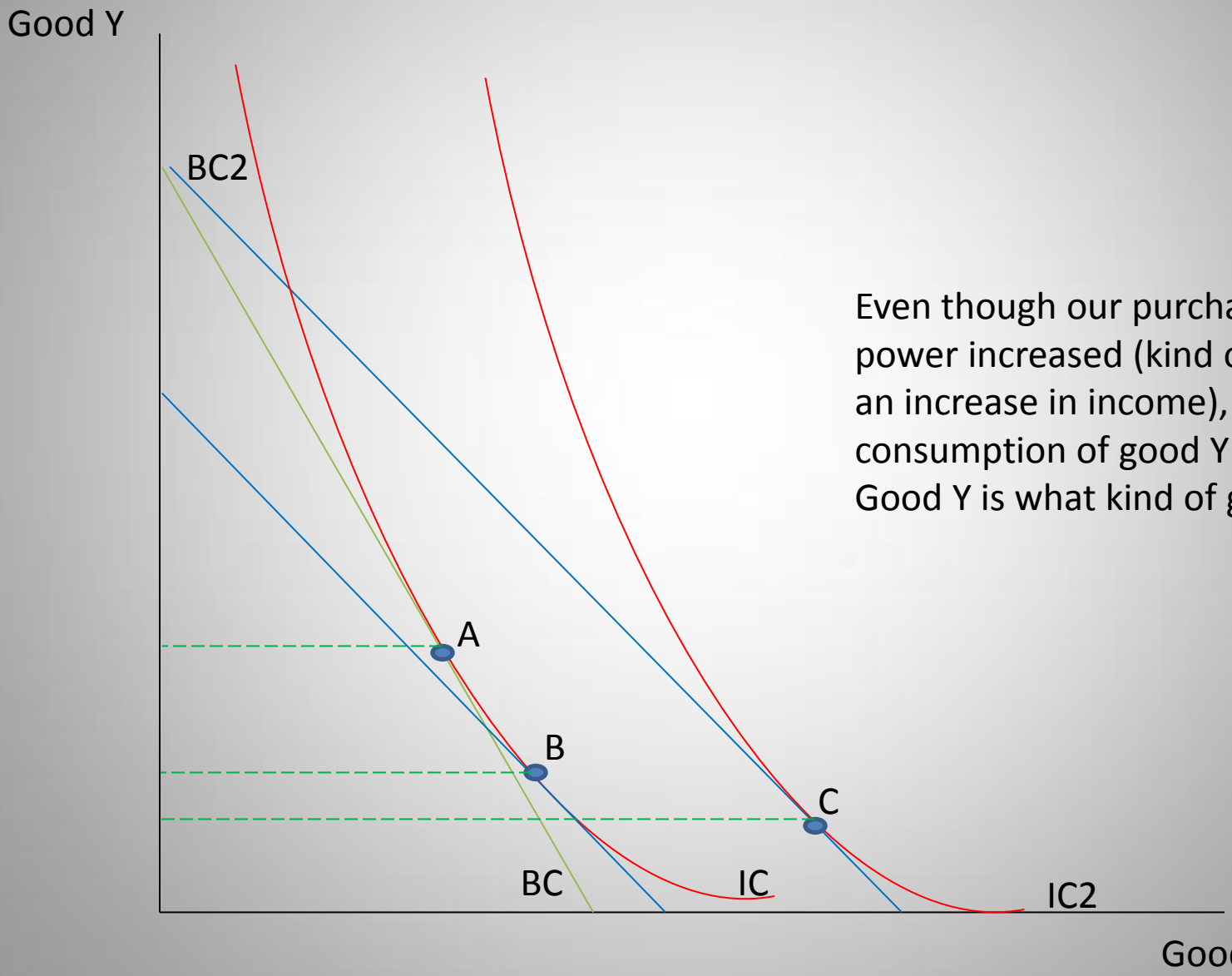


Even though our purchasing power increased (kind of like an increase in income), our consumption of good Y falls. Good Y is what kind of good?

Most important application of this theory:
Labor supply

For consumer goods, price goes up, resulting in a **decrease** in income. So for normal goods, the substitution effect and income effect go the same way.

For labor, price goes up (so price of labor goes up, aka wage goes up), individual gets an **increase** in income.

Income Effect

- Leisure a normal good
  - Evidence that leisure a normal good: What do lottery winners do? Quit working?

- So income effect when income (or wage) increases: consume more leisure (work less)

Leisure: a good. Has an opportunity cost: wage.

Wage goes up:

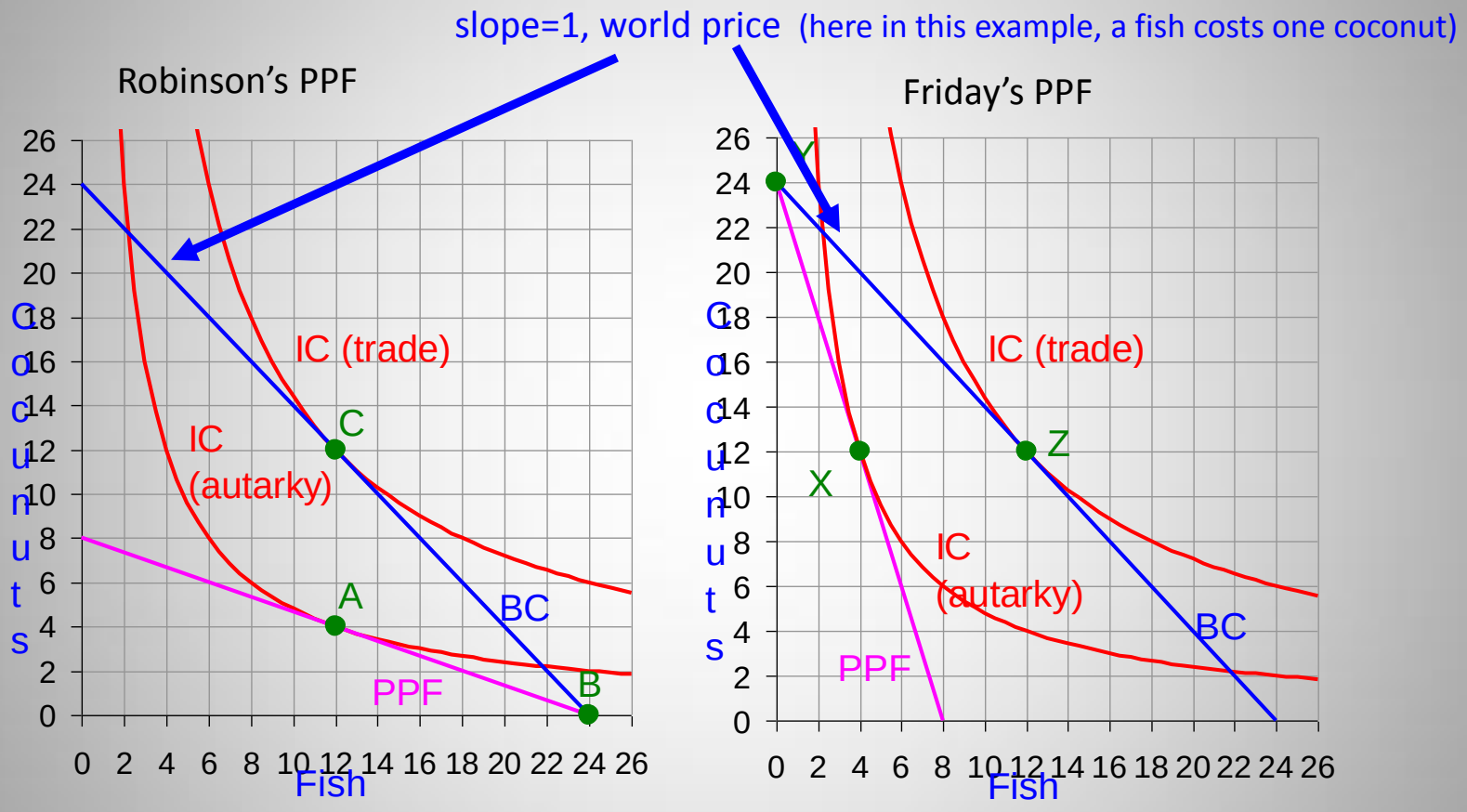
- Substitution effect
  - Opportunity cost of leisure increases
  - consume less leisure (work more)

What is the net effect?

Over time, as income has increased, time spent working has gone down (but income has increased dramatically).

So for the trend over time, income effect has predominated.

Completing the Picture



Robinson

	Produce	**Consume**
Autarky	A(12F,4C)	A (12F,4C)
Trade	B(24F,0C)	C(12F,12C)

Friday

	Produce	**Consume**
Autarky	X(4F,12C)	X(4F,12C)
Trade	Y(0F,24C)	Z(12F,12C)

Lots of great stuff on the previous graph!!!!

1. Production Possibility Frontier
2. Choice under autarky (on budget constraint where MRS equals opportunity cost)
3. Specializing in terms of comparative advantage
4. Gains from trade
5. Supply=Demand (Robinson supplies 12 fish and Friday demands 12 fish)