LECTURE 4

# VOUCHER VS. CASH
# INCOME AND SUBSTITUTION EFFECTS
# CONSUMER WELFARE

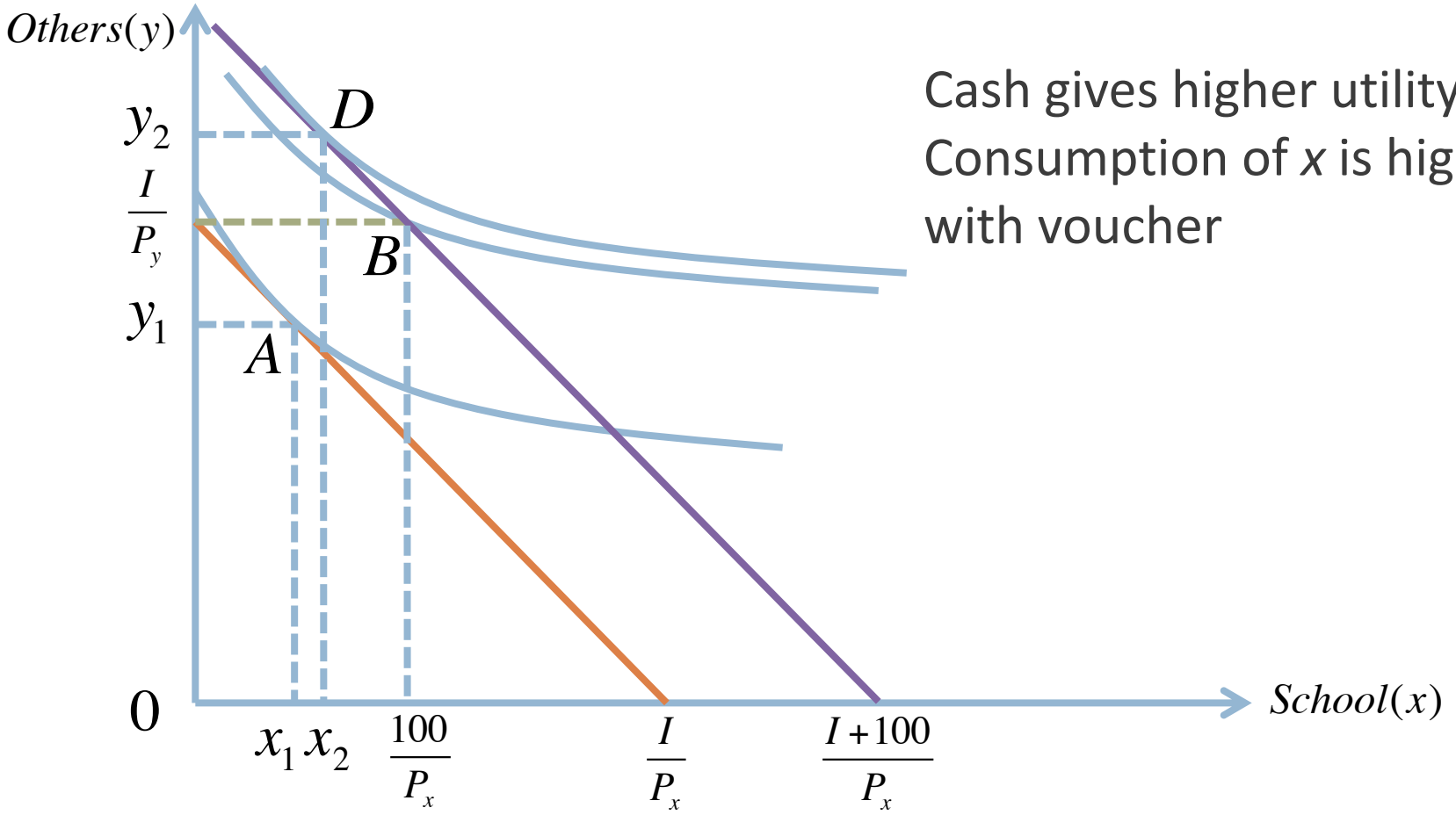
# Question 1: Voucher vs. Cash



- Cash is never worse than voucher
  - Comparing $\$V$ voucher to $\$V$ cash
  - Some consumers are indifferent between the two
  - Some consumers prefer cash to voucher
- Why use voucher?

# Question 1: Solution






Cash gives higher utility
Consumption of *x* is higher with voucher

# Question 2: Giffen Goods vs. Inferior Goods



- Giffen goods
  - Positive correlation between price and quantity demanded
- Inferior goods
  - Negative correlation between income and quantity demanded
- Are all Giffen goods inferior goods?
- Are all inferior goods Giffen goods?

# Question 2: Solution



- Are all Giffen goods inferior goods?
  - Yes
  - For a Giffen good, SE and IE have opposite signs and IE dominates SE
  - SE and IE have the same sign for a normal good
- Are all inferior goods Giffen goods?
  - No
  - For an inferior good, SE and IE have opposite signs but IE does not necessarily dominate SE

# Question 3 a): Subsistence Constraint



- A consumer buys two goods
  - A basic good *b* (e.g., rice)
  - A fancy good *f* (e.g., meat)
- Suppose the consumer is subject to a *subsistence constraint*
  - The total calories consumed must be at least 36 for the consumer to survive
- One unit of basic good provides a calorie of 1
- One unit of fancy good provides a calorie of 2
- What is the equation of the subsistence constraint?

# Question 3 b): Subsistence Line vs. Budget Line



- It should be

$$b + 2f \geq 36$$

- The subsistence line is

$$b + 2f = 36$$

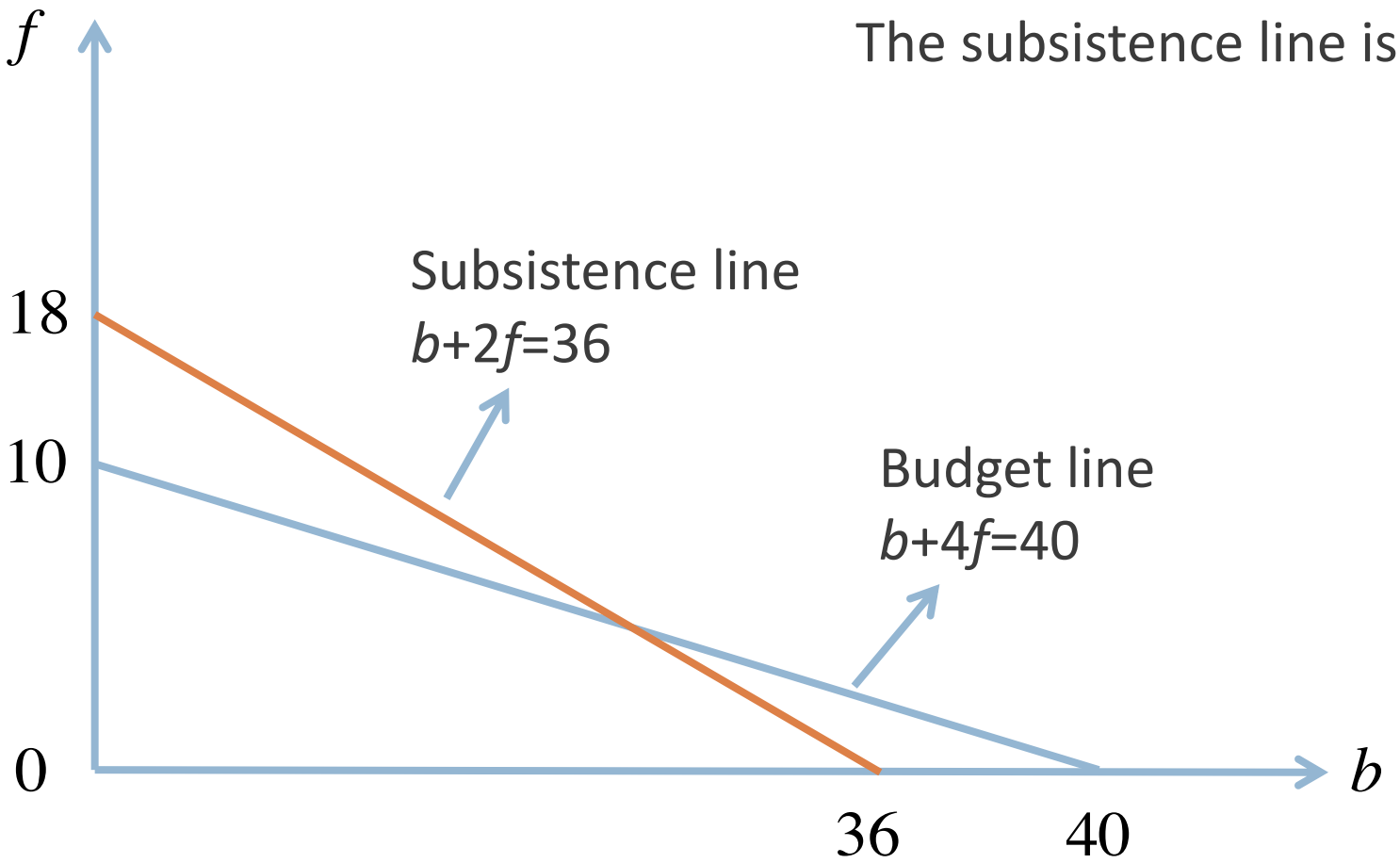
- Suppose the price of *b* is \$1, the price of *f* is \$4, and the income is \$40
- The budget line is

$$b + 4f = 40$$

- With *b* on the horizontal axis and *f* on the vertical axis, which one is steeper, the budget line or the subsistence line?

# Question 3: Graph





# Question 4: Calculating CV and EV



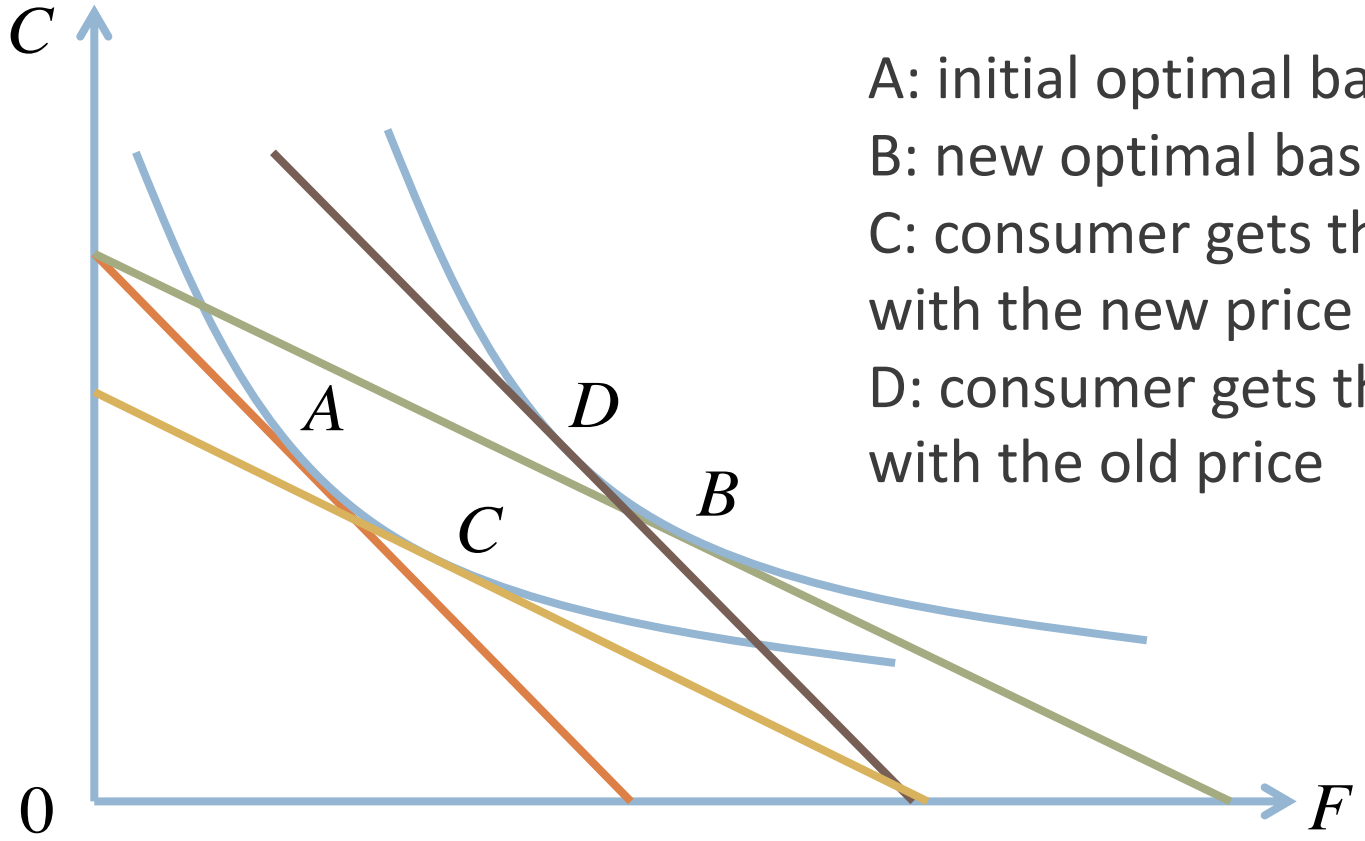
- Suppose the consumer has utility function

$$U(F,C) = FC$$

- Suppose price of food is \$2, price of clothing is \$2, income is \$10
- Optimal basket (A) is *F*=2.5, *C*=2.5, consumer's utility is 6.25
- Suppose price of food decreases to \$1
- Then new optimal basket (B) is *F*=5, *C*=2.5, consumer's utility is 12.5
- Calculate the CV and EV of this price change

# Question 4: Solution Graph






A: initial optimal basket
B: new optimal basket
C: consumer gets the old utility with the new price
D: consumer gets the new utility with the old price

# Question 4: Solution CV



- Basket C must satisfy

$$FC = 6.25$$

$$\frac{C}{F} = \frac{1}{2}$$

- Basket C is $F$=3.54, $C$=1.77
- To afford C, the consumer needs an income of

$$P_F F + P_C C = 1 \times 3.54 + 2 \times 1.77 = 7.08$$

- Thus CV=10-7.08=$2.92
  - The utility gain from the price decrease is equivalent to $2.92

# Question 4: Solution EV



- Basket D must satisfy

$$FC = 12.5$$

$$\frac{C}{F} = \frac{2}{2} = 1$$

- Basket D is $F$=3.54, $C$=3.54
- To afford D, the consumer needs an income of

$$P_F F + P_C C = 2 \times 3.54 + 2 \times 3.54 = 14.16$$

- Thus EV=14.16-10=$4.16
  - The utility gain from the price decrease is equivalent to $4.16

# Q&A on Lecture 4