The price of one good changing has two effects:

1. The rate at which you can exchange one good for another changes
   两个物品的相对价格发生变化
2. The total purchasing power of your income is altered 购买力发生变化
   - If the price went down, consuming the same bundle as before leaves extra income
     价格下降，手里剩钱
   - If the price went up, you cannot consume the same bundle as before
     价格上升，不能再买原来的数量

if 物品 1 价格 falls, you:

1. Must give up less of good 2 to purchase good 1
   Change in the rate at which you must substitute good 2 for good 1
2. Can now buy more of good 1
   The purchasing power of your income has gone up

if 物品 1 价格 increases, you:

1. Must give up more of good 2 to purchase good 1
   Change in the rate at which you must substitute good 2 for good 1
2. Can now buy less of good 1
   The purchasing power of your income has gone down

中心思想：

Substitution Effect 替代效应

•The change in demand due to the change in the rate of exchange ($p1/p2$)between the two goods
相对价格的变化对需求的影响

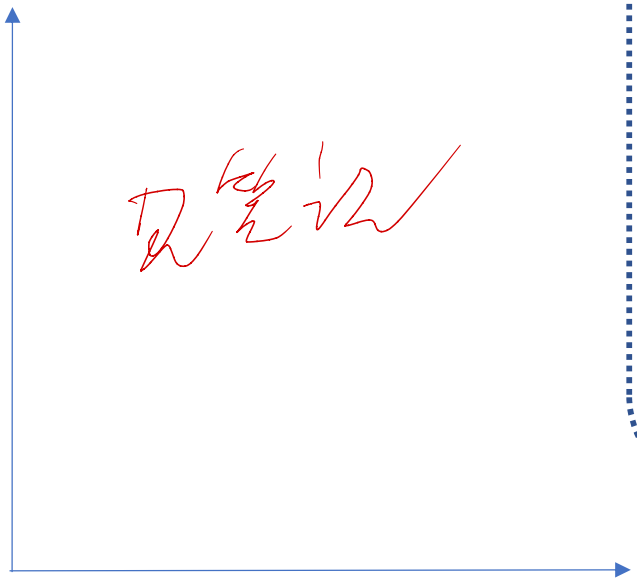
Income Effect 收入效应

•The change in demand due to having more or less purchasing power
购买力的变化对需求的影响

- **SUBSTITUTION EFFECT**

Let relative prices change and adjust income so as to hold purchasing power constant

改变相对价格，购买力一样（买原来的 bundle）



画图步骤：

If price of good 1 decrease

1.piovt the budget line outward

2.shift the pivoted budget line to the original bundle

当物品 1 价格下降

1.将预算线转到新的价格

2.将新价格的预算线平移回一开始的商品组合

两条 budget line 公式：

$m'=p1'x1+p2x2$

$m=p1x1+p2x2$

相减找出变化

$m'-m=x1\ (p1'-p1)$

$\Delta m=x1\Delta p1$

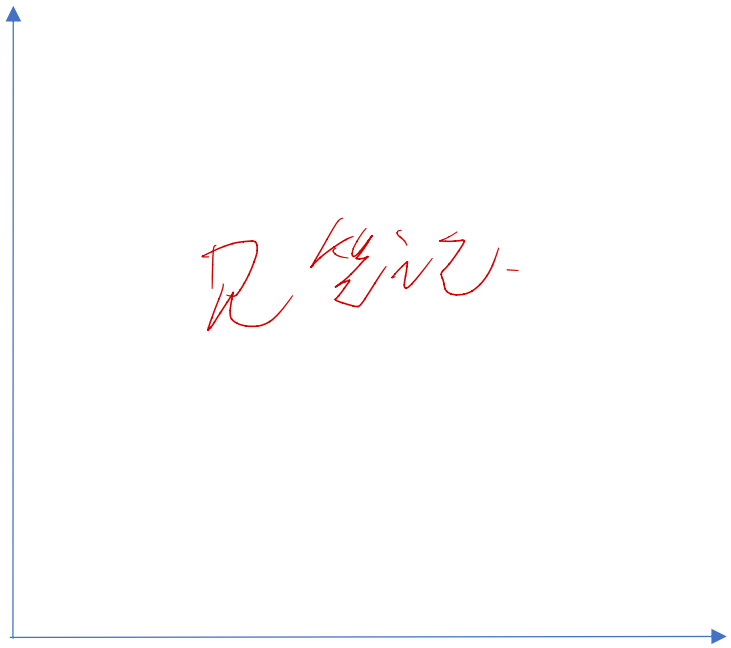
Substitution effect 公式：

$$\Delta x_1^S = x_1' - x_1 = x_1(p_1', p_2, m') - x_1(p_1, p_2, m)$$

- **INCOME EFFECT**

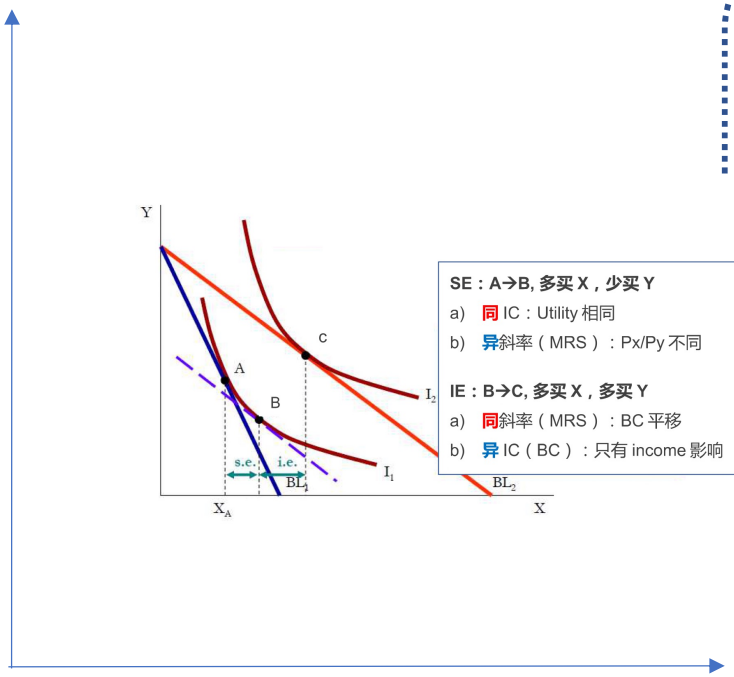
Let purchasing power adjust while holding relative prices constant

改变购买力，相对价格一样



Income effect 公式：

- 组合在一起
  - Case 1 :Good 1 Normal good



SE：A→B, 多买 X，少买 Y

a) 同 IC：Utility 相同

b) 异斜率（MRS）：Px/Py 不同

IE：B→C, 多买 X，多买 Y

a) 同斜率（MRS）：BC 平移

b) 异 IC（BC）：只有 income 影响

画图步骤：

If price of good 1 decrease

1.piovt the budget line outward

2.shift the pivoted budget line to the bundle

价格下降

线转到新的价格

格的预算线平移回一开始的

A->B Total effect (T.E.)

A->C Subsitution effect (S.E)

C->B Income effect (I.E)

总结：（后面的点减前面的点 才是变化）

Total effects = Substitution effect + income effects

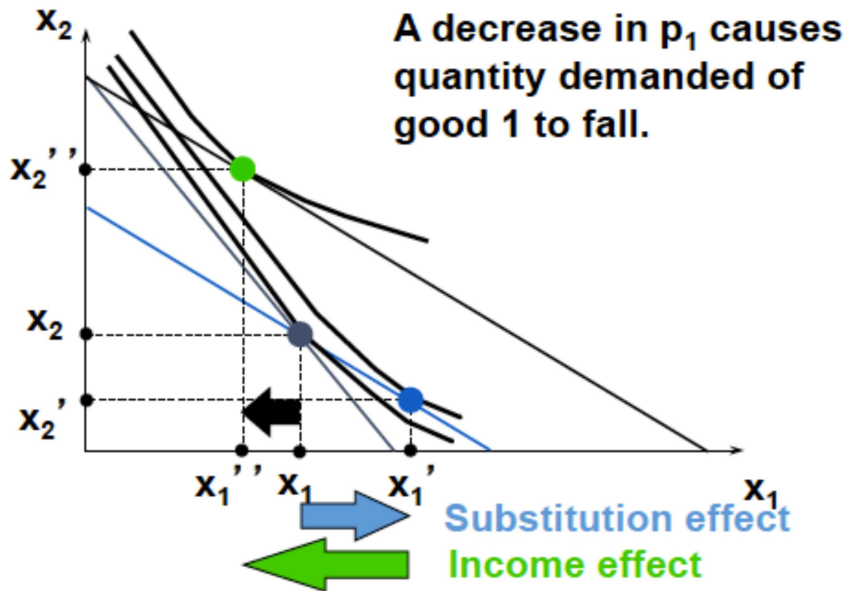
Total effects = $x_1^{final} - x_1^{initial}$

Subtitution effects= $x_1^{SE} - x_1^{initial}$

Income effects = $x_1^{final} - x_1^{SE}$

- Case 2 : Good 1 Inferior good

- Case 3: Good1 Giffen good



总结：

Normal Good: 普通商品

a) Substitute effect 替代影响

p1↓, x1↑,

p1↑, x1↓

b) Income effect 收入影响

X1 [ ] X2 [ ]

the IE reinforces the SE

Inferior Good: 残次品

1. Substitute effect 替代影响

p1↓, x1↑,

p1↑, x1↓

2. Income effect 收入影响X

X1 [ ] X2 [ ]

The substitution and income effects oppose each other when an inferior good’ s own price changes

- **SLUTSKY EQUATION**

The total change in demand from a price change can be written using the Slutsky Equation:

Normal good:

SE and IE work in same direction（直接可以判断出总变化的方向）

•A price increase causes a reduction in overall demand, through both SE and IE:

Inferior Good:

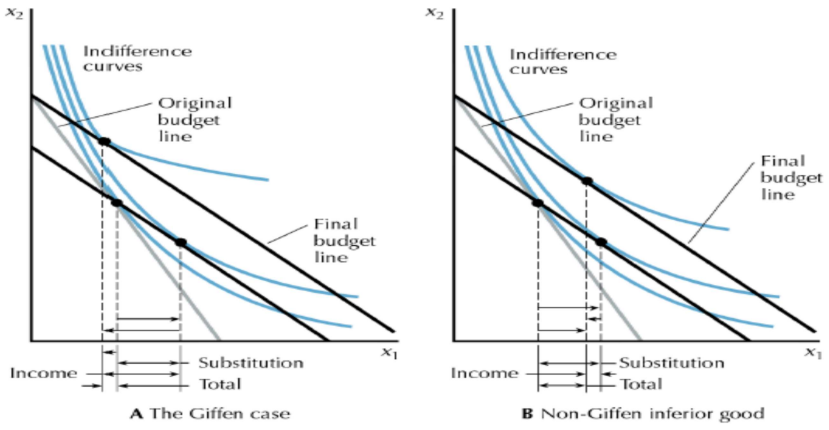
SE and IE work in opposite directions (需要通过哪个影响大，来判断出总变化的方向)

•A price increase causes an ambiguous change in overall demand, through SE being negative and IE being positive:

Giffen good: IE is larger, and price increase => consume more

(Non-Giffen) Inferior good: SE is large, and price increase => consume less

图像：



：

练习：

1. $x_1 = 10 + \frac{m}{10p_1}, m = 100, p_1 = 1, then\ p_1\ increase\ to\ 2, what\ is\ the\ change\ in\ m?\ \ IE? SE?$

2. U=xy, px=2, py=1, m= 120

   then px=1, py=1 m=120

   income effect? Subsititution effect ? how much income need to buy the orginal bundle with the new price?

TRUE/FALSE

1. A Giffen good must be an inferior good.

ANS: T

2. If a good is an inferior good, then an increase in its price will increase the demand for it.

ANS: F

3. The Slutsky substitution effect measures the movement between two points on the same indifference curve.

ANS: F

4. In the case of homothetic preferences, the entire change in demand from a price change is due to the substitution effect.

ANS: F

5. If two goods x and y are perfect complements, then if the price of x falls, the entire change in the demand for x is due to the income effect.

ANS: T

6. If the Engel curve slopes up, then the demand curve slopes down.

ANS: T

MULTIPLE CHOICE

1. If the prices of all goods increase by the same proportion as income, the quantity demanded of good *x* will
   a. decrease.
   b. increase.
   * c. remain unchanged.
   d. change in a way that cannot be determined from the information given.

2. If income doubles and the quantity demanded of good *x* less than doubles, then good *x* can be described as a
   a. substitute good.
   b. complement good.
   c. necessity.
   * d. Normal.

3. If an individual buys only two goods and these must be used in a fixed relationship with one another (e.g., coffee and cream for a coffee drinker who never varies the amount of cream used in each cup), then
   * a. there is no substitution effect from a change in the price of coffee.
   b. there is no income effect from a change in the price of coffee.
   c. Giffen' s Paradox must occur if both coffee and cream are inferior goods.
   d. an increase in income will not affect cream purchases.

4. Consider the two following statements:

I. x is an inferior good.

II. x exhibits Giffen' s Paradox.

Which of the following is true?

a. I implies II, but II does not necessarily imply I.

* b. II implies I, but I does not necessarily imply II.

c. I and II are statements of the same phenomenon.

5. Assume x and y are the only two goods a person consumes and x is an inferior good. If after a fall in p_x the quantity demanded of x increases, one could say

a. the income effect dominates the substitution effect.

* b. the substitution effect dominates the income effect.

c. it is still impossible to determine whether the substitution or income effect dominates.

d. none of the above.