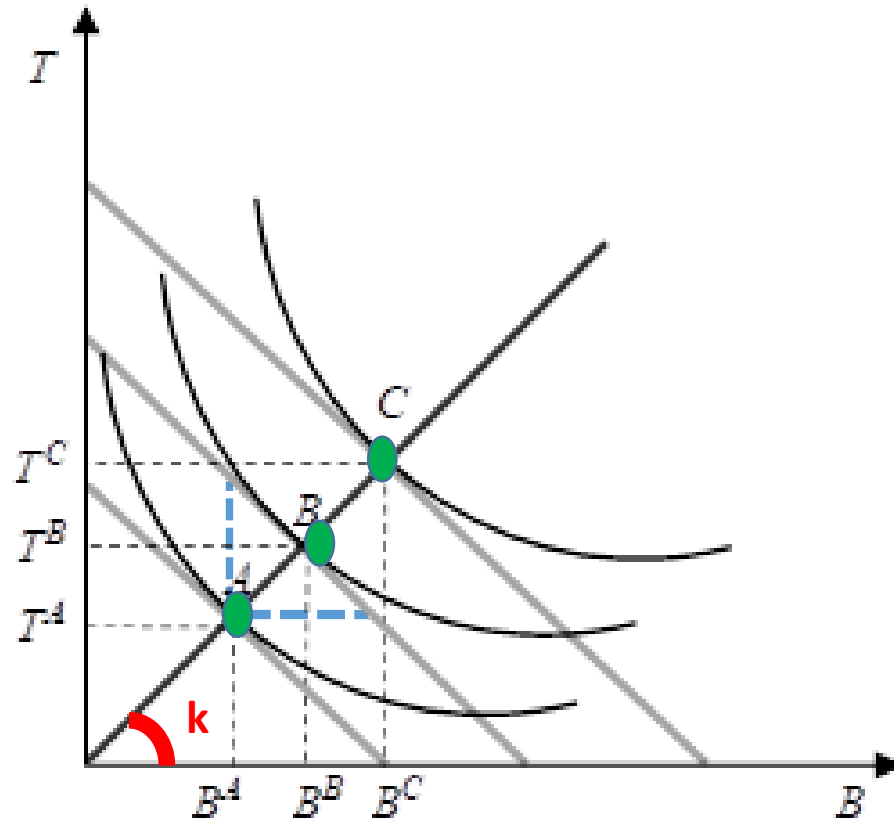




Chapter 3



Changes in individual income and superior goods



$$T^* = kB^*$$

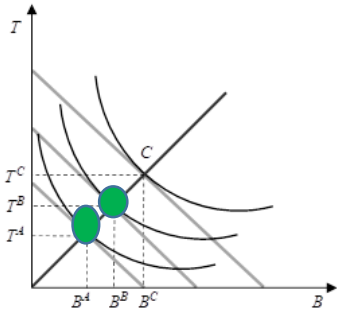
$$T^*/B^* = k$$

T and B are **superior goods**.

John's income elasticity for
B and L?

Positive!

Homothetic Preferences



$$T^* = k B^*$$

$$I_a = P_B B_a + P_T T_a = P_B B_a + P_T k B_a$$

$$B_a = \frac{I_a}{(P_B + P_T k)}$$

$$P_B B_a = (P_B I_a) / (P_B + P_T k)$$

$$(P_B B_a) / (I_a) = [P_B / (P_B + P_T k)]$$

If we now double income from I_a to $2 I_a (=I_b)$, with this type of preferences, the new preferred basket (B_b, T_b) will be such that:

$$I_b = 2 I_a = P_B B_b + P_T T_b = P_B B_b + P_T k B_b$$

Homothetic Preferences

$$2 I_a = P_B Bb + P_T Tb = P_B Bb + P_T k Bb$$

and since we know, from the previous budget constraint multiplied by 2, that

$$2 I_a = 2 (P_B Ba + P_T k Ba)$$

It must be true that **$Bb = 2 Ba$** :

$$P_B Bb + P_T k Bb = 2 (P_B Ba + P_T k Ba)$$

$$Bb (P_B + P_T k) = 2 Ba (P_B + P_T k)$$

$$Bb (\cancel{P_B + P_T k}) = 2 Ba (\cancel{P_B + P_T k})$$

$Bb = 2 Ba$ and thus that **$Tb = 2 Ta$**

since

$$Ta/Ba = Tb/Bb = k$$

$$Tb/Ta = Bb/Ba$$

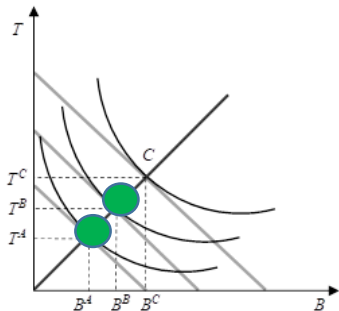
$$(P_B Ba)/(I_a) = [P_B / (P_B + P_T k)]$$

$$(P_B 2 Ba)/(2I_a) = [P_B / (P_B + P_T k)]$$

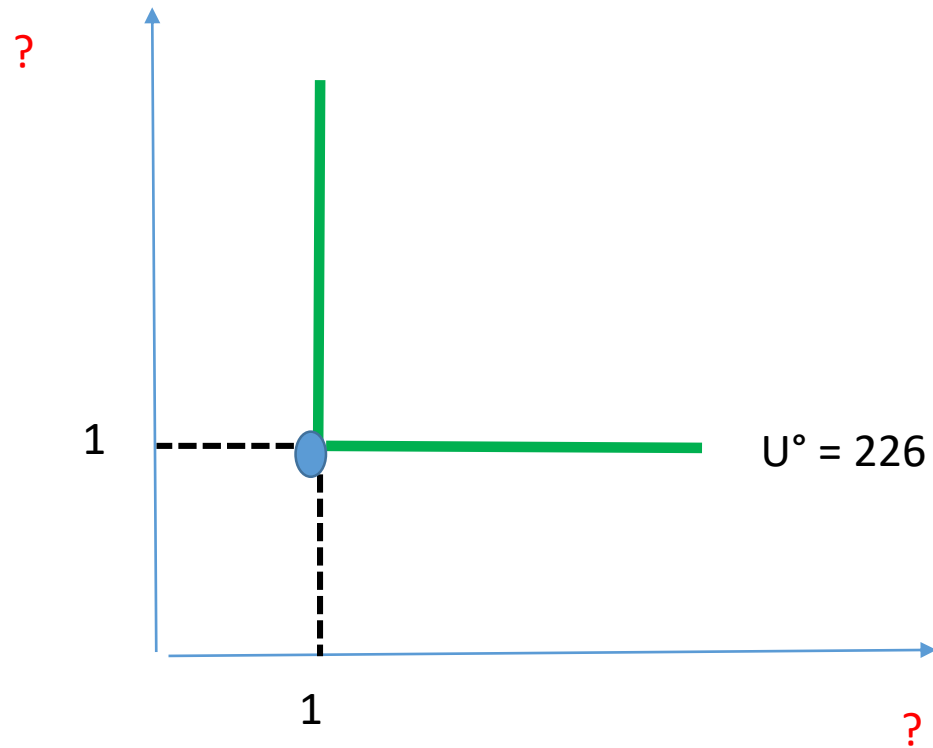
$$(P_B Bb)/(I_b) = [P_B / (P_B + P_T k)]$$

$$I_a = P_B Ba + P_T Ta = P_B Ba + P_T k Ba$$

The share of income spent on one good does not change when income changes.



Perfect complements

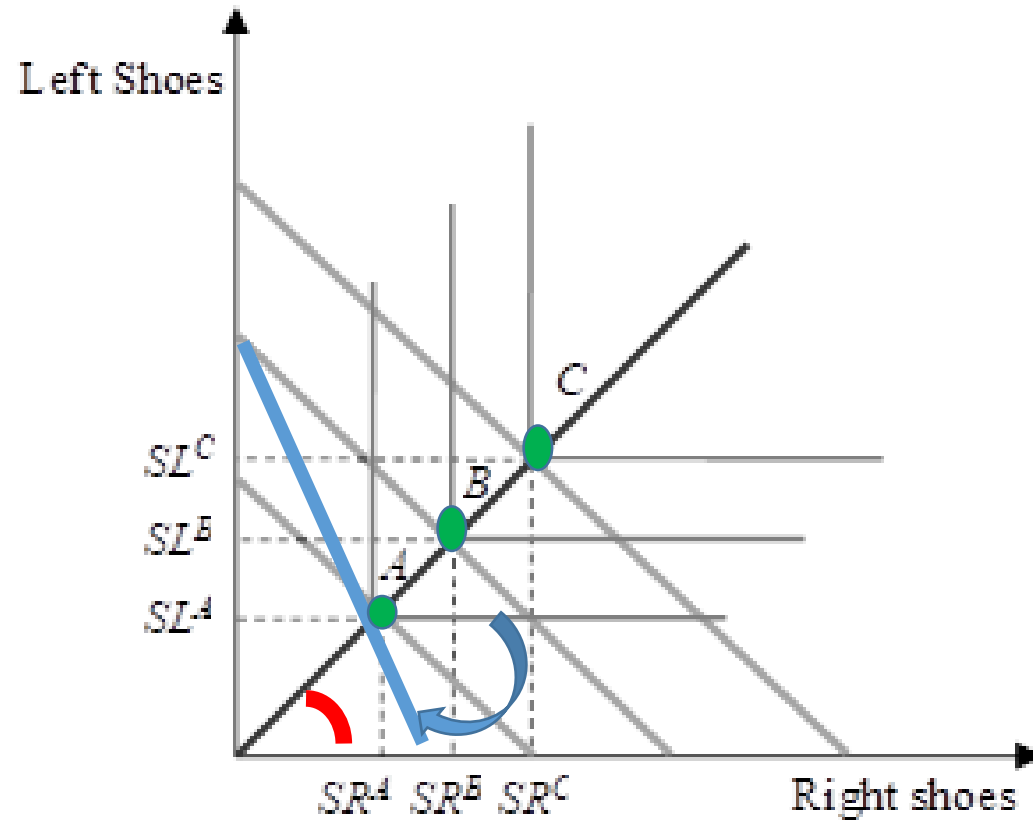


?





Perfect complements and homothetic preferences



$k=1$

2 goods are called complements when the price of one changes and the quantity desired of the other changes in the same direction of the quantity whose price has changed.

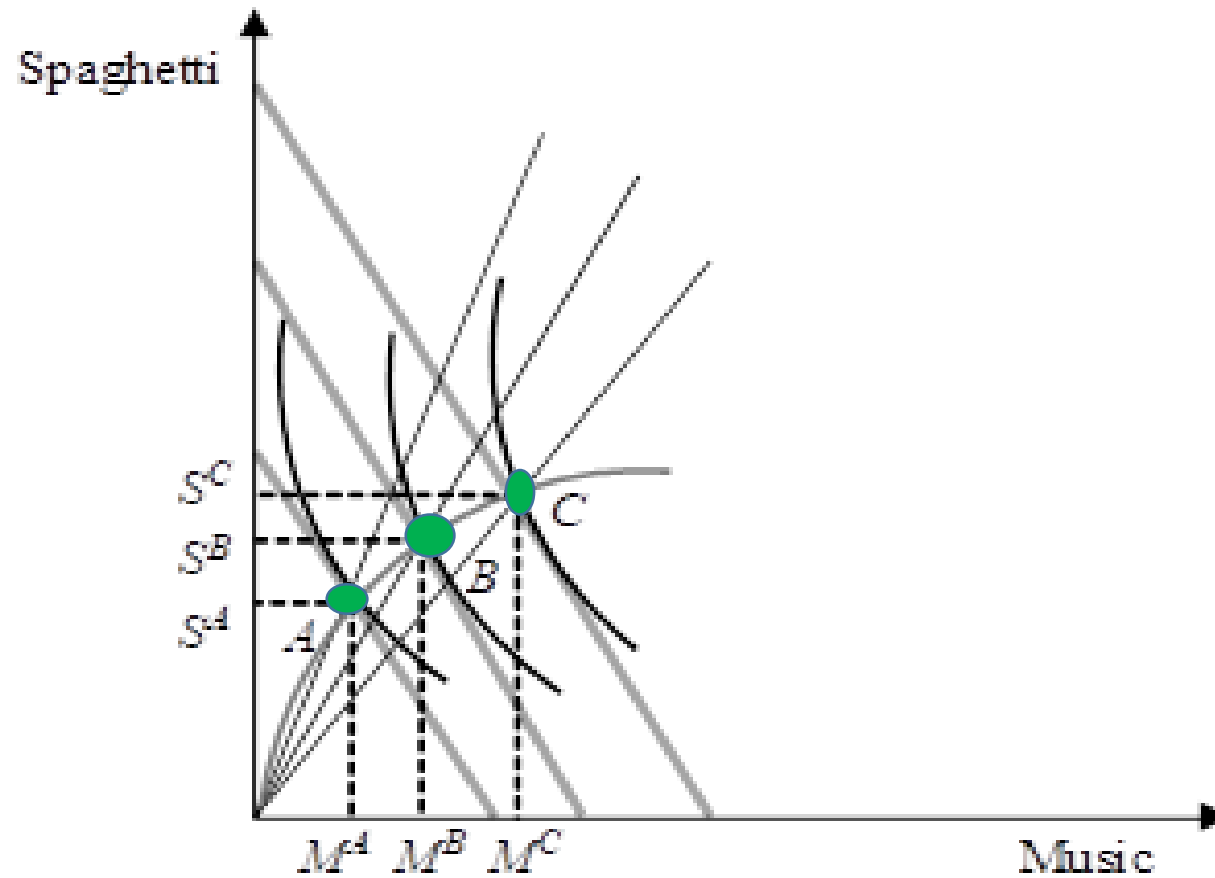




Necessary and luxury goods

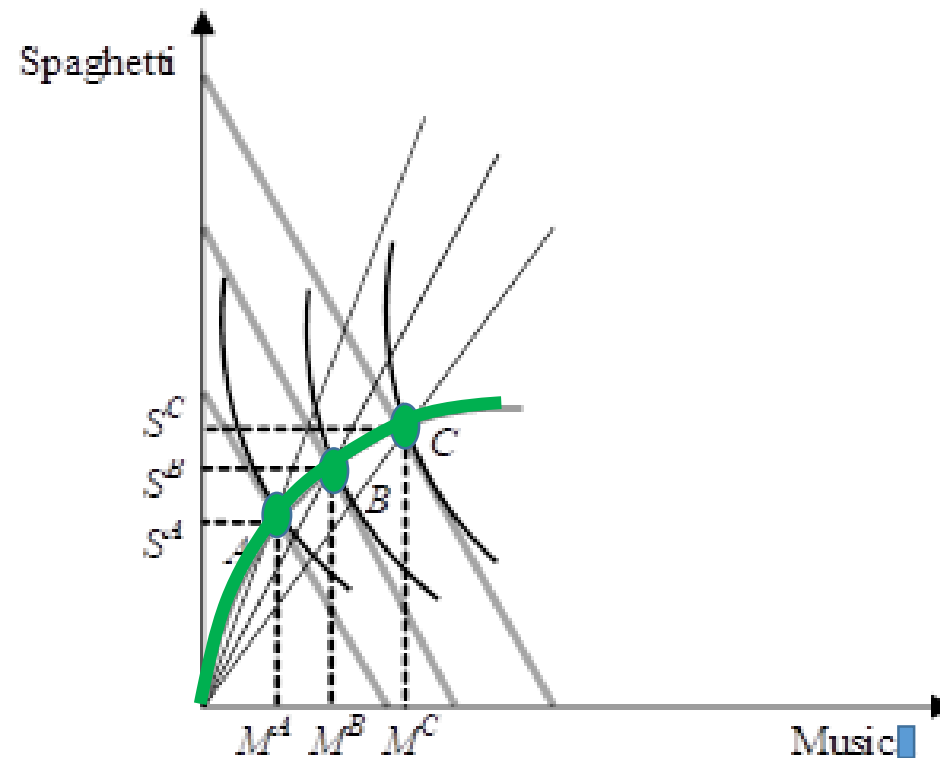
Superior?

Superior!





Income Expansion Path



Shares of spending: stable or changing?

Homothetic:

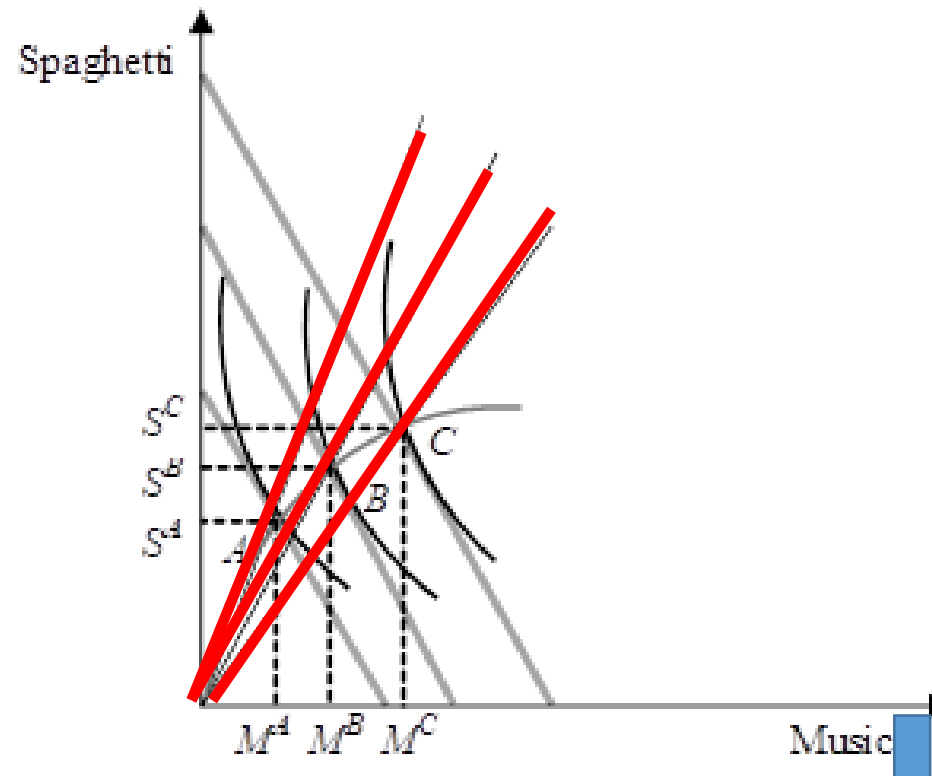
$$k = S^*/M^* ?$$

Or is

$$k = k(S^*/M^*) ?$$

So, what happens to the share of income dedicated to spending on a luxury good (M) as John grows richer?

What happens to the share of income dedicated to spending on a necessary good (S) as John grows poorer?



$$(P_B B_a)/(I_a) = [P_B / (P_B + P_T k)]$$

M is luxury
good!
And S?
Necessary!

$$\delta \left(\frac{PQ}{I} \right) / \delta I < 0$$

$$P \left[\left(\frac{\delta Q}{\delta I} \right) I - Q \right] \times \frac{1}{I^2} < 0$$

$$\left(\frac{\delta Q}{\delta I} \right) I - Q < 0$$

$$\left(\frac{\delta Q}{\delta I} \right) I < Q$$

$$\left(\frac{\delta Q}{\delta I} \right) < \frac{Q}{I}$$

Elasticity (to income) of M?
Of S?

What is missing?

Not Q, Q(I)!

$$(U/V)' = (U'V - UV')/V^2$$

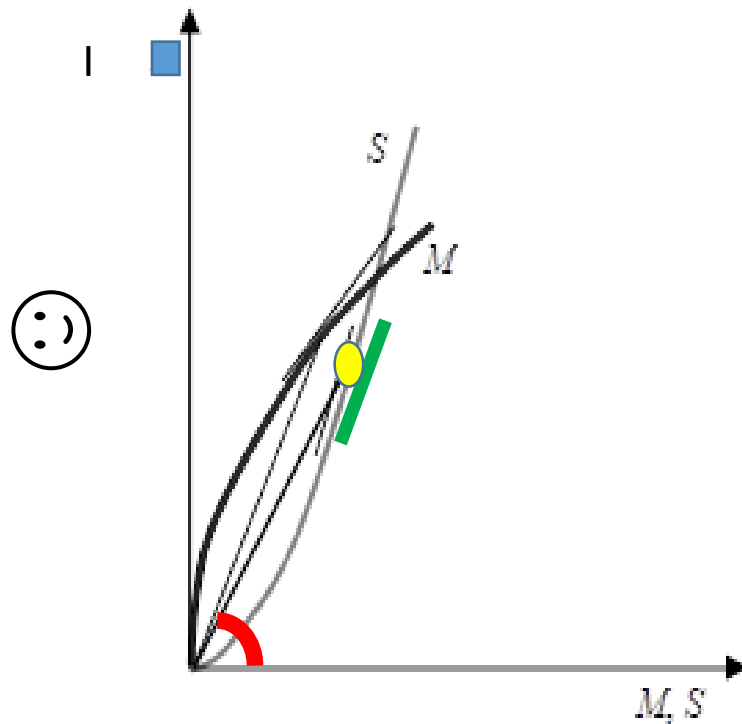
$$\frac{\left(\frac{\delta Q}{\delta I} \right)}{\left(\frac{Q}{I} \right)} < 1$$



**READY? YOUR FIRST DEMAND CURVE
(WITH RESPECT TO INCOME)**



Engel Curve



For necessary goods:

$$\left(\frac{\partial Q}{Q} \right) \times \left(\frac{I}{\partial I} \right) < 1$$

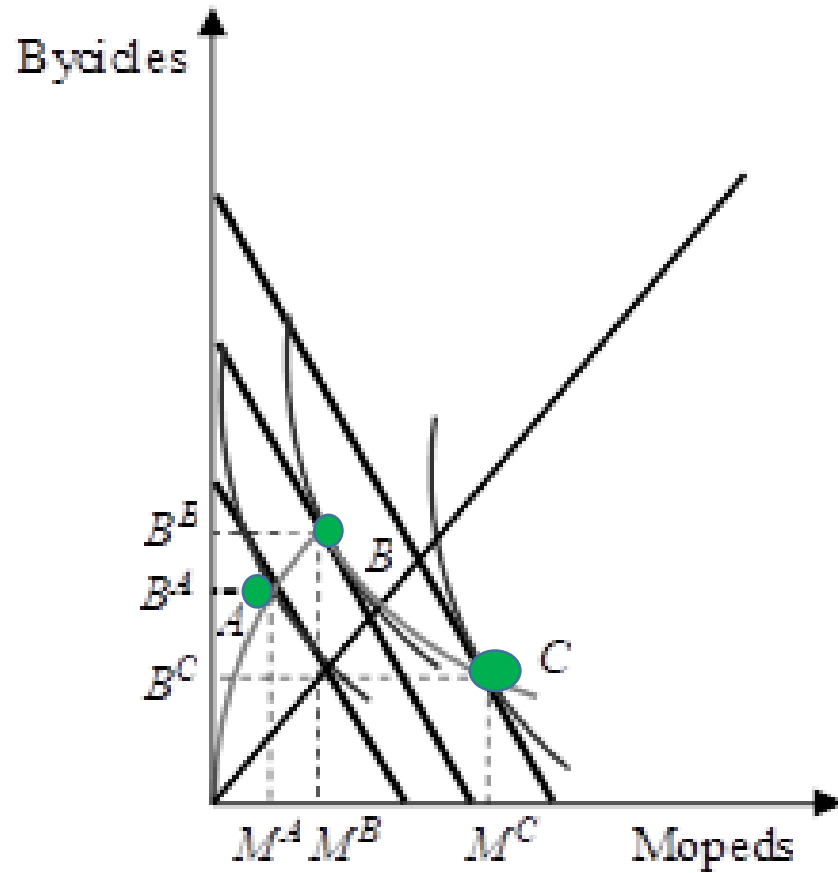
For luxury goods?

$$\left(\frac{\partial Q}{Q} \right) > \frac{I}{\partial I}$$

$$/ \left(\frac{\partial I}{\partial Q} \right) > \frac{I}{Q}$$

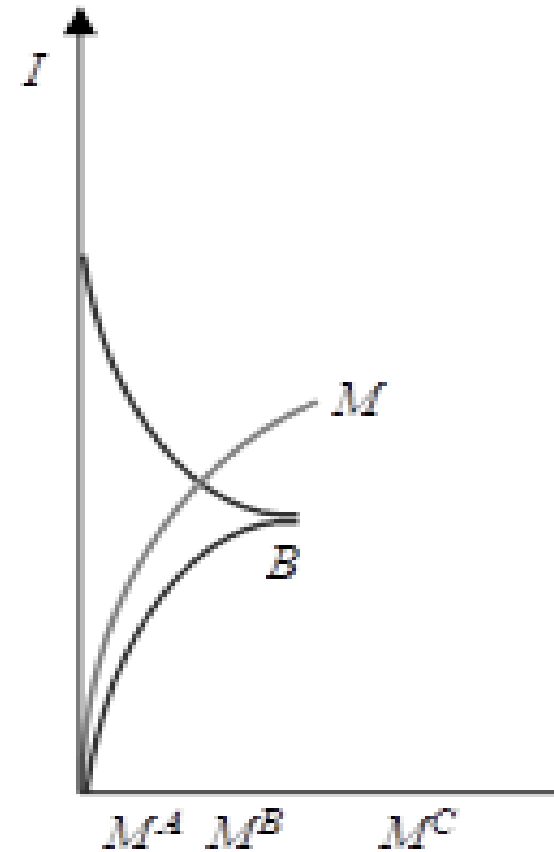
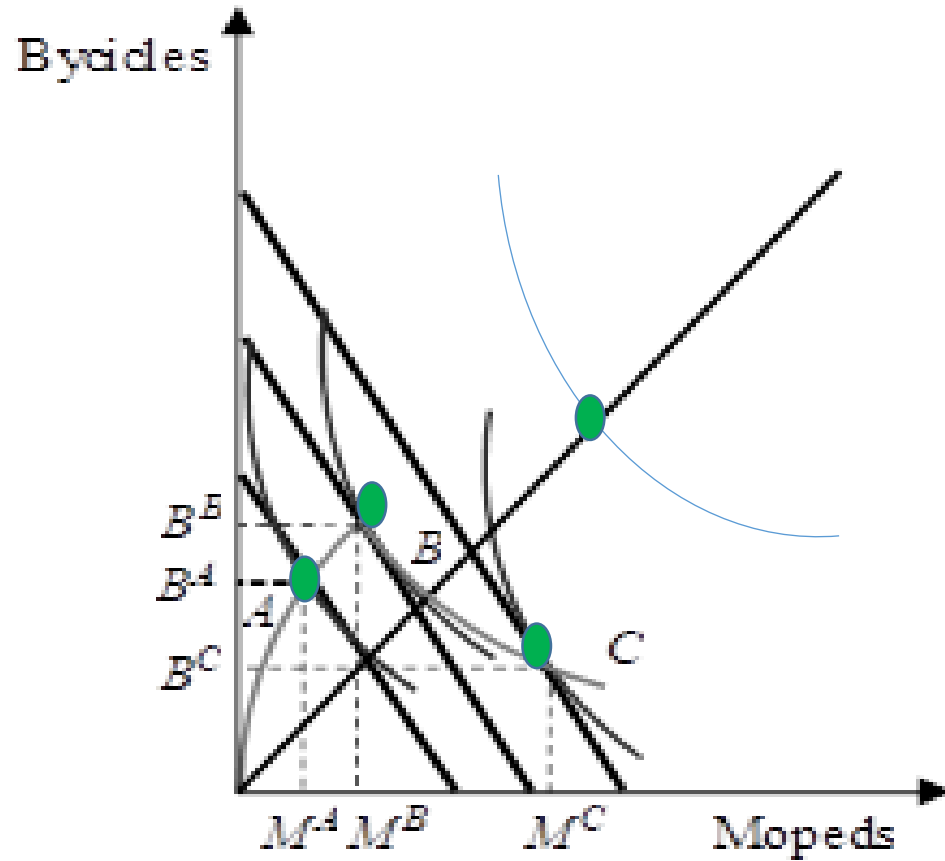


From superior to inferior goods





From superior to inferior goods



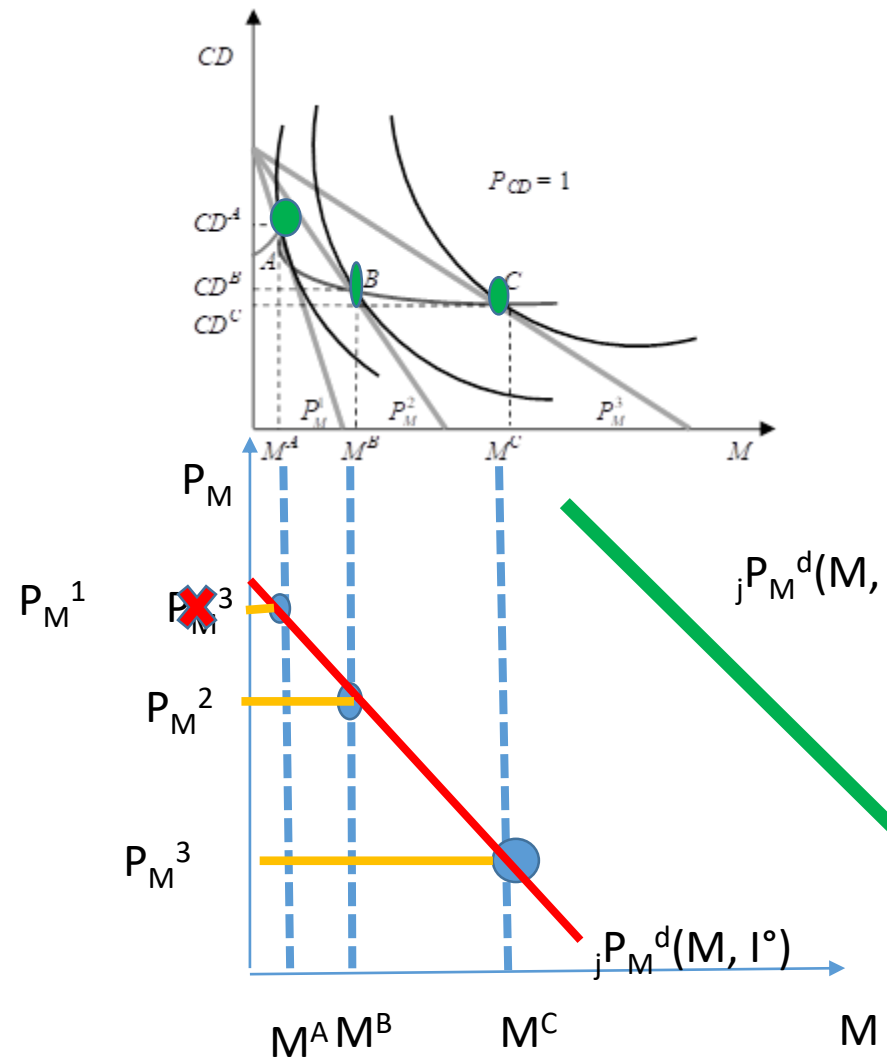


**READY? YOUR SECOND DEMAND CURVE
(WITH RESPECT TO PRICE)**



Your first price demand curve! Actually of John...

A «normal»
good.

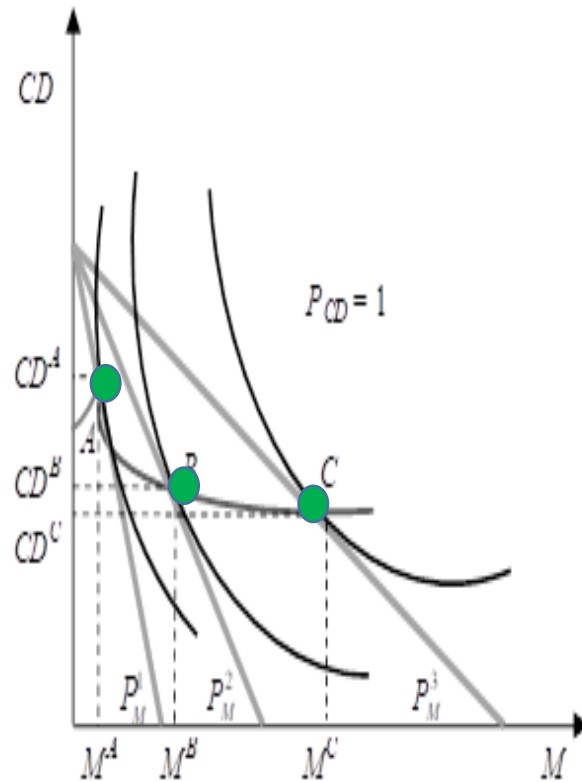


**IMPORTANT SLIDE:
MISSING IN THE BOOK**

$jP_M^d(M, I_1 \text{ with } I_1 > I^0)$: M is a ... good?



Normal Good (M) and goods (M and CD) ...?



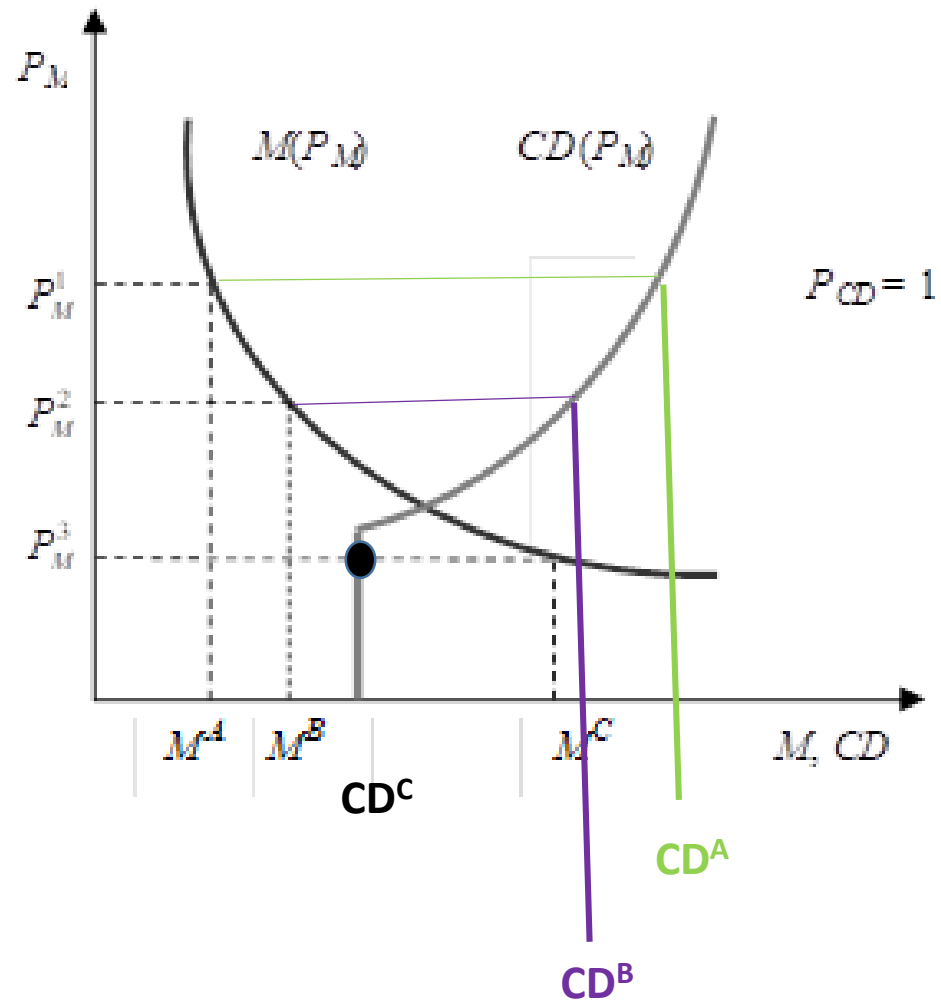
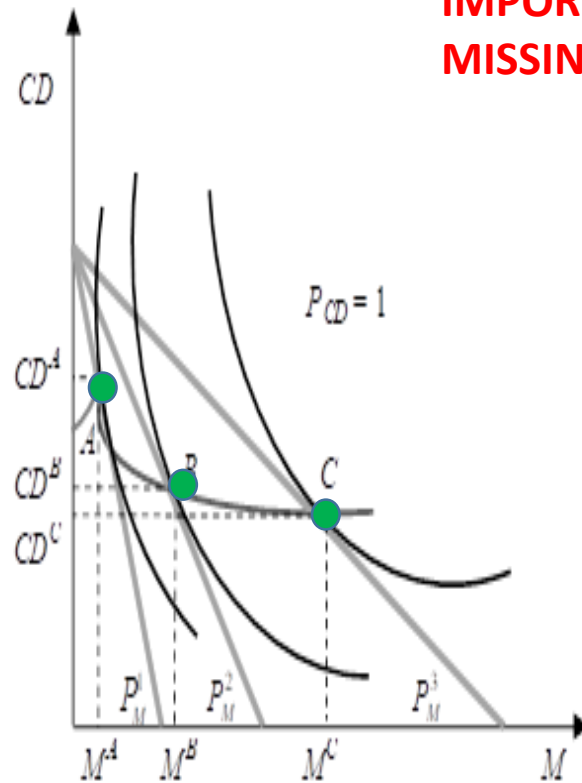
2 goods are called substitutes when the price of one changes and the quantity desired of the other changes in the **opposite** direction of the quantity desired of the good the price of which has changed.

From A to C: «Price consumption path»



Normal Goods and 2 substitute goods

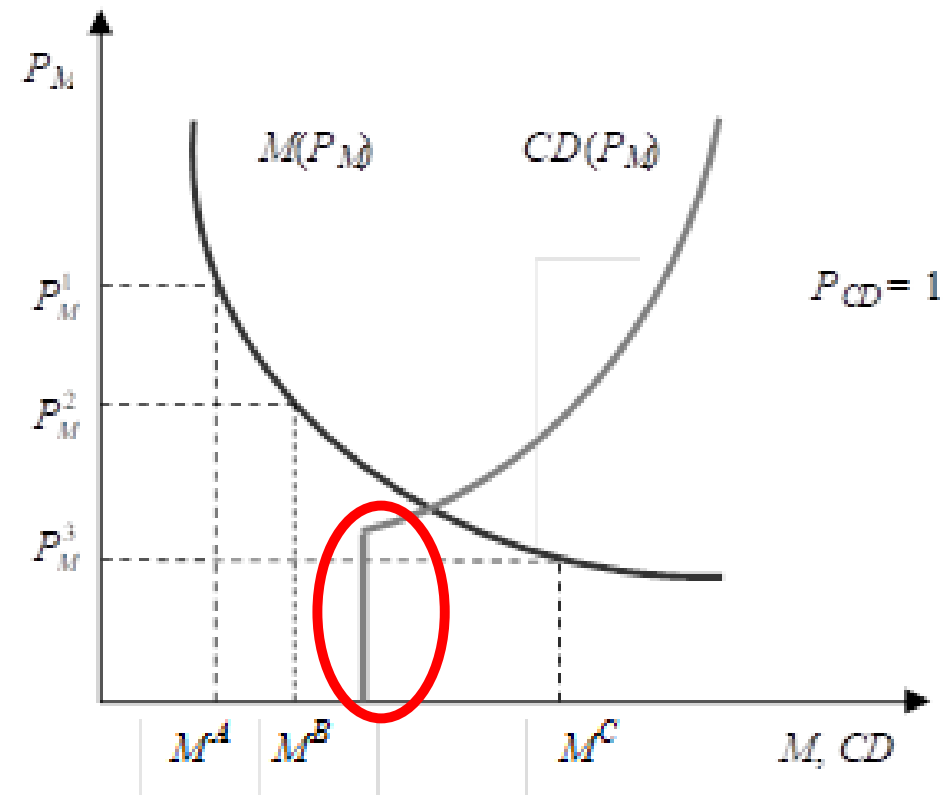
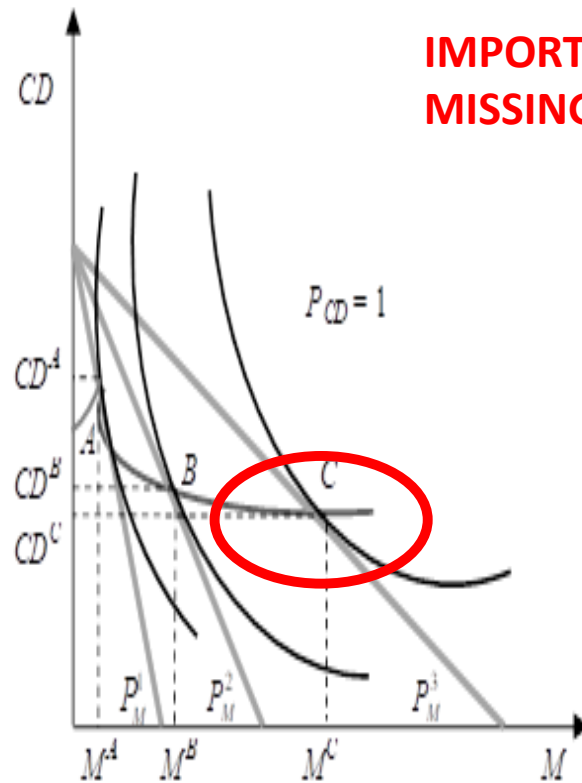
**IMPORTANT SLIDE:
MISSING IN THE BOOK**





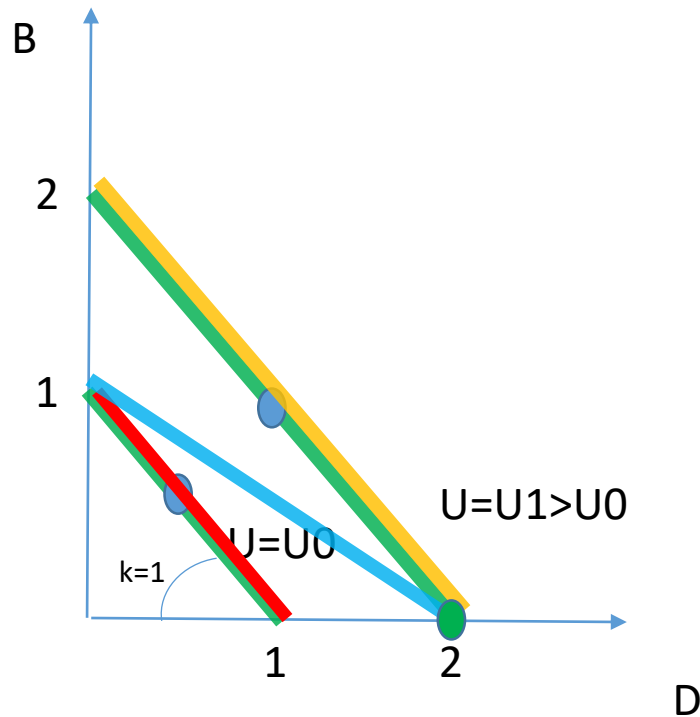
The cross-price demand curve

**IMPORTANT SLIDE:
MISSING IN THE BOOK**





Perfect substitutes

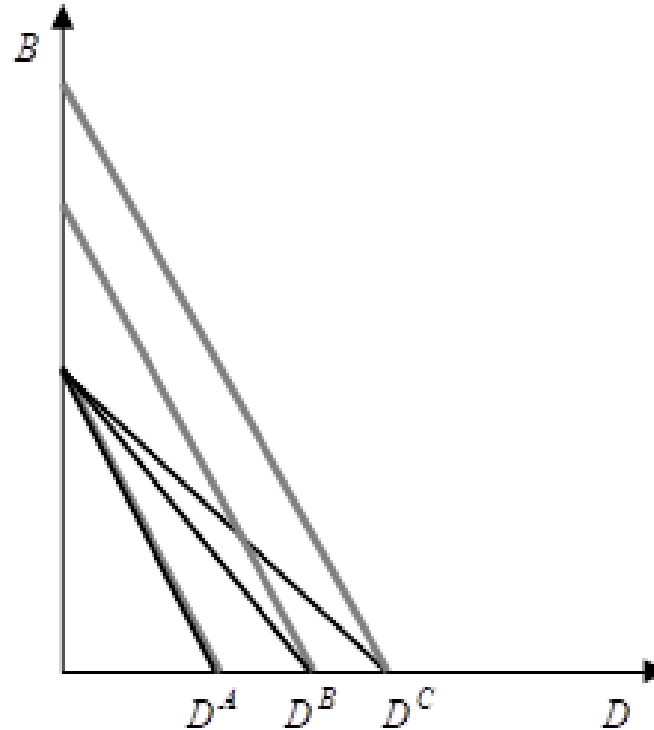


$$P^D = P^B = 1$$

$$I=1$$

$$I=2$$

$$P^D/P^B = (0,5)/1 \text{ with } I=1$$



2 goods are called substitutes when the price of one changes and the quantity desired of the other changes in the **opposite** direction of the quantity desired of the good the price of which has changed.



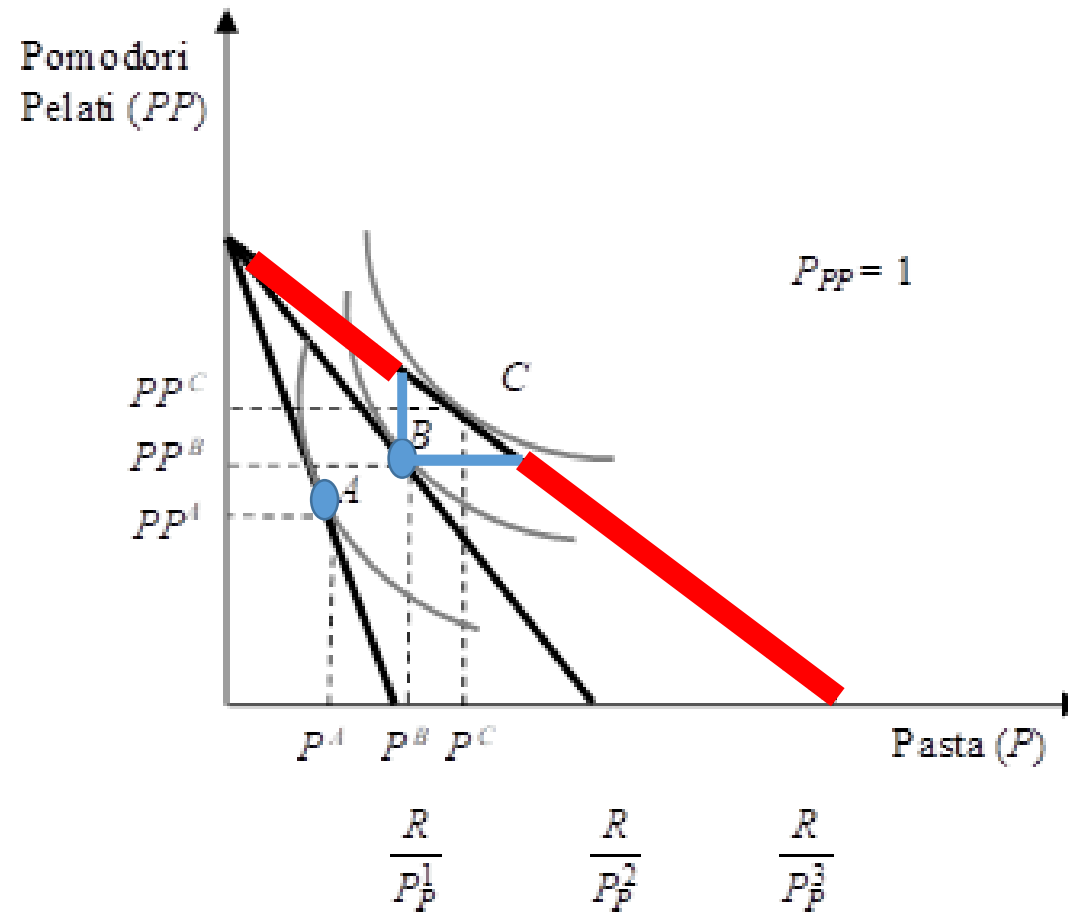
TOR VERGATA
UNIVERSITY OF ROME

Please draw choice with 2 complementary goods



Complementary Goods

«Please draw a consumer's choice that faces 2 complementary goods»



What Goods are those??

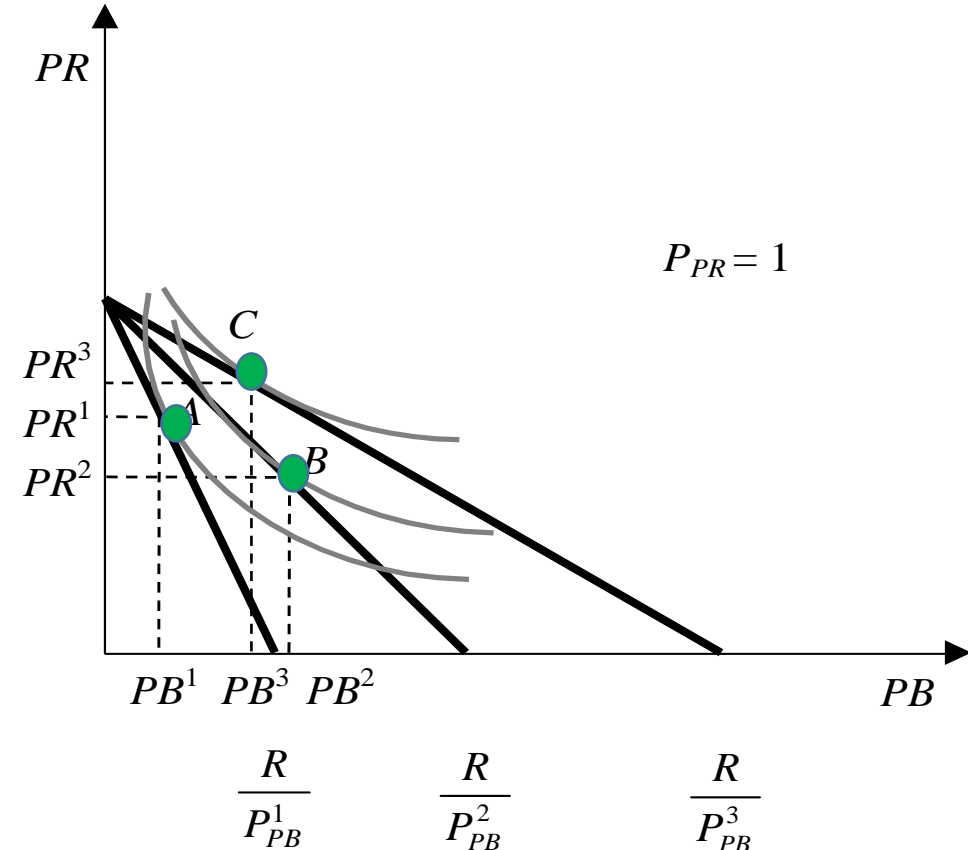


A family with 7 children has an income of 28 euro and must buy 14 diapers over a certain period, 2 diapers each, which it necessarily wants to be the same between children.

Low quality diapers PB cost 2 euro each, high quality ones PR 3 euro each. Not being able to afford to buy 14 high quality diapers, it would prefer 7 low and 7 high. Are they reachable? Check.

It therefore demands for 14 of low quality.

Now imagine that the price of the latter drops to 1 euro each. Check how if it is possible now that it only buys 7 low quality diapers (Giffen good!) and 7 high quality ones.



Giffen Goods



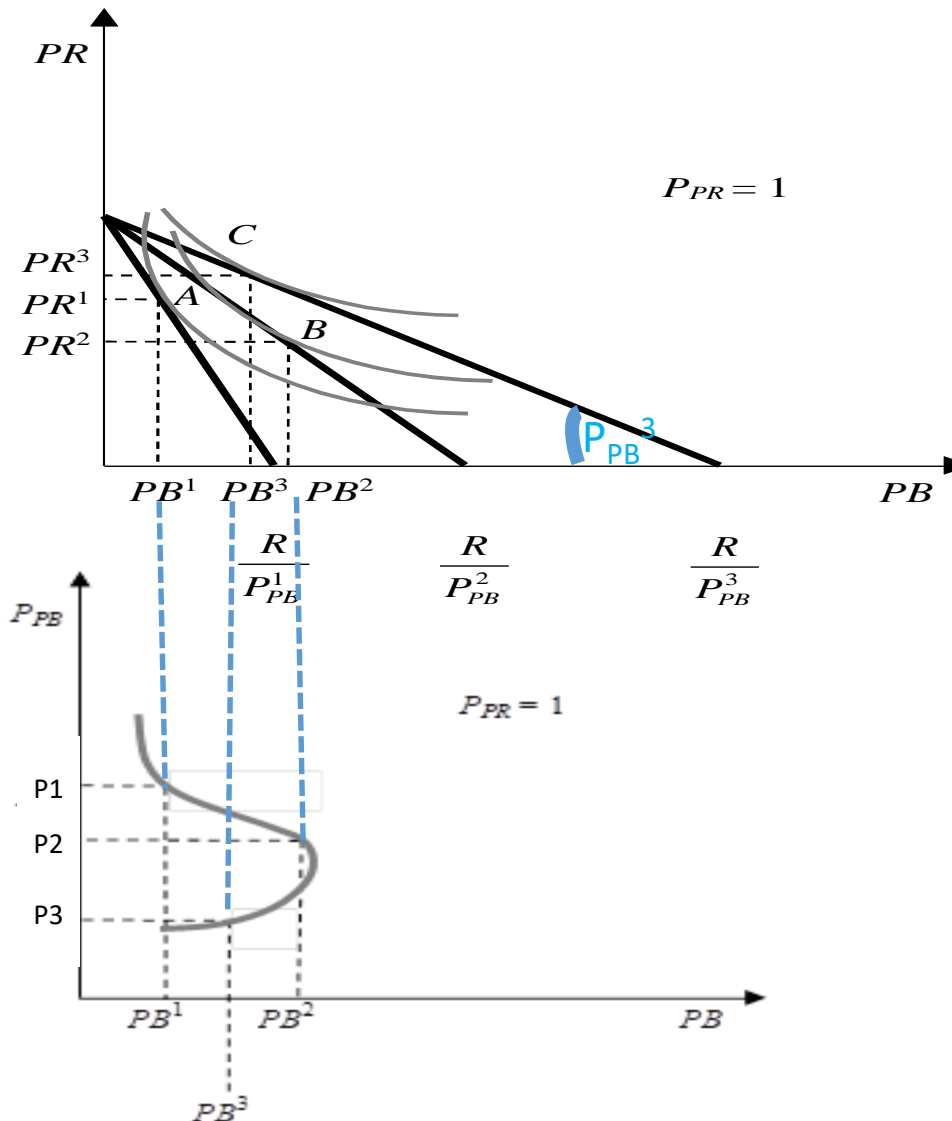
Giffen's goods

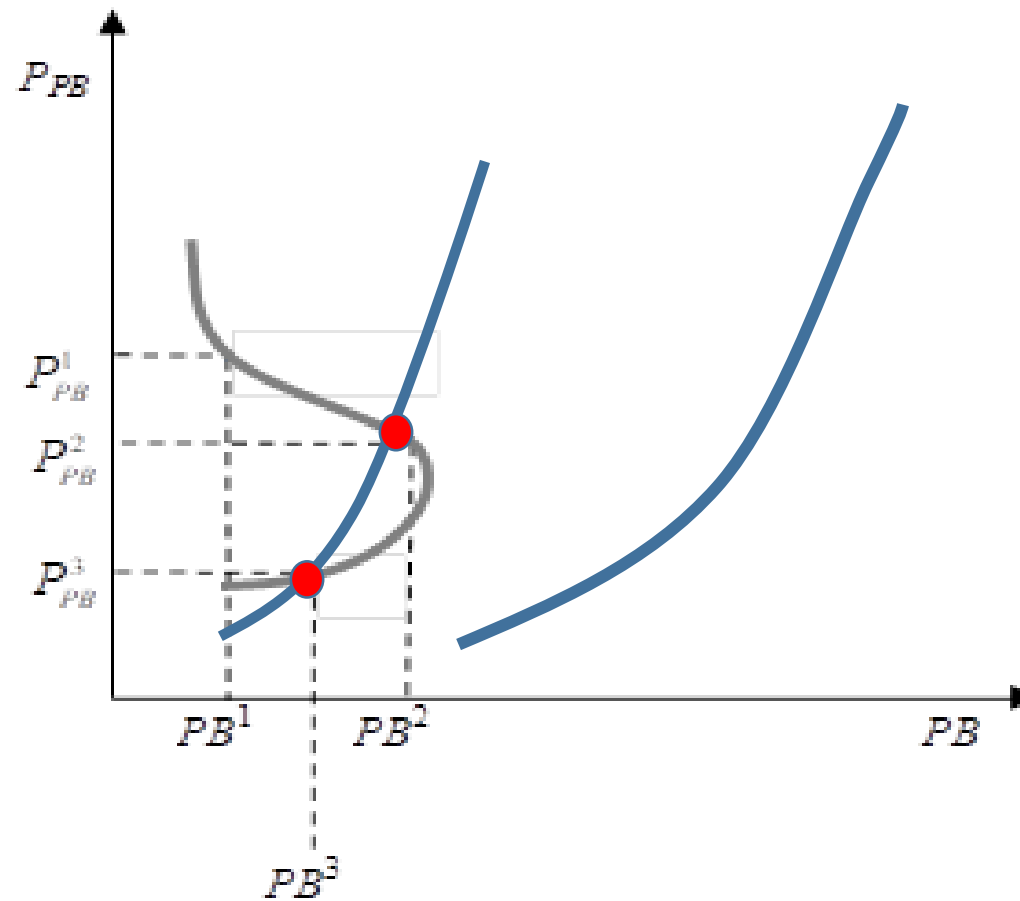


All Giffen goods are
(very) inferior goods;
not all inferior goods
are Giffen goods

The income effect of
a change in prices

PS: different from
status symbol goods







Recap on prices changes

$\delta Q / \delta P > \text{or} < 0$?

$\delta Q / \delta P < 0$ as we substitute away
toward cheaper similar goods
(**substitution** effect)

But we also know **that**

$\delta Q / \delta Y > \text{or} < 0$

Depending on the type of good and
consumer

$\delta Q / \delta Y > 0$ for superior luxury

$\delta Q / \delta Y > 0$ for superior necessary

$\delta Q / \delta Y < 0$ for inferior

And that δP make us richer (if < 0) or
poorer (if > 0):
a lot ? little?

Income effect of price changes

So $\delta Q / \delta P > \text{or} < 0$?

Imagine **$\delta P < 0$**

1) **$\delta Q_S > 0$** as we substitute away from
the more expensive similar good
(substitution effect)

But 2)...

If $\delta P < 0$, **I am richer**

So:

If the good is superior, added **$\delta Q_I > 0$** (stronger if luxury)

1+2) $\delta Q > 0$ (luxury) $\delta Q > 0$ (necessary)

In both cases: NORMAL GOOD **$\delta Q / \delta P < 0$**

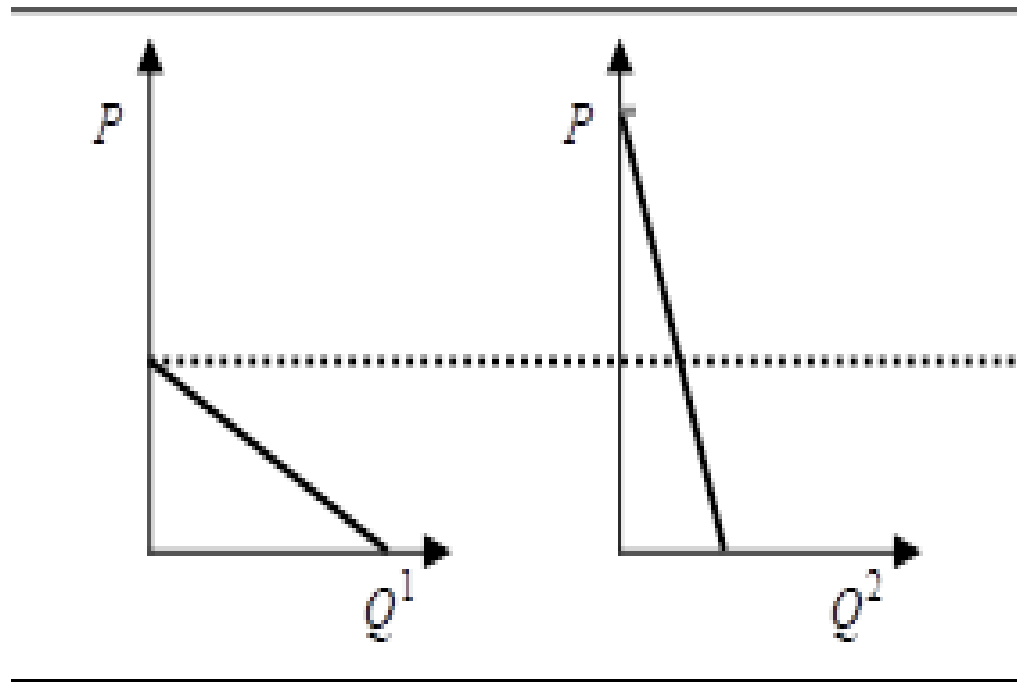
If the good is inferior, counter **$\delta Q_I < 0$**

How much inferior?

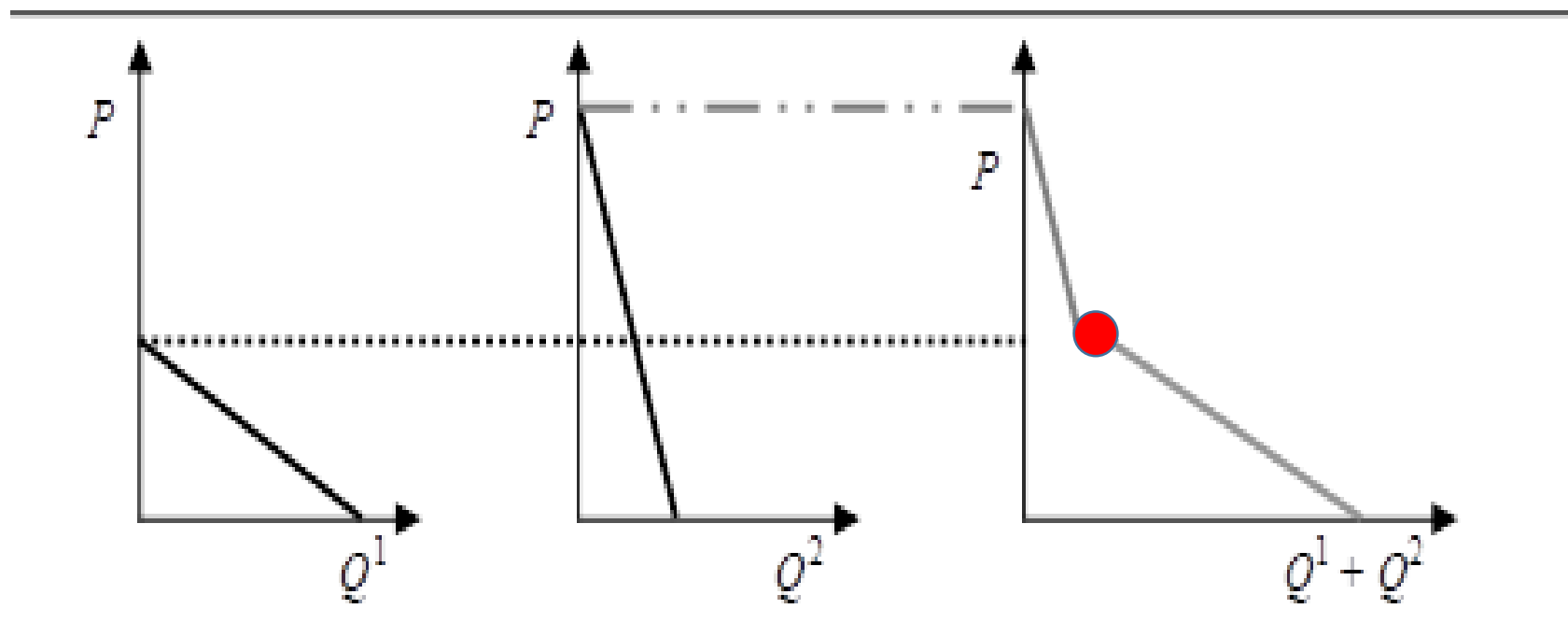
1) little? δQ_S dominates, still NORMAL GOOD **$\delta Q / \delta P < 0$**

2) a lot? δQ_I dominates, GIFFEN GOOD **$\delta Q / \delta P > 0$**

The aggregate demand curve



The aggregate demand curve

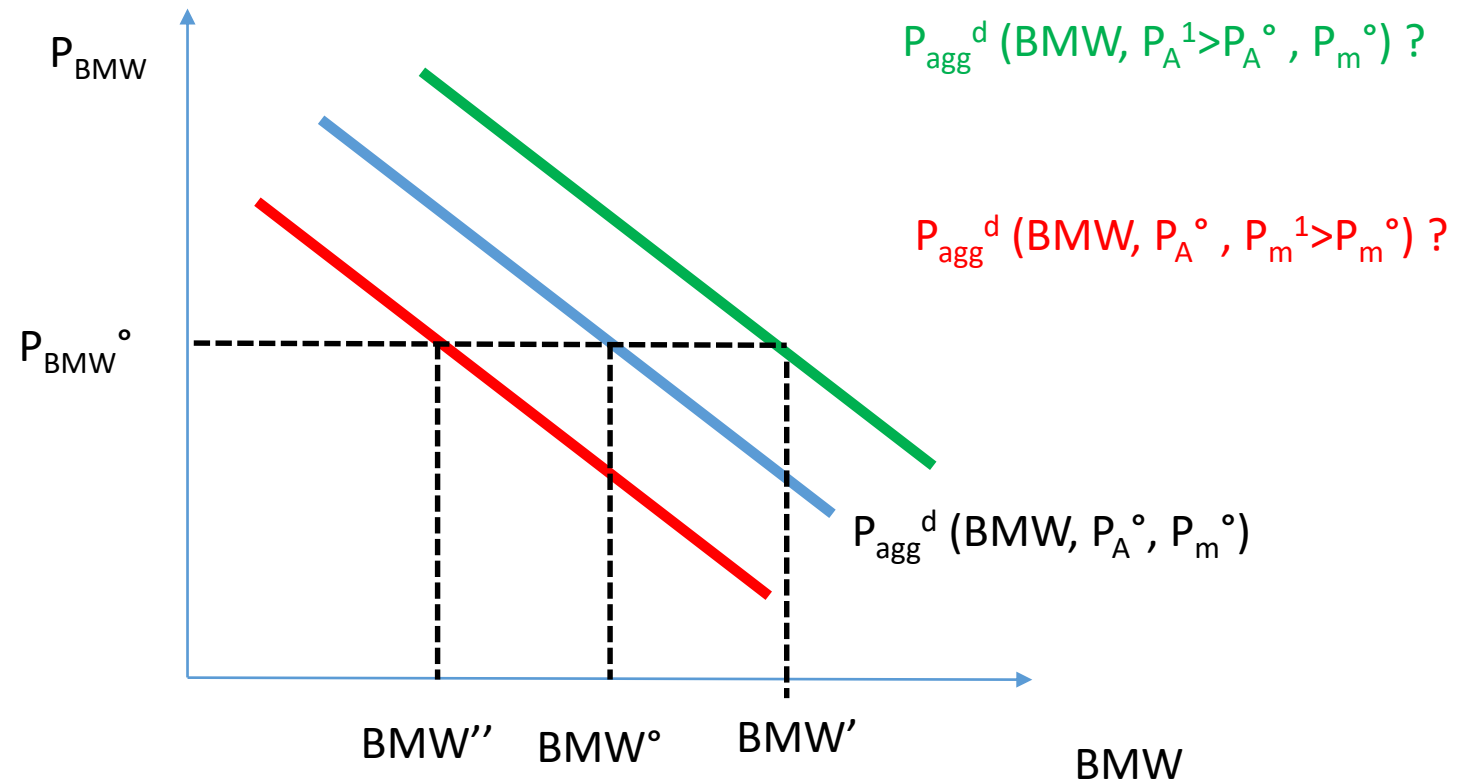




Shifts of the aggregate demand curve

P_m = price
of
maintenance

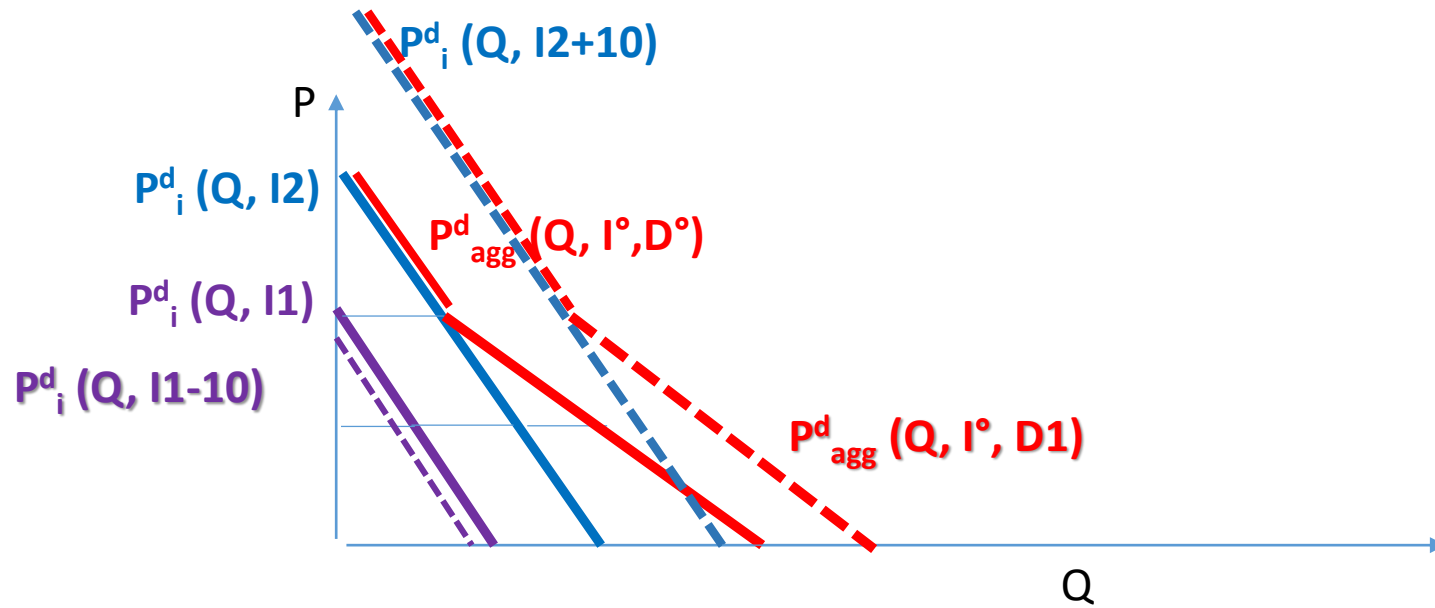
P_A = price of
Audi





Shifts of the aggregate demand curve

a) Country's income $I^o = I_1 + I_2$ is unchanged, but its distribution D changes.

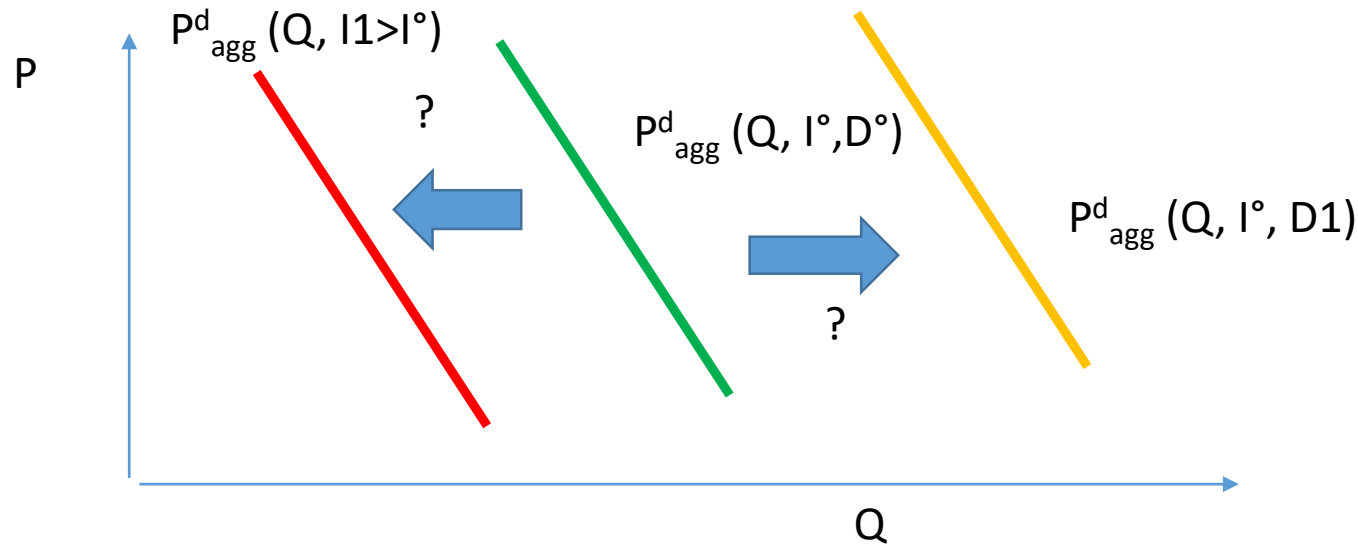




Shifts of the aggregate demand curve

a) Country's income is unchanged, but the distribution of it changes.

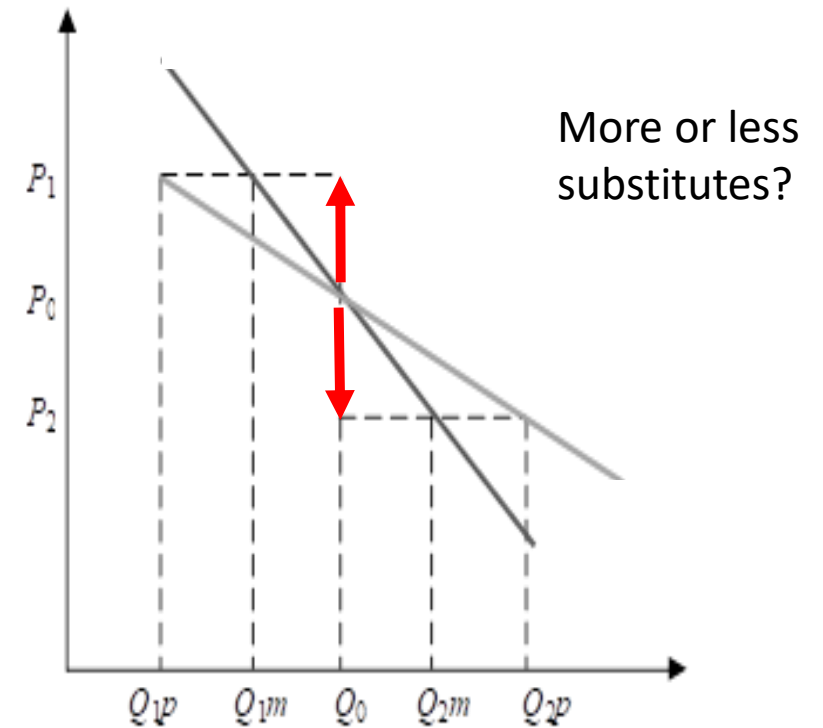
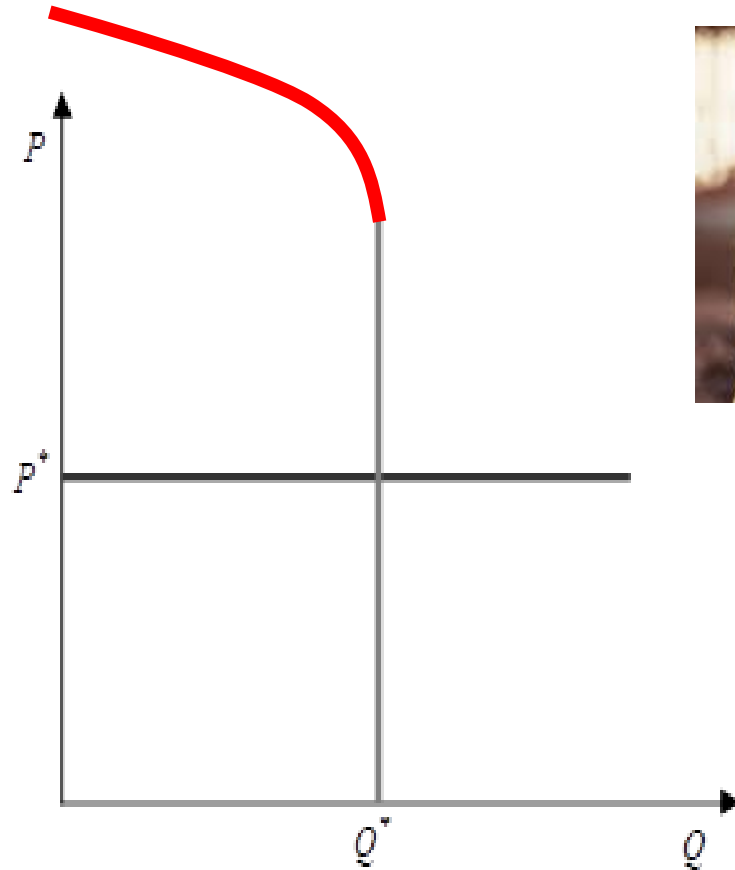
b) Rise in total income from I^0 to I_1 , and for a good **superior** for **all** citizens.



Imagine a rise in the income of one citizen by 10 mn € and the decline by 1€ for 1 mn citizens.
Richer citizen demands: + 1. Each poorer citizen demands: -0,5. Total: + 1-500.000 = -499.999

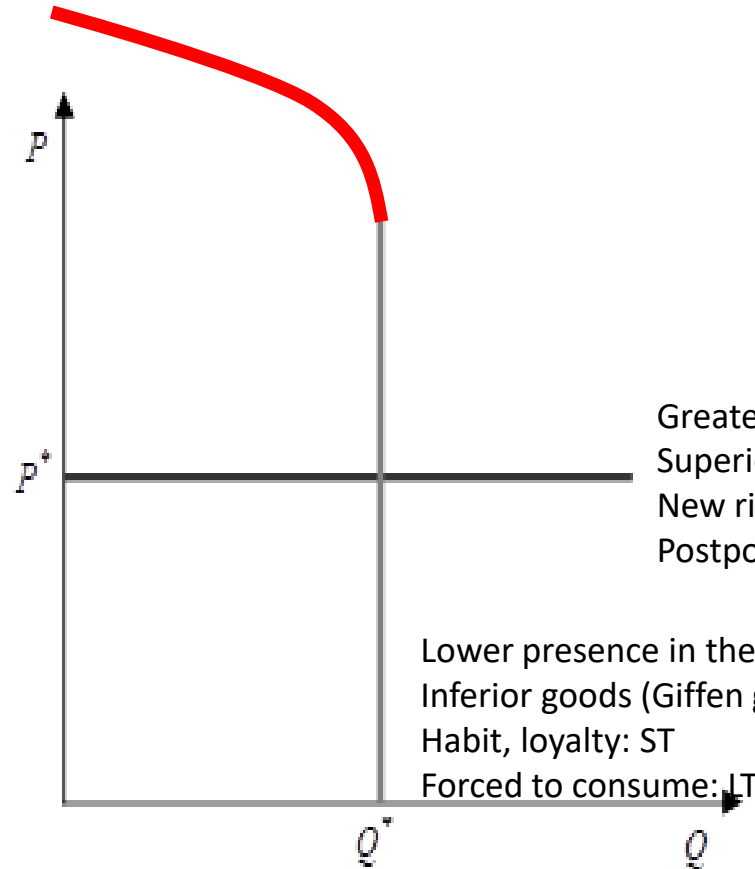


Demand curves and elasticity again ...



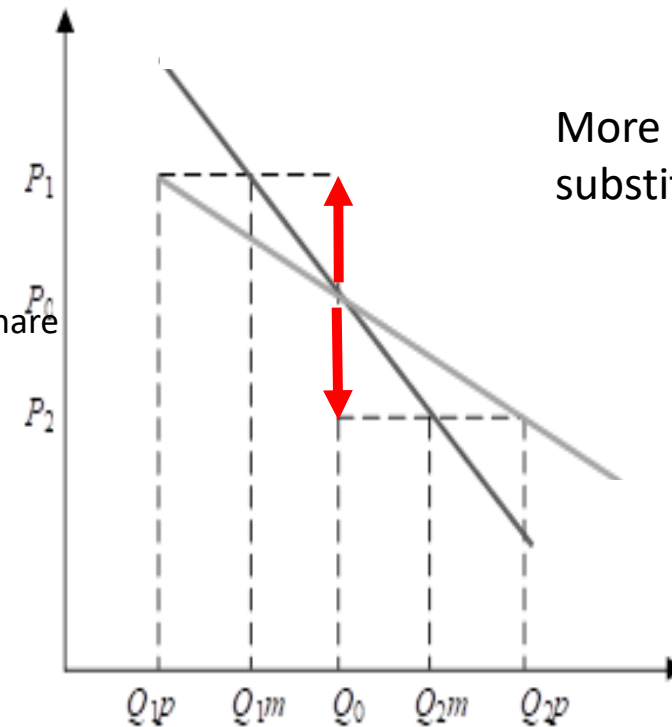


Demand curves and elasticity again ...



Greater presence in the expenditure share
Superior goods (luxury goods!)
New rivals: LT
Postponing consumption: ST

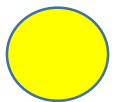
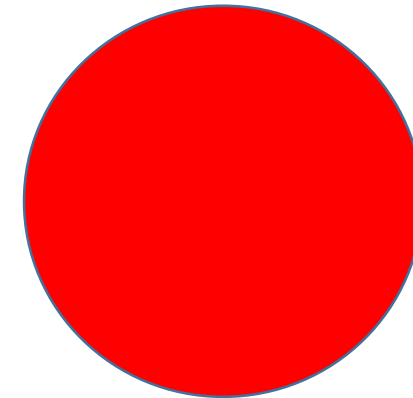
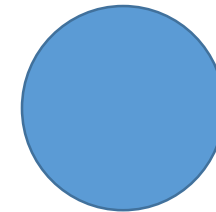
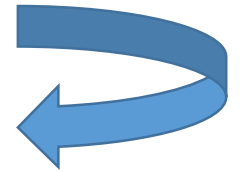
Lower presence in the expenditure share
Inferior goods (Giffen goods?)
Habit, loyalty: ST
Forced to consume: LT



More or less
substitutes?

>0 or <0?

Small or
large?



Small!

Large!

$$\varepsilon = \frac{\frac{dq_j}{dp_i}}{\frac{q_j}{p_i}}$$

Antitrust:
Market concentration
in the
«**relevant market**»