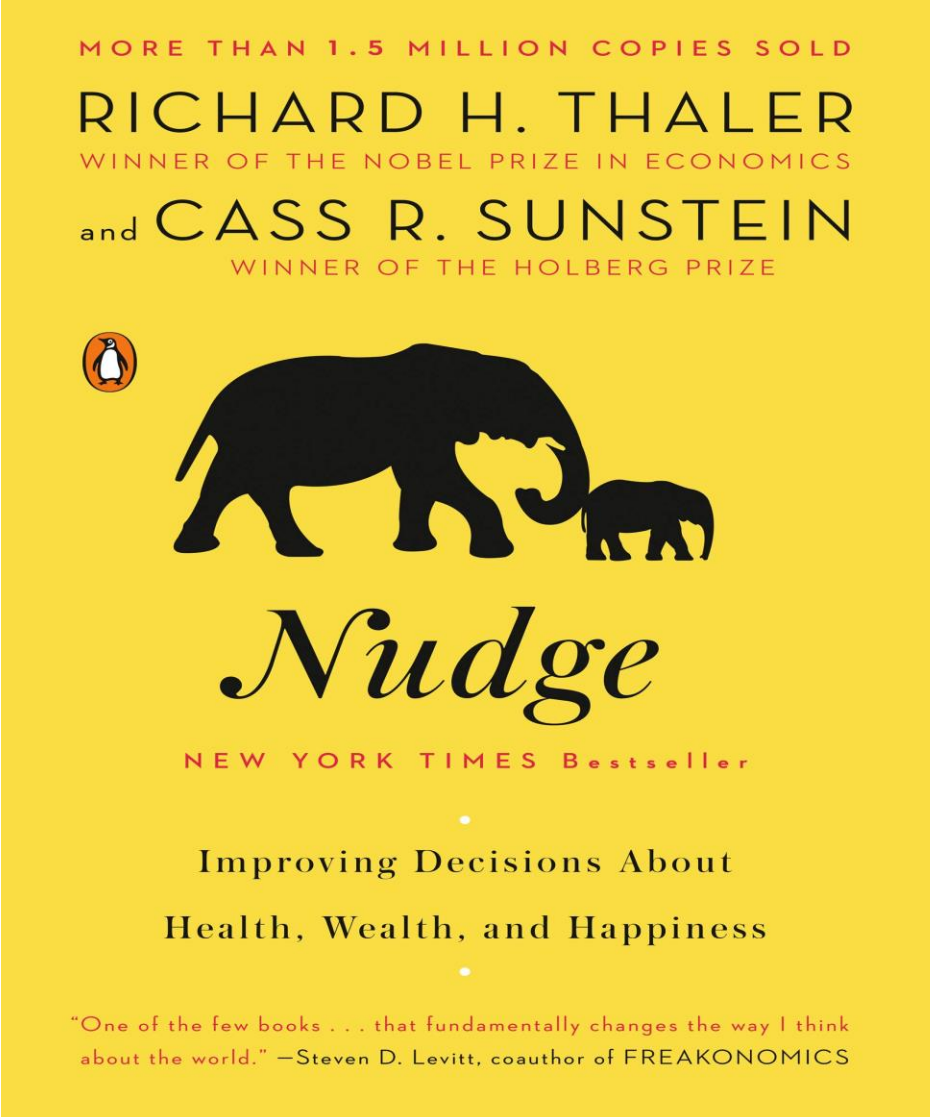
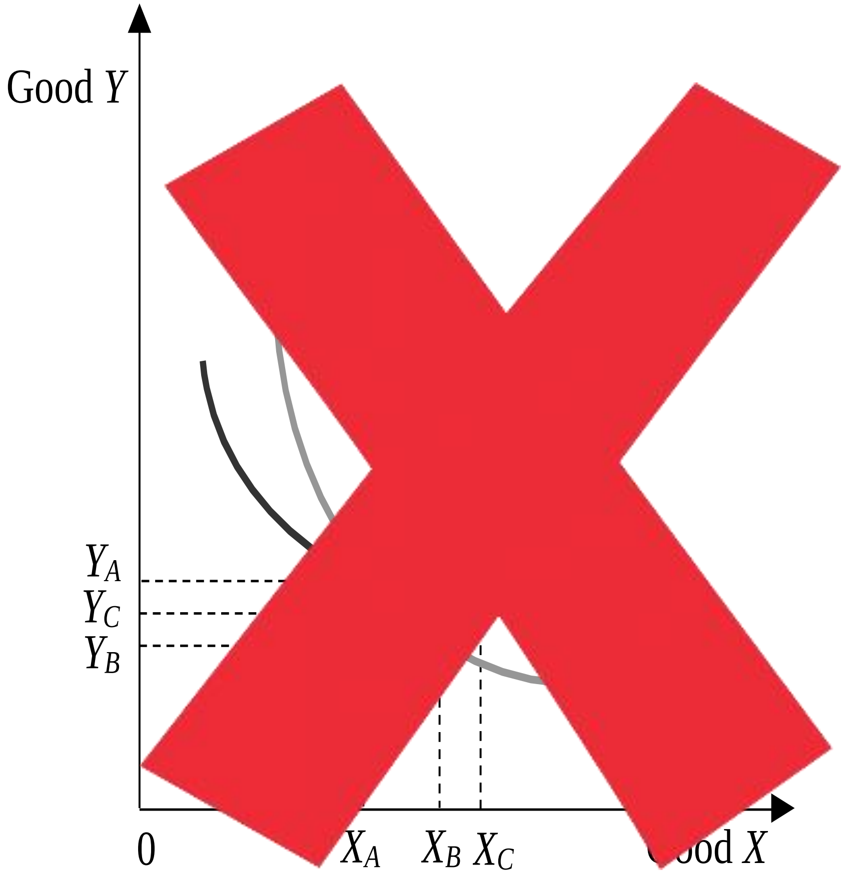
Overconsumption (of bads)

Paternalistic-Libertarian

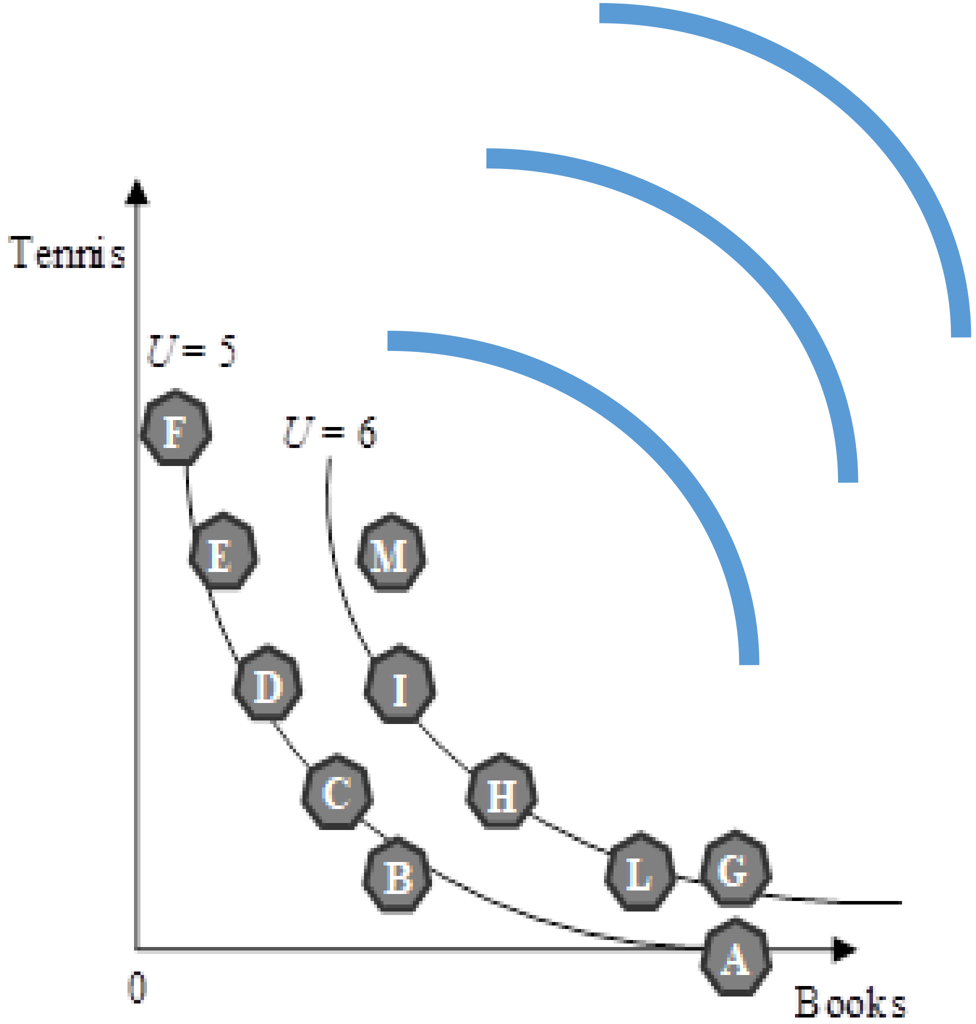


Can indifference curves intersect?



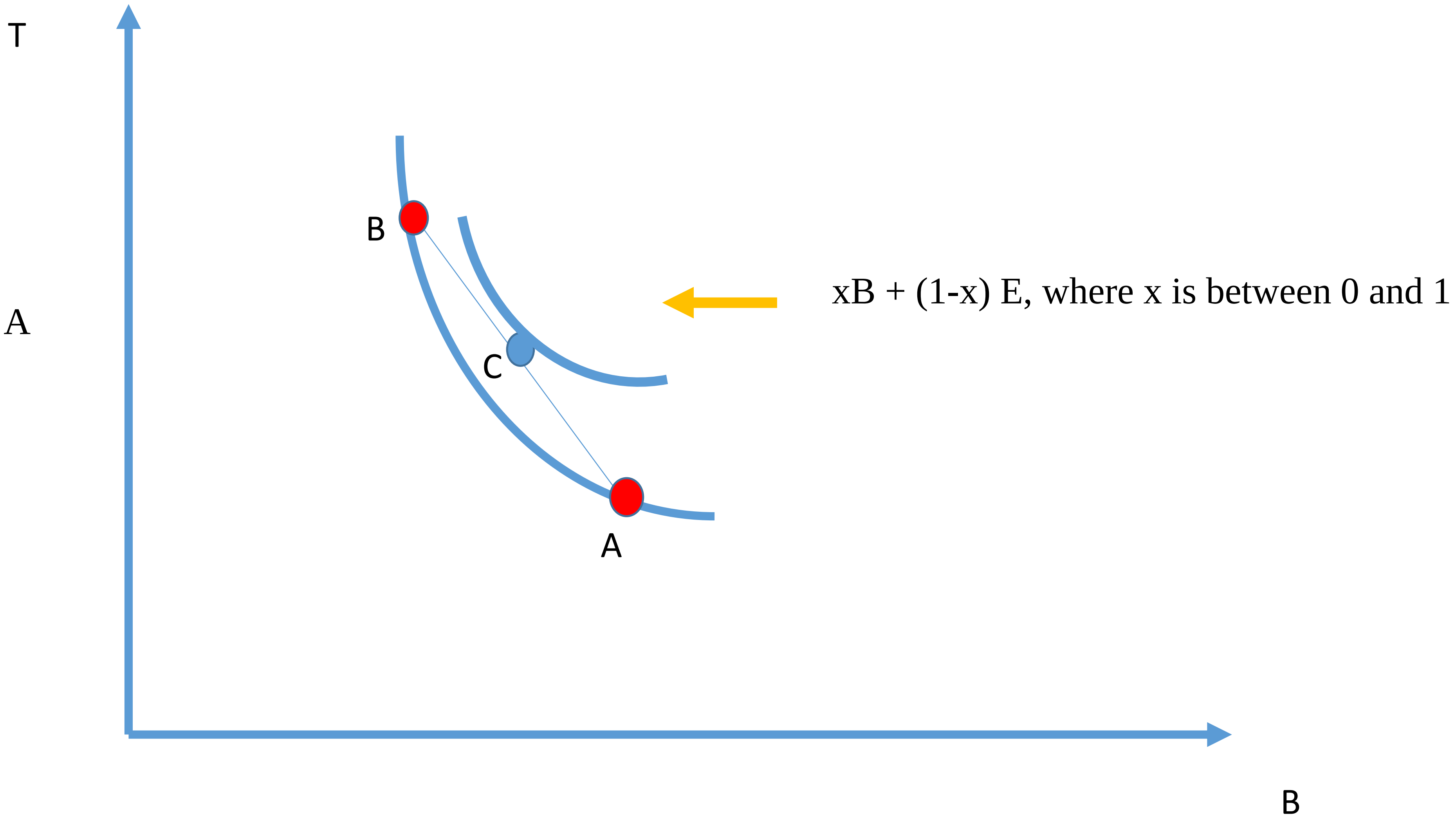
The Indifference Curve? Convex Toward the Origin

Basket	Books (quantity B)	Tennis (hours T)	Utility
A	10	0	5
B	7	1	5
C	5	2	5
D	4	3	5
E	3	5	5
F	2	8	5
G	10	1	6
H	8	2	6
I	7	3	6
L	9	1	?
M	7	5	?

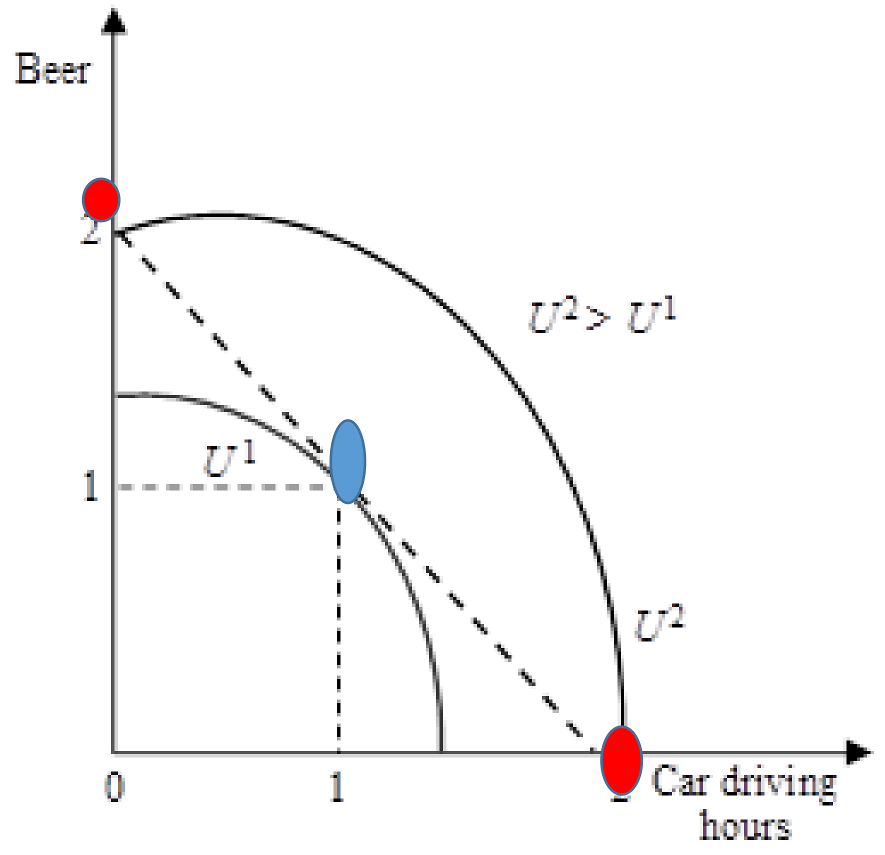


Convex curves

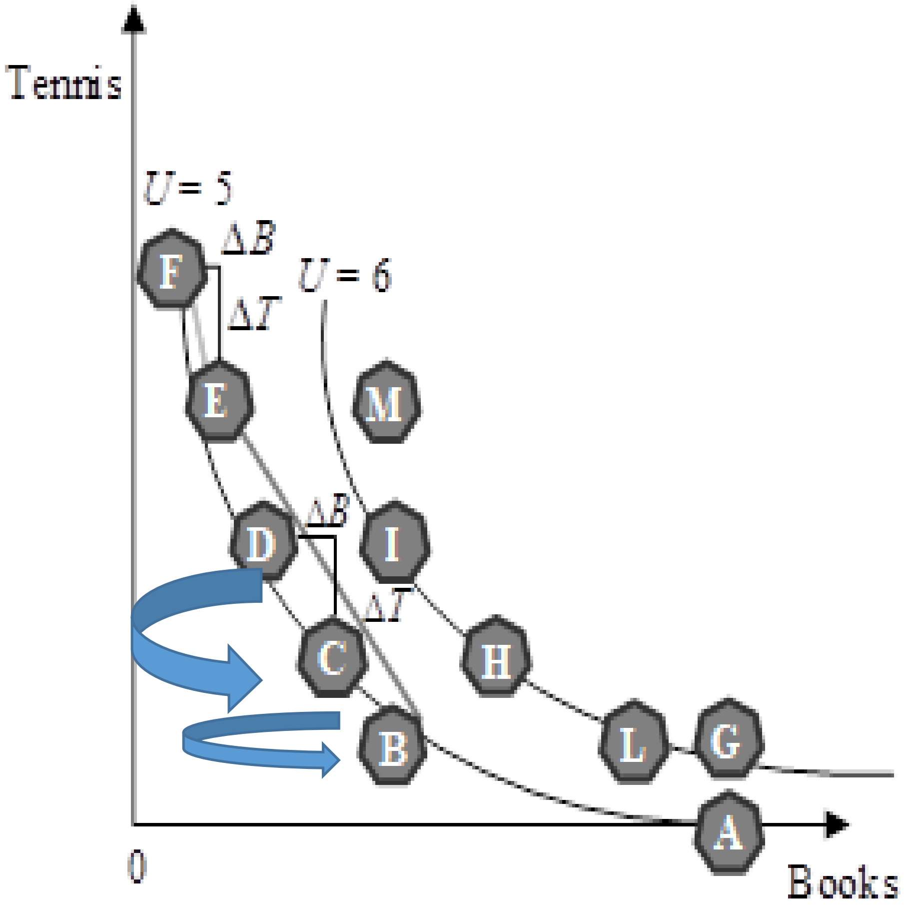
$C \succ B \sim A$



Curves that are concave toward the origin exist!



Curves not just decreasing but convex toward the origin



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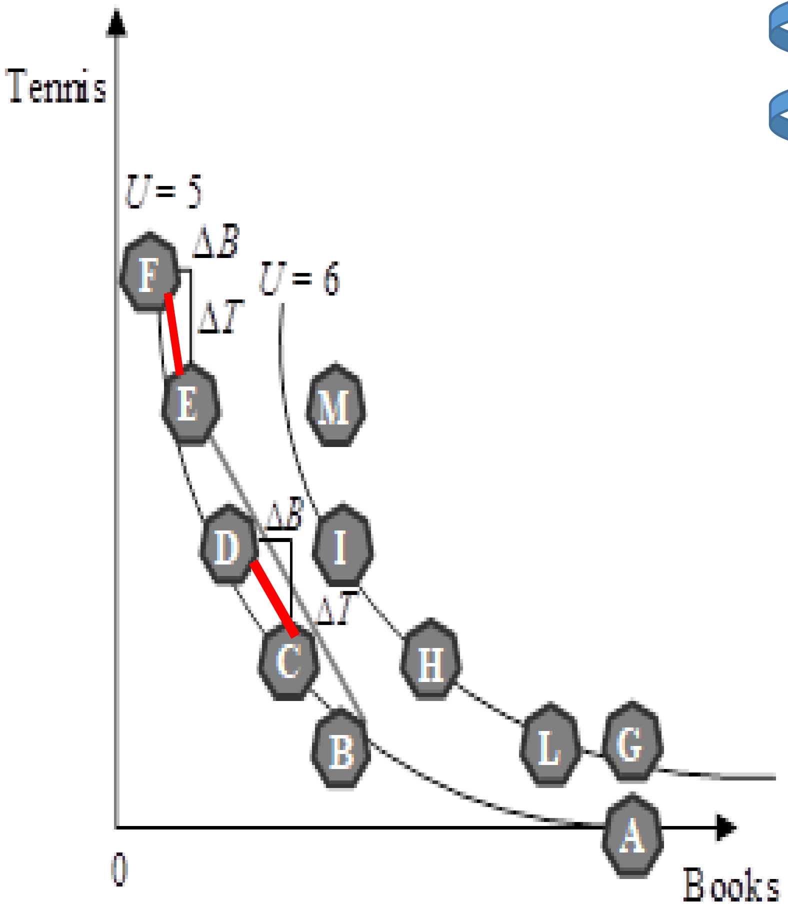
Subjective additional value of 1 unit of B

Moving from F to E, as we stay on the same indifference curve, **ΔB more books have the same value for us of ΔT tennis lessons**: which means that in that point (basket) **one more book is worth (ΔT/ΔB) tennis lessons for John**. (ΔT/ΔB), the value of one more unit of books in terms of tennis lessons for our consumer (hence a conception of **marginal subjective value**: how many tennis lessons John **is willing to give up** for one more unit of a book when he holds a certain amount of books), **decreases** with the increase in the consumption of books as you can see by going now from basket D to basket C. In fact (ΔT/ΔB) is nothing but the **slope of the hypotenuse** of the third side of the triangle (first FE and then DC) and this slope, due to **the convexity of the indifference curve**, is decreasing in absolute value.

If ΔB more books = ΔT tennis

[ΔB/ΔB] more book(s) = [ΔT/ΔB] Tennis

1 more book = ΔT/ΔB Tennis



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G	10	1	6
H	8	2	6
I	7	3	6
L	9	1	?
M	7	5	?

From F to E:

ΔB=+1 ; ΔT = -3

From D to C:

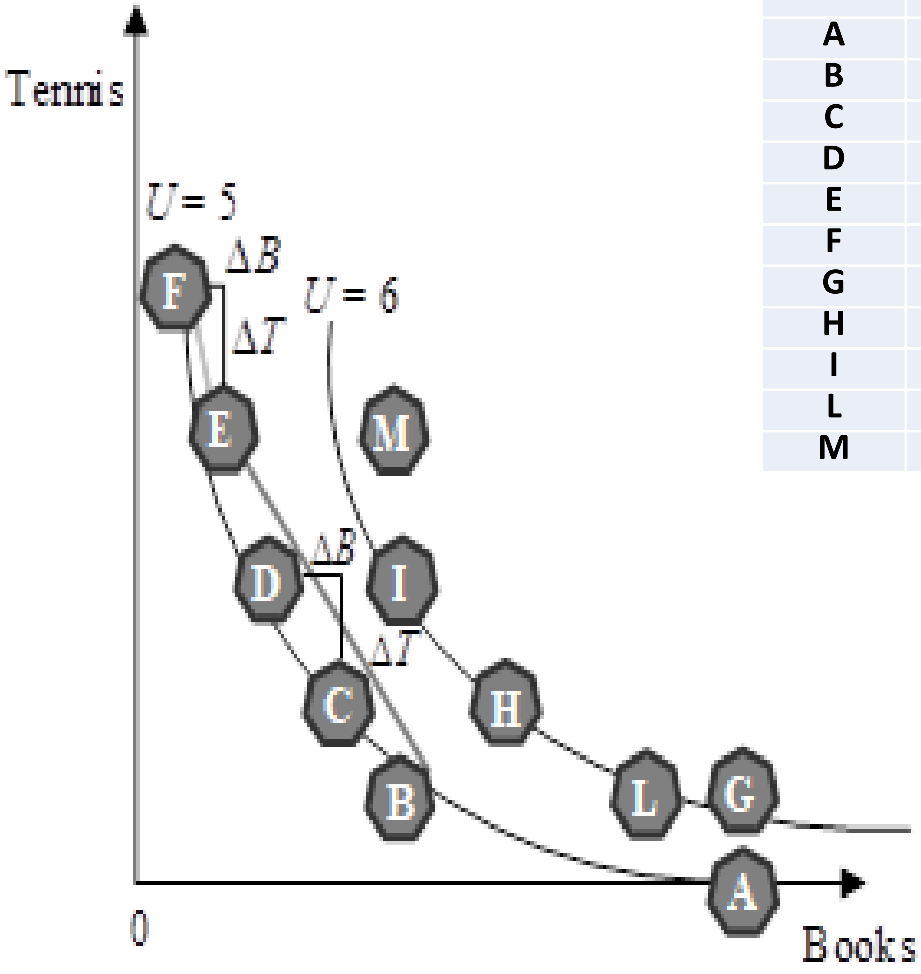
ΔB = +1 ; Δ T= -1

|ΔT/ΔB| ↘

when B↗

The marginal subjective value

If we let (ΔB) **converge towards zero**, the ratio ΔT/ ΔB becomes the **slope of the indifference curve** at the point considered. This slope of the indifference curve tells us how much we must decrease (since it is a negative number) the consumption of the good tennis lesson with an **infinitesimal increase** of the good books to remain indifferent to the previous situation. Hence, **the opposite of this slope** tells us, for a given amount of books and tennis lessons, **the value attributed by the specific consumer John to an infinitesimal additional unit of books in terms of tennis lessons**, and is called a **marginal rate of substitution MRS**.



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L	9	1	?
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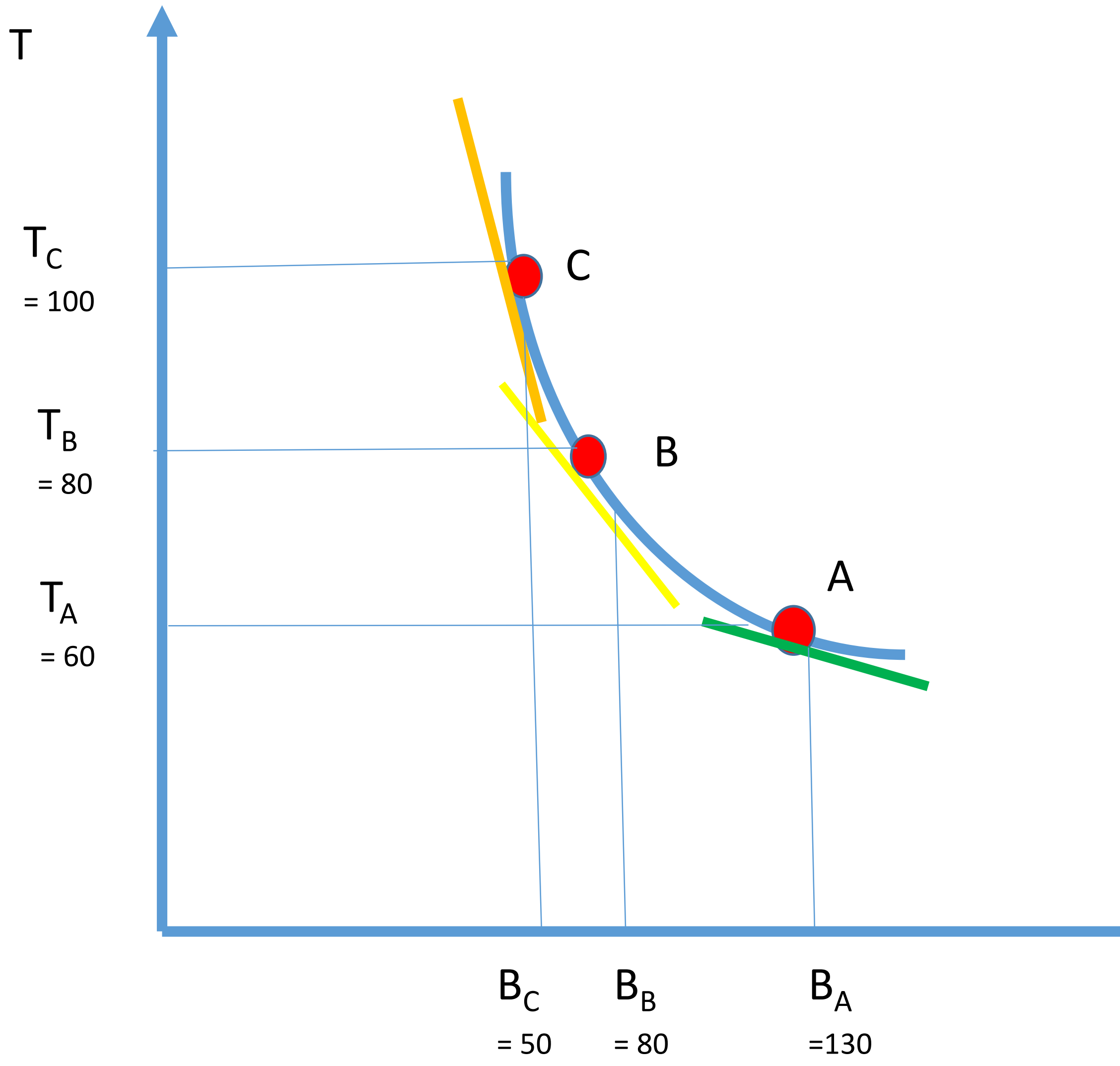
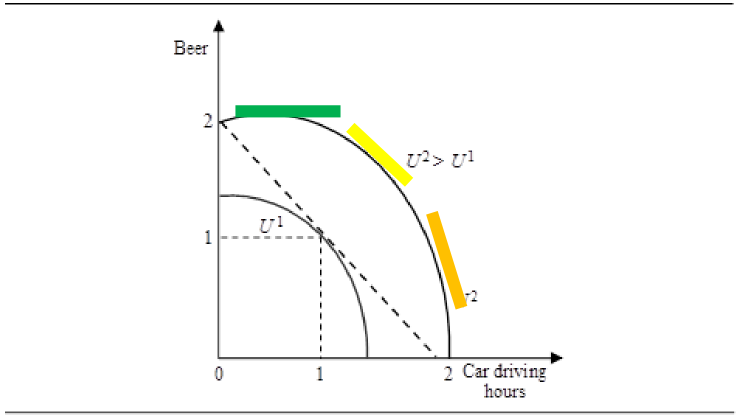
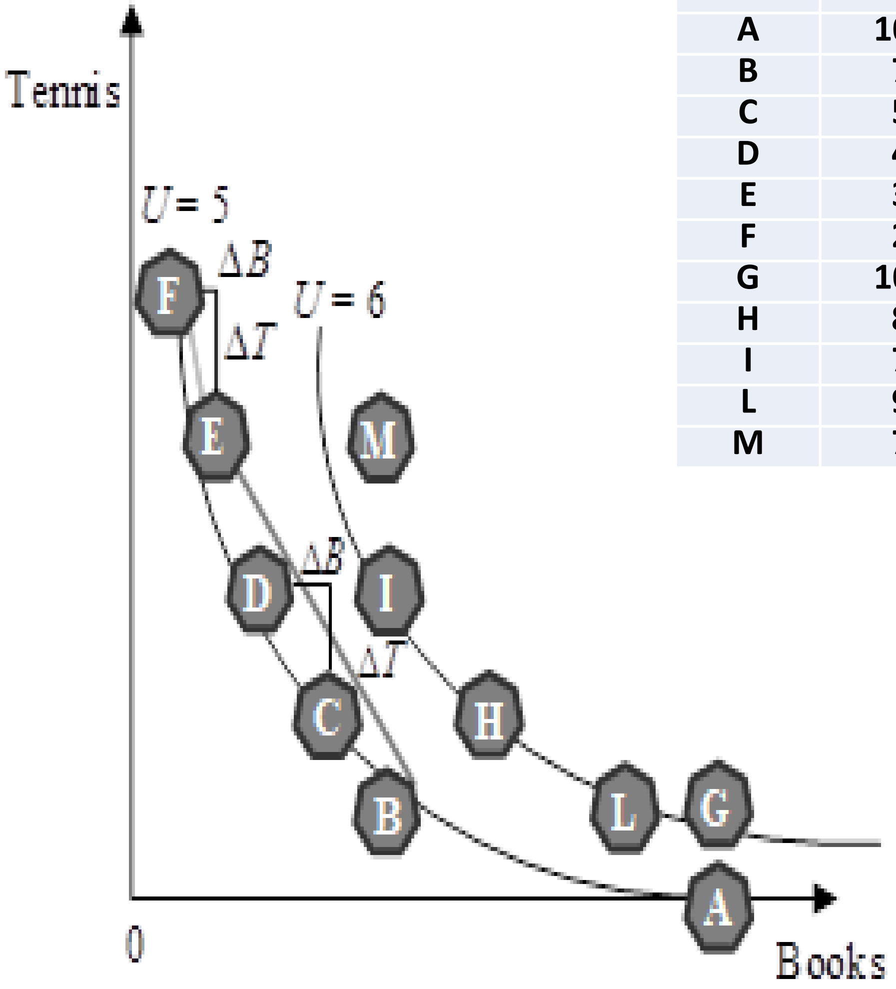
Convex curves: the slope declines as B grows





Slope of the indifference curve vs. MRS

The **slope** of the indifference curve dT/dB is **negative**, since the indifference curve is decreasing (downward-sloping), therefore the marginal substitution rate will be given by **(-dT/dB)**, coinciding with the opposite of the slope of the indifference curve. Please verify that the convexity towards the origin implies an indifference curve with a negative second derivative; this means that the **slope of the curve decreases as the variable increases on the x-axis**.



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Marginal Rate of Substitution MRS and marginal use value

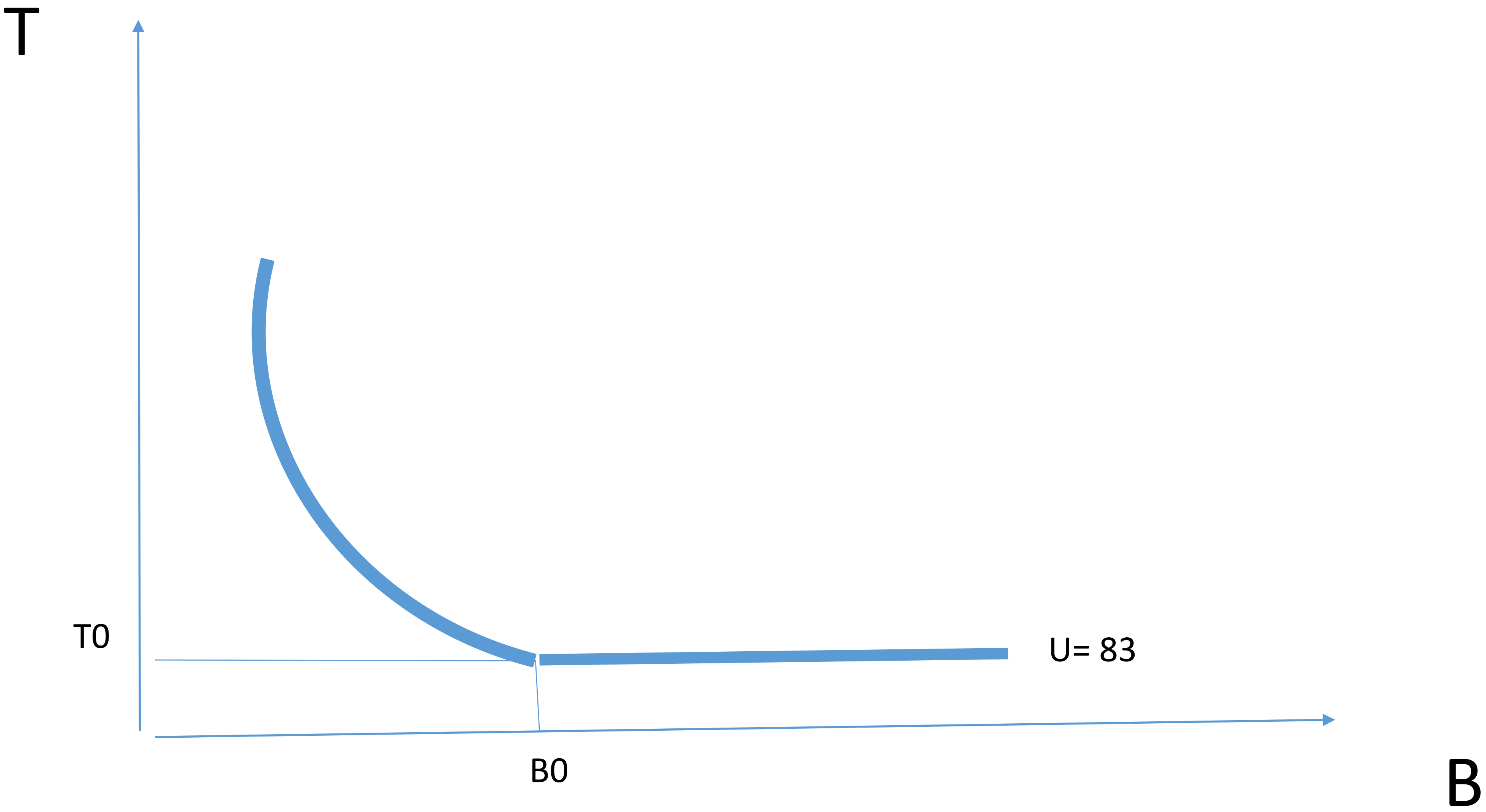
MRS of good B in terms of good T: the value of one more unit (a marginal increment) of the good B in terms of another good T, that is, how much we are **willing** to give up of another good T in order to come into possession **of one more unit** of that good B of which we already consume a certain amount.

PS: We are NOT talking about the exchange value, i.e. the price!

The convexity of preferences, which, as we have explained is an **assumption**, means that this **marginal value** is **decreasing** as the consumption of the good in question increases.

As the consumption of good A increases, we are **willing to give up** less and less of the other good B in order to consume **one additional unit** of good A.

Again. MRS?



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A walk in the forest toward our optimal basket

Where is the price/ marginal cost?

Where is the use value/marginal benefit?

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I	7	3	6
L	9	1	~~?~~
M	7	5	?

The exchange

At the roots of the reason for exchanging:

☺

Do we have a counterpart?

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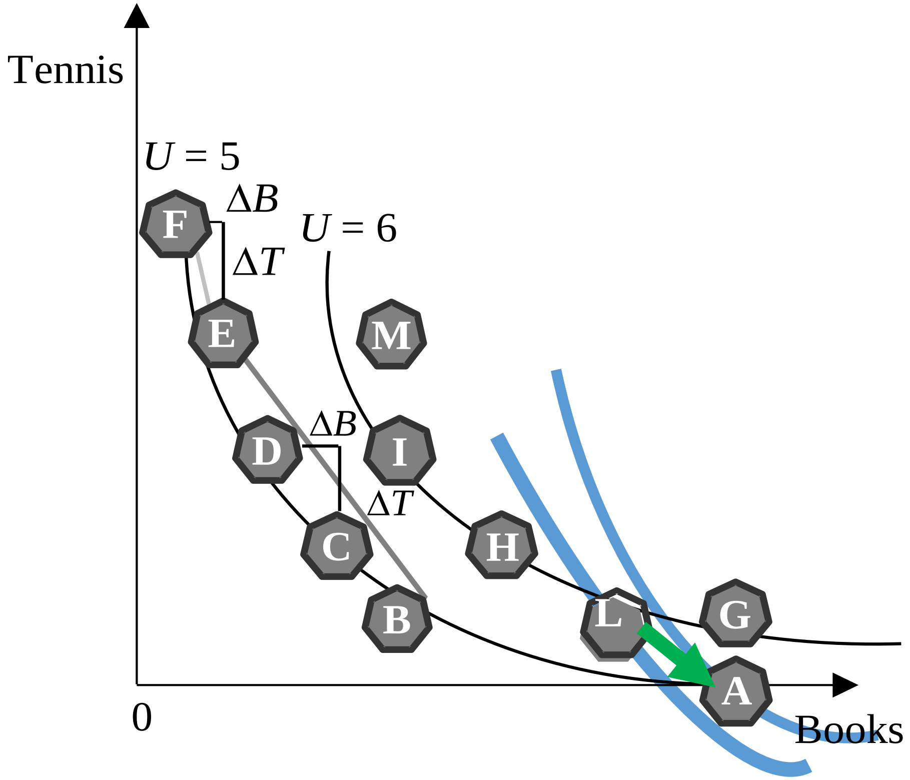
Another consumer



When do we stop trading?

Basket	Books (quantity B)	Tennis (hours T)	Utility
A	10	0	5
B	7	1	5
C	5	2	5
D	4	3	5
E	3	5	5
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H	8	2	6
I	7	3	6
L	9	1	?
M	7	5	?

?

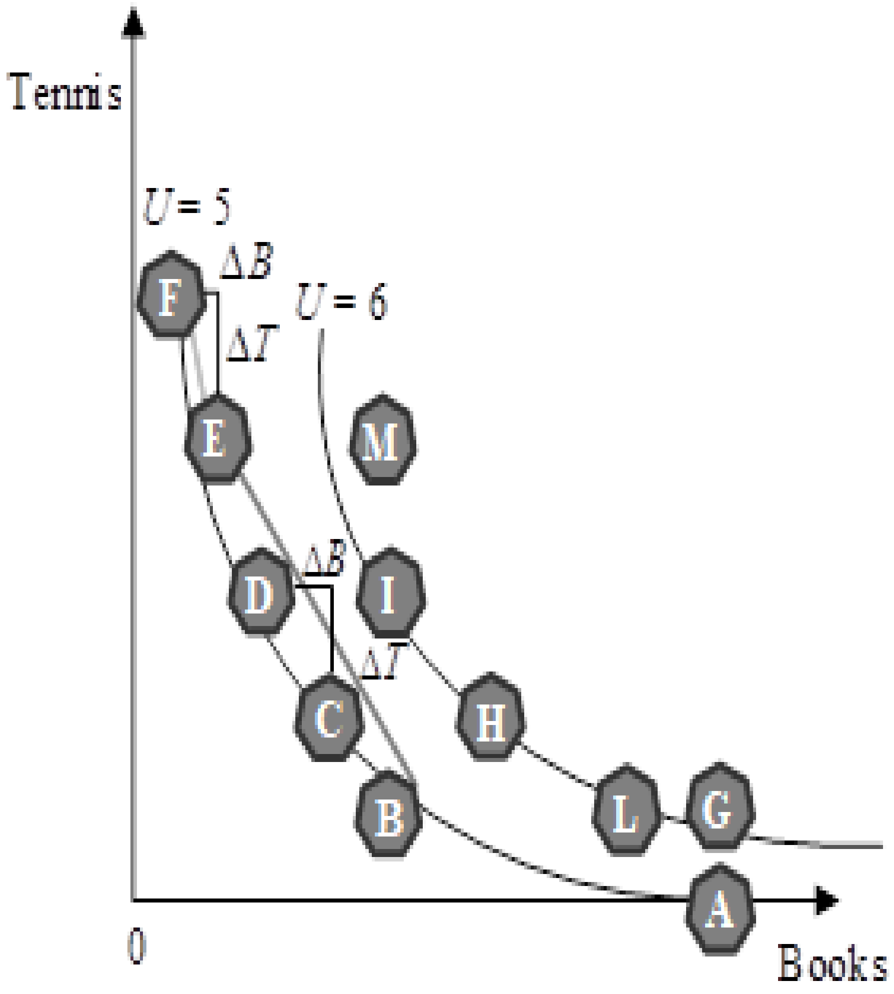
P_L/P_T?

From L to M

M ≻ L ?

M ≻ I
I ~ G
G ≻ L
M ≻ L !

therefore
U(M) > 6
5 < U(L) < 6



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Toward the optimal basket

Passing from A to L, do I have the resources?

And from L to M?
And if at L we were asked
10 books for 4 tennis lessons?

What if there is no counterpart at those prices?

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The budget constraint

P_B = 50 euro
P_T = 100 euro (relative price?)
I, monetary income, equals 500 euro

Consumer is a a *price-taker*

Constraint?

$$I \geq P_B \times B + P_T \times T$$

$$I = P_B \times B + P_T \times T$$

$$500 = 50 \times B + 100 \times T$$

A: affordable?
L: affordable?
M: affordable?
(and if P_T were to go down to 30 €?)

$$I = (P_B \times B) + (P_T \times T)$$

$$I - (P_B \times B) = (P_T \times T)$$

$$T = \left(\frac{I}{P_T}\right) - \left(\frac{P_B}{P_T}\right) \times B$$

and in our example:

$$T = \left(\frac{500}{100}\right) - \left(\frac{50}{100}\right) B = 5 - \left(\frac{1}{2}\right) B$$

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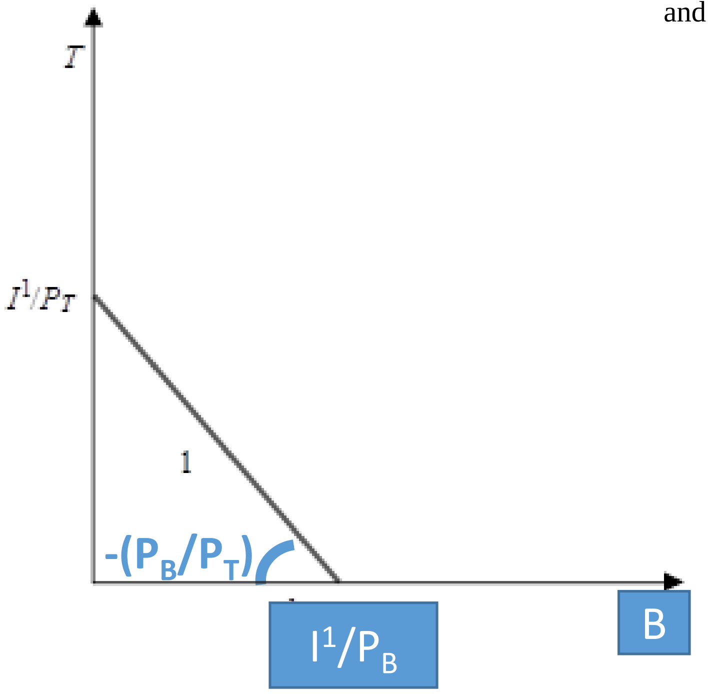
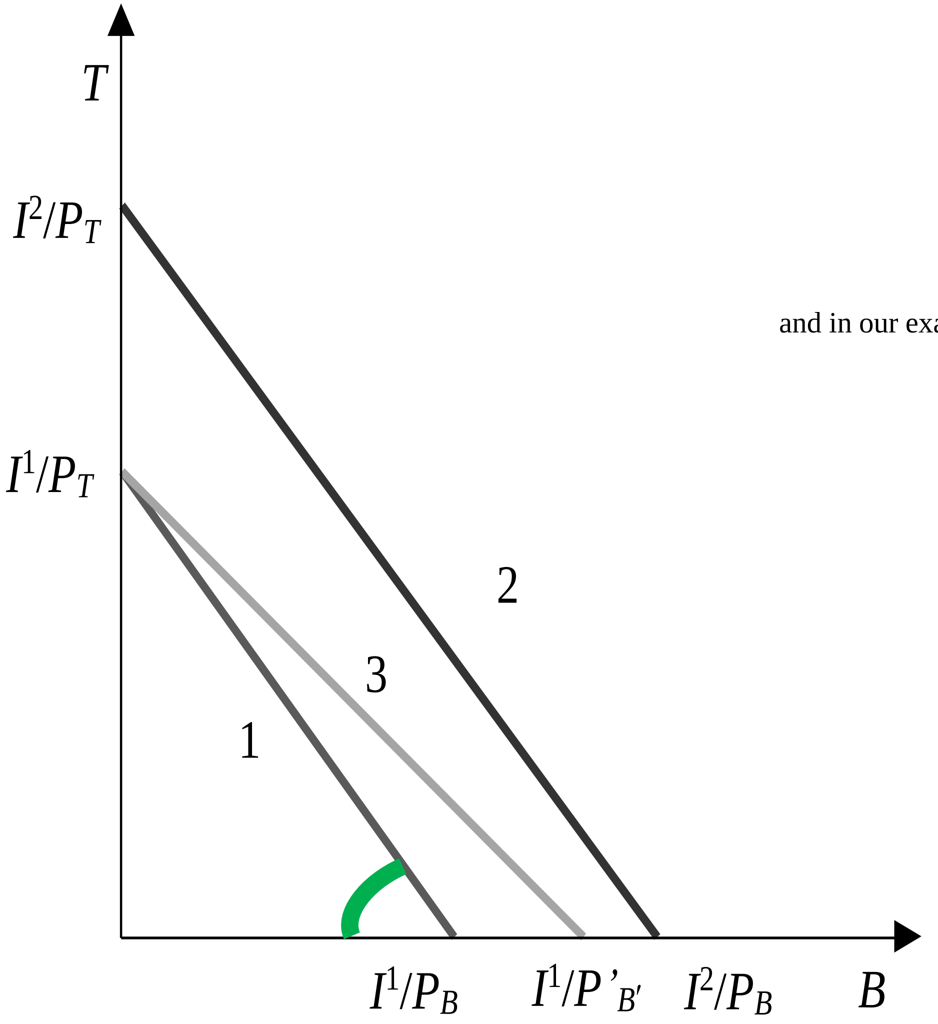


The budget constraint tells us for a given desired consumption of books ... the maximum amount of tennis lessons we can consume given our income and the absolute and relative cost of goods.

Decreasing!
Intercepts?
Area below? Area above?
Slope?

The budget constraint: shifts and tilting



$I = (P_B \times B) + (P_T \times T)$

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and in our example:

$$T = \left(\frac{500}{100}\right) - \left(\frac{50}{100}\right) B = 5 - \left(\frac{1}{2}\right) B$$

From «1» to «2» what changes?

Income. Or?

From «1» to «3» what changes?

Price. Of which good?

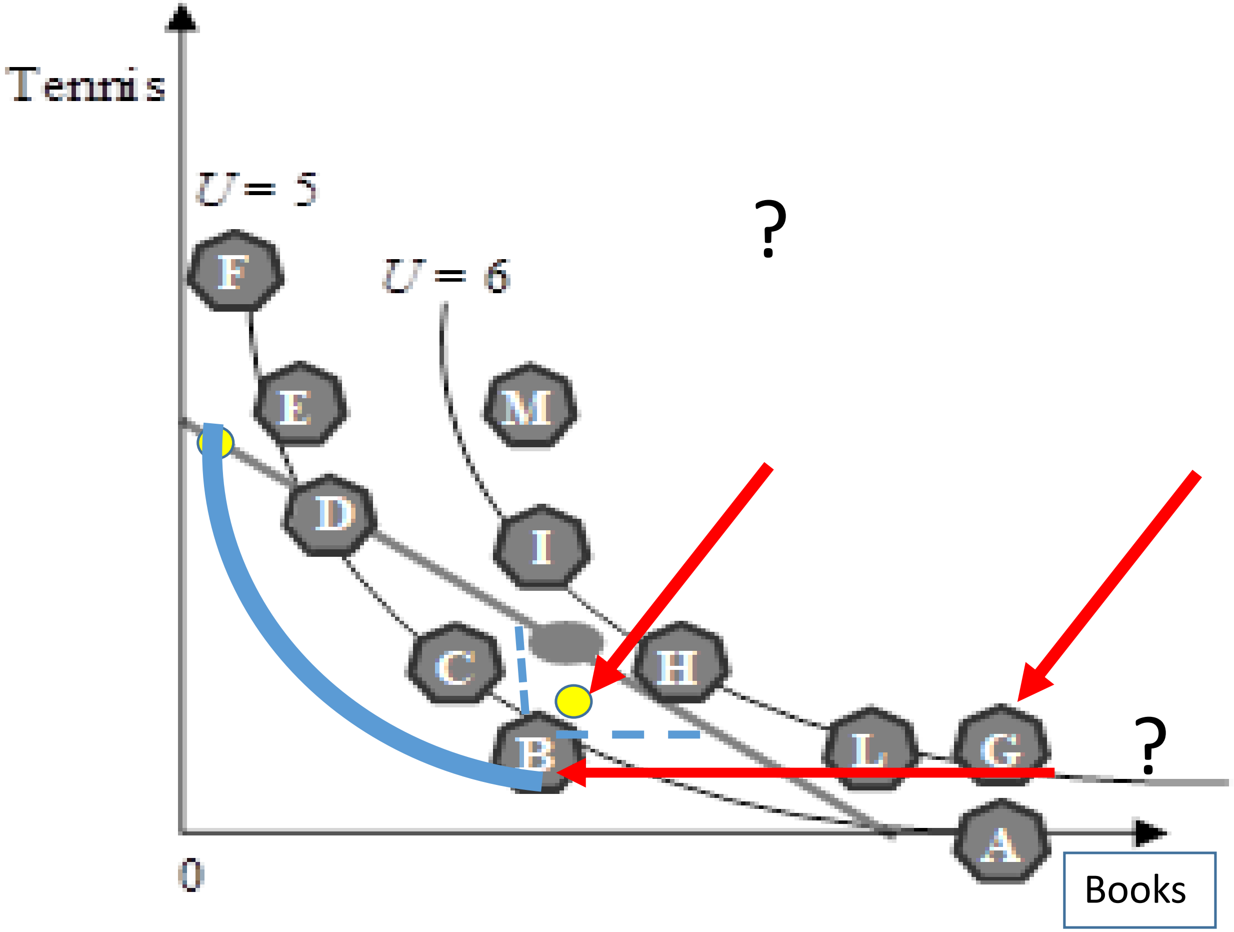
Books, right.

Are we richer?

What about hyperinflation?

John's choice

P_B = 50 euro
P_T = 100 euro (relative price?)
I, monetary income, equals 500 euro



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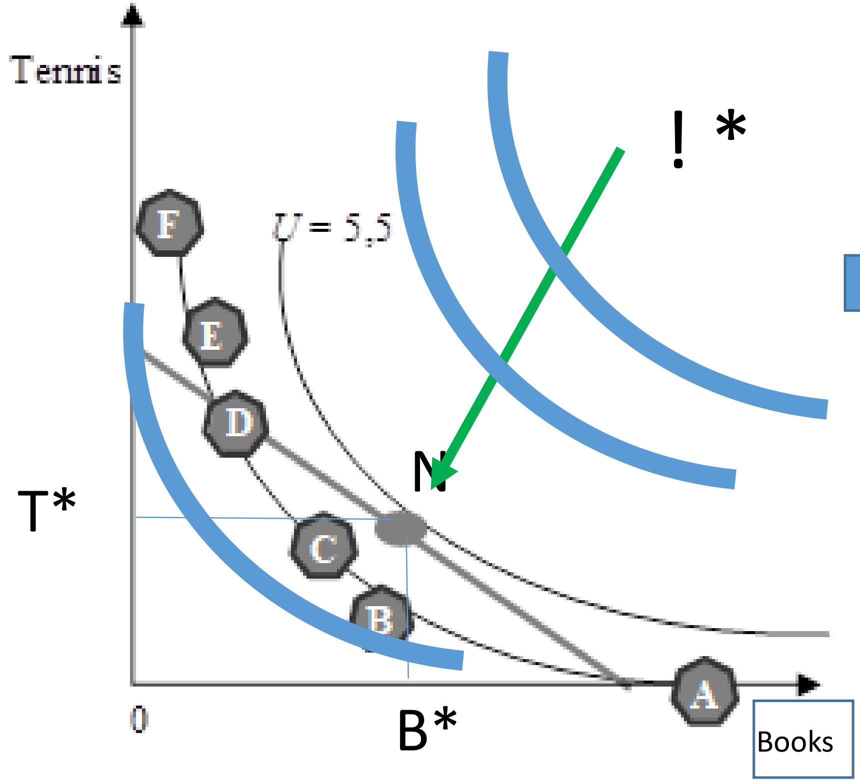
G?
B? C?
D?

Optimum point and conditions (preferred basket)



$$I = (P_B B^*) + (P_T T^*)$$

$$\boxed{\text{MRS}}\,(B^*, T^*) = \frac{P_B}{P_T}$$

$$I = (P_B B) + (P_T T)$$

$$\boxed{\text{MRS}} = \frac{P_B}{P_T}$$

And if they… differ?

$$MRS = -\frac{\partial T}{\partial B} = 3 > \left(\frac{P_B}{P_T}\right) = \frac{1}{2}$$

You have **a basket** such that what above holds which exhausts your income. Are you at an optimum point of choice?

So you can do better. How?

Now to try to give up 1 tennis lecture (-1T). With the remaining money, what can you buy?

2 books (+2B). A new basket.

But how much were you willing to pay for those 2 books?

6 tennis lessons! **How do you feel now?**

Your basket has changed … and you are **better off. That initial basket is not the optimal one (usually), you can do better.**