Decomposition of Price Effect

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THE IMPACT OF A PRICE CHANGE

Economists often separate the impact of a price change into two components:

- **the substitution effect; and**
- **the income effect.**

THE IMPACT OF A PRICE CHANGE

The substitution effect involves the substitution of good x_1 for good x_2 or vice-versa due to a change in relative prices of the two goods.

The income effect results from an increase or decrease in the consumer's real income or purchasing power as a result of the price change.

The sum of these two effects is called the price effect.

THE IMPACT OF A PRICE CHANGE

The decomposition of the price effect into the income and substitution effect can be done in several ways

There are two main methods:

(i) The Hicksian method; and

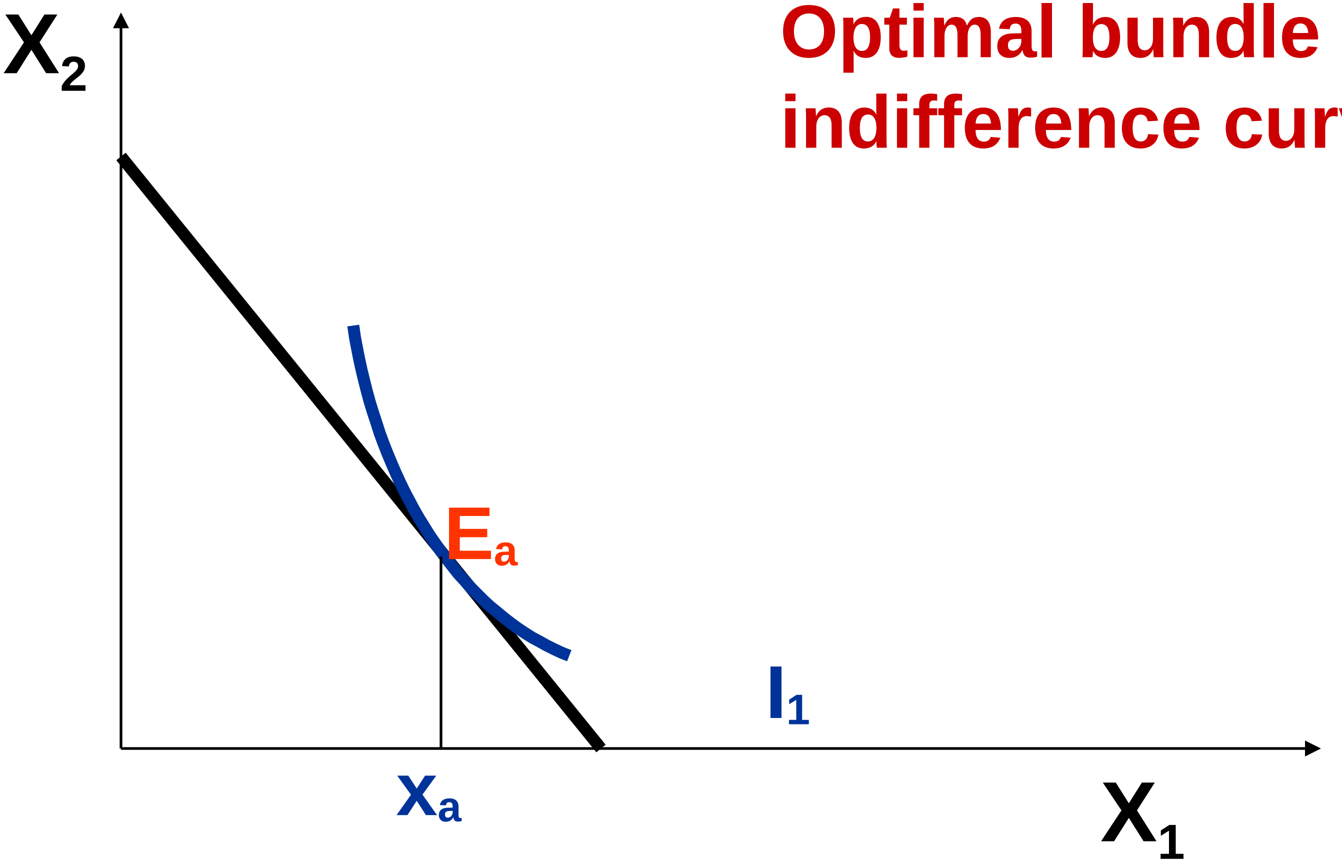
(ii) The Slutsky method

THE HICKSIAN METHOD

Sir John R.Hicks (1904-1989)

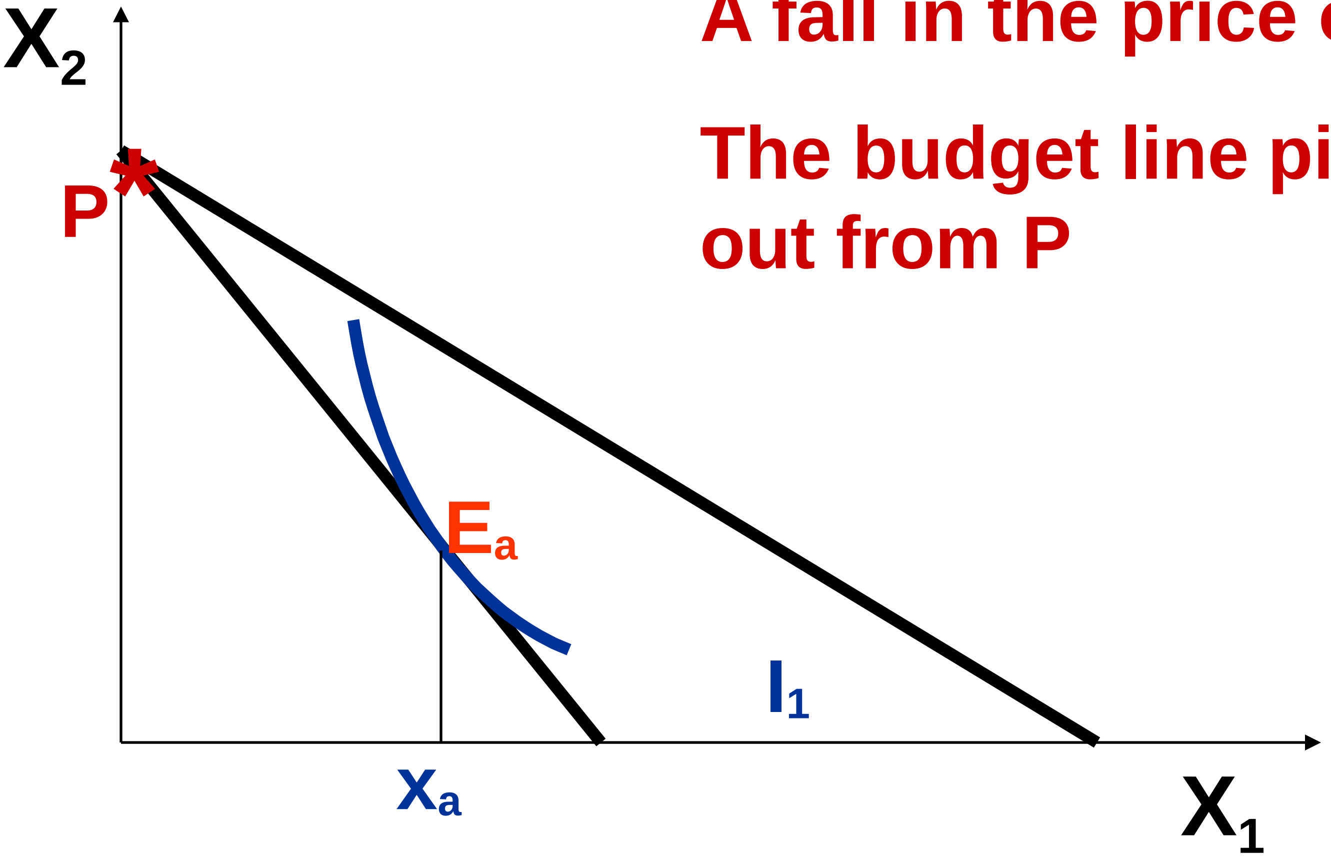
Awarded the Nobel Laureate in Economics (with Kenneth J. Arrrow) in 1972 for work on general equilibrium theory and welfare economics.

THE HICKSIAN METHOD



Optimal bundle is E_a, on indifference curve I_1.

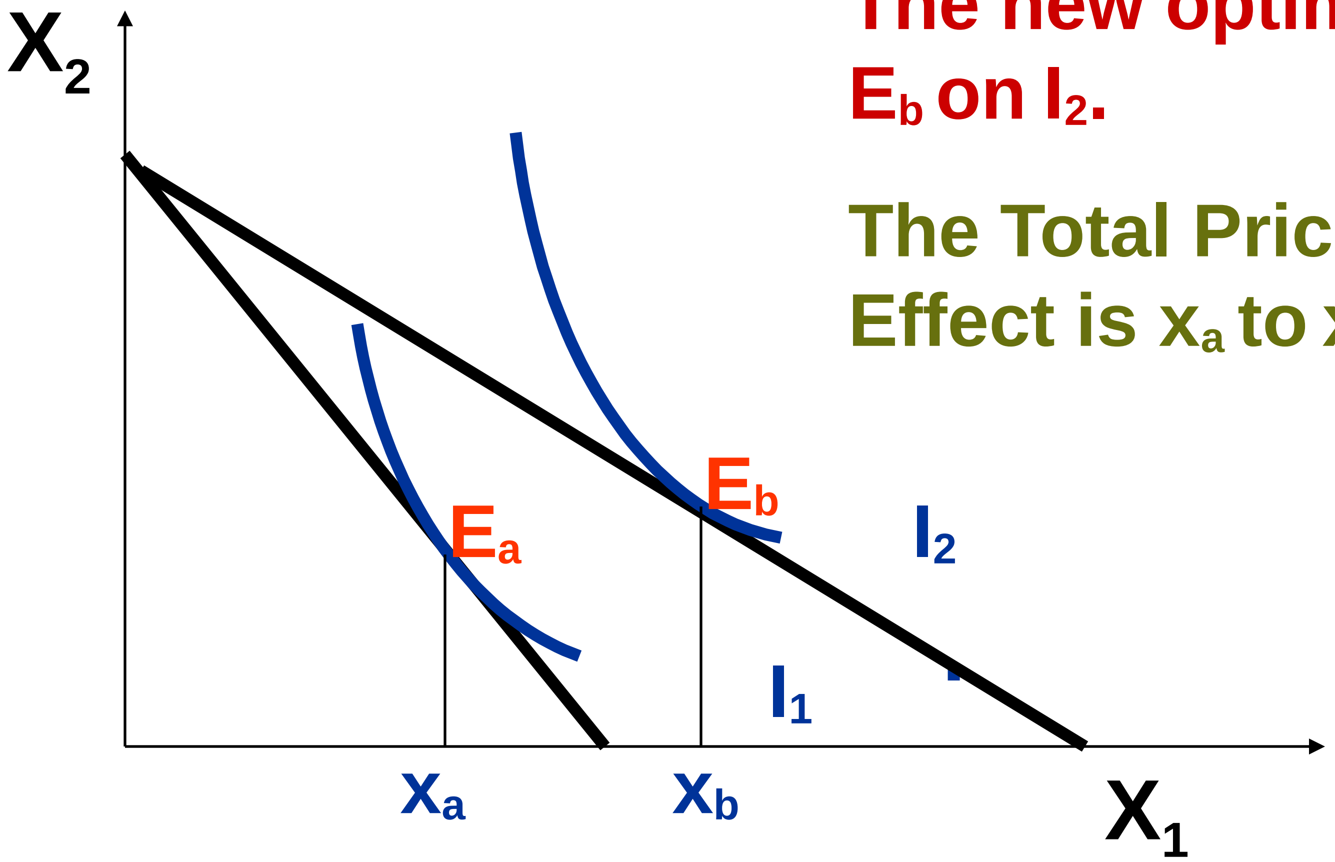
THE HICKSIAN METHOD



A fall in the price of X_1

The budget line pivots out from P

THE HICKSIAN METHOD



The new optimum is E_b on I_2.

The Total Price Effect is x_a to x_b

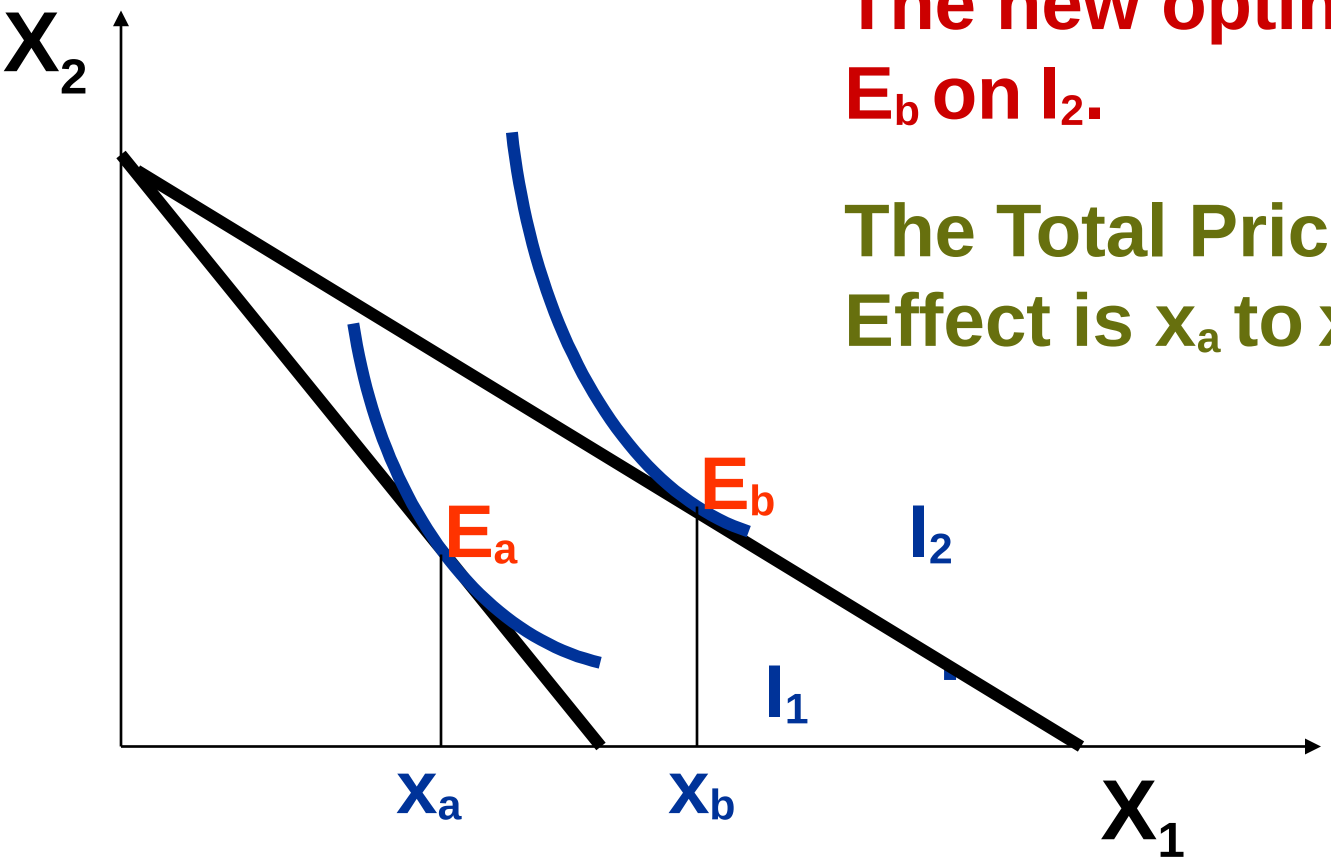
THE HICKSIAN METHOD

To isolate the substitution effect we ask….

"what would the consumer's optimal bundle be if s/he faced the new lower price for X_1 but experienced no change in real income?"

This amounts to returning the consumer to the original indifference curve (I_1)

THE HICKSIAN METHOD

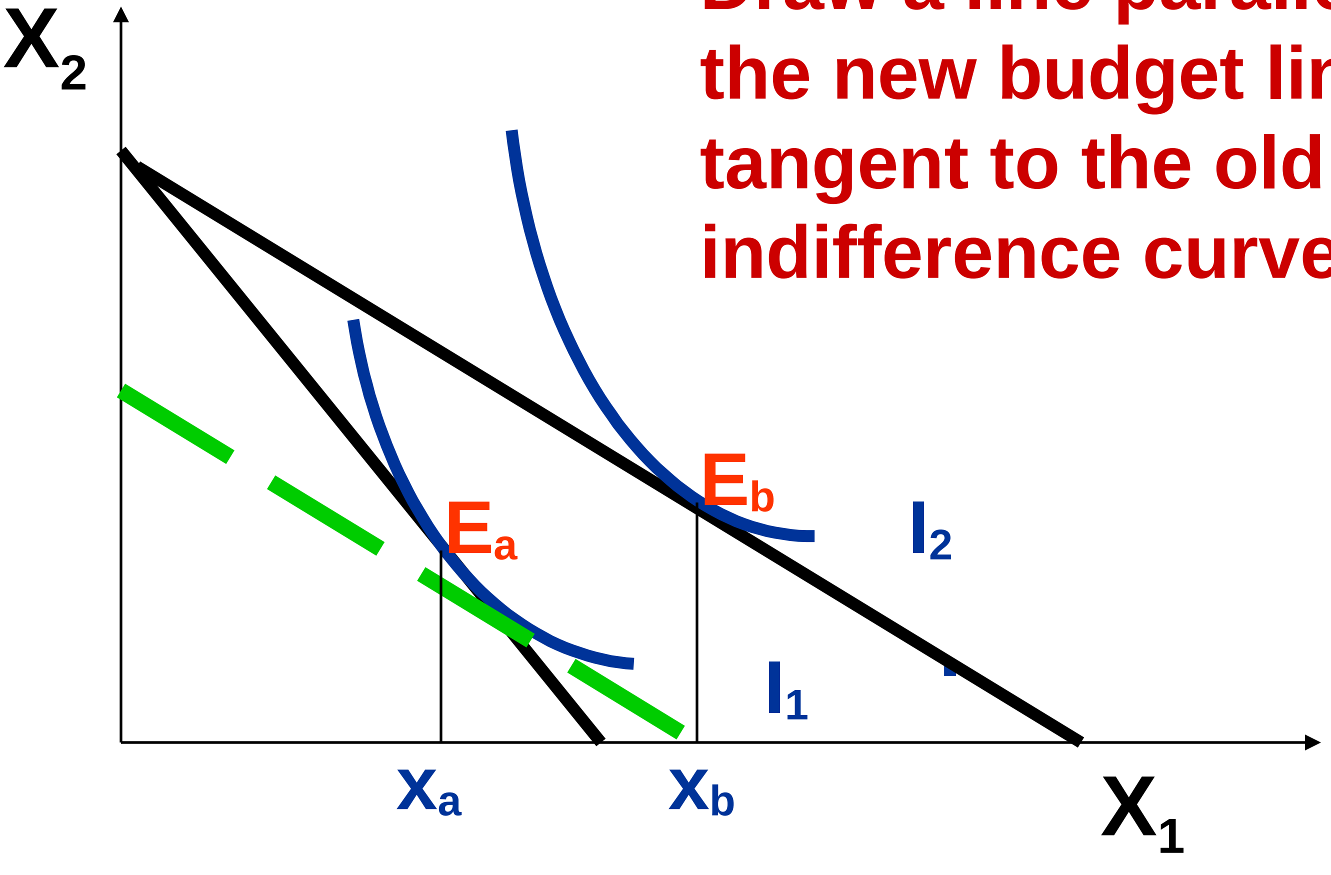


The new optimum is E_b on I_2.

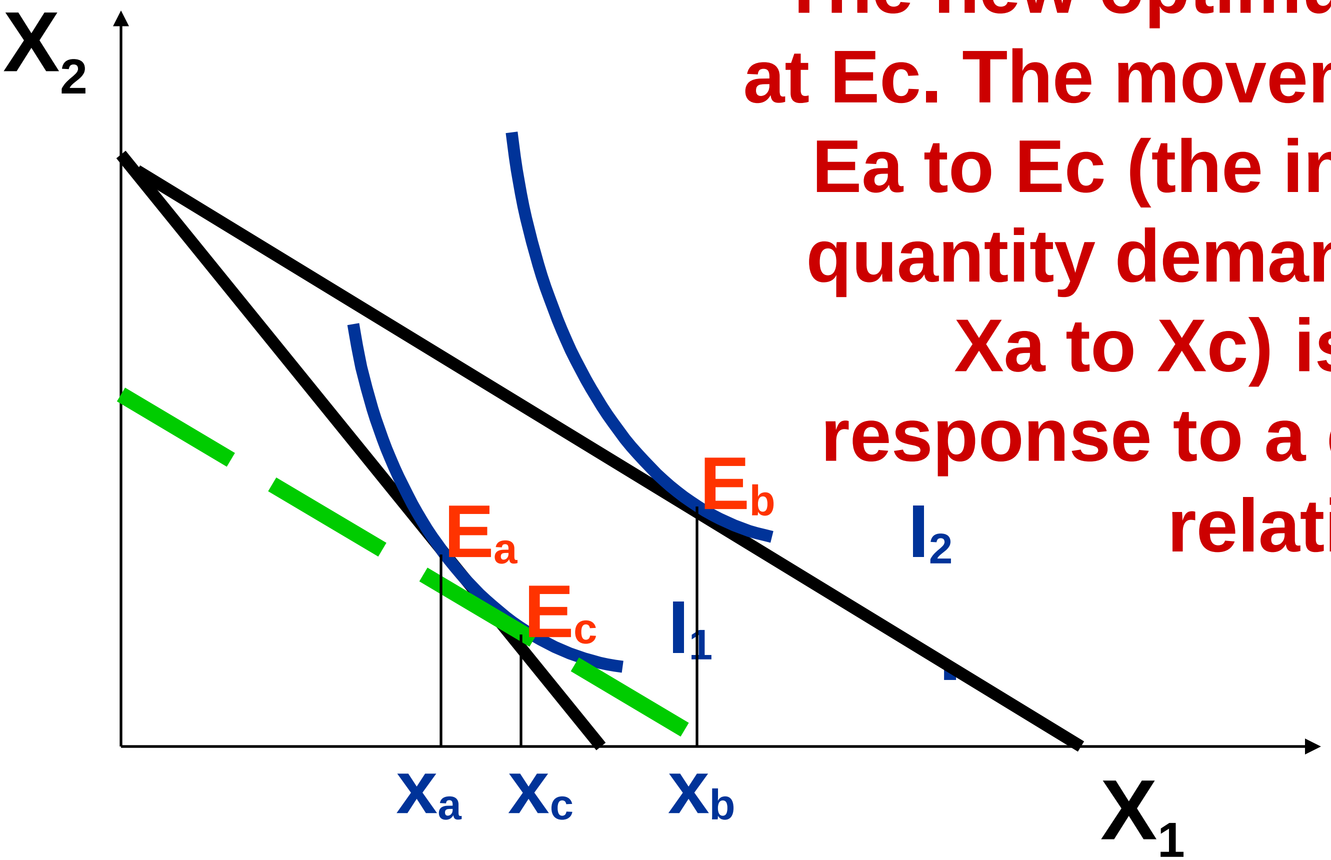
The Total Price Effect is x_a to x_b

THE HICKSIAN METHOD

Draw a line parallel to the new budget line and tangent to the old indifference curve



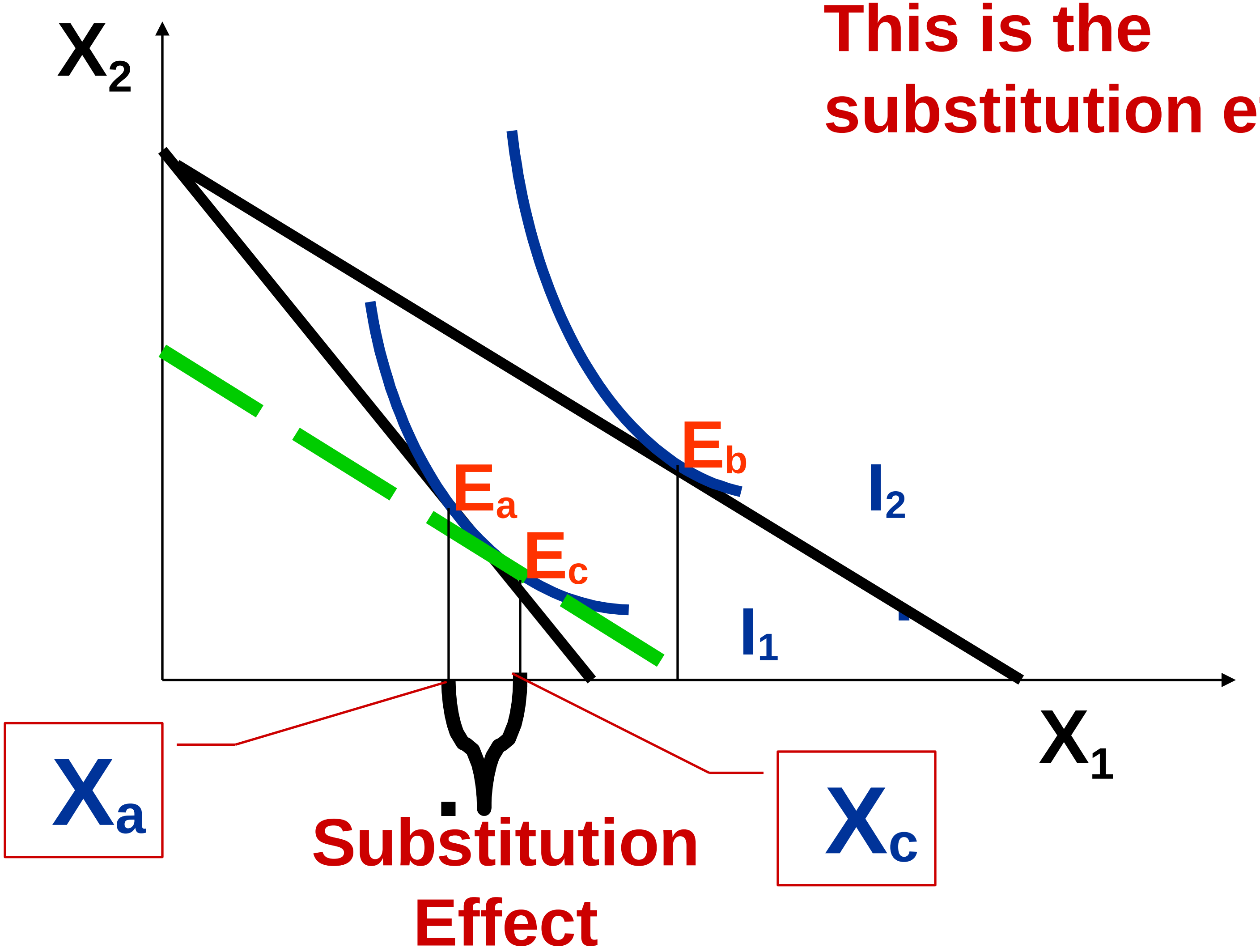
THE HICKSIAN METHOD



The new optimum on I_1 is at Ec. The movement from Ea to Ec (the increase in quantity demanded from Xa to Xc) is solely in response to a change in relative prices

THE HICKSIAN METHOD

This is the substitution effect.



THE HICKSIAN METHOD

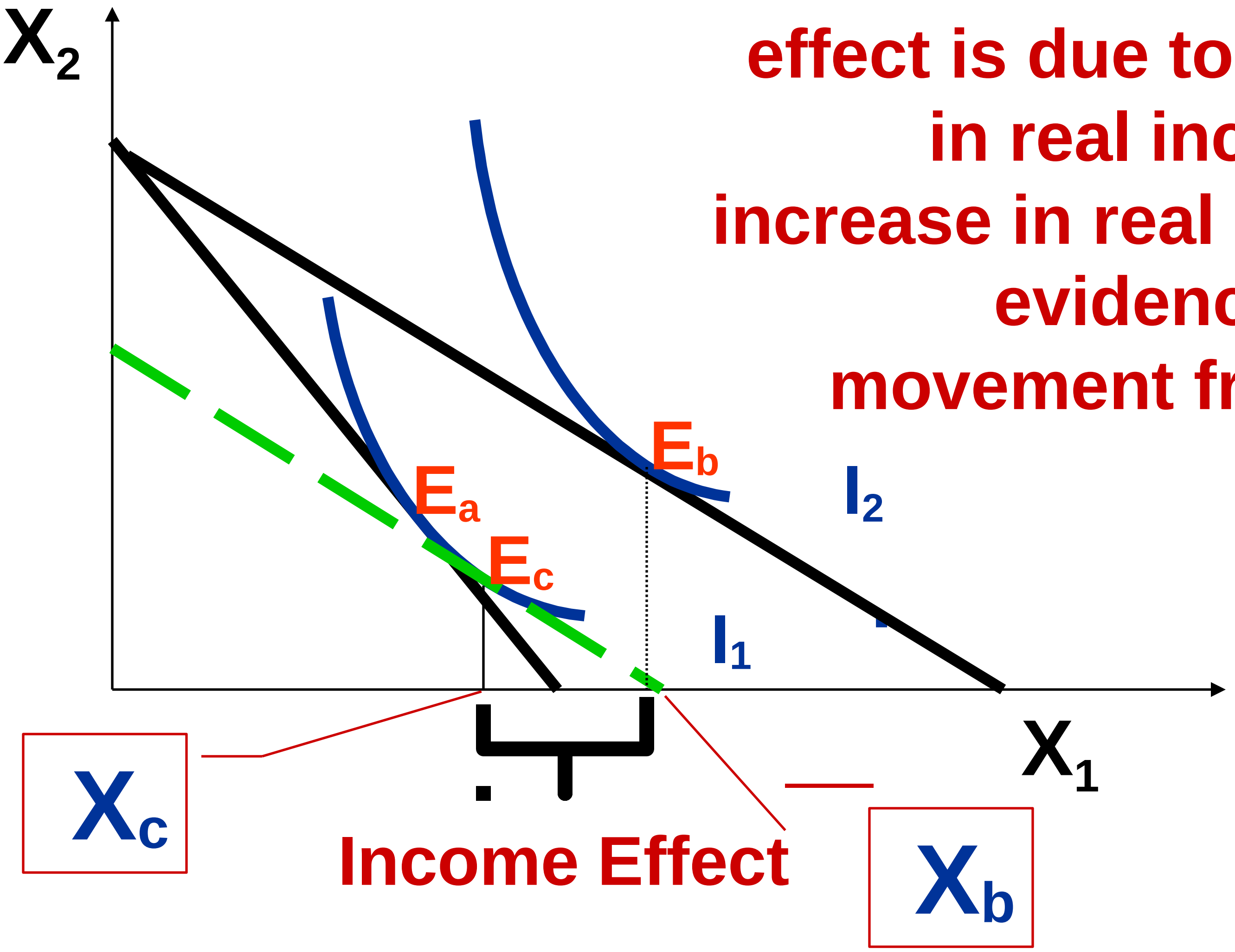
To isolate the income effect …

Look at the remainder of the total price effect

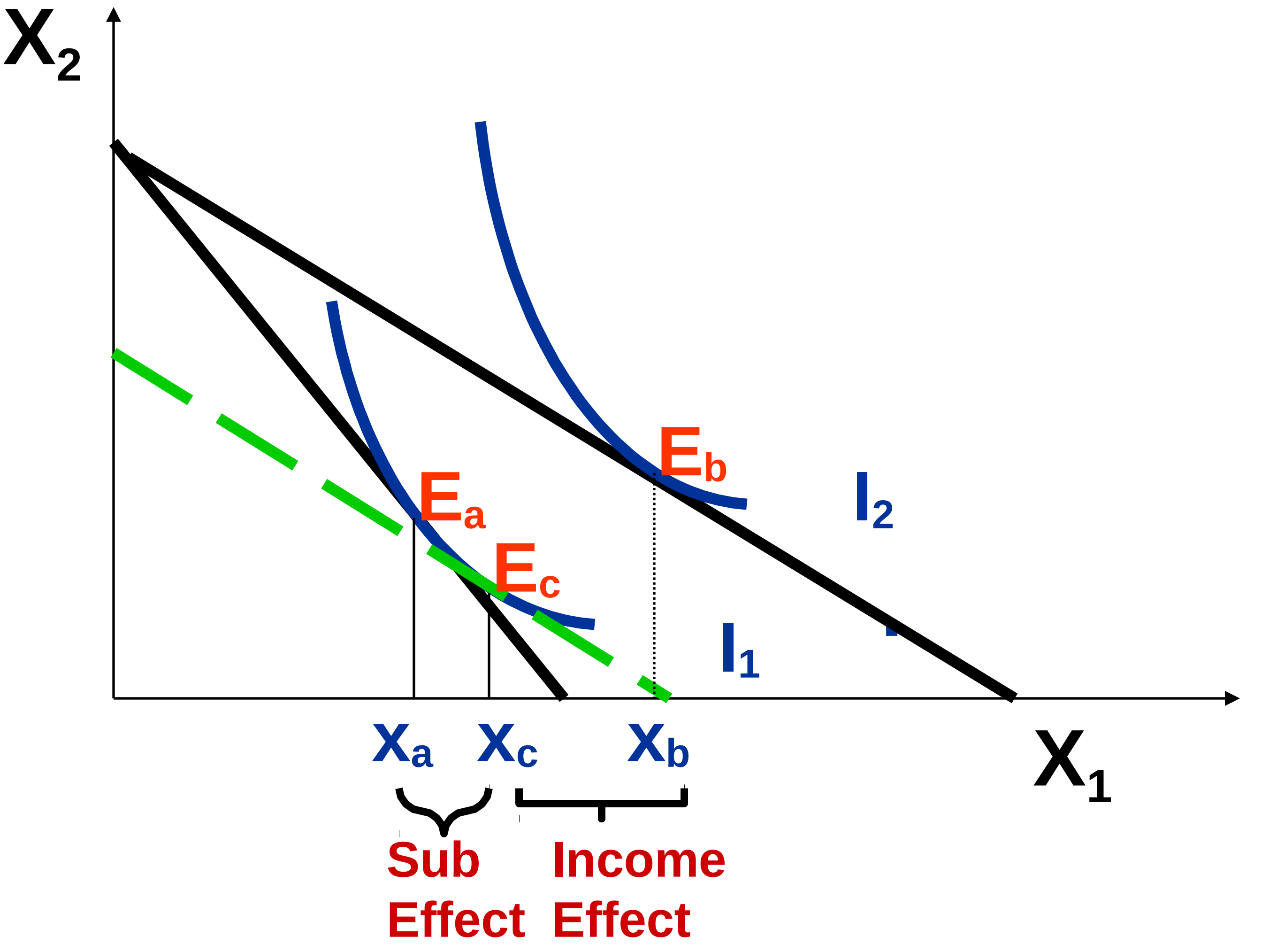
This is due to a change in real income.

THE HICKSIAN METHOD

The remainder of the total effect is due to a change in real income. The increase in real income is evidenced by the movement from I_1 to I_2



THE HICKSIAN METHOD



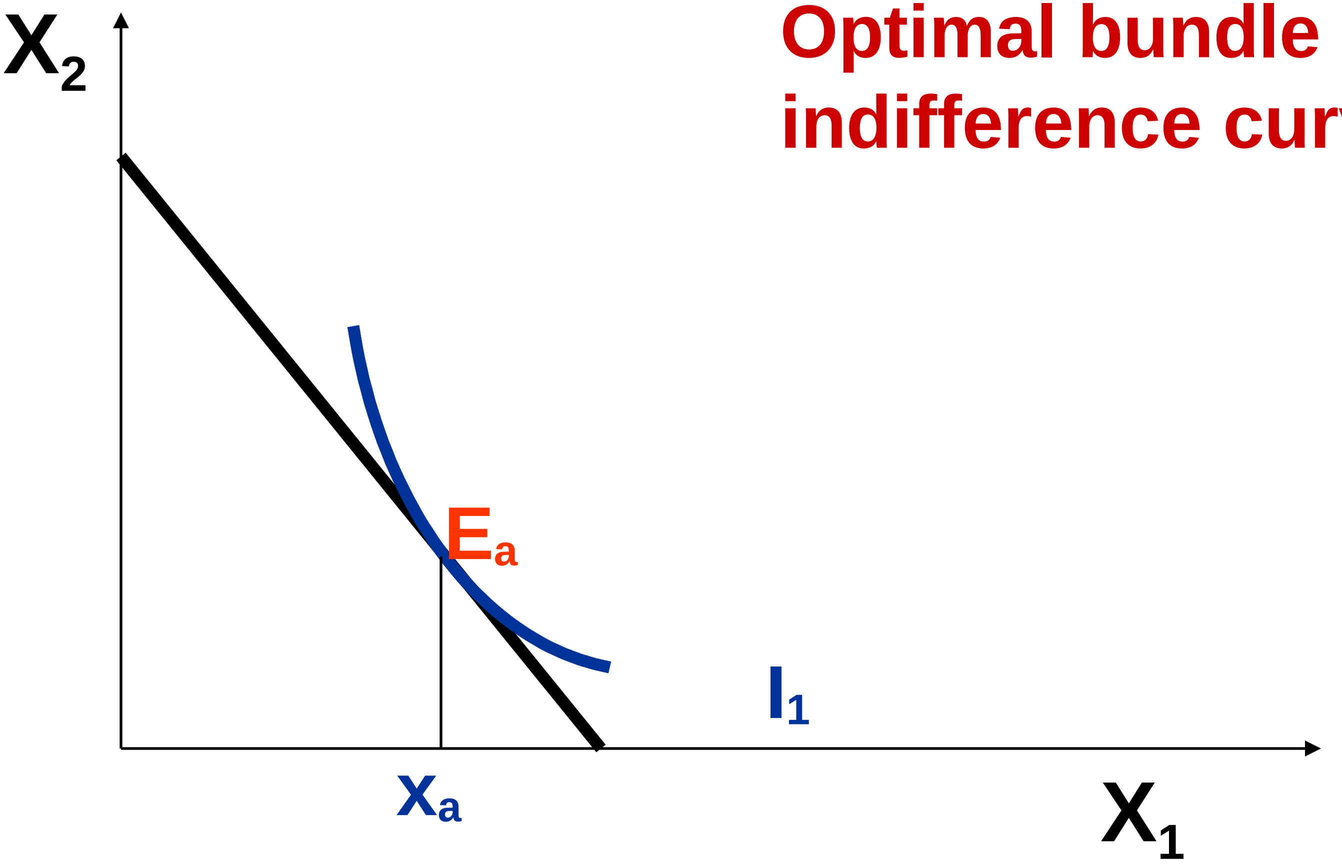
THE SLUTSKY METHOD

Eugene Slutsky (1880-1948)

Russian economist

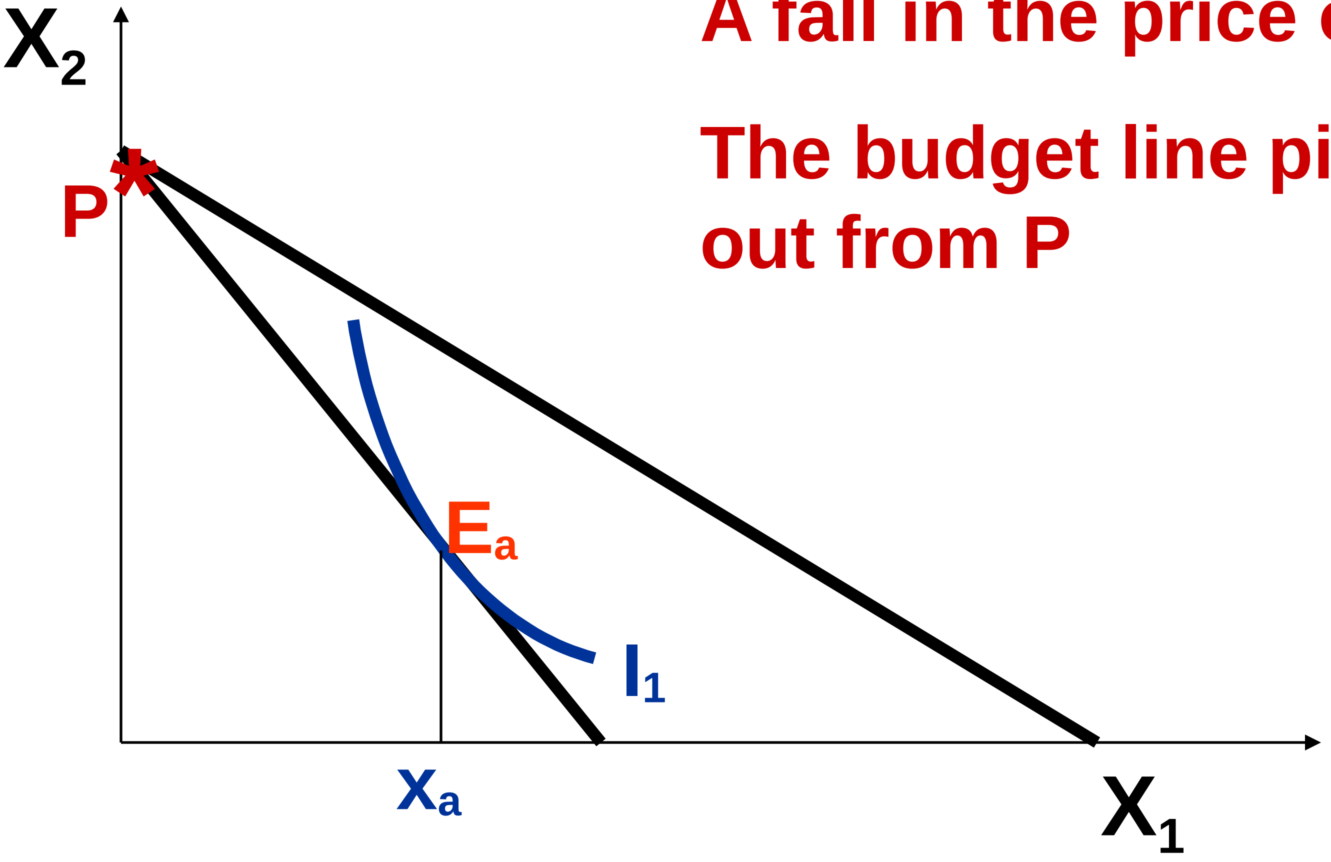
In his 1915 paper, “On the theory of the Budget of the Consumer” he introduced “Slutsky Decomposition”.

THE SLUTSKY METHOD



Optimal bundle is E_a, on indifference curve I_1.

THE SLUTSKY METHOD



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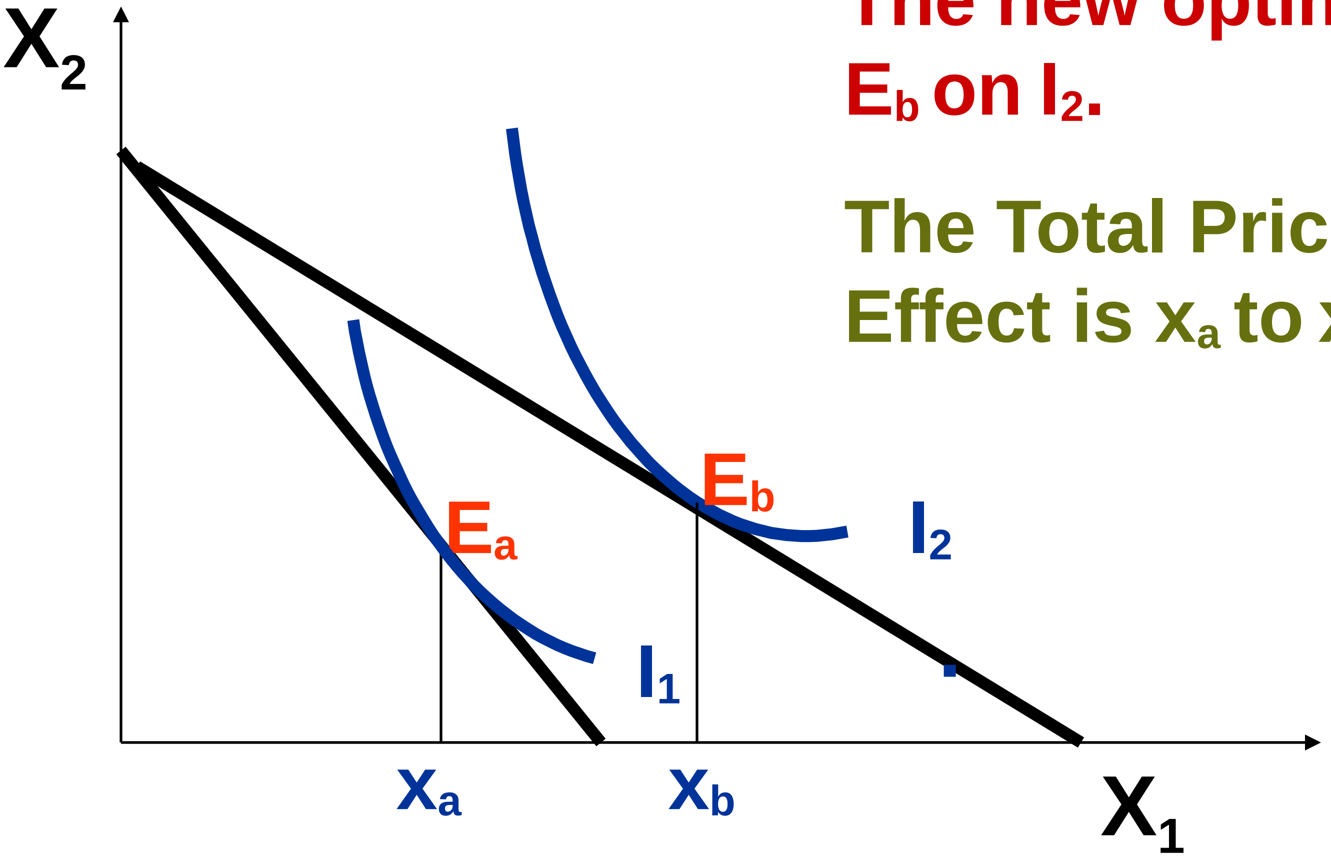
THE SLUTSKY METHOD



The new optimum is E_b on I_2.

The Total Price Effect is x_a to x_b

THE SLUTSKY METHOD

Slutsky claimed that if, at the new prices,

- **less income is needed to buy the original bundle then “real income” has increased**
- **more income is needed to buy the original bundle then “real income” has decreased**

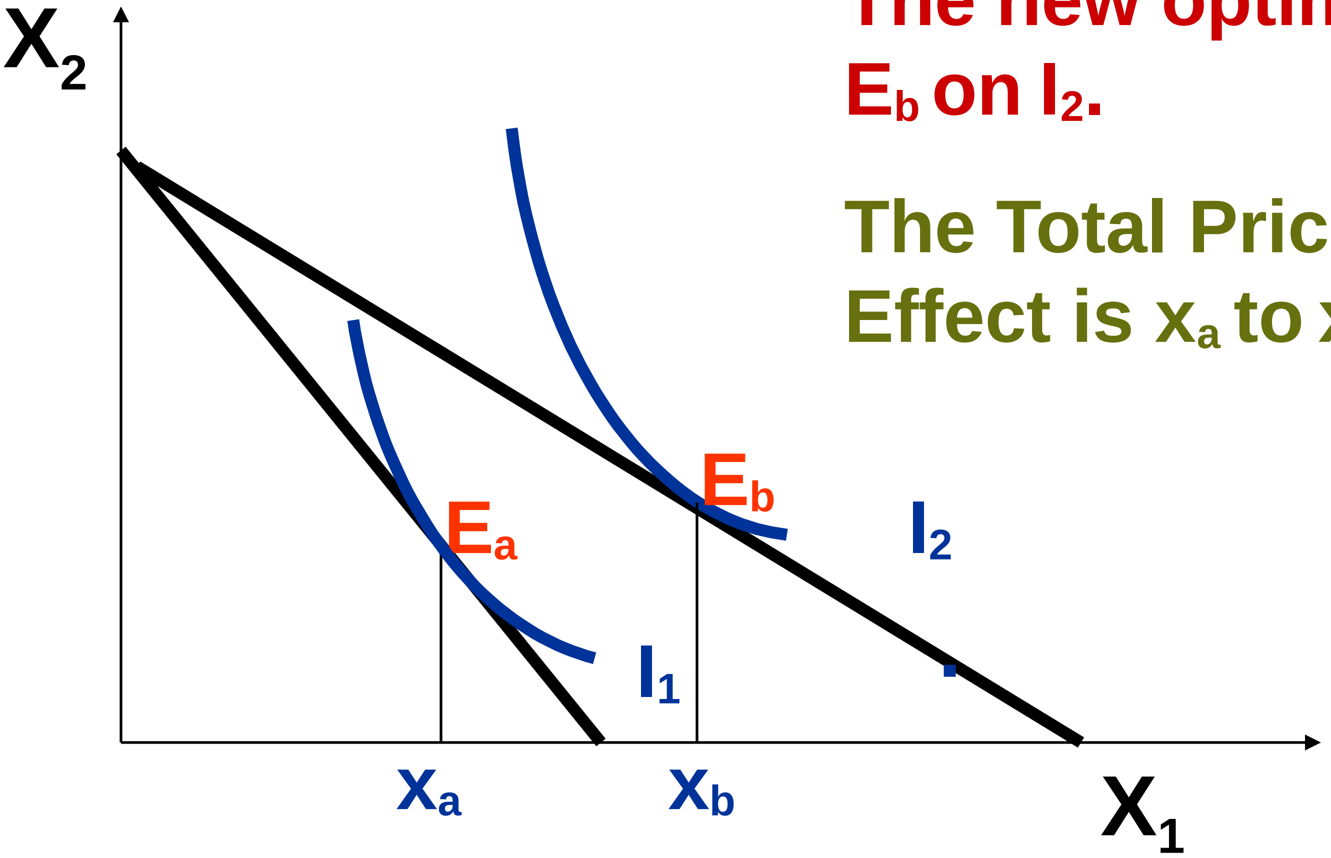
Slutsky isolated the change in demand due only to the change in relative prices by asking “What is the change in demand when the consumer’s income is adjusted so that, at the new prices, s/he can just afford to buy the original bundle?”

THE SLUTSKY METHOD

To isolate the substitution effect we adjust the consumer’s money income so that s/he change can just afford the original consumption bundle.

In other words we are holding purchasing power constant.

THE SLUTSKY METHOD



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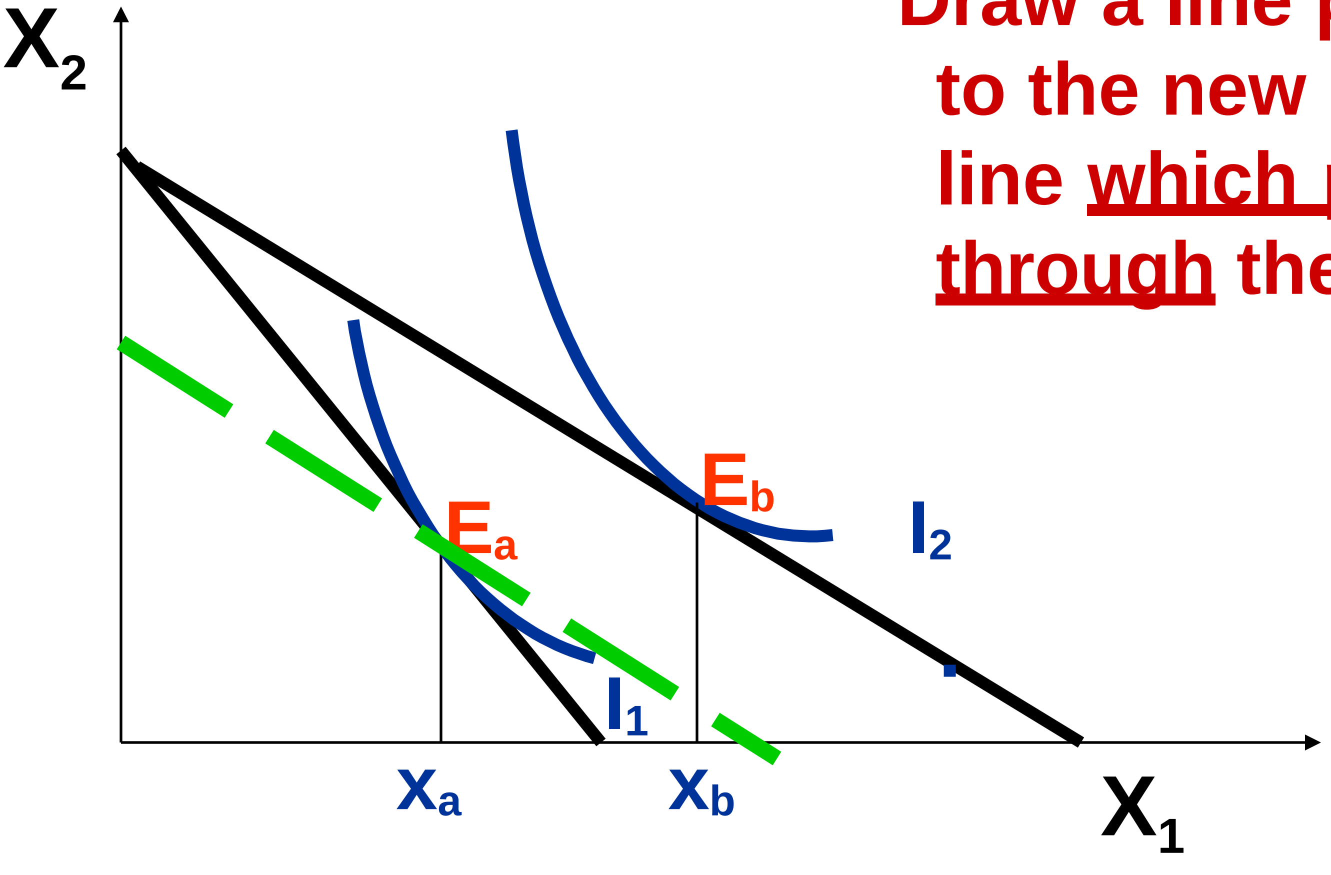
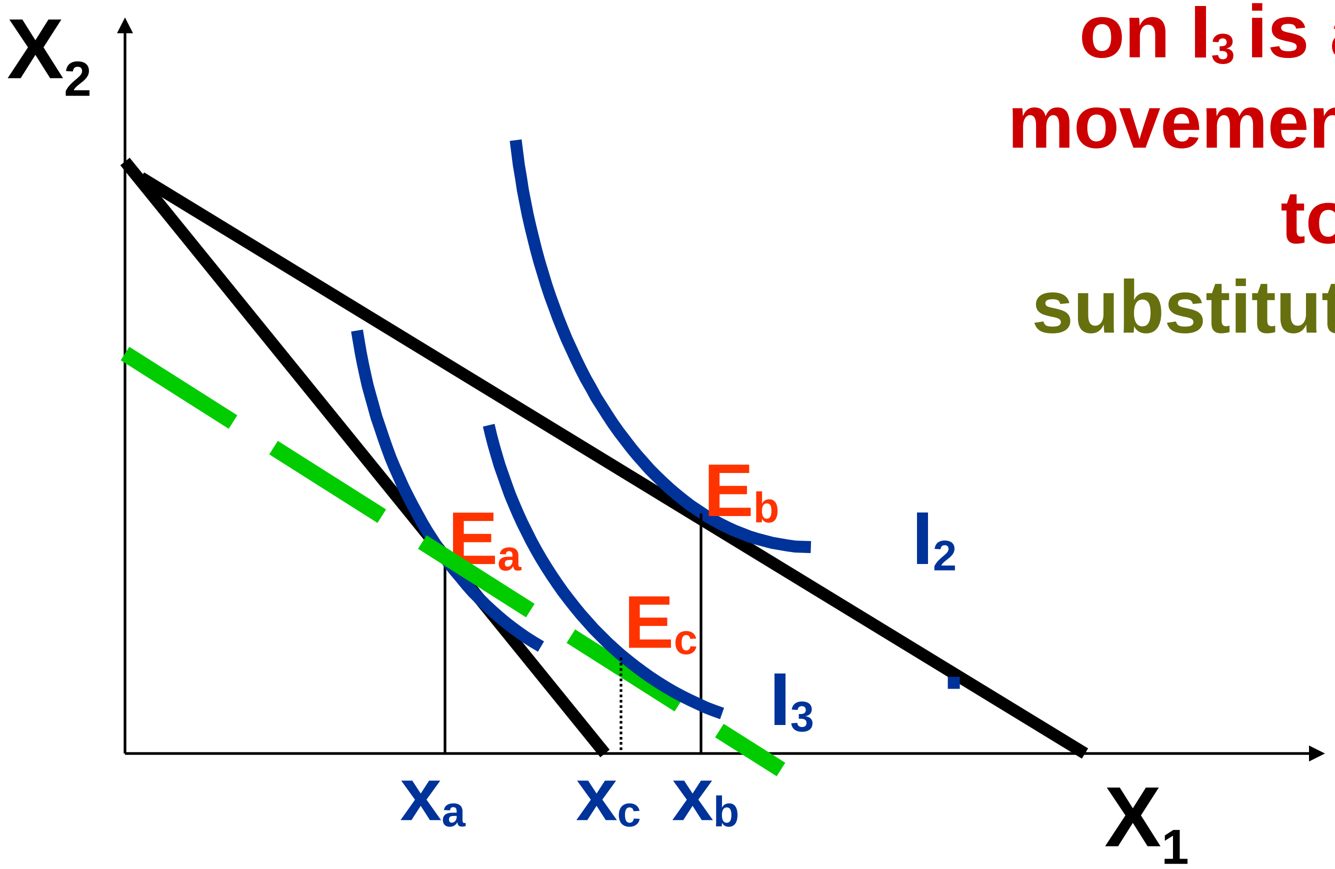
THE SLUTSKY METHOD



Draw a line parallel to the new budget line <u>which passes through</u> the point Ea.

THE SLUTSKY METHOD

The new optimum on I_3 is at Ec. The movement from Ea to Ec is the substitution effect



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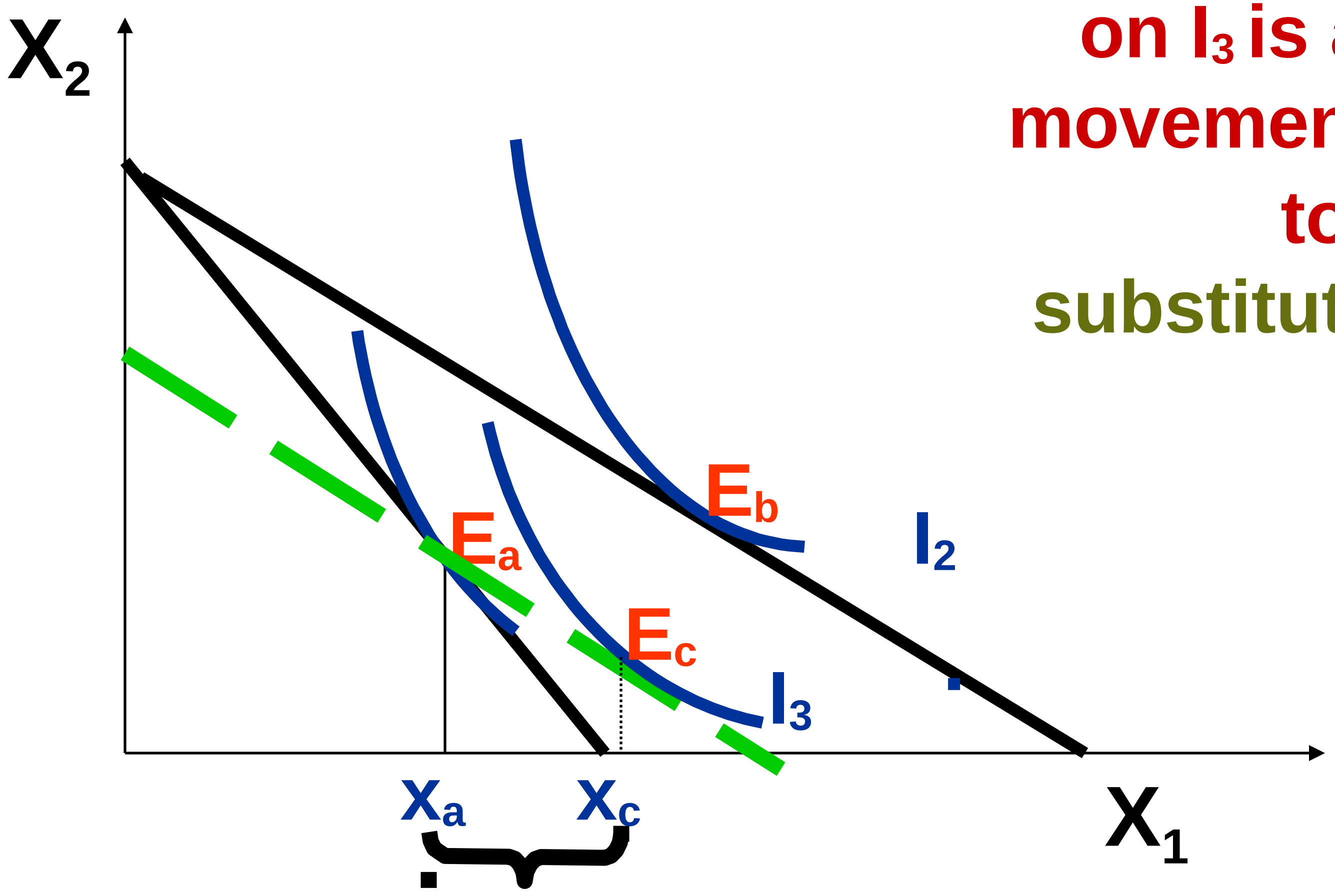
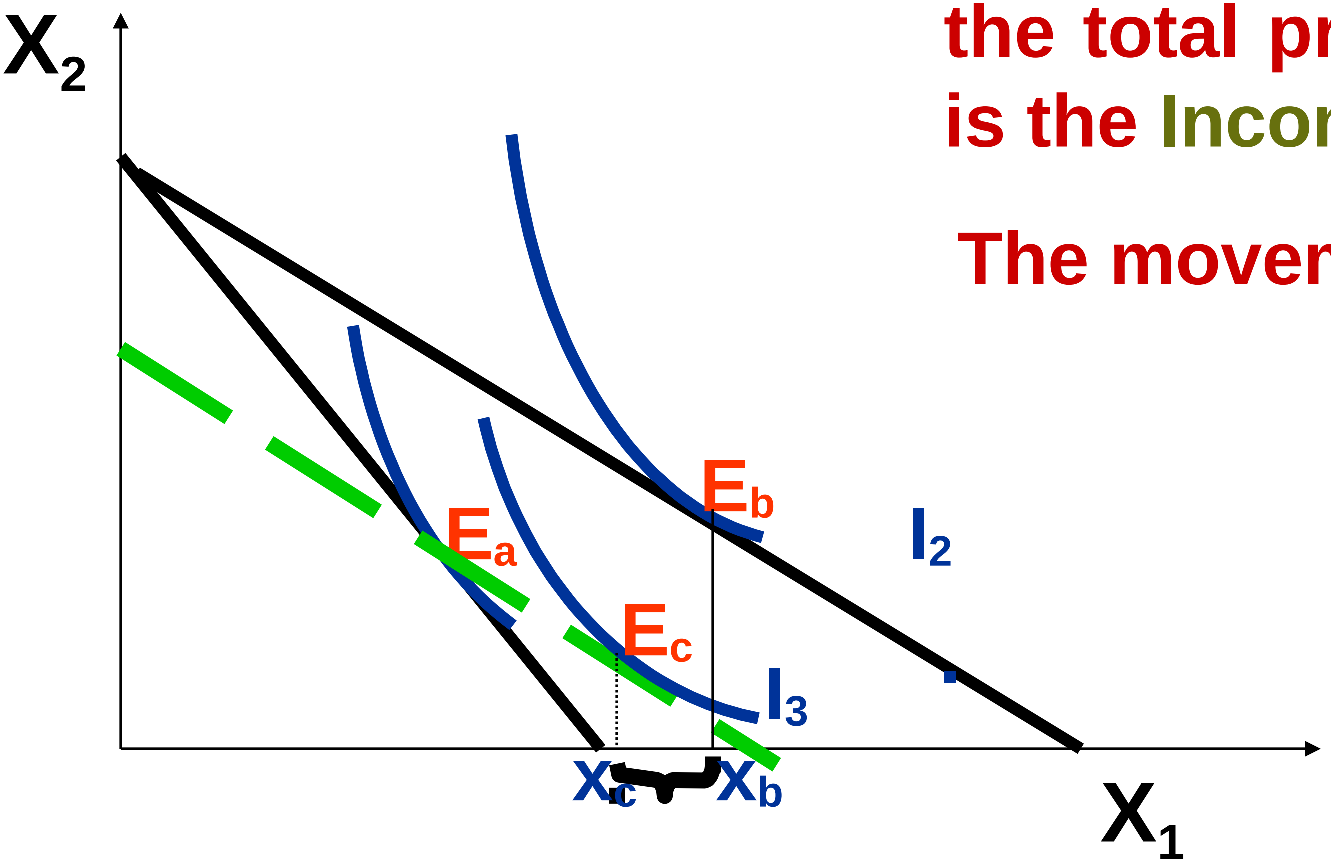


Substitution Effect

THE SLUTSKY METHOD

The remainder of the total price effect is the Income Effect.

The movement from Ec to Eb.



Income Effect

THANK YOU