

What is capital and how should we think about a technological innovation?

The zero profit condition if machines do not wear out:

$$p = w N H + \rho p_M M H$$

M = number of machines needed to make the product.

N = number of workers needed to make the product

H = number of hours needed to make the product

ρ = interest rate per hour

p_M = price of the machines

w = wage rate per hour of labor input

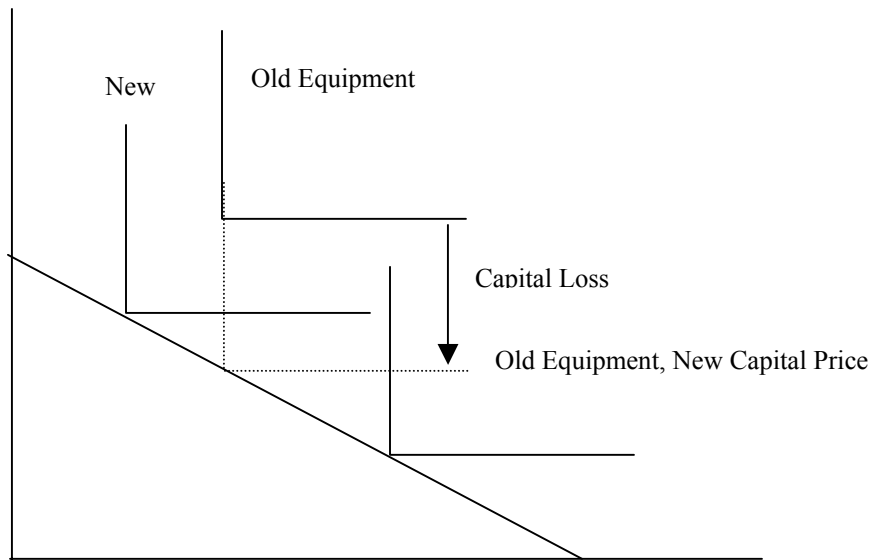
L = N H = labor-hours

K = $p_M M H$ = capital-hours

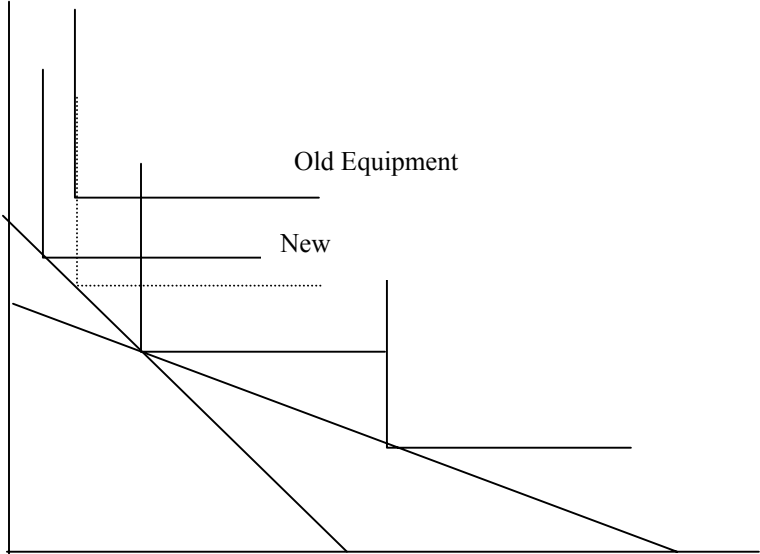
$$p = w L + \rho K$$

Note that by changing the price of the equipment we can move the capital input up and down. Suppose that the introduction of the Pentium processor allows one to buy the same computer for 10% less than before. This causes a shift downward of the isoquant by 10%. The existing equipment must be reduced in value by the same percentage in order for it to compete against the old equipment.

Find the capital loss caused by the introduction of new equipment:



Innovation in the capital-intensive sector causes a fall in the price of the existing equipment. The old equipment continues to be used in the capital abundant country.



Innovation in the capital-intensive sector causes a fall in the price of the existing equipment. This old equipment is completely transferred to the low-wage labor-abundant country. Absent that opportunity, the diagram below illustrates the case in which the old capital would simply be scrapped. Can you see why?

