Given a money lottery *L,* its **certainty equivalent**, for a particular individual, denoted by C_L, is that sum of money such that

Assuming that the individual in question prefers more money to less,

- if she is **risk averse relative to *L***
- if she is **risk neutral relative to *L***
- if she is **risk loving relative to *L***

Given a money lottery *L,* its **risk premium**, for a particular individual, denoted by R_L, is that sum of money such that

Assuming that the individual in question prefers more money to less,

- if she is **risk averse relative to *L***
- if she is **risk neutral relative to *L***
- if she is **risk loving relative to *L***

The relationship between $\mathbb{E}[L]$, C_L and R_L :

Note that if an individual

(1) prefers more money to less,

(2) is risk neutral relative to every money lottery,

(3) has transitive preferences,

then he ranks money lotteries according to their expected values, that is

INSURANCE MARKETS

Consider an individual with

W	initial wealth
L	potential loss
p	probability of loss

With no insurance she faces the money lottery

An **insurance contract** is a pair (h,d)

h	premium
d	deductible
$L-d$	insured amount of the loss

With contract (h,d) the individual faces the lottery

- If $d = 0$ we call the contract a **contract**
- If $d > 0$ we call the contract a **contract**

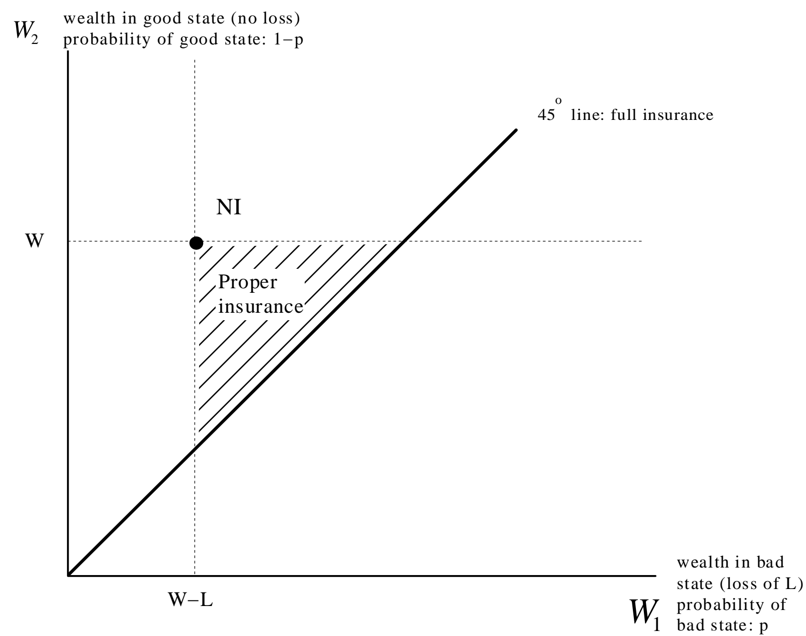
With a full-insurance contract $(h, 0)$ the individual is guaranteed a sure wealth of $W - h$

Would the individual purchase the full-insurance contract with $h = pL$?

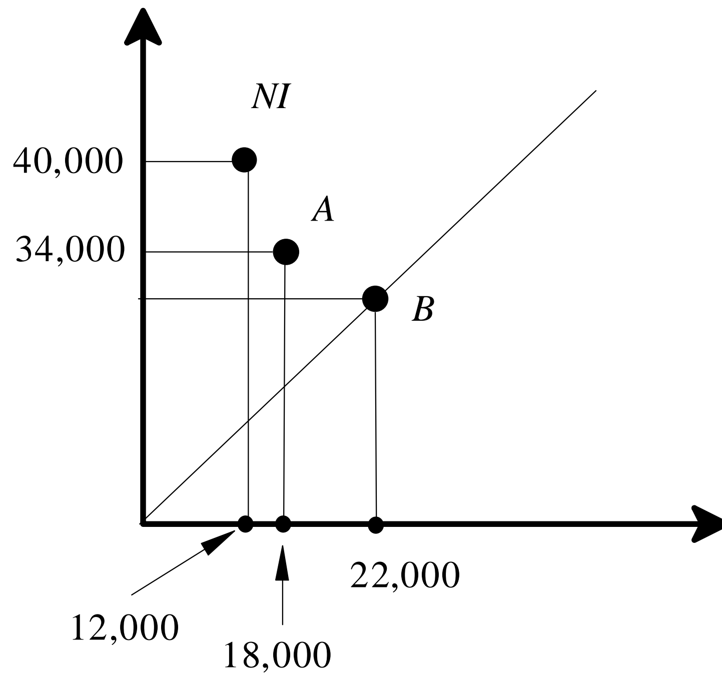
- If she is risk averse then

- If she is risk neutral then

- If she is risk loving then



A contract expressed as a pair (h,d) can be translated into a point in wealth space as follows:



Here we have: $W =$ $L =$

ISOPROFIT LINES

Assume that the **insurance company** is **risk neutral** so that it considers selling an insurance contract $C = (h,d)$, corresponding to the lottery

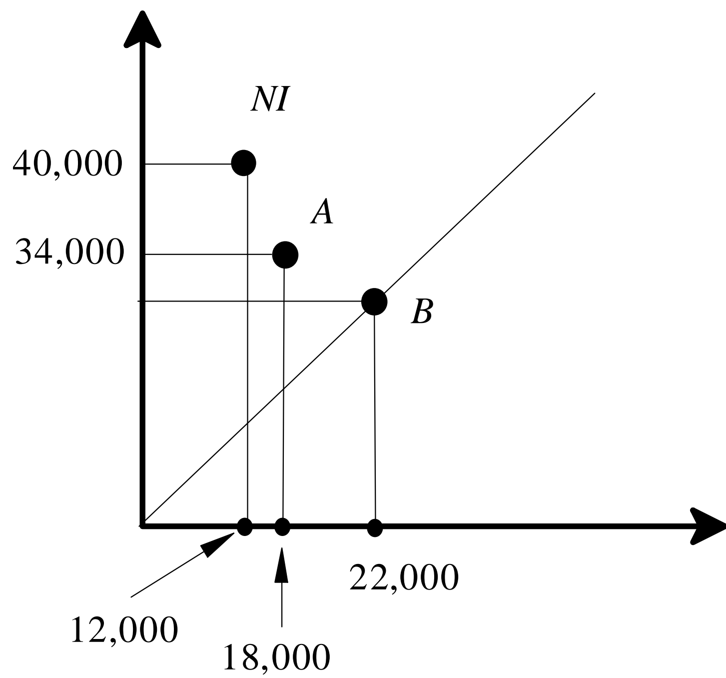
$C = \left(\quad \right)$, as equivalent to getting its expected value

for sure: $\mathbb{E}[C] =$

We denote the expected profit from contract (h,d) by $\pi(h,d)$. Thus

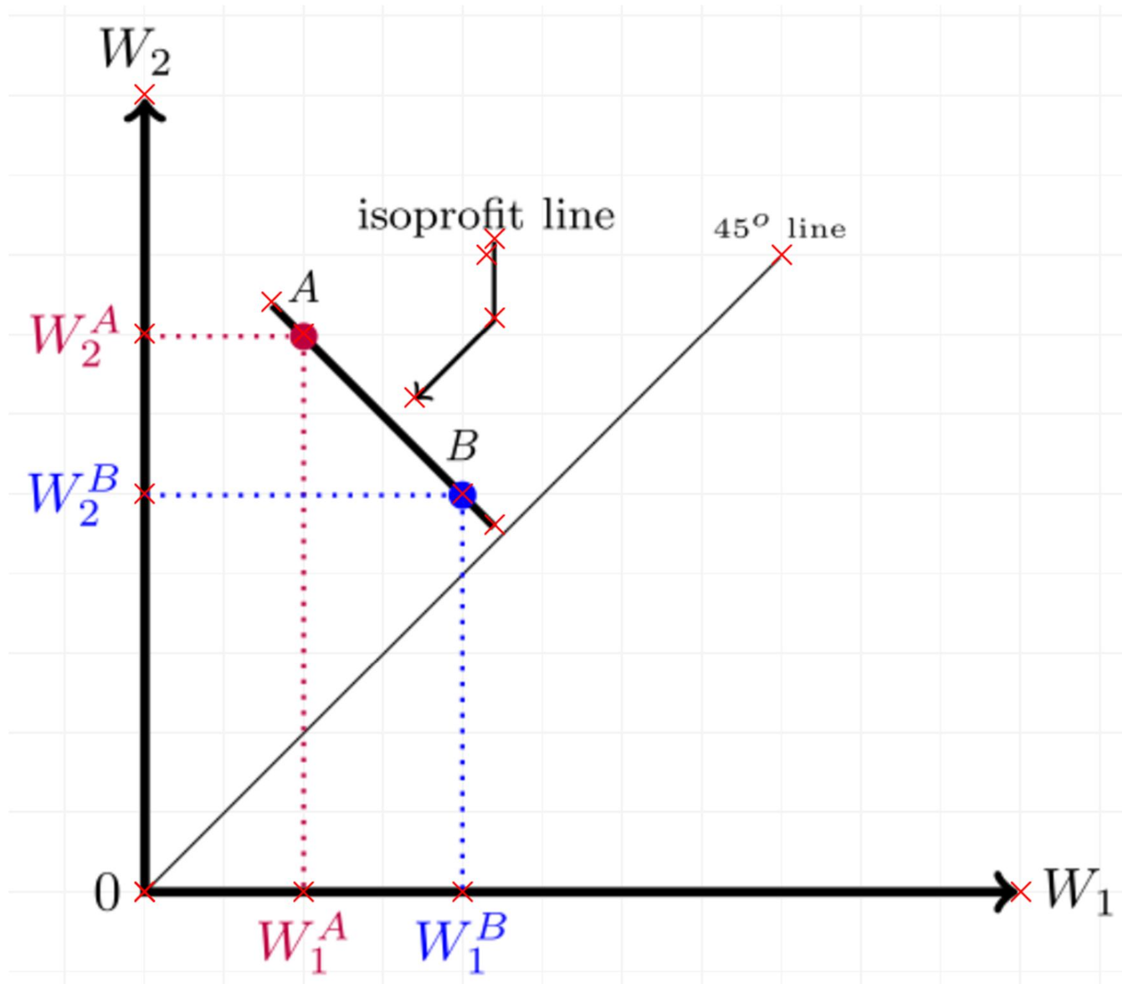
$$\pi(h,d) =$$

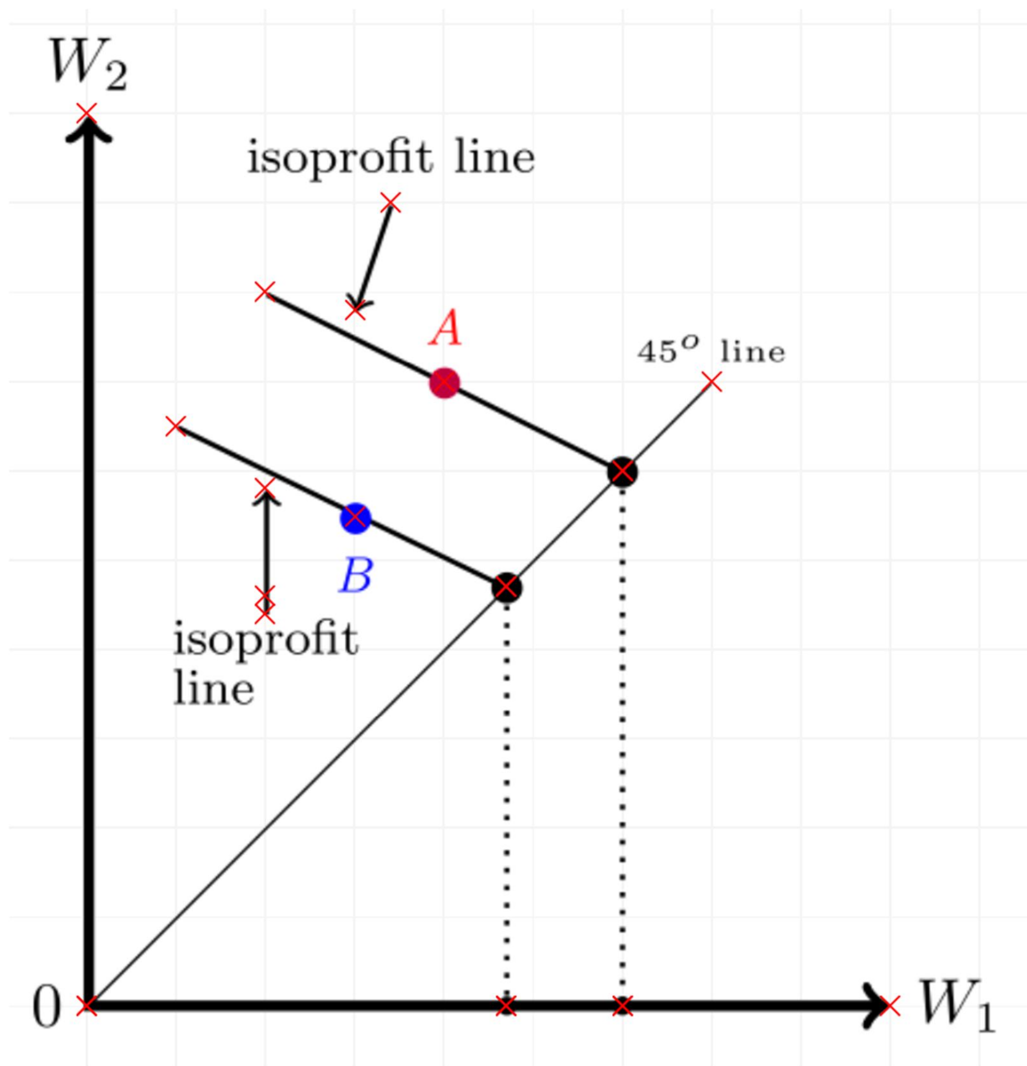
If the contract is expressed as a point (W_1, W_2) in wealth space then



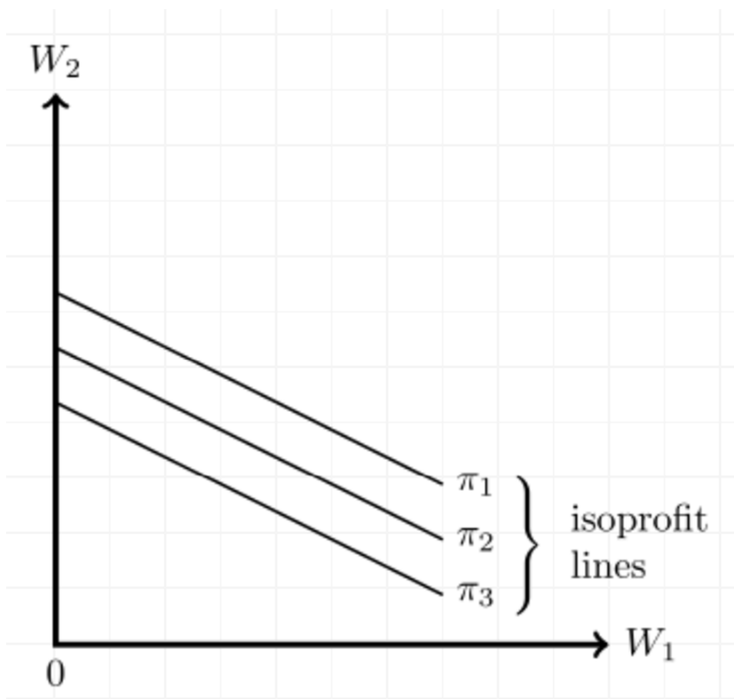
Suppose that $p = \frac{1}{10}$. What is $\pi(A)$? What is $\pi(B)$?

An **isoprofit line** is defined as a line joining contracts that give the same expected profit. Let $A = (W_1^A, W_2^A)$ and $B = (W_1^B, W_2^B)$ be such that $\pi(A) = \pi(B)$





W_2
isoprofit line
A
45° line
B
isoprofit
line
0
W_1



Since No Insurance can be thought of as the trivial contract $h = 0$ and $d = L$, which gives zero profits, the isoprofit line going through the NI point is the zero-profit line: