Buying Insurance

Some Cases

- The Case for Insurance
- How much for Insurance
- Does it always pay to buy insurance
- How much are you willing to pay to gamble?

The Case for Insurance

For most people, the marginal utility of income is decreasing

The Consequences of a Fire

\[ p_{\text{fire}} = 0.01 \]
\[ I_{\text{no fire}} = 250,000 \]
\[ I_{\text{fire}} = 150,000 \]

Expected Utility

Draw the red line and the green dot.
Buying Insurance

Expected Utility

U(Y)

E(U)

Naked

Fire

No Fire

This is your situation if you are "naked" (uninsured).

The Case for Insurance

Suppose you can buy insurance at your expected loss.

U(Y)

E(U)

Insurance

Naked

Fire

Loss

No Fire

E(U)

Naked

Loss

If people were risk takers, then buying insurance would mean lower E(U).

Most people buy insurance; that is why we think most people are risk averters.
This is an ideal case: the insurance company only charges its actuarial loss, no administrative selling, etc.

Common sense says if the company charged enough (say) $50,000 for this policy, even a risk averter would not buy.

But how much?

Suppose they charge this much

Your utility is equal to going naked

This is the maximum amount you will be willing to pay.

Your utility is equal to going naked
Does it always make sense to buy insurance?

Let’s take a section and expand it. If we blow the scale up, we get something that looks like a straight line. That is, we are essentially risk-neutral.

For small bets, that is essentially the case. If we are risk neutral we don’t care about insurance even if the insurance costs us our expected losses.
Buying Insurance

Does it always make sense to buy insurance?

U(Y)

And if it costs more, it makes sense not to buy.

Buying Insurance

Wagering

- Suppose you are a risk taker
- You are willing to gamble, but like a risk aveter who is unwilling to pay too much for insurance, there is a limit to how much you are willing to lose.
- How much?
• Find the red line
• Find the green dot

If you want to gamble you must be a risk taker.

Your utility function looks something like this.

If you gamble

Utility from staying home

Utility from gambling

Stay home

Stay home
Casinos as Charitable Institutions

• They are not.
• The house always has an edge.
• You should expect to lose.
• But how big an edge?

This Big an Edge

Utility from gambling

Utility from staying home

Win

Lose

Stay home

End

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