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

\[ U(Y) \]

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

The Case for Insurance

\[ E(U) \]

\[ E(U) \]

Suppose you can buy insurance at your expected loss.

With a 1% chance of a $100,000 loss, the insurance company would charge $1,000.

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.
Buying Insurance

How much for insurance

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
Buying Insurance

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.
Does it always make sense to buy insurance?

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

Should I insure against loss of a quarter in a vending machine. Theoretically possible, but when transaction costs are considered, a foolish idea.

Should I insure against a $500 loss on my car? Theoretically possible, but when transaction costs are considered, a foolish idea.

Wagering
- Suppose you are a risk taker
- You are willing to gamble, but like a risk averter who is unwilling to pay too much for insurance, there is a limit to how much you are willing to lose.
- How much?
Wagering

• Find the red line
• Find the green dot

Buying Insurance

Gambling

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

Buying Insurance

Gambling

Your utility function looks something like this.

Buying Insurance

If you gamble

Utility from staying home

Win
Lose
Stay home

Buying Insurance

If you gamble

Utility from gambling

Utility from staying home

Win
Lose
Stay home

Buying Insurance

If you gamble

Utility from gambling

Utility from staying home

Win
Lose
Stay home

Buying Insurance

If you gamble

Utility from gambling

Utility from staying home

Win
Lose
Stay home

Buying Insurance
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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