

## Risk

Human beings have provided some form of insurance to one another for at least as long as recorded time (e.g., Bogucki (2011)), and the modern world is full of institutional arrangements that protect individuals against risk. One way way to derive demand for these institutions from an economic model is to assume that individuals are inherently *risk averse* in the sense that they are willing to pay something now in return for a more certain outcome in the future. The *expected utility* model is a simple representation for this sort of preference. In it, we assume that individuals can rank choices that influence the probability distribution over uncertain future outcomes by comparing the expected value of an increasing state-independent concave utility function  $u(\cdot)$  across choices.

Let's think about this, and how it m

## Exercises

1. Compute certainty equivalent and draw picture.
2. Use different specific utility functions and draw picture.
3. Characterize expected-utility maximizing allocation.
4. Do the same numerically for more reasonable production technology
5. Examine numerically FOSD and SOSD of distributions.
6. Use distributions and utility function to compute range of profit maximizing and expected utility maximizing allocations.
7. Exercise: What is the farmer's willingness to pay for insurance?
8. Calculate welfare gain from insurance.
9. Calculate certainty equivalent as a function of parameters.

Bogucki, Peter. 2011. "How Wealth Happened in Neolithic Central Europe." *Journal of World Prehistory* 24 (2/3): 107–15. doi:[10.1007/s10963-011-9047-5](https://doi.org/10.1007/s10963-011-9047-5).