More on Risk Aversion and Uncertainty

- Risk Aversion should not be understood as meaning that individuals do not want to take risks. Risk averse individuals will take risk, but the odds will have to be relatively favorable for that to happen.

- An agent is risk averse if he dislikes all zero-mean risk at all wealth levels. Mathematically this translates into a concave utility function.

  $E[U(w_0+x)] < U(w_0)$

  With $E[x]=0$

- The observation of human behavior strongly favors the assumption that human beings are risk averse. For example, most households will insure their physical assets if an actuarially fair insurance premium is offered to cover them. Or, most investors will not purchase risky assets than cannot yield a larger expected return than the risk-free asset. These strategies are compatible with the assumption of risk aversion.

- However, horse betting, state-owned lotteries, and other unfair gambling operations contradict this assumption. Why? One possible explanation is the element of optimism in the assessment of the probability of winning. In any case the size of markets for unfair lotteries is marginal with respect to the importance of insurance and financial markets, where risk aversion is necessary to explain observed strategies and equilibrium prices.

- A useful concept to introduce there is that of Risk Premium. It is the maximum amount of money, π that one is ready to pay to escape a pure risk. For a risk averse individual this amount is positive. This can be calculated by solving the following equation:

$E[U(w_o + x)] = U(w_o - \pi)$

One is indifferent between retaining the risk and paying the risk Premium to eliminate the risk.

Actually this concept can be used to assess your own risk aversion:

What is the share of your wealth that you are ready to pay to escape the risk of gaining or losing a share α of it with equal probability?

Your answer we will call it π and use it to compute a widely used measure of risk aversion. Now, assuming a particular shape of the utility function that we will call CRRA, we can compute the degree of risk aversion.

RRA	α=10%
γ=0.5	0.3
γ=1	0.5
γ=4	2.0
γ=10	4.4
γ=40	8.4