1. Diamond-Dybvig Bank #1

The probability $\lambda$ of being impatient is 35%. The utility function is:

$$u(c) = -\frac{1}{c}$$

The rate of return to the asset harvested late is 200%, i.e.,

$$R = 3$$

(a) What is the depositor’s *ex-ante* expected utility $W$ as a function of $c_1$, consumption in period 1, and $c_2$, consumption in period 2?

(b) Show that the depositor prefers consumption smoothing.

(c) Why can’t she insure on the market or self-insure against liquidity shocks?

Assume that her endowment is 100 and that she deposits her entire endowment in the bank.

(d) What is her utility $W$ in autarky?

(e) What is her utility $W$ under perfect smoothing, i.e. when $c_1 = c_2$?

(f) What is the bank’s resource constraint $RC$? Write this down precisely. Explain this in words.

(g) What is the incentive problem? Write this down precisely and explain in words the incentive constraint $IC$.

(h) Find the optimal deposit contract for this bank. What is $W$ if there is no run?

(i) Why is there a run equilibrium for this bank?

(j) Calculate the following numerical values of *ex-ante* utility $W$ and rank them in numerical ascending order: $W_{autarky}, W_{perfect \, smoothing}, W_{no \, run}, W_{run}$.

(k) Assume that the run probability $s$ is 10%. Will individuals deposit in this bank? That is, will they accept this banking contract? Explain.