ECON4335 Exam Spring 2010. Aid for examiners

Questions A and B have equal weight. However, the final grade should be based on an overall judgment of what has been achieved.

Question A

1. Reasons for credit rationing: Adverse selection, moral hazard or bankruptcy costs in combination with a supply of loanable funds that is an increasing function of the interest rate. Sources are Freixas and Rochet Ch 5, Stiglitz and Weiss and Walsh Ch 7.

2. Comparing returns in case of success

   Same expected return means that $p_S I_S = p_T I_T$

3. Expected profits

$$\Pi_S = p_S(I_S - RK) - (1 - p_S)C$$

$$\Pi_T = p_T(I_T - RK) - (1 - p_T)C$$

$$\Pi_S - \Pi_T = -(p_S - p_T)(RK - C) < 0$$

   The inequality follows from $p_S > p_T$, $C < K$ and $R > 1$. Total expected return is the same, but S is likely to pay more to the bank.

4. Critical interest rates with steps at R_S and R_T.

$$R_S = \frac{I_S}{K} - \frac{(1 - p_S)C}{p_S K}$$

$$R_T = \frac{I_T}{K} - \frac{(1 - p_T)C}{p_T K}$$

   Demand curve is decreasing step-function.

5. Expected gross revenue of bank:

$$
\begin{aligned}
B &= (p_S + p_T)RK + (2 - p_S - p_T)C & R \leq R_S \\
B &= p_T RK + (1 - p_T)C & R_S < R \leq R_T \\
B &= 0 & R_T < R
\end{aligned}
$$

$$\rho = B/K$$

The relationship between ρ and R is first increasing with slope $p_S + p_T$ until $R = R_S$, where there is a discrete fall to a lower level; then increases again with slope p_T until R_T, where it drops to zero. The level at R_T can be shown to be higher than at R_S, but it is not expected that the students will see this.

6. Intuition: Adverse selection that gets worse.

7. Different versions of the graphs (with axis inverted) can be found in the different sources, e.g. figure 5.2 in Freixas and Rochet.

Some points related to Question B: ECON 4335 – Economics of Banking – 2010

"In relation to the financial crisis banks are sometimes accused of taking too risky positions, causing financial instability. Discuss what actions authorities may take to get banks to behave so as to reduce such instability."

Some tentative, but not exhaustive, points could be related to the following issues:

- Why are banks motivated to take too risky positions? First one should perhaps provide some clarifying remarks as to what should be meant by taking a too risky position. One issue is related to granting too risky loans; low probability for success, but high outcome if success. (Also, granting loans to strongly correlated projects.) Next question: Why is more risky positions more profitable than less risky positions? The main idea is that moral hazard plays a prominent role in explaining such behavior. There is a discrepancy between the internal cost facing the bank (the management or the owners) and the external cost from "bad behavior".

- Suppose we have a bank with deposits, paid a given rate of interest. There is deposit insurance so that downside risk is minimal for the bank; with limited liability for owners/management. Even though the bank might be risk neutral, limited liability will make the bank's payoff a convex function, leading the bank's manager to act in a risk-loving way in ntheir lending. Higher risk, in the sense of a MPS, will then increase expected payoff. The bank's management under deposit insurance is then less likely to be monitored by depositors – the management has more degrees of freedom or discretion and might then be motivated to take more risky positions. To prevent banks from taking such (risky) positions in these circumstances, the authorities might impose stricter capital or other reserve requirements so as the have build up reserves to be used in case of defaults or when facing liquidity problems. (If deposit insurance is only partial, default might lead to bank runs – with contagious effects.) Dewatripont and Tirole have suggested a procedure for which group (equity or debt) is giving control rights under what circumstances: As long as the bank is managed well with no or few losses, shareholders and management (with low downside risk due to limited liability) have control. This group will tend to favour risky decisions. However, once there are problems, debt-holders, with concave payoff and risk aversion is given control rights. This separation of control rights – possibly rather difficult to implement in a credible way and without being vurlernable to manipulation – might lower the bank's incentive to take too risky positions. (Of course, this change in behavior will take place only if giving away control rights have some negative impact on the management's own financial position.)

- Along the similar lines as deposit insurance, we have the view that banks will be saved if they get into trouble – too big to fail. Such insurance will lead to moral hazard problems.
- Dispersed ownership will, as in other large corporations, create a problem with free-riding, as there are weak incentive for a small owner to incur cost for providing a public good through monitoring. But this is not a specific problem for banking. (Fraud and mismanagement is another problem, but perhaps not specific to the banking industry.)
- Short-sighted reward systems within the banking industry might be explaining some risky decisions. Herd behavior.
- Another reason for extensive risk-taking positions by banks, is the the increased ability to hold a wide variety of securities – less transparent for both owners and authorities, implying more discretion for management.
- More competition? A more competitive banking sector is said to motivate or induce banks to put more weight on short-term profitability/more risky positions, with increased probability of bankruptcy. Lower charter value, due to more competition, will not cause too much harm on owners if the bank should be incurred a loss. More intense competition without deposit rate ceiling, might create too low margins and too little equity. (Also deposit insurance itself might spur more competitive/aggressive behavioir among the banks.)