

Cournot Competition: Simple Model

- If there are two banks: $i = 1, 2$
- Balance sheet for each bank: $L_i + B_i = D_i(1-k)$
- Loan demand: $r_L = b - aL$ where $L = L_1 + L_2$
- Deposit demand: $r_D = d - cL$ where $D = D_1 + D_2$
- We can set up Bank 1's profit problem as usual:

$$\pi_1 = r_L L_1 + r_B (D_1(1-k) - L_1) - r_D D_1$$

Use loan and deposit demand, to rewrite:

$$\pi_1 = (b - a(L_1 + L_2))L_1 + r_B (D_1(1-k) - L_1) - (d + c(D_1 + D_2))D_1$$

Differentiation yields:

$$L_1^* = \frac{b - aL_2 - r_B}{2a} \quad \text{and} \quad D_1^* = \frac{r_B(1-k) - d - cD_2}{2c}$$

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- Since the problems are symmetric for Bank 1 and Bank 2, loan and deposit strategy of Bank 2 are identical.
- Solving for the “equilibrium” loan quantity gives:

$$L_i^* = \frac{b - r_B}{3a} \quad \text{for both } i = 1, 2$$

- Using these, plugging back into the demand function we find that

$$r_L = \frac{2r_B + b}{3}$$

- You are asked to solve similarly for deposit markets in homeworks.
- Once done, you will find the expression for spread as:

$$r_L - r_D = \frac{2kr_B + b - d}{3}$$