Andreas Krause

Chapter 15.1.2

Coordination of deposit withdrawals

Losses from withdrawing deposits

- Withdrawals of deposits can impose losses on banks as they need to raise additional cash reserves
- These losses can impact depositors if banks are not able to repay their deposits fully
- If such losses occur to depositors remaining with the bank, it can be rational for them to withdraw deposits, too
- This causes a bank run
- Coordinating the withdrawal of deposits can prevent a bank run and be beneficial for all depositors

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Loan sales to finance deposit withdrawals

- Banks face withdrawals of deposits
- They repay these deposits from their existing cash reserve and the sale of loans, for which they obtain a fraction of their true value
- $R + \lambda\pi\left(1 + r_L\right)\hat{L} = \gamma D$

$\Rightarrow \hat{L} = \frac{\gamma D - R}{\lambda\pi(1+r_L)}$

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Bank failure

- A bank fails if the remaining depositors cannot be repaid
- Banks obtain the repayments of the loans not sold, and the cash reserves, less the amount repaid for early withdrawals
- From this they need to repay the deposits of the remaining depositors
- $\pi\left(1+r_L\right)\left(L-\hat{L}\right)+R-\gamma D<\left(1-\gamma\right)\left(1+r_D\right)D$

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Insolvency with small deposit withdrawals

- If reserves are sufficient to cover the early withdrawal, $\gamma \leq \frac{R}{D}$, banks do not sell loans, $\hat{L} = 0$

$\Rightarrow$ $\pi < \pi^* = \frac{(1+(1-\gamma)r_D)D-R}{(1+r_L)(D-R)}$

- If loans are very risky the bank does not generate enough profits to repay depositors and becomes insolvent

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Illiquidity with large deposit withdrawals

- If withdrawal rates are high, banks may have to sell all loans, $\hat{L} = L$
- Banks cannot pay all depositors withdrawing early if the money raised, plus cash reserves, is below the deposit withdrawals
- $R + \lambda\pi\left(1 + r_L\right) L < \gamma D$

$\Rightarrow$ $\pi < \pi^{**} = \frac{\gamma D - R}{\lambda(1+r_L)(D-R)}$

- Bank are failing due to illiquidity

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Inability to repay remaining depositors

- For intermediate deposit withdrawals, banks sell some of their loans, $0 < \hat{L} < L$

$\Rightarrow$ $\pi < \pi^{***} = \frac{(\lambda(1+(1-\gamma)r_D)+\gamma)D-(1+\lambda)R}{\lambda(1+r_L)(D-R)}$

- The bank can repay depositors withdrawing early, but the losses from selling loans are too large to allow them to repay the remaining depositors in full

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Profitable to withdraw deposits

- The remaining depositors obtain from the bank repayments of the loans not sold, and the cash reserves, less the amount repaid for early withdrawals
- As early withdrawal does not pay any interest, they would be worse off than those depositors if the repayments shared are below the face value of the deposit
- $\pi\left(1+r_L\right)\left(L-\hat{L}\right)+R-\gamma D<\left(1-\gamma\right)D$

$\Rightarrow$ $\pi<\hat{\pi}^{***}=\frac{(\lambda+\gamma)D-(1+\lambda)R}{\lambda(1+r_L)(D-R)}$

- Depositors are better off withdrawing early than remaining with the bank, causing a bank run
- Coordinating to not withdraw deposits would benefit all depositors

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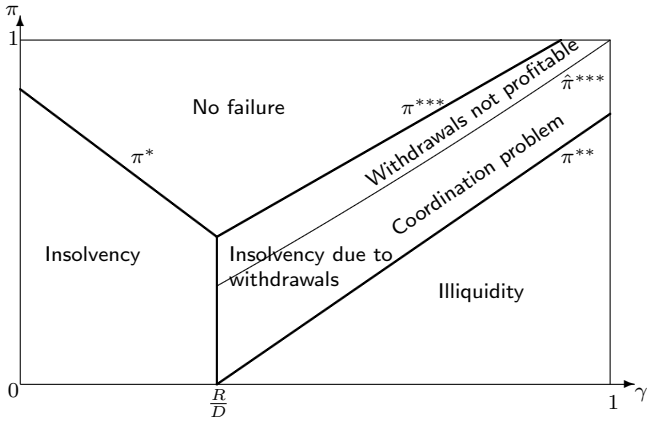
Bank failures due to deposit withdrawals



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Summary

- Banks taking high risks face insolvency or illiquidity as they cannot raise enough cash to withstand early deposit withdrawals
- Banks taking low risks and facing low deposit withdrawals will not fail
- Banks between these extreme can raise enough cash for early deposit withdrawal, but might not have the resources to repay the remaining depositors
- It can be beneficial for depositors to withdraw early and cause a bank run
- This presents a coordination problem as all depositors not withdrawing would be beneficial for all

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