The banks studied so far do not face any risk and are always solvent.

In the real world banks are known to fail, which can be costly for taxpayers.

We will investigate two possible reasons for banking failures:

1. Bank runs that force the sale of assets at a loss;
2. Unexpectedly poor returns on assets.
Demand Deposits Banking

- Banks have liabilities (deposits) payable on demand and assets that are not.

- This raises the possibility of a bank run.

- If a high number of depositors decides to withdraw at the same time, a bank must either borrow or sell assets.

- If depositors feel that the rush of others will leave them empty handed, they will rationally join the run.
**Model**

- Constant number $N$ of 3 period lived people born every period and endowed with $y$ goods when young.

- People do not consume when young.

- There is a 0.5 probability that a person is of type 1 and consumes in the second period and a 0.5 probability that a person is of type 2 and consumes in the third period.

- People learn their type in the second period of life.

- Types are unobservable to other people.

- An individual’s need for liquidity stems from the uncertainty about their type.
Model (continued)

- There are two assets: storage and capital.

- Storage has a one period gross rate of return of 1 and can be done secretly.

- Capital has a two period gross rate of return of $X > 1$.

- Capital that has not yet produced can be sold at price $v^k$.

- Verifying that the capital is legitimate costs $\theta > X - 1$. 
The one period gross rate of return on capital is $v^k - \theta$.

IOUs are possible only among members of the same generation.

Because storage is available $v^k \leq X$.

By assumption, $\theta > X - 1$, so that $\theta > v^k - 1$, or $1 > v^k - \theta$, the one period rate of return on storage is higher than that of capital.

Like before, people want to save to consume later, but the uncertainty about their type at the time of asset selection does not guarantee the best rate-of-return.
Although there is individual uncertainty, on aggregate everybody knows that half the people are of type 1.

Consider an intermediary that promises a rate of return 1 after one period to type 1 people, and a rate of return $X$ after two periods to type 2 people.

If everybody gives the endowment to the intermediary he simply invests half $\frac{Ny}{2}$ in storage and the other half in capital, thus making exactly zero profits.

Since the type is unobservable to others, the intermediary must make the type 1 payment available to whoever claims to be of type 1 – demand deposits.

Is truthfulness in each individual’s best interest? Yes.
Bank Runs

- Banks provide liquidity by allowing people to be flexible in the timing of their spending, even when the asset’s returns are not flexible.

- Should a type 2 person that believes other type 2 persons are going to withdraw in the second period, pretending to be type 1 persons, rush to the bank and try to withdraw early? Yes.

- In the second period, the bank only has enough in storage to pay \( \frac{N}{2} \) people (the type 1 people).

- If type 2 people also withdraw, the bank must sell capital.

- Selling one unit of capital yields only \( v^k - \theta < 1. \)

- There may be nothing left for type 2 people who wait for the third period.