BANK OF ENGLAND

Lunch and Learn

What do banks do?

Building a traditional banking system with a central bank.

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Contents

1 Interaction of two banks.

- Real-economy transactions financed here by simple cheque payment.

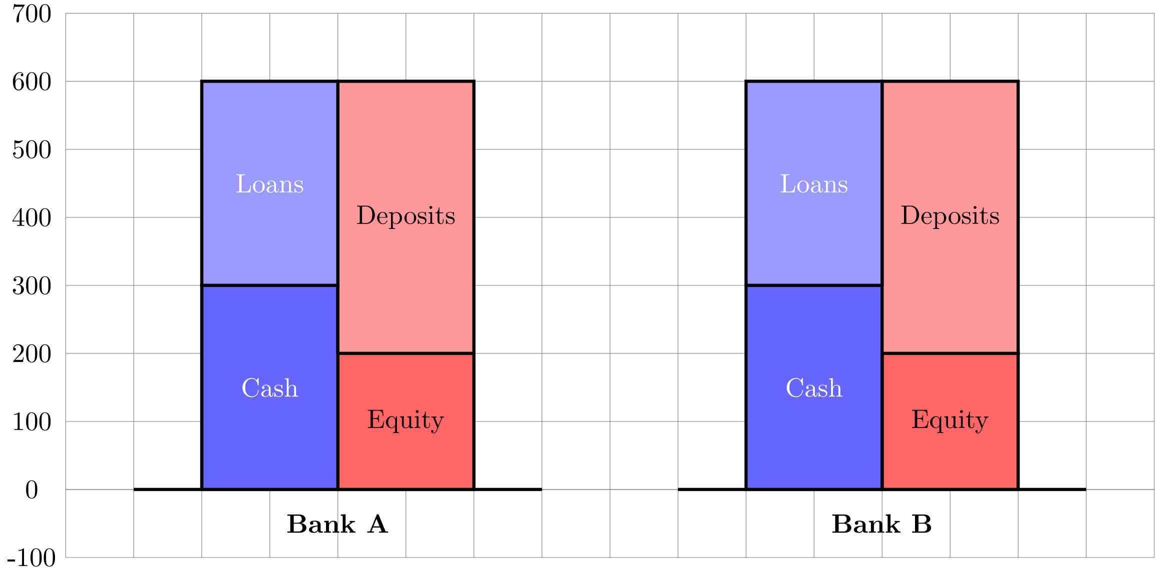

Figure 1: Balance sheets: Deposit-taking banks.

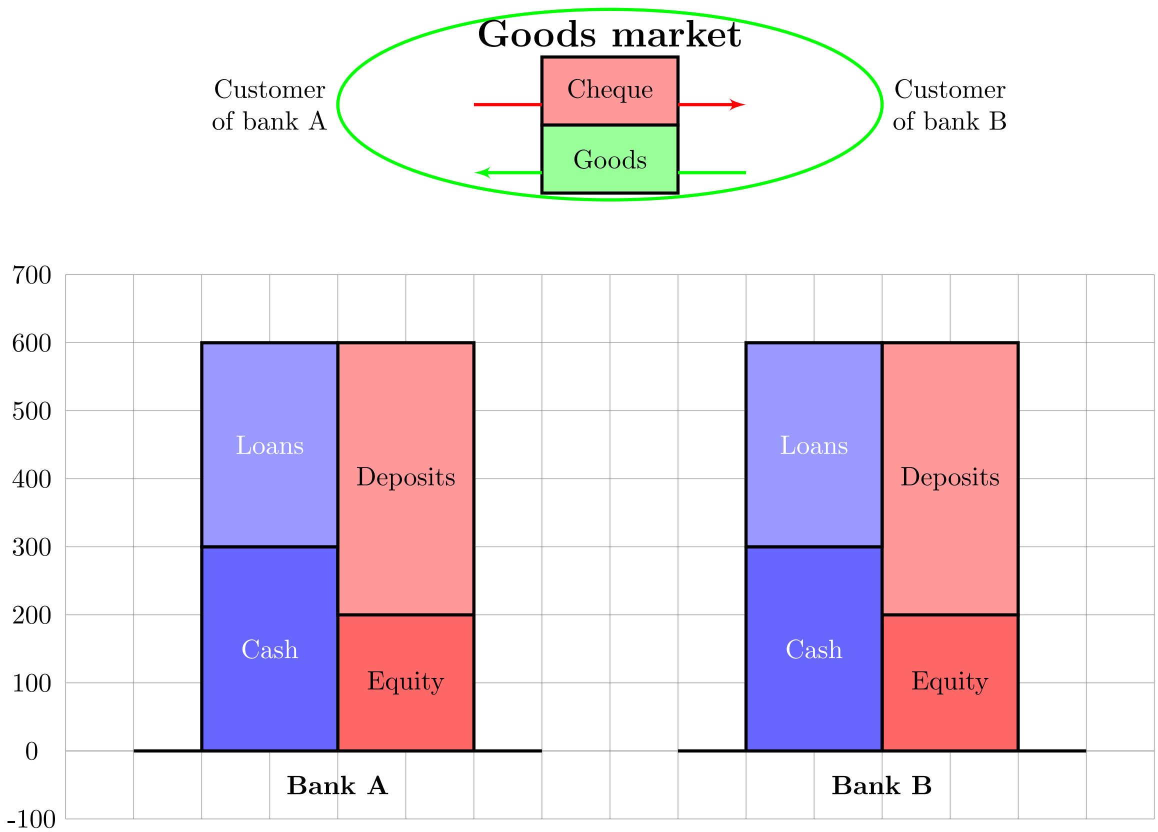

Figure 2: Balance sheet: Deposit-taking banks, inter-customer transaction.

- The cheque holder faces two credit risks. What are they?

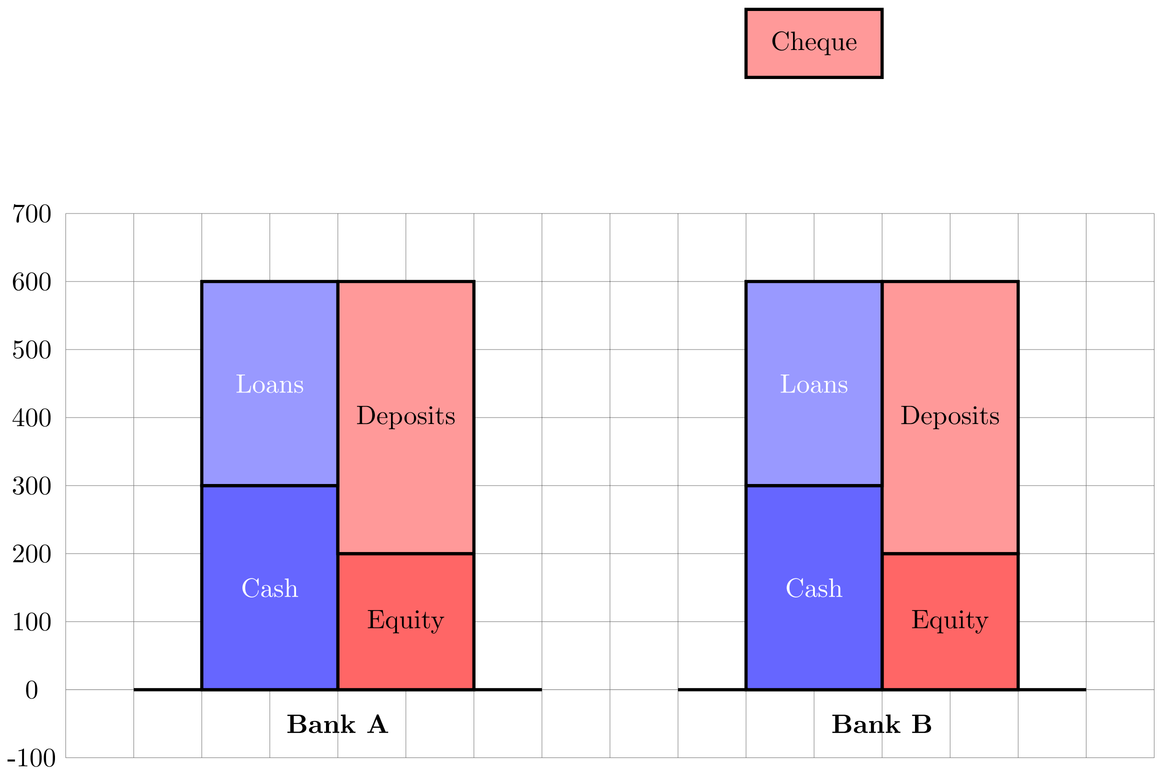

Figure 3: Balance sheets: A's cheque now owned by B.

- Bank B holds the cheque.
- No funds have been credited to its customer's account at this stage.
- The customer still faces 2 credit risks.

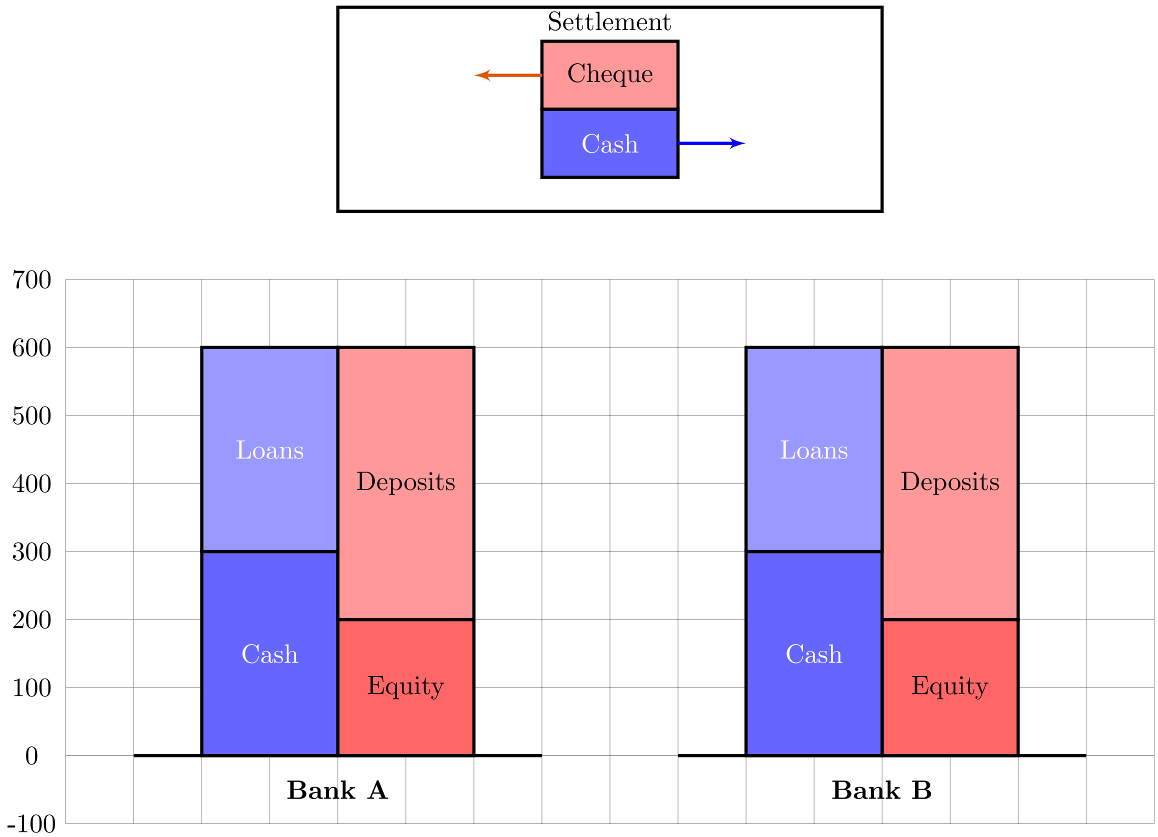

Figure 4: Balance sheet: Cheque clearing.

- Bank B exchanges the cheque for cash from Bank A.
  - B now owns the cash.
  - B adds to the size of its customer's deposit.
- What would happen if A does not hold sufficient cash?
- What would happen to B if this resulted in its having insufficient cash to meet its own depositors' cash demands?
- And...in a larger system, if B then cannot clear its own cheques for Bank C?

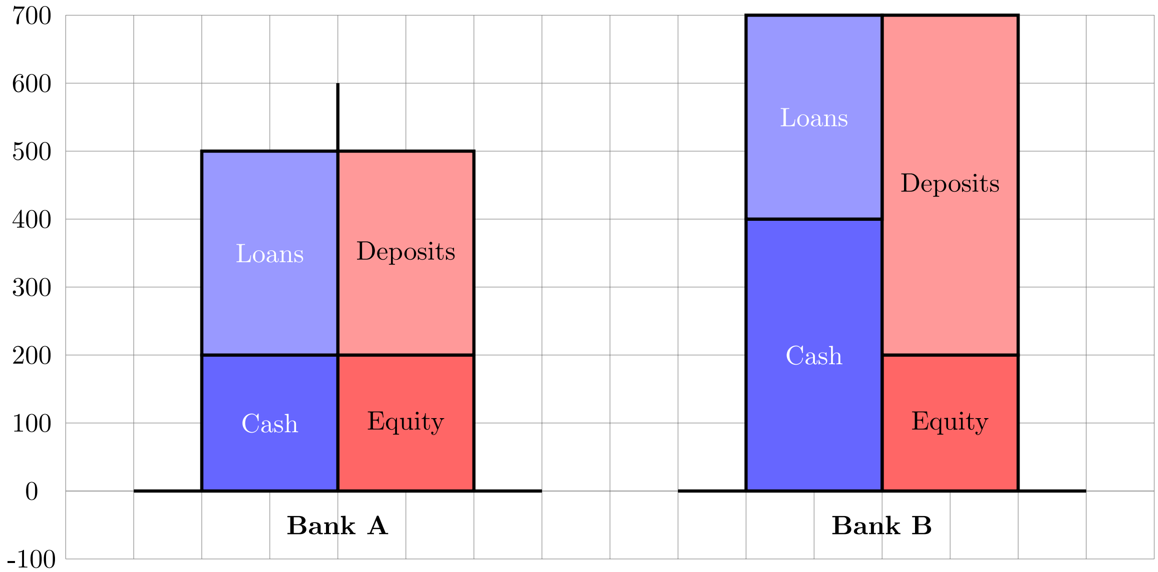

Figure 5: Balance sheets after successful clearing.

- This time it worked.
- Note that B's balance sheet has grown as a result of the goods transaction.
- What has happened to its reserve and capital ratios?
- What is B's management likely to do with the enlarged balance sheet?

2 Building a banking system.

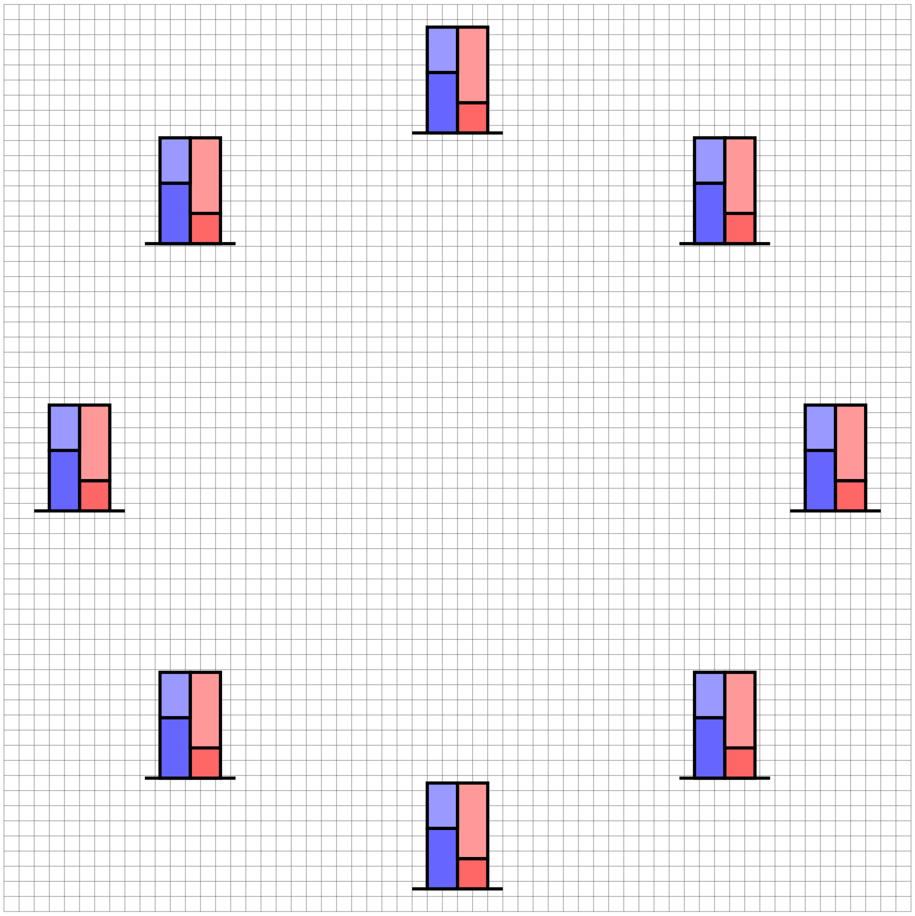

Figure 6: Balance sheet: Lots of deposit-taking, lending banks.

- The banks are coincidentally but alarmingly similar.
- Does this suggest any possible problems?
- Any bank can continue to clear cheques bilaterally.

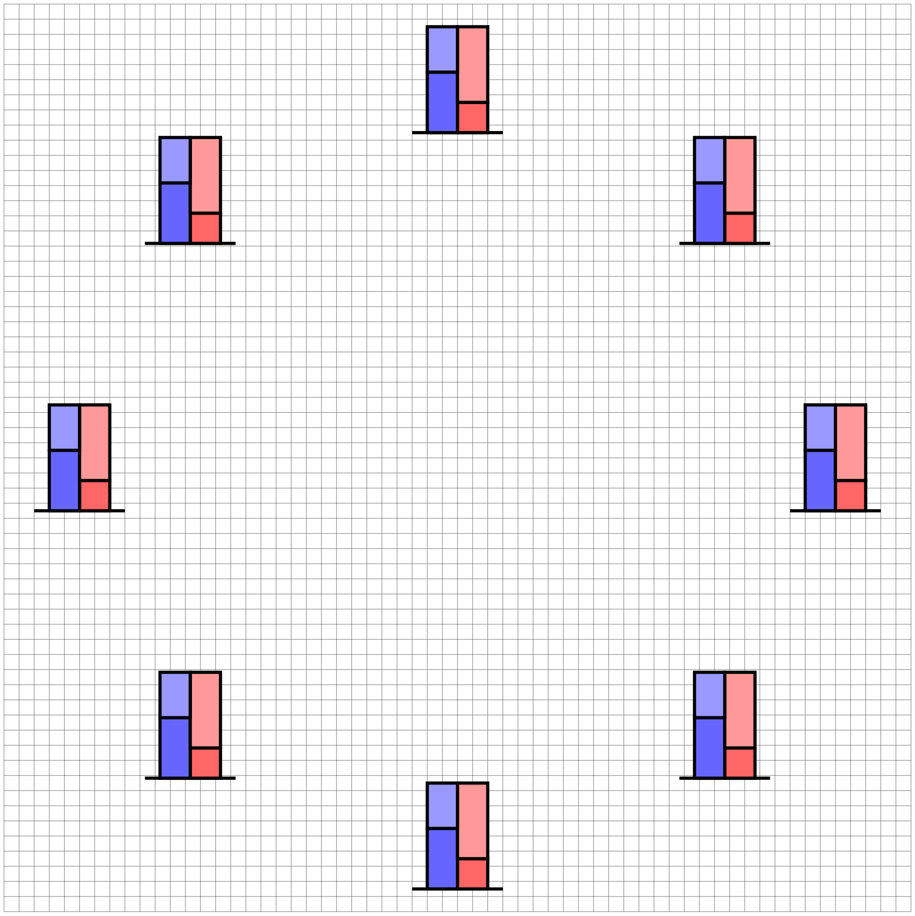

Figure 7: Balance sheet: Lots of deposit-taking, lending banks.

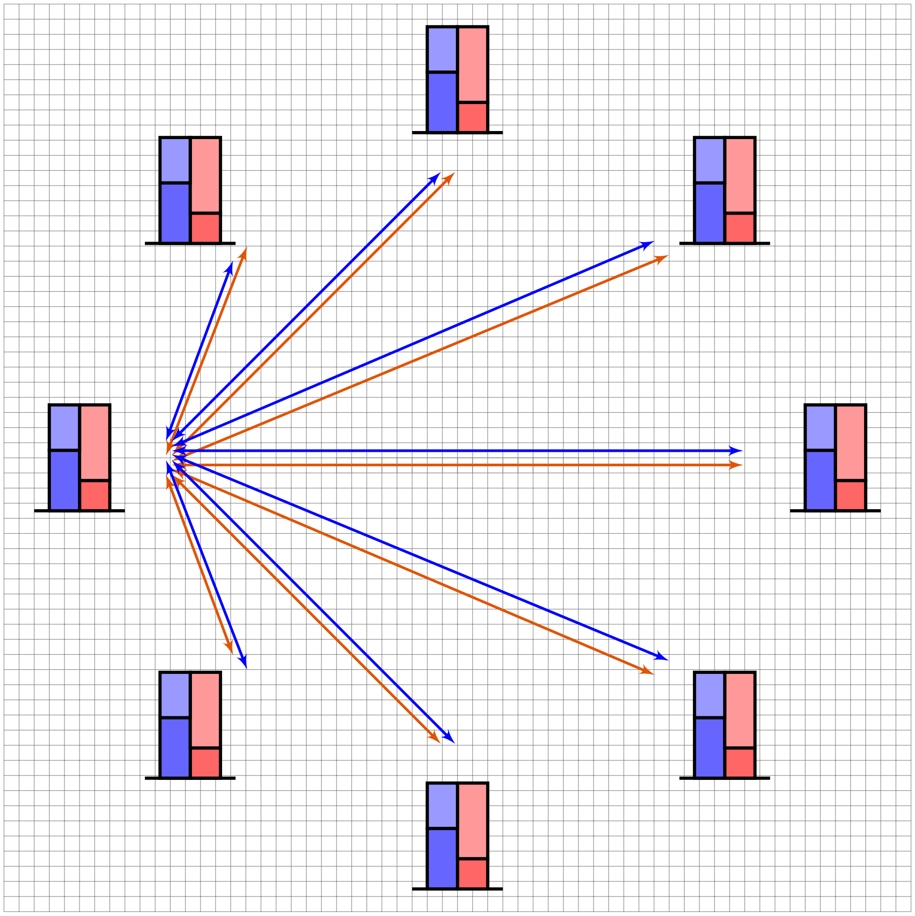

Figure 8: Balance sheet: Complete bilateral clearing for one bank.

- When they all undertake bilateral clearing it gets complicated.
- What would happen if bank X could clear cheques from bank A, but only after receiving cleared cash from bank K?

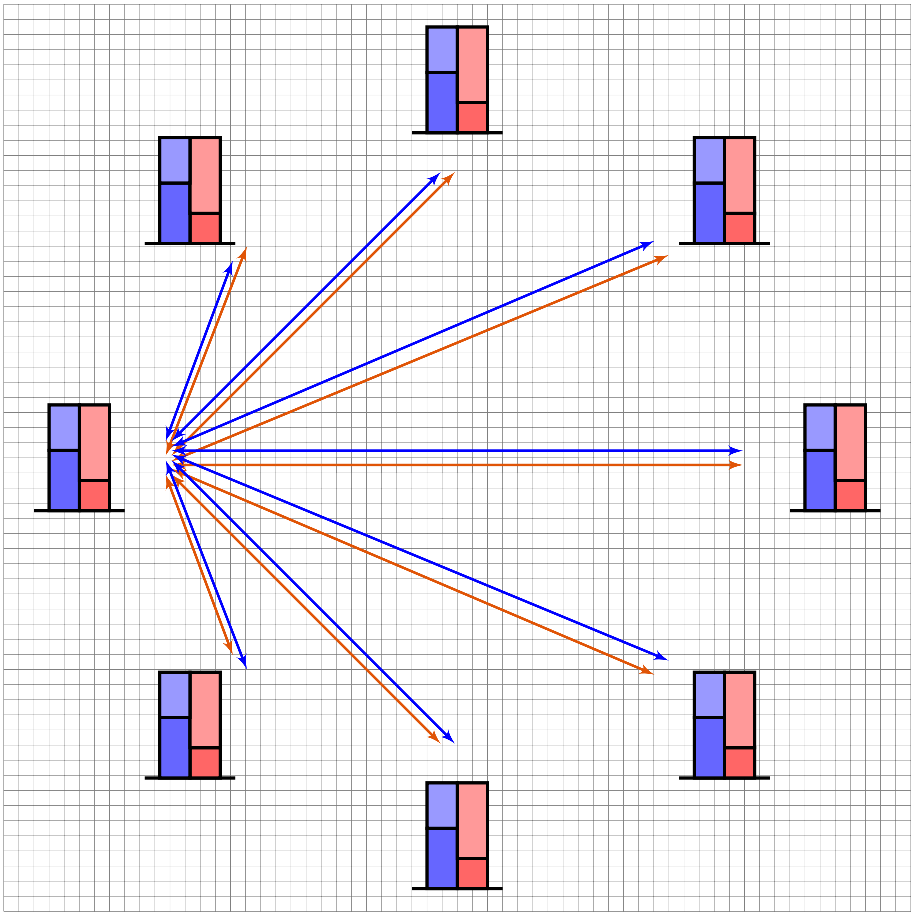

Figure 9: Balance sheet: Complete bilateral clearing for one bank.

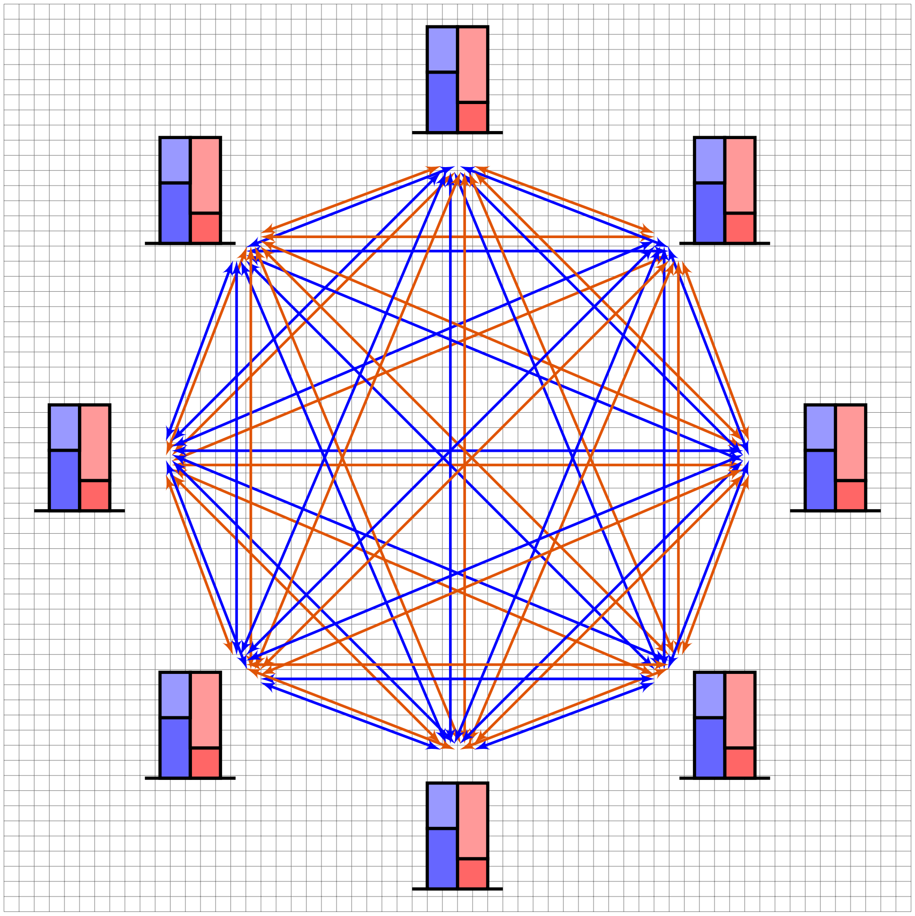

Figure 10: Balance sheet: Complete bilateral clearing for all banks.

- In the early stages of the US banking system cheques were settled by porters carrying cheques and cash between the banks.
- Eventually they figured out that they could all meet at a single building.

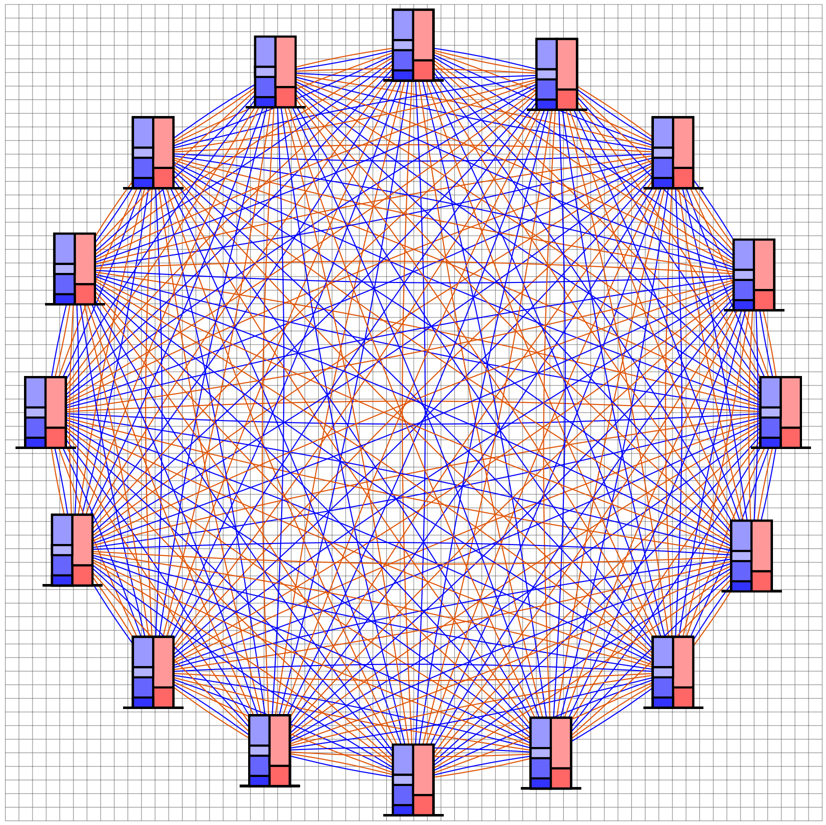

Figure 11: Complete bilateral clearing to demonstrate facility with uninformative computer graphics.

3 Adding a commercial banking clearing house.

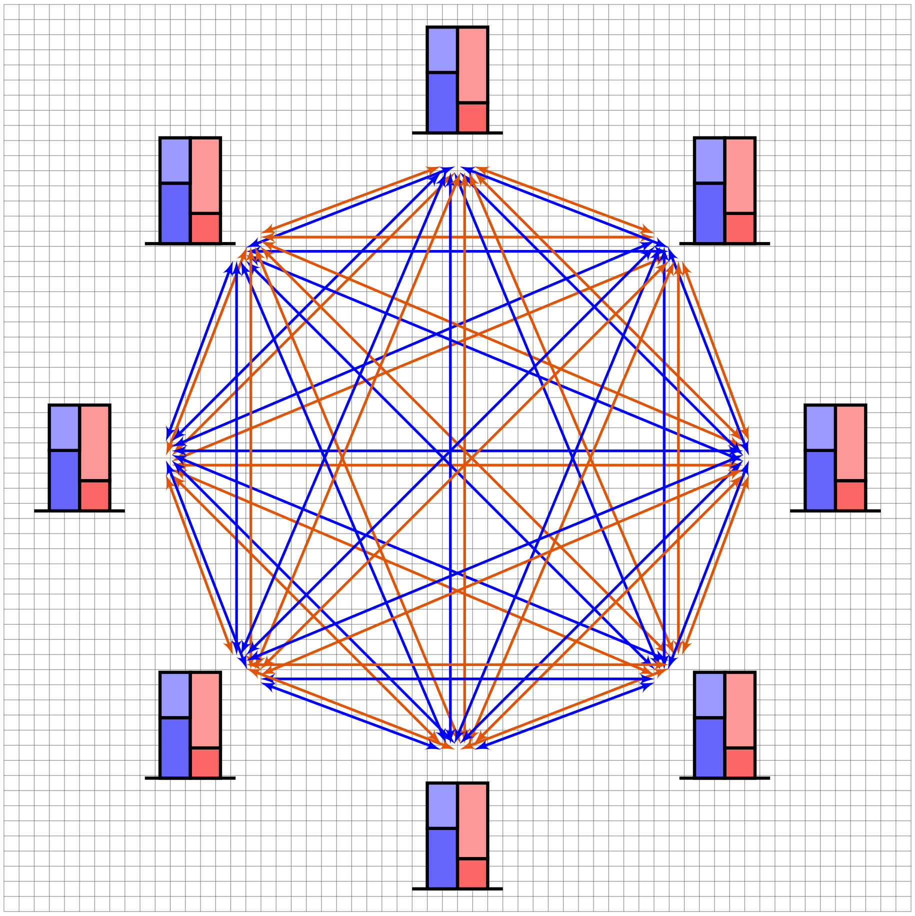

Figure 12: Balance sheet: Complete bilateral clearing for all banks.

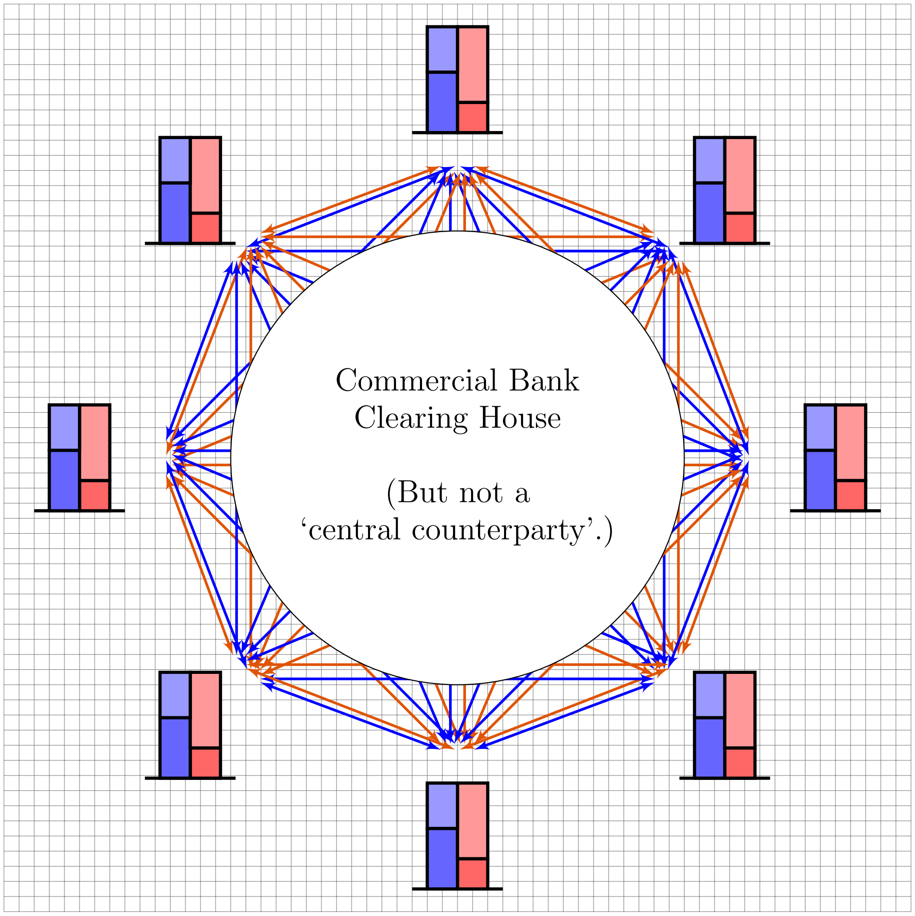

Figure 13: Balance sheet: Introduction of a CBCH.

- In the US the complexity of cheque settlement increased sharply in 1849-53 with the California gold rush and development of the railways.
- A solution to the growing complexity of clearing is a central, Commercial Bank Clearing House.
- It serves as a meeting place in which the porters can complete their bilateral clearing transactions.
- In the US the first of these was the New York Clearing House Association (NYCHA) created in 1853. It still operates today in conjunction with the New York Fed.

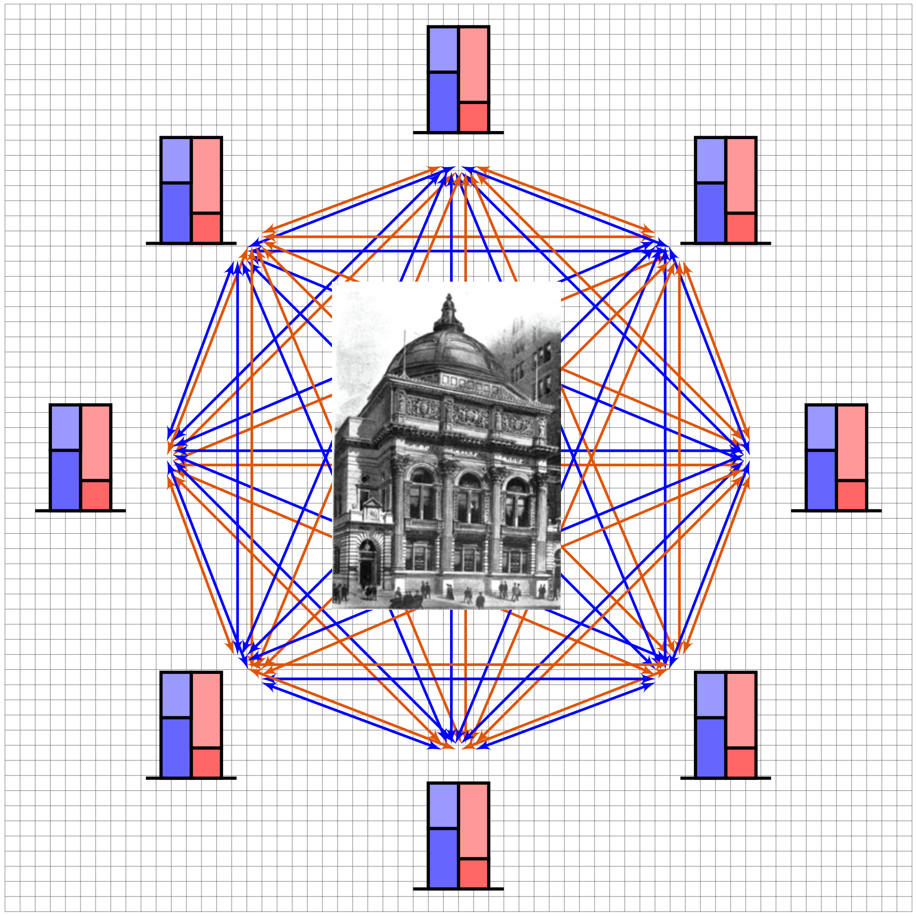

Figure 14: Balance sheet: Introduction of a CBCH.

- The first of these in the US was the New York Clearing House Association created in 1853. It still operates today, in conjunction with the New York Fed.
- Clearing remained on a bilateral basis until it it was made simpler, and safer for the porters, by one of the banks holding deposits from each of the others.

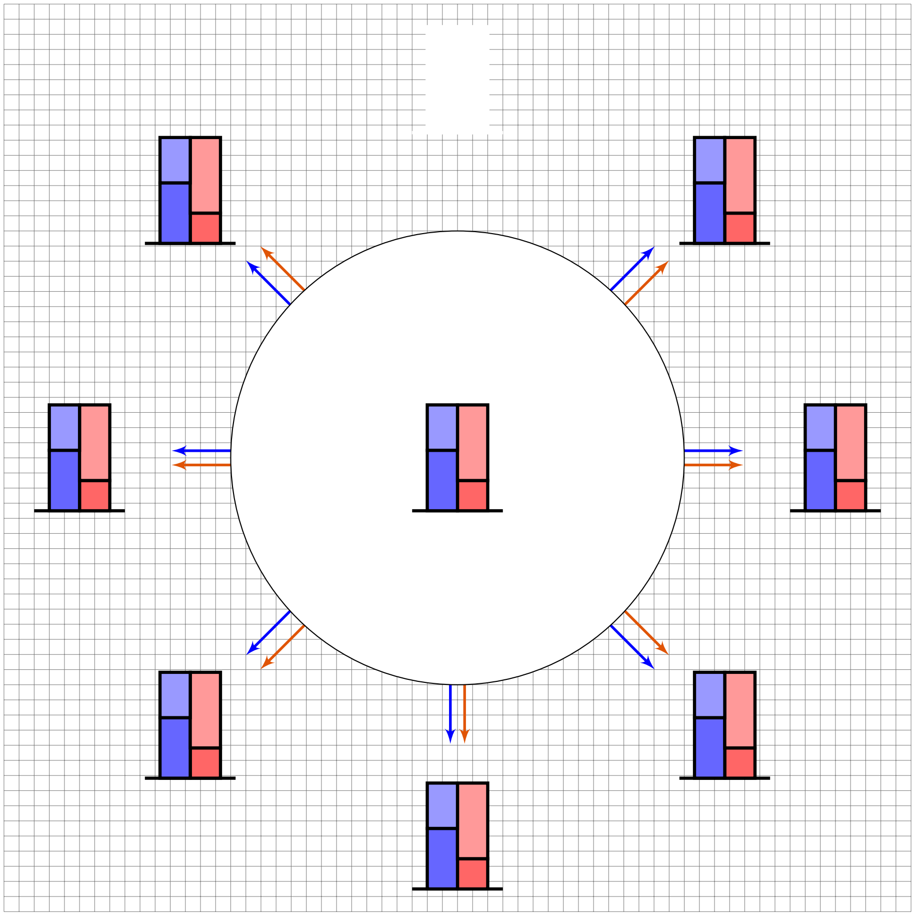

Figure 15: Balance sheet: The central bank at the...centre.

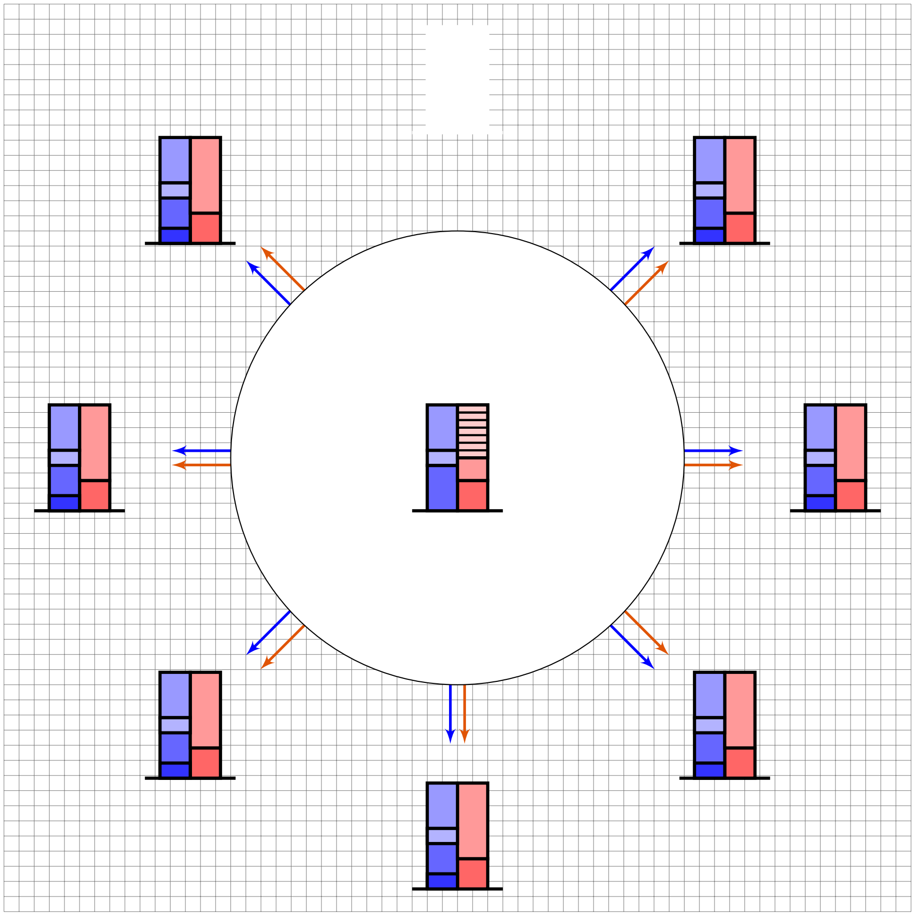

Figure 16: Balance sheet: The central bank at the...centre.

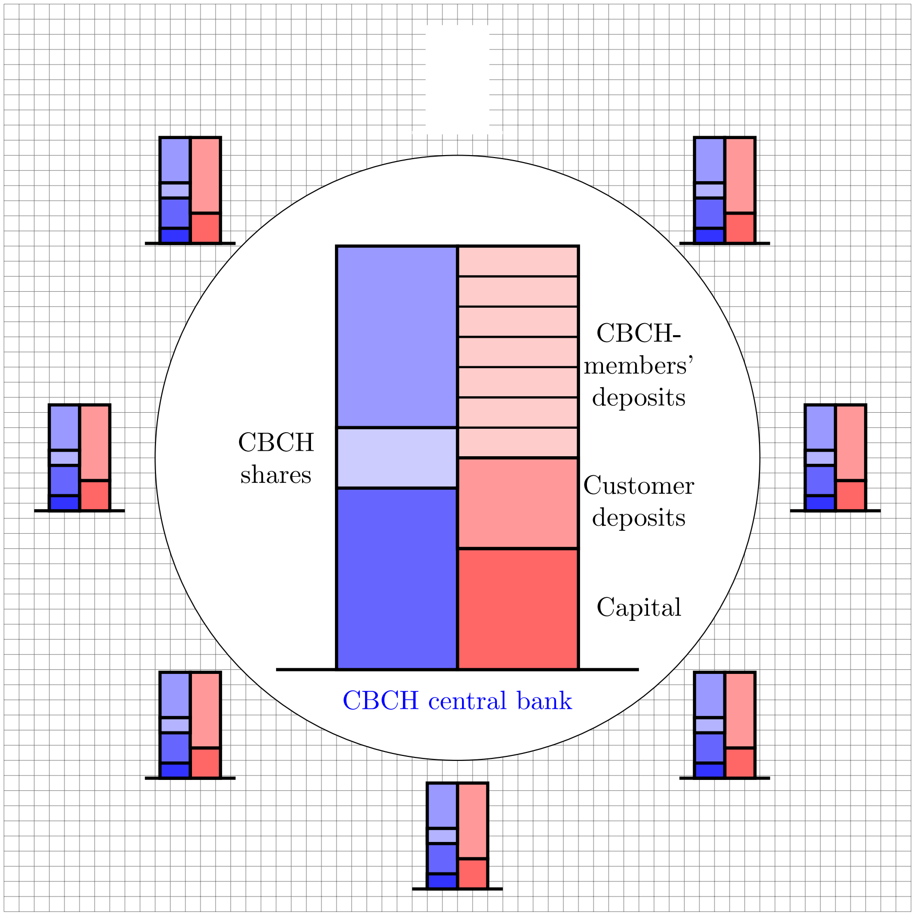

Figure 17: Balance sheet: Balance sheet of the 'central bank'.

- Cheques would be settled by transfers between these deposit accounts instead of cash transfer.
- Typically at the end of the day, after 'netting'.

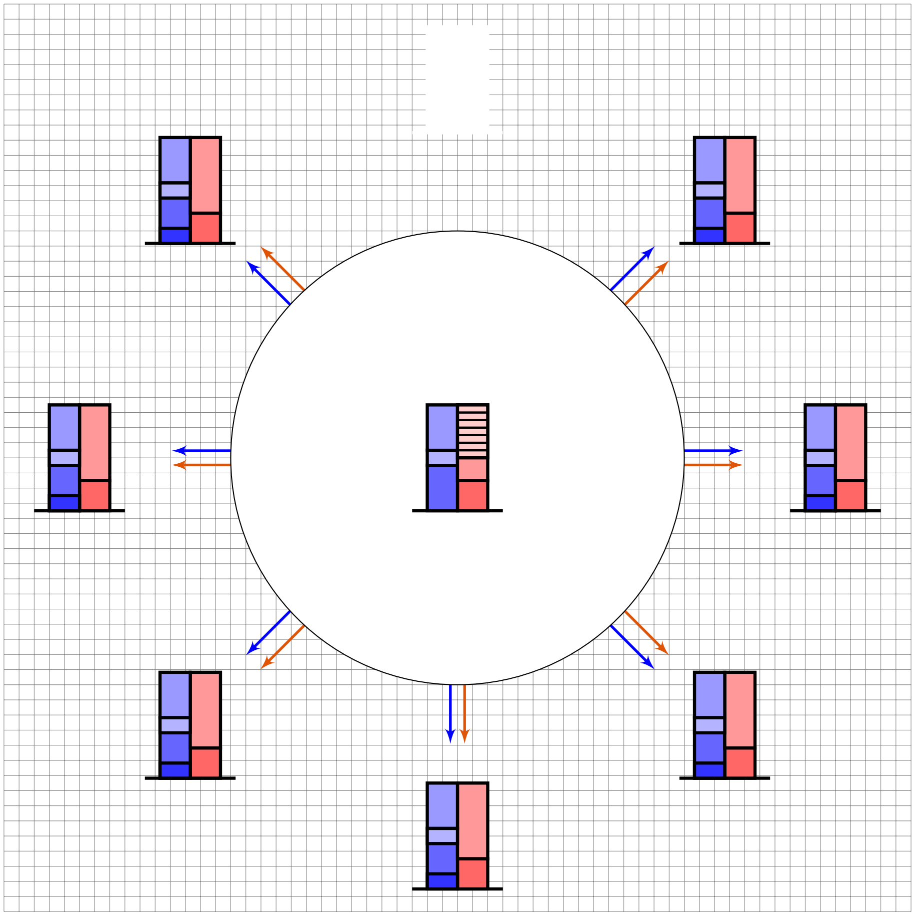

Figure 18: Balance sheet: Deposit-taking, lending bank.

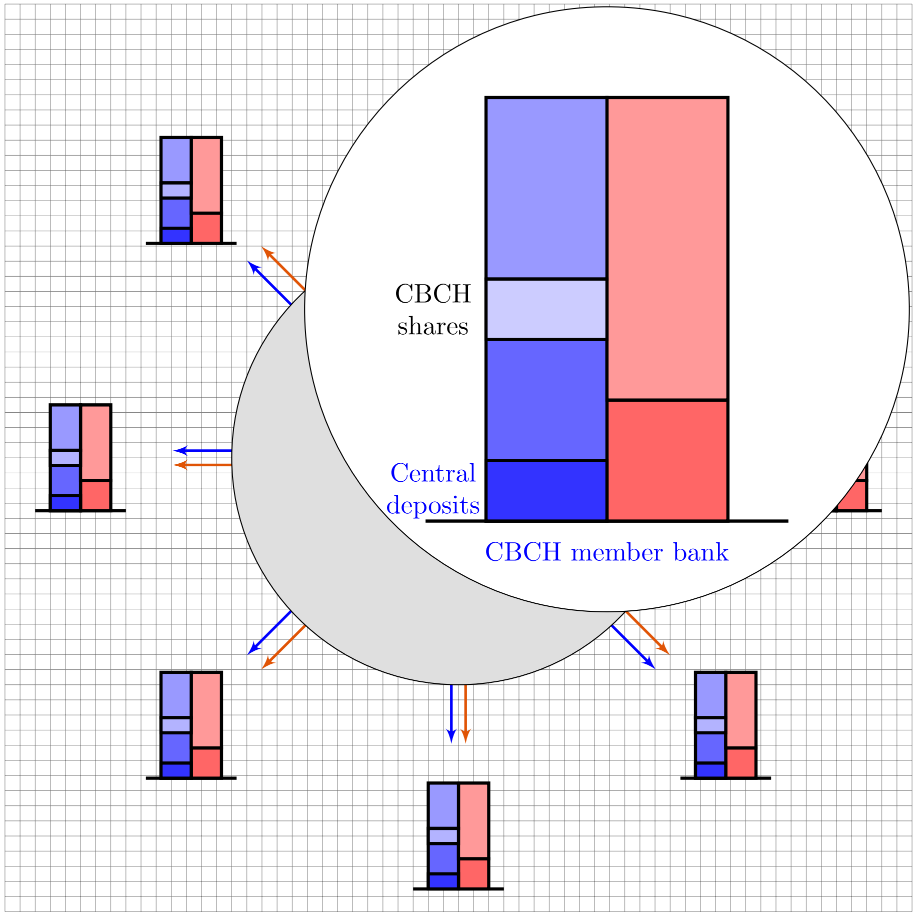

Figure 19: Balance sheet: CBCH member bank.

4 Another reason for forming a CBCH.

- The NYCHA was formed in response to the growing complexity of the bilateral clearing system
- Once in place it became a natural home for a number of other functions.
- Its advantage over alternative providers was based on information issues.

  "...it is almost literally true that the Federal Reserve System, as originally conceived, was simply the nationalization of the private clearing house system."
  Gorton (1985)

1. Growth of demand deposits (and cheque payments) relative to bank notes.
   - Less subject to theft.
2. Cheques carry 'double' credit risk:
   (a) The writer may have insufficient funds on deposit.
   (b) The bank may be unable to clear (payout on) the cheque. Why not?
      i. The bank has an incentive to invest deposited funds in high-risk, high-return loans.
      ii. Depositors cannot observe this, so cannot prevent it.
      iii. This can lead to liquidity and solvency problems.

5 CBCH membership conditions.

- Initial screening.
- Capital requirements.
- Reserve requirements: cash and deposits at the CBCH central bank.
- Interest rate restrictions.
- Audits.
- Reporting forms.
- Publication of (incomplete) balance sheet information.

All of which served to reduce that risks an individual bank faced from the other banks.

5.1 CBCH membership benefits.

- Liquidity insurance (liquidity backstop).
- Certification - membership conveyed a signal to depositors.

6 Banking panics: What can the central bank do?

> "A banking panic occurs with a sudden shift in the perceived riskiness of demand deposits at all banks, leading depositors to demand large-scale transformations of deposits into currency."
> Gorton (1985)

- Depositors cannot easily assess the risks of specific banks (why not?).
  - Which organisation is best placed to do this?
- 'Aggregate' events could cause runs on all banks.
- 'Idiosyncratic' (bank specific) events could also cause runs on all banks. How?
- In a panic the CBCH usually:
  1. Suspended publication of individual bank balance sheets.
  2. Substituted the publication of the aggregate balance sheet of all CBCH members.
  3. Suspended the conversion of all demand deposits into currency.
  4. Created 'loan certificates'.

6.1 CBCH loan certificates.

- Used from 1857 to creation of the Federal Reserve System in 1914.
- Designed to provide short-term assistance to any member bank unable to meet depositors' currency demands.
- They were a liability of the CBCH i.e. all banks collectively.
- Maturity was 1 to 3 months, and holders were charged interest.
- Issued to the bank in return for collateral and subject to a 'haircut'. Why?
- The bank could use these in clearing in place of currency, which could be used to pay out to depositors.
- Essentially the creation of additional reserves, reducing the banks' need for currency.
- Any bank failing to repay loan certificates with currency would be expelled from the CBCH.
- Large denomination certificates were for use in clearing only.
- Small denomination certificates could be used to for deposit withdrawals. Why might depositors be willing to accept them?

6.2 When is a CBCH likely to fail?

- When the demand for currency exceeds the holdings of the CBCH as a whole.
- I.e. when the whole CBCH membership is under attack.
- It's loan certificates will not be accepted by depositors.

7 Differences between the CBCH-cental-bank system and today's central banks.

- Ownership: Many central banks are publicly owned.
- Core characteristics:
  - Lender of last resort to deposit-taking banks.
  - Sole right of note issue.
  - Banker to the government.
- Blinder's 4 central bank responsibilities:
  1. Conducting monetary policy, including possible use of LOLR role.
  2. Preserving financial stability, LOLR almost always used.
  3. Supervising and regulating banks.
  4. Safeguarding payment and settlement systems, likely to make use of LOLR.
- Common suggested additions:
  - Collateral management.
  - Resolution.
  - Framer and calibrator of the regulatory regime. Why?
  - Monitor of the state of financial asset markets (as observer and manager of collateral).

8 Questions.

Should a central bank:

1. Be publicly owned?
2. Lend to insolvent banks?
3. Provide liquidity assistance to non-banks?
4. Act as market-maker of last resort?
5. Provide liquidity assistance in foreign currency to domestic banks.