

# Fractional Reserve Banking

This is a class exercise exploring individual actions by people and banks using the practice of fractional reserve banking. The intent is to experience firsthand how fractional reserve banking increases the money supply. Explain to the students that this is a role-playing game. They will either be a person (a depositor) or a bank (a lender). Then explain you, the teacher, are the central bank. You will set the fractional reserve percentage. The flow of the activity follows this pattern: A person deposits money in a bank. That bank keeps the minimum amount based on the reserve percentage and lends the rest to another person. The total supply of money as increased.

 **ACTIVITY TYPE**  
**Game · Role-play**

 **DURATION**  
**35 min**

 **PARTICIPATION**  
**Whole class**

## MATERIALS

- White board or projector / screen
- Calculators for students

## PREPARATION NOTES

The sheet allows 1 hour. If you have never given this class before, plan for an hour or more to familiarize yourself with the activity and the key concepts.

After you have delivered the activity the first time, future preparation is minimal.

This activity uses role playing, which requires time for students to think about the rules and act. Allow for 30 minutes for the activity and 5 minutes after the activity for discussion.

To accelerate the exercise, you can do this cooperatively as a class. Allow for 15 minutes for the activity and 5 minutes for discussion.

## SETUP

To keep students engaged with minimal downtime, draw the example table below on a whiteboard before the activity. You can also build this in Excel and project on a screen. Include the starting reserve rate for this activity.

| 10% Reserve  | Bank 1 | Bank 2 | Bank 3 | Bank 4 | Bank 5 | Bank 6 | Total |
|--------------|--------|--------|--------|--------|--------|--------|-------|
| Person A     |        |        |        |        |        |        |       |
| Person B     |        |        |        |        |        |        |       |
| Person C     |        |        |        |        |        |        |       |
| Person D     |        |        |        |        |        |        |       |
| Person E     |        |        |        |        |        |        |       |
| Person F     |        |        |        |        |        |        |       |
| Money Supply |        |        |        |        |        |        |       |

## PROCEDURE

### Step 1: Person A

Each step below shows the sheet's example table as it stands once that step is done, at the 10% reserve rate the sheet starts with.

Ask who wants to win the lottery?

Asking for volunteers to start the exercise is best. If no one raises their hand, go ahead and choose a student to be Person A.

Explain that Person A won the lottery, \$100,000, and will now decide which bank to deposit their money in. Whoever they choose, tell that person they are Bank 1.

Ask, "Person A, how much money do you have?"

Update the table.

| 10% Reserve  | Bank 1  | Bank 2 | Bank 3 | Bank 4 | Bank 5 | Bank 6 | Total   |
|--------------|---------|--------|--------|--------|--------|--------|---------|
| Person A     | 100,000 |        |        |        |        |        | 100,000 |
| Person B     |         |        |        |        |        |        |         |
| Person C     |         |        |        |        |        |        |         |
| Person D     |         |        |        |        |        |        |         |
| Person E     |         |        |        |        |        |        |         |
| Person F     |         |        |        |        |        |        |         |
| Money Supply | 100,000 |        |        |        |        |        | 100,000 |

### Step 2: The First Loan

Ask who (other than Person A) wants to borrow money from Bank 1?

If no one speaks up, pick someone. Let the student know they are Person B. Prompt them to ask Bank 1 how much they can lend.

Ask Bank 1 to calculate how much they can lend.

Assist the Bank 1 student with the calculations. It's important to let them do the math. Since other students are listening, point to the fractional reserve percentage on the tracker and the deposited amount while you explain "10% of \$100,000 = \$10,000. So, the amount you can lend is \$100,000 - \$10,000 = \$90,000."

Congratulate Person B. You now have \$90,000. Ask Person B who they want to be their bank. Whoever they pick is now Bank 2.

Update the table for the \$90,000 Person B deposits in Bank 2.

Highlight for the class that the "total money" has increased to \$190,000.

| 10% Reserve  | Bank 1  | Bank 2 | Bank 3 | Bank 4 | Bank 5 | Bank 6 | Total   |
|--------------|---------|--------|--------|--------|--------|--------|---------|
| Person A     | 100,000 |        |        |        |        |        | 100,000 |
| Person B     |         | 90,000 |        |        |        |        | 90,000  |
| Person C     |         |        |        |        |        |        |         |
| Person D     |         |        |        |        |        |        |         |
| Person E     |         |        |        |        |        |        |         |
| Person F     |         |        |        |        |        |        |         |
| Money Supply | 100,000 | 90,000 |        |        |        |        | 190,000 |

### Step 3: The Second Loan

Repeat the process from Steps #2 and #3. Involve students who have not already participated. You'll add Person C and Bank 3.

Point to the fractional reserve percentage on the tracker and the deposited amount while you explain "10% of \$90,000 = \$9,000. So, the amount you can lend is \$90,000 - \$9,000 = \$81,000."

Update the table for the \$81,000 Person C deposits in Bank 3.

Highlight the "total money" has increased to \$271,000.

| 10% Reserve  | Bank 1  | Bank 2 | Bank 3 | Bank 4 | Bank 5 | Bank 6 | Total   |
|--------------|---------|--------|--------|--------|--------|--------|---------|
| Person A     | 100,000 |        |        |        |        |        | 100,000 |
| Person B     |         | 90,000 |        |        |        |        | 90,000  |
| Person C     |         |        | 81,000 |        |        |        | 81,000  |
| Person D     |         |        |        |        |        |        |         |
| Person E     |         |        |        |        |        |        |         |
| Person F     |         |        |        |        |        |        |         |
| Money Supply | 100,000 | 90,000 | 81,000 |        |        |        | 271,000 |

### Steps 4 to 7

If the students have absorbed the ideas well, or if you're short on time, you can "fast forward" to the final table.

Otherwise, repeat the previous steps with Persons D, E and F and Banks 4, 5 and 6.

Highlight that the "total money" has increased to \$468,559.

| 10% Reserve  | Bank 1  | Bank 2 | Bank 3 | Bank 4 | Bank 5 | Bank 6 | Total   |
|--------------|---------|--------|--------|--------|--------|--------|---------|
| Person A     | 100,000 |        |        |        |        |        | 100,000 |
| Person B     |         | 90,000 |        |        |        |        | 90,000  |
| Person C     |         |        | 81,000 |        |        |        | 81,000  |
| Person D     |         |        |        | 72,000 |        |        | 72,000  |
| Person E     |         |        |        |        | 65,610 |        | 65,610  |
| Person F     |         |        |        |        |        | 59,049 | 59,049  |
| Money Supply | 100,000 | 90,000 | 81,000 |        |        |        | 468,559 |

## KEY POINTS

1. A fraction = part of a whole.
2. Fractional reserve banking is a tool banks use to lend more than they keep on-hand, or “in reserve”
3. The smaller the reserve amount, the more risk banks face in terms of bank runs or default.
4. This tool can be used with sound money (like gold) or with unsound money (like fiat).
5. The ability to expand the money supply, combined with bailouts and insurance programs, such as the FDIC, leads to moral hazard for banks. They have an incentive to make riskier decisions because they keep the profits, but their losses are paid by everyone.

## DISCUSSION QUESTIONS

- Why do people think they have money when a bank lends them money?
- The “total money supply” grew nearly 5x the original \$100,000.
- What would happen if everyone asked for their money in cash at the same time?
- Does the money supply go up or down when the fractional reserve rate goes down?
- Does the money supply go up or down when the rate goes up?

## NOTES

You do not need to be a math expert to understand the main concept of reserve banking or its risks.

## ADDITIONAL RESOURCES

- [Video: “Fractional Reserve Banking Explained in One Minute” on the YouTube Channel “One Minute Economics” is an animated video. It walks through an example like the one used in the My First Bitcoin lesson. https://www.youtube.com/watch?v=-09ap6zIB6I](https://www.youtube.com/watch?v=-09ap6zIB6I)  
https://www.youtube.com/watch?v=-09ap6zIB6I  
Video: “What’s the Problem?” is a video produced by Joe Bryan. It covers more than just fractional reserve banking, which is one of many ways to create fiat money. This video explains the consequences. https://www.whatstheproblem.org/ Book: “Broken Money” by Lyn Alden is a long, in-depth book. This is for those who have a passion for the subject of money and want to go deep in their personal studies. https://www.lynalden.com/broken-money/
- **A • Activity sheet (designed handout)**  
https://qr.myfirstbitcoin.org/fractional-reserve.pdf