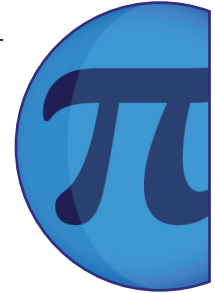




# Fractional Reserve Banking

## Key Learning Content

The film illustrates the relationship between ratios, percentages and decimals by explaining how banks fund their businesses. Customers deposit money with a bank, which then lends out this money to other customers. Regulators insist that banks hold back a fraction of their deposits as reserves – this is money that they cannot lend out. The fraction they must hold back varies by country and by type of bank. An example is given of a reserve ratio of 3:100, also shown as 3% and as 0.03. The film ends by observing that if all depositors want their money back straight away, this creates a problem for the bank because most of the money has been lent out to others. Some wealthy people therefore choose to hold their spare cash in gold. No specific mathematical knowledge is required prior to watching the film. The film will be of particular interest to those considering studying economics.



### Core Outcomes

#### Learning Points

- Be able to express a given number as a fraction of another number.
- Be able to convert from fractions to decimals and percentages, e.g.  $\frac{3}{5} = 0.6 = 60\%$ .
- Be able to use ratio notation.

#### Suggested Activities

- Use long division to convert a fraction into a decimal.
- Practise converting fractions into decimals and percentages using number cards.

### Extension Outcomes

#### Learning Points

- Be able to understand the different ways that ratios can be converted into fractions.
- Be able to carry out calculations using money, including converting between currencies.
- Be able to understand the economics of borrowing and lending.

#### Suggested Activities

- Solve simple problems involving ratios.
- Produce a simple business plan for a bank using interest rates and fractional reserve ratios.
- Research the price of gold over time.



Fractional reserve banking allows a controlled increase of money in circulation.

## Related Films

To use before the lesson plan:

### Fractions: Slow Motion

This film explains why knowing how to divide by a fraction can help to make slow motion film clips.

To use after the lesson plan:

### Ratios: Currency Exchange

This film defines an exchange rate as a ratio, and shows, using examples, how money can be made and lost through exchange rate fluctuations.

### Could You Owe More Than America?

This film shows how small but regular increases in interest charges can result in very large debts.

## Guide Lesson Plan

### Introduction

Ask students if they know how banks make money. Discuss their ideas, then ask if anyone has heard of the '3-6-3 rule': take deposits at 3%, lend the money out at 6%, be on the golf course by 3pm. Explain that this was a simplified and cynical view of how banking worked 50–100 years ago.

### Show Film

### Fractional Reserve Banking

### Main Activity

#### Foundation

Point out the different ways that the film used to express a reserve ratio of 1:10 or  $1/10$  or 0.1 or 10%. Summarise the rules for converting from a fraction to a decimal to a percentage. Then prepare a pack of cards, with each card showing either a fraction or a decimal or percentage. Get students to play a memory game in groups where all cards are placed face down on the table; each student takes it in turns to turn over two cards at a time, keeping the cards if they are the same number (e.g.  $\frac{1}{2}$  and 0.5), returning them face down if not. The winner is the player with the most number of cards at the end.

#### Advanced

Summarise converting from a fraction to a decimal to a percentage as above, then focus on the ratio notation. Explain that ratios are converted to fractions in two different ways, depending on context. If a bank has to keep £3 of every £10 deposited, then the ratio of reserves to deposits is 3:10, and we may write that the fractional reserve is  $\frac{3}{10}$ . But if you and your brother have money in the ratio 3:10, then you have  $\frac{3}{13}$  of the money, and your brother  $\frac{10}{13}$ . Discuss with the students why there is a difference in converting the ratio to a fraction in each case, and derive a rule. Practise using simple examples.

## Extension Activity

### Foundation

Ask students to convert  $1/7$  or  $1/13$  or  $1/19$  to decimals without using a calculator. Go over the process of long division, pointing out how to recognise when a recurring decimal occurs. Set as a task, writing all the fractions from  $1/2$  to  $1/20$  as decimals.

### Advanced

Describe a highly simplified banking business plan where the bank has a fractional reserve ratio of 5%, pays depositors 2% annual interest on their deposits, and lends out money at 4% annual interest to borrowers. If the bank has annual running costs of \$1million, work out how much profit or loss they make for different levels of deposits. Then ask how students would take account of defaulters – borrowers who did not pay back their loans to the bank.

## Optional Extra

Research the price of gold over time, taking a time period of several decades. Draw a graph of gold price over time. Is putting your money in gold a risk-free decision?

