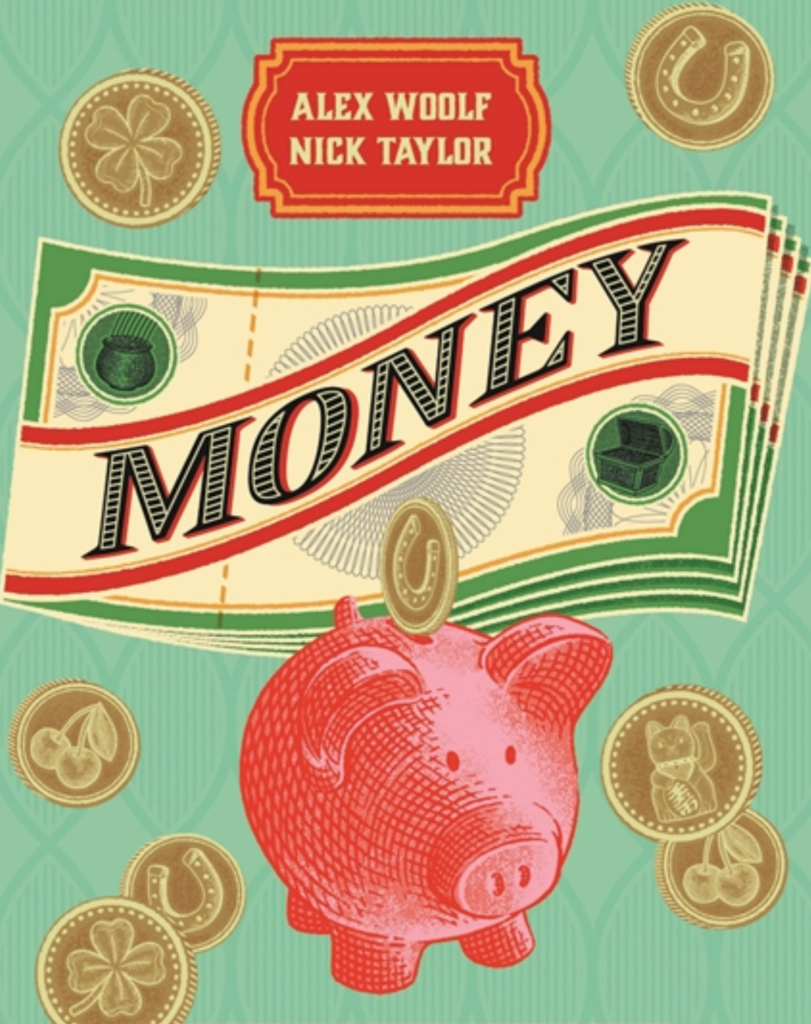
ALEX WOOLF
NICK TAYLOR

MONEY



A RICHLY ILLUSTRATED
HISTORY

BIG PICTURE PRESS

MONEY

A RICHLY ILLUSTRATED HISTORY

ALEX WOOLF

NICK TAYLOR

To my father, who has taught me so much about money. – A.W.

For Scarlett and Louie. – N.T.

BIG PICTURE PRESS

First published in the UK in 2024 by Big Picture Press
an imprint of Bonnier Books UK
4th Floor, Victoria House
Bloomsbury Square, London WC1B 4DA
Owned by Bonnier Books
Sveavägen 56, Stockholm, Sweden
www.bonnierbooks.co.uk

1 3 5 7 9 10 8 6 4 2

ISBN 978-1-80078-570-0

This book was typeset in Veneer and Bahnschrift.
The illustrations were created digitally.

Edited by Charlie Wilson
Designed by Winsome d'Abreu
Production by Neil Randles

Printed in China

MONEY

A RICHLY ILLUSTRATED HISTORY

ALEX WOOLF
NICK TAYLOR

BPP

CONTENTS

MAGIC PAPER

Money is amazing when you think about it. You can go into a shop with a banknote and buy things with it. Yet the banknote is really just a piece of paper or plastic. The material it's made of has almost no value. Another piece that cost the same to make wouldn't buy you anything. The banknote has value only because everyone agrees it does. The same goes for other forms of money, such as coins and credit cards. It's like a magic trick that we've all bought into, and as long as everyone keeps believing in it, the magic works.

WHAT'S SO SPECIAL ABOUT MONEY?

Why is money accepted as payment when other things aren't? We will explore this question in more detail on the following pages, but essentially it comes down to trust. The shopkeeper may not know or trust you, but they trust your money. When you hand that money over to them, they know they can use it at some future date to pay for the things they need. The person they pay knows this, too, and so it goes on.

A MEDIUM OF EXCHANGE

Money has three functions: it is a medium of exchange, a store of value and a unit of account. We've already looked at the first of these: a medium of exchange is something you can exchange for things you need. In other words, you can use it to pay for things. You can try paying for things with a banana, but unless you can find someone who wants a banana you're not going to get very far. With money, you can pay for anything that's for sale.

A STORE OF VALUE

Money is also a store of value – something that can be stored and retrieved later without losing its value. So if you don't want to spend your money now, you can keep it in a bank until you need it. Precious metals, jewellery or valuable paintings can also be stores of value. An ice cream is not a store of value, especially on a hot day, because its value disappears as soon as it melts.

A UNIT OF ACCOUNT

Finally, money is a unit of account, or a way of measuring the value of things. Imagine going into a shop to buy a salad bowl and finding one that is priced at five paintbrushes, and another that is priced at four forks. You would have no idea which is more expensive. Money gives us a common yardstick for comparing prices.

DIFFERENT KINDS OF MONEY

Money works because it is trusted, but this trust doesn't come out of nowhere. It has to be based on something. There are several reasons why money might be trusted. Some money is trusted because it is made of something valuable, such as gold or silver. This is called commodity money. Another kind is trusted because it represents something valuable. This is called representative money. A third kind is trusted simply because a government tells us it is valuable. This is called fiat money.

COMMODITY MONEY

The earliest forms of money were all commodity money. As well as gold and silver, many other items have been used as commodity money, including salt, tea and seashells (see pages 12–19). Commodity money is useful in times and places where there's no stable government, during wartime, or when other forms of money are in short supply or not trusted. It is often used in closed communities such as prisons or refugee camps. It is useful because people can recognise its value instantly. One drawback is debasement (see page 20). If a coin's only value is the gold that it's made of, what happens if someone chips away tiny flakes of the gold before paying you? The coin is now less valuable.

REPRESENTATIVE MONEY

One way around the problem of debasement is representative money. In this case, the material the coin is made of is unimportant. All that matters is what the coin represents. If the coin represents gold, it means it is backed by and convertible into gold (see pages 56–57). You can, in theory, take it to the government and they will pay you the coin's equivalent value in gold. Nobody actually does this, but the fact that they can gives representative money its value. One problem with representative money is that governments are limited in the amount they can create. If the money is backed by gold, for example, they cannot create more of it than they have gold in their vaults. This can be a problem during a crisis, such as a war or pandemic, when governments need to spend lots of money.

FIAT MONEY

Fiat money is not backed by a commodity, like representative money, but by a government, and the government can decide how much of this money it wants to create. Fiat currencies include the US dollar, British pound, euro and rupee. This works quite well – most of the time. However, when governments aren't limited by the amount of money they can create, they sometimes create too much. This leads to inflation (see page 22), when the purchasing power of money goes down.

BEFORE WE GO ON, LET'S EXPLAIN A FEW MONEY-RELATED TERMS...

LEGAL TENDER

Legal tender is money that the law says can be used to settle a debt. That doesn't mean a shopkeeper has to accept it, however. They are allowed to turn down a fifty pound note for an apple, for example, because of the huge amount of change they'd have to hand over. Cash in the currency of a country is legal tender in that country. Cheques or card payments are not legal tender, but can be exchanged for legal tender at a later date.

CASH

Cash is money in its physical form – banknotes and coins. This is different from money in the form of credit (see pages 40–47), where it is lent or borrowed, or electronic money (see pages 70–71), where it is transferred electronically from one bank account to another. Cash is becoming less common today as we increasingly use digital payment technology to pay for things. However, some people prefer cash because payments are anonymous and cannot be tracked by governments or commercial organisations.

CURRENCY

A currency is the system of money generally used in a particular country or community. The currency of the United States, for example, is the dollar, and the currency of France is the euro. The value of currencies rise and fall in relation to each other. In foreign exchange markets (see page 60), people buy and sell currencies in order to make a profit. Cryptocurrencies (see pages 74–75) are digital currencies not backed by any central authority.

A WORLD WITHOUT MONEY

To understand why money is useful, let's try to imagine a world without money. In such a world, the only way to get hold of the things you need would be to make or grow them yourself or to obtain them from other people. Those people are unlikely to simply give you the things, so you will have to offer them something in return. This system is known as barter – the exchanging of goods or services for other goods or services without using money.

BARTER AND GIFTS

We don't know of any society that existed entirely without money. However, many ancient peoples used barter alongside money, swapping goods and services rather than paying for them with a medium of exchange. Others employed a gift system, where goods and services were offered for no reward to help others, to gain status or to strengthen social bonds.

COINCIDENCE OF WANTS

The problem with barter is that it's much harder to agree what makes a fair trade because there are no agreed prices for things. The other problem is that barter requires a 'coincidence of wants'.
In other words, both parties need to have something the other one wants, and this isn't always going to be the case.

BARTERING TODAY

When money fails, for example during periods of hyperinflation (see pages 62–65), people may resort to barter. In close-knit communities, people often swap goods and services. At online swap sites, people exchange goods with no need for money. The Internet can be accessed by many people so there's more likely to be a coincidence of wants – for example, you might just find someone to swap your roller skates for a Star Wars lightsaber.

WHAT MAKES A GOOD FORM OF MONEY?

The earliest forms of money were very different to the money we use today. There was no paper or printing presses or machines to mould metal coins in ancient times. People had to make do with objects they found in the natural world. All of the first forms of money were commodity money – valued for what they were. The problem was, not all people valued them, so their function as a medium of exchange was limited.

For money to be practical as a medium of exchange, it should have five basic qualities. Money should be:

1. durable (long-lasting)
2. fungible (each unit should be identical and interchangeable with every other unit)
3. portable (you can carry it around)
4. acceptable to everyone
5. limited in supply.

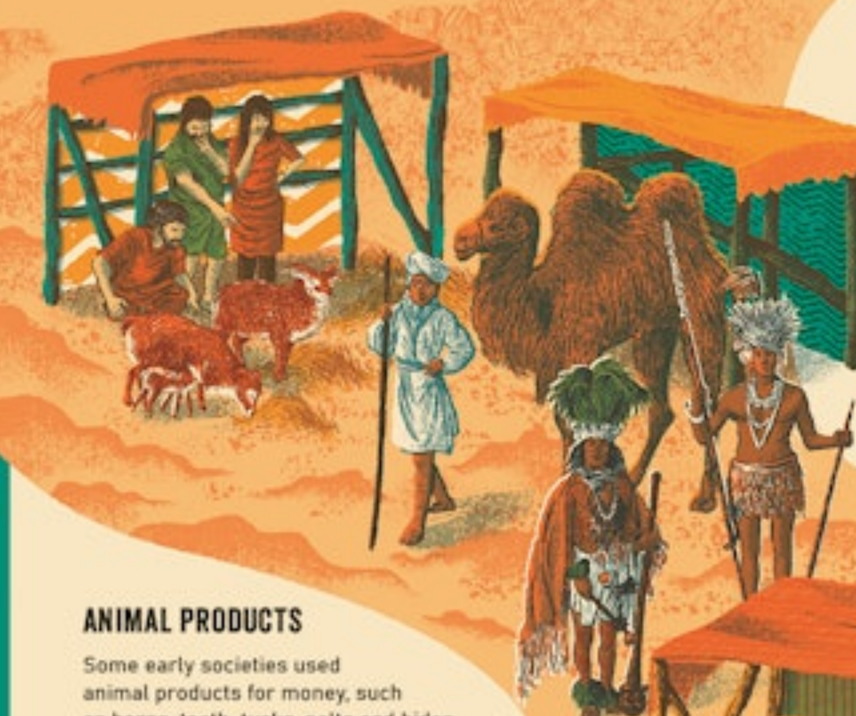
No ancient form of money fulfilled all these functions, which is why they eventually died out.

COWRIE SHELLS

Seashells and beads were common forms of early money. Cowrie shells were first used as money from about 1200 BCE by coastal communities around the Indian and Pacific Oceans. They were durable, portable and more-or-less fungible, being similar in size and shape. As trade expanded, some European countries also accepted cowrie shells as currency.

WAMPUM

Wampum, a form of money used by some Native American tribes, was another practical form of early money. Wampum was made up of whelk and clam shell beads assembled on strings or woven into belts. At first, wampum was mainly used for ceremonial purposes or given as gifts. In the early seventeenth century, it began to be used in trade between Native Americans and European colonisers. Wampum even became legal tender in New England in the North America from 1637 to 1661. Requiring skill to make, the supply of wampum was limited, which boosted its value as a currency. Although colonisers switched to other currencies, wampum continued to be used by many Native American tribes as a form of currency until the mid-nineteenth century.



LIVING MONEY

Long before cowrie shells and wampum, the very earliest form of money was livestock, such as cows, sheep and camels. This began around 9,000 BCE with the domestication of cattle. Reindeer were used for the same purpose in Siberia, and buffalo in Borneo. The ancient Greeks measured the value of things in oxen, whereas the Hittites did so in sheep. Even human beings, who had been enslaved, were traded as units of value by Vikings in Ireland.

ANIMAL PRODUCTS

Some early societies used animal products for money, such as horns, teeth, tusks, pelts and hides. Fijians used whale teeth as currency, and Indigenous peoples in Canada traded in beaver pelts with European colonisers. The Maya of Central America used the metallic green-blue feathers of the quetzal bird as currency, usually to purchase gold. Interestingly, we still use animal products in our money to this day: many modern polymer (plastic) banknotes contain a tiny amount of animal fat.

LEATHER MONEY

From about the sixth century BCE, leather and animal hide began to be used as currency in places such as ancient Rome, Carthage (modern Tunisia) and Gaul (modern France). In Russia, leather money was used as recently as the early eighteenth century. The Chinese emperor Wudi (reigned 141–87 BCE) created currency from the hides of his personal herd of white stags. Although leather money is no longer used, it has left its legacy in the use of 'buck' (a male animal) as slang for dollar.

QUIRKY CURRENCIES

Many unusual objects were used as money in the era before notes and coins. These included foodstuffs such as barley, rice, corn and wheat. The Chinese used tea bricks to pay for things, whereas the Aztecs used cacao beans, and the peoples of ancient Africa and the Middle East measured value in coffee beans. The Mesopotamians kept sacks of grain in protected barns, much like the banks of today. When stored carefully, these foods could provide a reasonable store of value. But a storm or a bad harvest could wipe out your wealth.

MONEY YOU CAN EAT

Some surprising foods have been used as mediums of exchange in different parts of the world. Here are some of them.

BUTTER

In 1620, the Pilgrims aboard the *Mayflower* stored tubs of butter for use as money. During the Second World War, butter became a unit of exchange in Norway.

CHEESE

In Emilia Romagna in northern Italy, banks accept cheese as a form of money. Farmers can deposit wheels of Parmesan cheese with a bank as security for a cash loan.

EELS

Dried and smoked eels were easily stored and lasted for months, making them quite a useful form of currency in medieval England, where they were often used to pay the rent.

GOURDS

In the early 1800s, gourds (a family of fruit including pumpkins, squash and melons) were made the national currency of Haiti. To this day, the standard Haitian coin is called the gourde.

COCONUTS

For the Kuna Yala, who live on islands off the Caribbean coast of Panama, money literally grows on trees. They harvest coconuts to exchange for other goods.

EGGS

When Venezuela was suffering from hyperinflation (see pages 62–65) in 2018–2020, companies often paid their workers bonuses in the form of eggs.

BREAD

In ancient Egypt, the basic salary consisted of ten pieces of bread and a ration of beer.

POTATO MASHERS

In ancient Cameroon, potato mashers were used as a currency. These heavy iron objects, called ensubas, were shaped like a club.

KISSI PENNIES

The kissi penny was a currency used mainly in West Africa in the first half of the twentieth century. They were long iron rods, usually arranged in bundles of 20. A cow could be bought for 30 or 40 bundles.

IRON SNAKES

The Lobi tribe of Burkina Faso used iron snakes as a currency. They would also attach them to their calves as a protection from snake bites and lightning.

KNIVES

Large bronze knives circulated as currency in ancient China between 600 and 200 BCE. According to one story, this started when a prince who was running low on money to pay his troops allowed them to use their knives to pay for goods in the local village.

RAI STONES

The small Pacific island of Yap possesses the world's biggest money. Rai stones are huge discs of rock weighing up to 8 tonnes each. The stones are rarely moved and are not used for day-to-day transactions, but they change hands as ceremonial gifts, to forge alliances, resolve conflicts or to apologise for wrongdoing.

THE FIRST COINS

Before the fifth and sixth century BCE, when the first coins were minted, metal had been used as a form of money. Rings, iron bars and even fishhooks were used as currency. Metal had advantages over all other forms of ancient money. It was durable, and could be melted down and divided into small, equal units that were both portable and fungible. Rare metals, such as gold and silver, were limited in supply and universally valued. In other words, metal had the potential to fulfil all the requirements of a practical form of money. But the shape had to be right.

METAL DISCS

The coin could have been shaped like a sphere, cube or triangle, but the ideal shape turned out to be a disc. Discs are round with no corners that can get worn away, and they can be easily stacked for counting. They have flat surfaces where a design can be stamped, which brings us to the feature that distinguishes the coin from all earlier forms of money: they carry the mark of an authority, such as a monarch's head, reinforcing their status as a legitimate currency.

THE LYDIAN LION

The world's first coin appeared in Lydia (in modern-day Turkey) in the 600s BCE. It was known as the Lydian Lion because it featured a roaring lion, the emblem of the kings of Lydia. It was made from electrum, an alloy of silver and gold. King Croesus of Lydia (reigned circa 560–546 BCE) may have issued the first gold coins. His wealth was legendary, giving rise to the phrase 'rich as Croesus'.

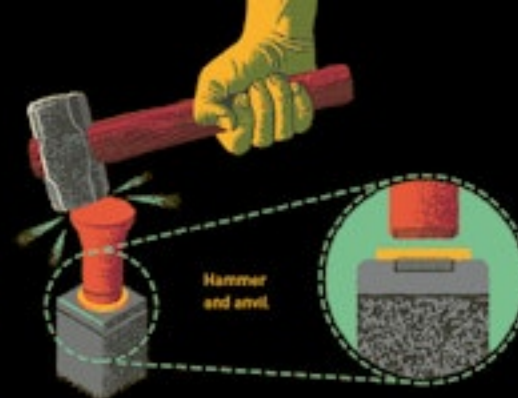
GREEK AND PERSIAN COINS

The sheer practicality of the coin quickly became obvious to traders in other parts of the world. Within a few decades, the Persians and the Greek city-states of Athens, Aegina and Corinth were minting their own coins made of gold and silver. At this stage, coins were still commodity money – the coins were worth the actual value of the metal they contained (the idea of representative money had not yet been invented – see page 8).

The world's first coin featured a lion

MINTING COINS

The first coins were made by flattening a lump of metal with a hammer placed over an anvil. A 'punch' was used to create an impression, such as a monarch's head. Later, around 350 BCE, the Chinese started to produce round coins by pouring molten metal into moulds (called casting). In medieval times, bars of metal were cast and hammered flat on an anvil. The coins were minted by hand, by placing a square piece of metal between the two halves of a die, called a pile and trussel. The coins were then struck with a punch before being trimmed into circles using shears.



Minting was revolutionised by the introduction of the screw press. First invented by the ancient Romans, the screw press was originally used in wine and olive oil production. In 1553, French engineer Aubin Olivier developed a screw press for flattening metal, with machines for punching out discs from the sheet. In the 1780s, the steam-driven screw press was invented, which could strike up to 84 coins a minute. In the early twentieth century, mints began using electrical power.

THE SPREAD OF COINS

The circulation of coins helped with the expansion of trade. People now found it easier to carry their money around with them as they moved from town to town buying and selling. Each city minted its own coins, so there were many different currencies in circulation, which may have been a little confusing. However, what really mattered was the value of the metal the coin contained. This was determined by weight, so every trader carried a set of weighing scales.

CIVIC PRIDE

Many of the earliest coins contained designs that celebrated local culture. Early Greek coins were engraved with animals, birds, insects, mythical beasts and gods. Corinthian coins showed the flying horse Pegasus, while Athenian coins showed the head of their patron goddess Athena. The Celts engraved their coins with runes, animals and important leaders.


(Left to right) Corinthian coin showing Pegasus, Athenian coins showing the head of the goddess Athena and her symbol, an owl

SENDING A MESSAGE

Coins were also used by leaders to project strength and authority. Athens forbade the use of any coins but their own in the Athenian empire. Roman coins displayed the head of the emperor, so no one would forget who ruled them. Indian ruler Samudragupta (reigned circa 335–376 CE) may have sought to project a softer image with his coin, which portrayed him as both a conqueror and a musician.


Gold coin of Samudragupta showing him playing a stringed instrument called a vina

CHINESE COINS

The first recognisable Chinese coins appeared around 350 BCE. Before that, the Chinese used various kinds of metal money shaped like shells, knives and spades. They invented coins independently. These were metal discs with square holes in the centre, so the coins could be threaded onto a string for ease of carrying. Chinese coins were cast in moulds, not hammered and cut out like European coins. They were usually made of copper, bronze or iron, rarely from gold or silver.


Chinese coins with square holes in the centre

BIRTH OF THE DOLLAR

The US dollar, the most widely used currency in the world, has its origins in the tiny Czech town of Jáchymov. In 1512, vast quantities of silver were discovered in the area. The owner, Stefan Schlick, officially named the town Joachimsthal (Joachim's valley) after the local patron saint of miners. Schlick was granted permission to mint his own silver currency, which he called Joachimsthaler, soon shortened to thaler. Schlick's coin was phenomenally successful. By the mid-sixteenth century, some 12 million thaler were circulating around Europe. Each country had its own name for the currency. In Iceland it was the dalur, in Italy the tallero and in Poland the talar. European colonisers brought their money to America in the seventeenth century, giving the eventual US currency (after a further change in spelling) its name.


Silver taler showing Saint Joachim

DEBASEMENT

For much of their history, coins were commodity money – their value lay in the metal (usually silver or gold) they contained. This made them vulnerable to debasement. People could find ways of removing some of the precious metal for their own profit. And it wasn't only individuals who did this. Sometimes governments, when short of money, would debase their own coinage by using less pure metal, allowing them to mint more coins. Debasement of coins is a problem because it leads to inflation – an increase in prices due to a fall in the purchasing power of money (see pages 22–23).

A debased English shilling, known as a testoon, issued during the reign of King Henry VIII

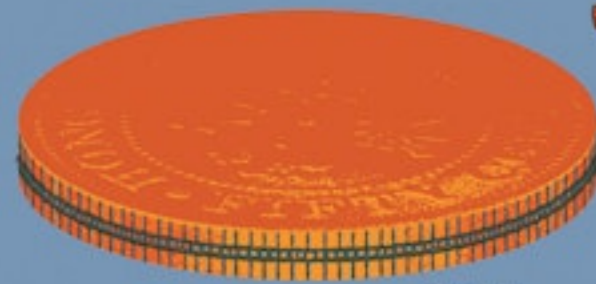
OLD COPPERNOSE

King Henry VIII of England (reigned 1509–1547) enjoyed an extravagant lifestyle and frequently engaged in costly wars with France and Scotland. All this left him very short of money, so in 1544 he decided to debase his currency. By replacing the gold and silver content of his coins with cheaper metals, coins could be produced at lower cost, and he could keep more of the precious metal for himself. Over the following years, gold coins dropped from 23 karat to 20 karat, while silver coins fell from 92 per cent silver to just 25 per cent. So debased were these coins that the thin silver outer coating would rub off where Henry's nose was, revealing the copper underneath. This earned him the nickname Old Coppernose. The economic problems caused by the great debasement only ended in 1560 when all the debased coins were removed from circulation.

CLIPPING

Ordinary people found clever ways of stealing the precious metal contained in coins. One method was clipping – shaving off tiny amounts from the edges of coins. These shavings would be saved up and eventually melted into bars and sold to a goldsmith, or used to make new coins. Clipping was simple to do, requiring only a file, some shears and a melting pot. It became such a problem in seventeenth-century Britain that the government declared it an act of high treason, punishable by death.

Pile of shavings from clipped coins



Close-up of a milled edge

MILLING

Britain's Royal Mint attempted to end the crime of clipping by milling the edges of coins – engraving them with tiny vertical lines or ridges. Milled edges made it possible to see if a coin had been clipped. Sometimes they would engrave the edge with a phrase, such as *Decus et Tutamen* ('an ornament and a safeguard'), which appeared on the edge of the crown coin of King Charles II (reigned 1660–1685). To this day, coins have milled edges, even though modern coins are not made of precious metals.

Sweating metal coins

SWEATING

Another method criminals used to extract the precious metal from coins was sweating. This involved placing a number of coins in a bag and violently shaking them. The coins would rattle against each other, causing tiny metal particles to fall from their surfaces. These particles could be collected from the bottom of the bag and melted down for profit. Sweating tended to wear the coin in a more natural way than clipping, making it harder to detect. Even a milled coin could be sweated for its metal and few would be the wiser.

PLUGGING

With larger coins, criminals used a different method to harvest their metal. They would cut the coin in half, extract the valuable metal from the centre, fill it with a base metal such as lead, and then weld the coin back together. This practice, which dates back to ancient times, became known as plugging in the United States in the first half of the nineteenth century. It spawned the phrase 'not worth a plugged nickel' to describe a worthless thing.

Plugged nickel

INFLATION

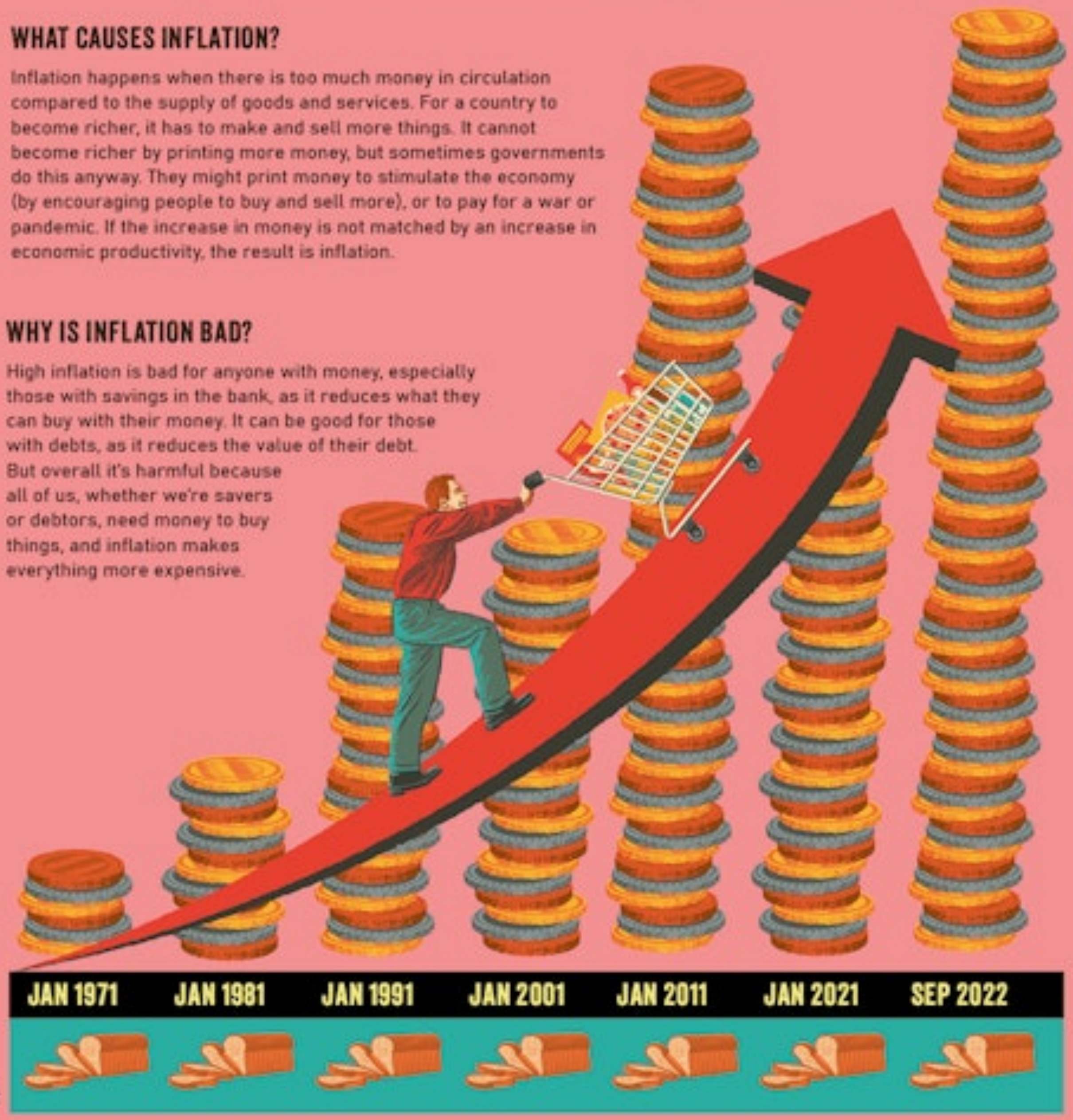
The value of money is not fixed. It can go up or down. When the value of money goes down, prices go up, because more money is needed to pay for things. This is called inflation. The inflation rate is the rate at which money's purchasing power drops over time. It's usually measured by looking at the rise in prices of commonly bought goods such as food, clothing and electricity. If the inflation rate is 5 per cent, it means that the prices of these goods have risen by an average of 5 per cent over a year. So a loaf of bread costing £1 will cost £1.05 a year later.

WHAT CAUSES INFLATION?

Inflation happens when there is too much money in circulation compared to the supply of goods and services. For a country to become richer, it has to make and sell more things. It cannot become richer by printing more money, but sometimes governments do this anyway. They might print money to stimulate the economy (by encouraging people to buy and sell more), or to pay for a war or pandemic. If the increase in money is not matched by an increase in economic productivity, the result is inflation.

WHY IS INFLATION BAD?

High inflation is bad for anyone with money, especially those with savings in the bank, as it reduces what they can buy with their money. It can be good for those with debts, as it reduces the value of their debt. But overall it's harmful because all of us, whether we're savers or debtors, need money to buy things, and inflation makes everything more expensive.



HOW TO FIGHT INFLATION

In most countries, it's not governments but central banks (see page 36) that are in charge of keeping inflation under control. They do this by limiting the amount of money in circulation. They use a number of tools to achieve this, one of which is the control of interest rates. The interest rate is the cost of borrowing money. By raising the interest rate, borrowing becomes more expensive, so people will borrow less, reducing the amount of money in circulation.

THE DANGERS OF DEFLATION

Central banks have to be careful not to raise interest rates too much as this can lead to a general fall in prices, known as deflation. A small drop in prices is no bad thing, but rapid deflation is a sign that people aren't spending money. Companies may react by reducing production and laying off workers. Ultimately, this can lead to a recession – a period of economic decline. So the control of interest rates is always a balancing act.

THE FIRST PAPER MONEY

If coins were the first great innovation in the evolution of money, banknotes were the second. The story of paper money begins a long time ago in seventh-century China, during the period of the Tang dynasty. At that time, merchants would carry their copper coins around with them, threaded on a rope. Rather than lug all these heavy coins around, some merchants began leaving their coins with someone they trusted who gave them a paper receipt recording how much they had deposited.

FLYING CASH

Merchants used these paper receipts, known as promissory notes, to buy with. Sellers accepted them because they knew they could be exchanged for coins at any time. They nicknamed them feiqian ('flying cash') due to the paper's tendency to blow away in a high wind. These weren't yet banknotes because they weren't officially printed and issued by a government or bank, yet they functioned as money. This planted the idea in people's minds that money didn't have to only take the form of a valuable metal token such as a coin. It was an early example of representative money (see page 8).

THE JIAOZI

In time, promissory notes became widely accepted in China, opening up the possibility of an official, government-issued paper currency. The world's first banknote, known as the jiaozi, was issued during the eleventh century under the Song dynasty. The jiaozi was backed by the government and, like promissory notes, could be exchanged at any time for copper coins. It proved a great success, and paper money became firmly established in China.

PAPER MONEY TRAVELS

Venetian merchant and explorer Marco Polo travelled through Asia along the Silk Road (a famous trading route) between 1271 and 1295. While in China he spent time at the palace of the Chinese emperor Kublai Khan where he learned about paper money. Upon his return to Europe, Marco Polo reported the fascinating stories about how the Chinese used paper money, which was backed by the government.

CREATING KUAN CURRENCY

The Chinese used the bark from mulberry trees to make paper money. The fine fibre, called bast, between the bark and the wood of the trees was pounded down and stretched out with glue, and then marked with Kublai Khan's seal. Marco Polo also learned that the Chinese were very worried about the problem of counterfeiters (see pages 66–69). Guards were posted around mulberry forests to prevent counterfeiters obtaining the bark from which banknotes were made. The banknotes had a complex design to make forging difficult, and each one contained a stark warning: Those who counterfeit will be beheaded.

EUROPE TAKES NOTE

A few centuries would pass before European countries followed China's example and introduced paper money of their own. The process began in the 1500s in a similar way to China, with promissory notes. British bankers began offering these paper receipts for gold coins deposited with them. Known as 'running cash notes', these could be used to pay for things, and could be exchanged for their face value in coins by taking them to the bank that issued them. Although they worked just like money, they weren't an official currency because they were issued by commercial banks, not the government.

1600s
I PROMISE TO PAY THE BEARER...

London's goldsmith bankers (see page 32) begin issuing paper receipts that include the phrase, 'I promise to pay the bearer on demand the sum of X pounds'. In other words, the receipts are payable to the bearer of the note, not the depositor, encouraging their use as currency. The phrase continues to appear on British banknotes to this day.

1661
FIRST EUROPEAN BANKNOTE

The Swedish central bank, Stockholms Banco, issues Europe's first ever banknote. It is a short-lived experiment – the bank prints too many and three years later it goes bankrupt.

1685
PLAYING CARD CURRENCY

Due to a shortage of coins in the French colony of Canada, soldiers are issued with playing cards signed by the governor to use as an alternative form of money.

1690
MASSACHUSETTS BAY COLONY

Sir William Phips, governor of the Massachusetts Bay Colony, issues a temporary banknote to help fund the war effort against France. Britain's other North American colonies soon follow suit.

1695
BANK OF ENGLAND

The Bank of England (established in 1694) starts permanently issuing banknotes. These notes are handwritten to the exact amount.

1704
PROMISSORY NOTES ACT

The era of paper money began in England with the Promissory Notes Act of 1704, which made the promises of bankers (to exchange banknotes for gold) enforcable in law. This meant the banker's promise now became money, and borrowers were as happy to accept banknotes as depositors.

1745
FIXED DENOMINATIONS

The Bank of England issues the first banknotes in fixed denominations, ranging from £20 to £1,000 (equivalent to £4,650 and £232,000 today).

1756–1802
DENOMINATIONS GET LOWER

The Seven Years' War (1756–1763) causes gold shortages in Britain. To avoid draining its gold reserves, the Bank of England starts issuing lower denomination notes: first £10 and then, in 1793, £5. During the French Revolutionary Wars (1792–1802), the bank starts issuing £1 and £2 notes, again to avoid paying out too much gold. Because of its meanness with gold, the bank gets the nickname the Old Lady of Threadneedle Street.

1833
LEGAL TENDER

The British government formally declares banknotes legal tender (i.e. they must be accepted if offered in payment of a debt). This marks the start of representative money. However, bank cashiers still need to sign each note individually before it can be used.

1844
SOLE CONTROL

The Bank Charter Act of 1844 grants the Bank of England the sole right to authorise the issuing of new banknotes.

1853
FULLY PRINTED NOTES

British banknotes become fully printed and no longer need to be signed by cashiers.

1863–1932
GOVERNMENT ASSERTS CONTROL

A series of laws are passed giving the US government the sole right to issue banknotes. Before this, commercial banks could issue their own notes.

THE FIRST BANKS

Banks began more than four thousand years ago as places for wealthy people to store their money. The earliest banks were in temples, because they were viewed as safe and secure. Deposits were looked after by priests as well as armed guards. These first banks didn't just store people's money, they also lent it out to other people in return for a regular payment, known as interest.

BABYLONIAN BANKING

The earliest form of banking can be found in ancient Mesopotamia, where people stored their money and valuables in temples and occasionally royal palaces. In Babylonia, a kingdom in Mesopotamia, in 2,000 BCE people depositing gold had to pay a fee amounting to approximately 1.6 per cent of the total value of the deposit. Banks also offered loans. A bank might loan a farmer seed grain, which the farmer would repay from the harvest. Such agreements were recorded on clay tablets, some of which survive today.

GRAIN BANKS IN ANCIENT EGYPT

In ancient Egypt, farmers would deposit grain for safekeeping in enormous grain warehouses owned by the government. When they wanted to buy something, they would withdraw some of their grain from this grain bank. They would pay a fee (in grain) for this. These fees were used by the government to pay state workers, such as the people who built the pyramids.

THE TRAPEZITES OF ANCIENT GREECE

Ancient Greek bankers were known as trapezites. The main service they offered was moneychanging: exchanging the currencies of foreign traders for the local currency. They also safely stored deposits, for which they paid interest, and they acted as pawnbrokers – lending money at interest on the security of a valuable item, which they would keep if the loan wasn't repaid.

THE ARGENTARII OF ANCIENT ROME

Bankers in ancient Rome were called argentarii. They operated from small shops and stalls around the Forum (town square). Their original job was to change foreign currencies into Roman currency. They were organised into a guild (an association of people in the same profession) with a limited number of members. Over time, their role expanded to include holding deposits, lending money and taking part in auctions (public sales in which items are sold to the highest bidder). They were also responsible for determining the value of coins, detecting forged coins and circulating new money.

BANKING IN THE MIDDLE AGES

Following the fall of the Roman Empire in 476 CE, European culture fell into decline, and its economy became a simple one based on farming. That had changed by the thirteenth century as international trade and commerce began once more to flourish. With it came a need for banking services, such as holding deposits, moneychanging, extending loans and transferring large sums of money from place to place. But medieval bankers faced a major problem: the Church, which was tremendously powerful in the Middle Ages, regarded the practice of charging interest on loans (known as usury) as a sin.

TAKING NO INTEREST

Medieval Christian bankers couldn't openly charge interest, so they disguised it as something else. They might charge a fee for a loan, for example, or make money out of differences in exchange rates. Yet the ban on usury did not make life easy for them. Jews, on the other hand, were not subject to these restrictions – they could charge interest on loans so long as their customer wasn't also a Jew. As a result, Jews came to dominate the banking profession.

THE KNIGHTS' BANK

The Crusades (1095–1291 CE) were a series of military conflicts when European Christian knights attempted to seize the Holy Land from Muslim control. Knights going on Crusade needed to be able to access their funds while abroad. A wealthy and powerful organisation of knights called the Knights Templar stepped in to handle this demand. They controlled a network of castles across Europe. A knight could deposit their wealth at one castle in exchange for a letter of credit, and hand it in to another castle, where they would be given the equivalent amount in local currency. Because usury was forbidden, the Templars made money on the differences in exchange rates. They also helped arranged large financial deals, much like modern banks. When King Henry III of England wanted to buy an island off the coast of France, the Templars handled the finance.

WHY DO WE CALL IT A BANK?

The word bank comes from banca, the Italian for bench – the bankers in medieval Italy would do their business from benches, or counters, set up in public squares and other trading centres. The word bankrupt, meaning 'unable to pay one's debts', comes from banca rotta, or 'broken bench'.

Medici coat of arms

BANKING IN ITALY

By the fourteenth century, the ban on usury was no longer so strictly enforced, and Christians began to displace Jewish bankers. This happened first in wealthy Italian city-states such as Florence, Siena, Milan, Venice and Lucca. Italy was a great centre of international trade, but journeys by land and sea were long and dangerous. Banks were needed to lessen this risk by issuing letters of credit, helping commerce to flow. The Florentine banks were the most successful of all. By the early fifteenth century, Florence had around 80 banks with branches all over Europe, and they were lending money to kings, emperors and popes.

Giovanni di Bicci de' Medici

THE MEDICI

The greatest of all the Florentine banking families was the Medici, founded by Giovanni di Bicci de' Medici in 1397 and lasting until 1494. They had branches in the major cities of Italy as well as London, Lyon, Geneva, Bruges and Avignon. At their height, the Medici were among the richest families in Europe, and they used their wealth to acquire political power, controlling Florence and installing several of their members as pope. The Medici fortune helped fund great artists like Leonardo da Vinci and Michelangelo. The Medici were also innovators, pioneering new accounting methods such as double-entry bookkeeping, a way of accurately tracking debits (money owed) and credits (money received), giving bankers and merchants a better understanding of the state of their business.

THE START OF MODERN BANKING

After King Charles I of England (reigned 1625–1649) seized all the gold held in the Tower of London in 1640, aristocrats needed a safer place to store their wealth. They turned to the goldsmiths of London, who had secure, private vaults, and these became the first English bankers. The goldsmiths, along with the Bank of Amsterdam (established in 1609), pioneered new forms of banking in the seventeenth century. These included the issuing of banknotes and cheques. They also developed something called fractional reserve banking.

THE GOLDSMITHS

The goldsmith bankers of London issued paper receipts, or promissory notes, recording the amount of precious metal deposited in their vaults and stating that it would be payable on demand to the depositor. But because of fractional reserve banking, the gold was very often not there in their vaults, having been lent to someone else. This didn't matter because they always had enough gold to pay any customer arriving at the bank (as long as too many didn't arrive at once). These promissory notes therefore amounted to a new kind of money. They didn't represent gold, but were a kind of debt – the goldsmiths' debt to their customers.

Mayer Amschel Rothschild

THE ROTHSCHILDS

The Rothschilds were the most famous of all European banking families. For around two hundred years, starting in the 1790s, they wielded huge influence on the history of Europe. They made a fortune lending money to European governments during the French Revolution and Napoleonic Wars. During the Industrial Revolution they helped finance the development of the railway, coal and ironworking industries and, later, the oil industry.

NATHAN ROTHSCHILD AND THE CARRIER PIGEON

News travelled very slowly in the early nineteenth century, so when the British and Prussians defeated Napoleon's army at Waterloo in 1815, it would be days before the rest of the world found out. But the famous banker Nathan Rothschild had a trick up his sleeve – a network of trained carrier pigeons that could deliver messages far quicker than the conventional communications of the day. That was how he learned the result of the battle a full day before anyone else, and was able to make big profits by investing in British government bonds (see page 52).

Nathan Mayer Rothschild

THE RISE AND FALL OF JOHN LAW

LAW'S LEGACY

Ironically, today we use a system very similar to the one Law proposed, with paper money backed not by precious metal but by the authority of the state and its central bank. Law's mistake was to underestimate the excitement his invention caused. It led to a bubble – a rapid rise in the price of an asset caused by enthusiasm and speculation rather than the asset's actual value – followed by a collapse.

BANKING TODAY

As the world's economy has grown more complex, the banking industry has responded by separating into different institutions offering a variety of specialised financial services. These services play a vital role in keeping the economy functioning. Sometimes businesses have an excellent product, but they need to borrow money to develop it. Individuals may need help in deciding where to invest their money, or a loan to make ends meet. There are banking services to meet all these needs.

CENTRAL BANKS

These institutions manage the currency of a country or group of countries and control the amount of money in circulation. The main goal of a central bank is to maintain price stability and avoid inflation. Central banks work with governments and large financial institutions to achieve their goals. They have no contact with individual consumers.

RETAIL BANKS

These are the banks one finds on the high street or on the Internet. They offer the full range of financial services to individuals and businesses, including current accounts (from which money can be withdrawn without notice), savings accounts (which pay interest on money deposited there), loans, credit cards (see pages 44–45) and financial advice.

BUILDING SOCIETIES

These are similar to credit unions, being owned by their members, except their primary objective is to provide loans, called mortgages, for people buying homes. With a mortgage, the loan plus interest is repaid in monthly instalments. The property being purchased is the collateral, or security, for the debt. This means that the building society can potentially seize the property if the borrower fails to make their regular repayments.

CREDIT UNIONS

These are similar to banks except they are created, owned and controlled by their members. They may be established by people from a particular profession, such as teachers or members of the armed forces. Members buy shares in the credit union, pooling their money to provide loans, savings accounts and other financial products. They are not-for-profit and any income generated is used to fund projects to benefit members.

INVESTMENT BANKS

These institutions act as intermediaries in large and complex financial transactions. For example, they get involved when businesses want to raise money in order to expand or merge with other businesses, or if they want to sell shares in their company to the public (see pages 52).

BROKERAGE FIRMS

Brokerage firms act as intermediaries connecting buyers and sellers of shares, bonds (see page 52) and other financial instruments. Brokers – the people who work for these firms – earn a fee or a commission (a percentage of the sum involved) once the transaction has been completed.

INSURANCE COMPANIES

Life is always risky, whether you're an individual driving on an icy road, a farmer worrying about their crops during a drought, or an international trader anxious that a ship carrying your cargo might sink in a storm. Insurance companies offer protection against loss. In return for small, regular payments (called premiums), they will compensate customers for their financial losses should disaster strike.

PAWNBROKERS

Pawnbroking is an ancient profession. They lend money to individuals who offer a valuable item, such as a piece of jewellery, as collateral (security). If the loan isn't repaid in the agreed time, the pawnbroker can sell the item to recover the cash. Pawnbrokers usually charge a higher rate of interest than other lenders.

PAYDAY LENDERS

Payday lenders offer short-term loans at extremely high interest rates. Unlike a pawnbroker, no collateral is required. The amount borrowed is based on what the borrower earns and is paid back out of the borrower's next paycheck. Vulnerable people who need money quickly often turn to payday lenders because they can't get loans from regular banks.

WHEN BANKING FAILS

Throughout the history of banking there have been moments of crisis when banks get into trouble. The bankers of the Knights Templar (see page 30) were crushed by an external force, but many banks are at least partly to blame for their own downfall, thanks to bad investments or unwise lending. Since the invention of fractional reserve banking (see page 32), banks have been vulnerable to bank runs. These happen when a large number of customers withdraw their deposits simultaneously because they fear the bank is in trouble.

KNIGHT-MARE

By the early 1300s, the Knights Templar had grown enormously wealthy. King Philip IV of France (reigned 1285–1314), who was in desperate need of money, decided to take it from them by force. The king's agents launched a surprise raid, arresting their leaders throughout France. He accused them of unspeakable crimes, including devil worship and eating dead knights, and blamed them for the failure of the Crusades. The Templars were tortured to extract confessions. Finally they were killed, and Philip seized their treasure.

King Philip IV

FLORENTINE FAILURES

A number of Florentine banking families (see page 31) funded the English king Edward III (reigned 1327–1377) at the start of the Hundred Years' War (1337–1453) between England and France. But when Edward defaulted (failed to repay) his loans in 1343, it caused a chain of bankruptcies among the banks, along with many of their depositors. The system of money they had constructed, based on bills of exchange, depended on everyone acting with honesty and goodwill. So when the king decided simply to cancel his debts, the entire system swiftly collapsed.

King Edward III

GREAT DEPRESSION

Following the 1929 Wall Street Crash (see page 53), the United States plunged into an economic depression (a period of long-term economic decline). In 1930, rumours began to spread that a bank in Tennessee was refusing to give depositors their cash. Customers rushed to withdraw their money. Bank runs are self-fulfilling – the more people queue up to demand their money, the more likely a bank will go bust. And one bank failure will spook customers of nearby banks, causing a domino effect. This is exactly what happened in the early 1930s, when panic at one bank led to a wave of bank failures across the United States.

The Daily Report

15 September 2007

RUN ON THE ROCK!

Yesterday morning, in towns all over Britain, long queues of customers formed outside the branches of Northern Rock bank, all of them desperate to get their hands on their lifetime savings. We're unused to such scenes in this country – this was the first run on a British bank in nearly 150 years. By the afternoon, billions of pounds had been withdrawn from the bank, sending it close to collapse.

Northern Rock was one of Britain's smaller banks, but it had ambitions to be a big player. With only 70 branches taking cash from depositors, it didn't have enough of its own money to expand at the rate it wanted. So it borrowed money on the global markets. Unfortunately, this coincided with the time when US banks were lending irresponsibly to home owners, and the whole global financial system was teetering on the brink of a crash, which happened the following year. Northern Rock was only the first in a chain of bank failures in 2007–2008.

THE LAWS OF LENDING

For as long as money has existed, people have lent and borrowed it. There are different ways that this can be done. A lender can give money to the borrower on the understanding that the borrower will pay it back later. Or the lender can let the borrower have goods and services for free on the understanding that the borrower will pay for them later. In return for the loan, the borrower pays the lender interest, which is a percentage of the amount owed. The Babylonians were the first to develop laws about lending. The Code of Hammurabi (c. 1755–1750 BCE) set the maximum amount of interest that could be charged, and imposed fines for non-payment.

CREDIT AND DEBT

Money lent is known as credit. The word comes from the Latin credere, meaning 'believe or trust'. A person to whom money is owed is a creditor. When a lender extends credit to a borrower, they are giving them a loan. Money owed is called a debt. A person who owes money is a debtor.

COLLATERAL

Collateral is a valuable asset that a borrower pledges as security for a loan. If someone needs cash, they can visit a bank. Sometimes a person's house is the collateral. In the event of a default (a failure to repay the loan), the bank can reclaim the collateral to recover their loss. Loans that are secured with collateral usually come with a lower interest rate than an unsecured loan.

INTEREST

The lender charges a sum of money, known as interest, in compensation for the risk of not getting their money back, and for the sacrifice of being temporarily parted from their money. The interest rate is the percentage of the principal (the loan amount) that must be paid by a set period (such as a year). The size of the interest rate often depends on the borrower's creditworthiness (how likely they are to repay the loan). It all comes down to risk. If the borrower has a bad record for paying back loans, or they want the money for a long time, or the loan isn't secured with sufficient collateral, the lender is likely to charge a higher interest rate.

LOAN OF £100 FOR 1 YEAR AT 25% INTEREST

25% OF £100

100/100=1

1 X 25 = £25

LOAN PAID BACK: £100 AT 25% INTEREST AFTER 1 YEAR

£100 + £25 = £125

KEEPING A TALLY OF YOUR LOANS

THE RISE OF CONSUMER CREDIT

During the eighteenth and nineteenth centuries, the aristocratic taste for luxury spread to the middle classes. This led to a rise in demand for goods that were desirable but not essential – items that elevated people's social status like fine food, furnishings and clothing. Shopping became a leisure activity, and retailers found new ways of responding to and encouraging this trend. Aware that consumers didn't always have the funds available to purchase the goods they desired, they would extend them credit.

1728
THE FIRST OVERDRAFT
A merchant named William Hogg finds himself temporarily short of funds, so, for a fee, his bank allows him to withdraw £1,000 (worth over £66,000 today) from his empty account to pay his debts before he receives his next payment. This is the world's first overdraft facility.

1803
TAILORS' TALES
A group of London tailors begin swapping information on customers who failed to pay their debts – an early example of a credit check.

1807
THE FIRST INSTALMENT PLAN
Cowperthwaite & Sons, a New York City furniture store, allows customers to pay for furniture in instalments.

1865
CHARGE COINS
These metal or celluloid tokens are issued by department stores, allowing customers to purchase goods on credit. Over time, they are also used by hotels, petrol stations, hardware and shoe stores.

1919
BRINGING CARS TO THE MASSES
General Motors offers customers loans to buy a new car, asking for a 35 per cent deposit followed by monthly instalments. By 1930, two-thirds of all cars are bought this way.

1920s
BUY NOW, PAY LATER!
Instalment plans become all the rage, with customers using them to buy sewing machines, radios, refrigerators, phonographs, washing machines, vacuum cleaners and many other consumer goods.

1935
CHARGA-PLATES
Charga-plates are an early version of a department store credit card: small metal rectangles embossed with the customer's name and address, issued by department stores to their regular customers, allowing them to buy goods on credit.

1946
CHARG-IT
John Biggins of the Flatbush National Bank of Brooklyn is the first banker to issue a credit card, but it is only valid at shops within a two-block radius of his bank.

1949
DINERS CLUB CARD
Frank McNamara is dining out in New York when he realises he's left his wallet at home. This gives him the idea for the Diners Club Card, the first popular credit card.

1958
CREDIT CARDS TAKE OFF
The American Express and BankAmericard (now Visa) credit cards are launched. By the early 1960s credit cards have become hugely popular in the United States.

1960
MAGNETIC STRIPE
IBM engineer Forrest Parry invents the magnetic stripe used on credit cards to store data such as the account number, name, expiration date and verification code.

CREDIT CARDS

The consumer credit boom, which began in the nineteenth century, really took off in the 1920s with the rise of the instalment plan, and took on rocket boosters in the 1960s with the arrival of credit cards. By 1970, around 16 per cent of American families owned a credit card. By 2021, 70 per cent of all Americans carried at least one credit card, with 34 per cent owning three or more. There were an estimated 2.8 billion credit cards in use worldwide.

REVOLVING CREDIT

From the 1920s to the 1960s, the dominant kind of consumer credit was the instalment plan – paying off a loan in regular instalments. Credit cards represented something new: revolving credit. The card issuer offers you a fixed line of credit – a limit on how much you can borrow each month based on your income and credit history. With revolving credit, the amount you owe varies each month, depending on how much you buy, and so does your minimum monthly repayment – usually a percentage of the total balance on your account. The card provider charges interest until the borrowed money is paid back.

THE DUAL-PARTY CARD

Credit cards, pioneered by Diners Club, were a great financial innovation known as the dual-party card. For the first time, the card issuer wasn't actually providing the goods or services being purchased. Diners Club didn't provide any food or catering, it simply signed up hotels and restaurants to participate in its credit card plan. Then it issued cards to people willing to pay a yearly fee for the convenience of being able to pay with a card, rather than a cheque or cash.

THE BANK CARD

The next stage in the dual-party card revolution was the bank card. While Diners Club specialised in restaurants and hotels, the bank card was a general-purpose credit card that consumers could use to pay for almost anything. When these launched in the 1950s, they faced a problem: why should big retailers with established store credit cards participate in bank card programmes? By the 1960s, retailers realised that general-purpose credit cards made things more convenient for their customers, so they began to accept them.

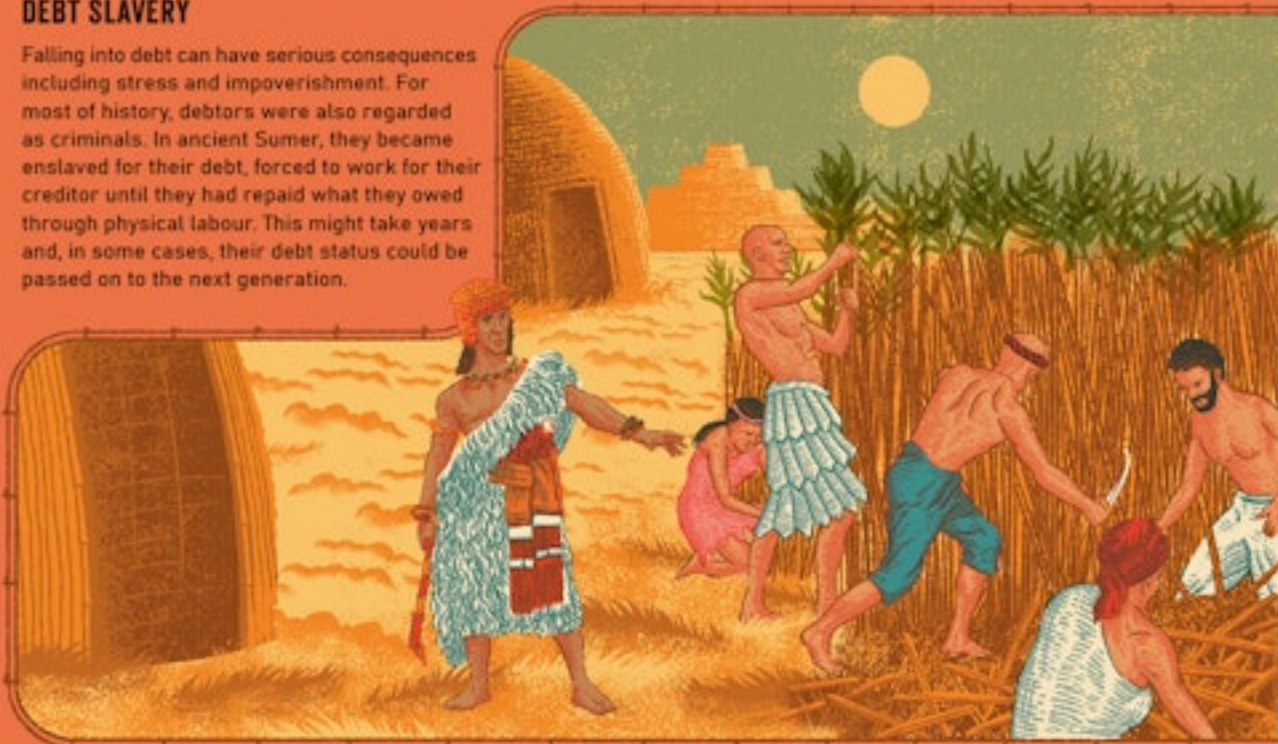
0000 0000 0000 0000

DEBT

For many, the rise of consumer credit has been a huge benefit. It's a convenient way of paying for things, and allows people to enjoy goods and services when they want them rather than having to wait until they've saved up enough money. However, there is a dark side to consumer credit, and that is, of course, consumer debt. Producers of goods and services use clever marketing to persuade people to buy their products, tempting those who cannot afford them. As a result, there are many who can't keep up their loan repayments or their credit card bills, and fall into debt.

DEBT SLAVERY

Falling into debt can have serious consequences including stress and impoverishment. For most of history, debtors were also regarded as criminals. In ancient Sumer, they became enslaved for their debt, forced to work for their creditor until they had repaid what they owed through physical labour. This might take years and, in some cases, their debt status could be passed on to the next generation.



DEBT BONDAGE

During the early Roman Republic (509–326 BCE), a borrower would often pledge themself as collateral for a loan. If the borrower defaulted (failed to repay), they could become a nexus or debt bondsman. This was a legal contract under which they would be obliged to work off their debt through physical labour. Although the bondsman technically remained a free citizen, not enslaved, they were often subjected to beatings and other abuses by their creditor.

BAILIFFS

In medieval Europe, bailiffs were appointed by the court to enter a debtor's home and seize goods to the value of their debt before handing them over to the creditor. The system was often corrupt, and bailiffs would seize far more than needed to pay off what was owed, keeping the extra for themselves.

Debt collection in medieval Europe was often a legal form of robbery

People in debtors' prison often had no other means of support than the charity of passersby

DEBTORS' PRISON

From the 1300s to 1800s, debtors could end up in prison until they or their families repaid their debt. Prisons were government-owned but run for private profit. Wardens could be cruel, and the prisons were often overcrowded, cold and damp. High-status prisoners had more comfortable accommodation, and some were even allowed out during the day. Imprisonment for debt ended in Britain in 1869. Today, some debtors still go to prison, but only when they have, for example, defrauded their creditors of large amounts of money.

WHAT IS THE ECONOMY?

We've talked about how money has been used by people and businesses as a means of buying and selling things. It's time to take a step back and look at the entire system within which money works – the economy. We live in a world of limited resources. There are limited amounts of workers, land and raw materials, while the demand for them is potentially infinite. The economy is the system we use for distributing those limited resources by means of production, consumption and trade, all facilitated by money. There are two main kinds of economy: the market economy and the command economy.

THE MARKET ECONOMY

In a market economy, producers decide what is produced and sold and what prices to charge. If they want to succeed, they will produce what consumers want and charge what consumers are willing to pay. Each individual producer is simply trying to make a profit and stay ahead of their competitors, but collectively this can lead to widespread benefits: market economies tend to be efficient at allocating resources; they encourage innovation; they produce wealth and jobs; and they offer consumers a wide choice of products. The market economy model has been successful, although there are not many pure market economies.

THE COMMAND ECONOMY

In command economies, the government decides what is produced and how much it is sold for. Under command economies, the government decides who works where and what their wages will be. This can ensure low levels of inequality and jobs for all. Yet the absence of competition leads to inefficient allocation of resources, low-quality products and a lack of innovation. There are very few command economies in the world – North Korea and Cuba are among the last remaining examples. It has not proved a successful economic system.

MIXED ECONOMIES

Most countries have a mixed economy, which means that they operate a market economy, but one constrained by government regulations, for example to protect workers' rights and the environment. Often the government will own and run vital sectors of the economy such as the railway and energy distribution networks.

TAXES

We can see money clearly in our daily lives, for example when we go shopping or lend some cash to a friend, but money also moves around invisibly in the background, keeping our society functioning. We all benefit from public services like law and order, healthcare, education, welfare benefits and waste collection. These things cost money. We pay the government to provide these services for us through our taxes.

PURPOSES OF TAXATION

The most important function of taxation is to pay for public services, but it can also serve other purposes. Rulers have sometimes taxed their populations to enrich themselves, pay for wars of aggression or build monuments to celebrate their achievements. In more recent times, governments have taxed products such as alcohol and tobacco, not only to raise money but to discourage their consumption. Governments may also use the tax system to reduce inequality (see pages 54-55) by taxing the wealthy at a higher rate.

STRIKING A BALANCE

It is a balancing act to tax people at a rate that maximises government revenue.

If taxes are too high, people will have no incentive to work hard and may even decide to move abroad or put their wealth in a place where taxes are lower (a tax haven). Either way, tax revenues will go down.

If the government taxes people and businesses too little, it won't be able to pay for decent public services.

TYPES OF TAX

Governments have found many ways of taxing their populations. They may tax people's earnings (income tax), business profits (corporate tax) or the sale of goods and services (VAT). Here are some of history's weirder taxes...

1696
WINDOW TAX

In England in 1662 a chimney tax was introduced but it proved hard to collect as it entailed entering people's properties. The window tax seemed an improvement as windows were easy to count, but the tax proved highly unpopular. People began bricking up their windows to avoid paying it. They called it a tax on fresh air, and it gave rise to the phrase 'daylight robbery'.

60 CE
URINE TAX

In ancient Rome, human urine was a useful product, used for leather tanning, washing clothes and even brushing teeth. Emperor Nero began taxing its purchase. This led to a popular Latin phrase, *Pecunia non olet* ('money does not stink').

1100
COWARDICE TAX

English medieval knights could opt out of fighting a war by paying a tax to the king. Its official name was scutage, but many people called it the 'cowardice tax'.

1535
BEARD TAX

King Henry VIII of England introduced a tax on beards – although the bearded monarch exempted himself from paying it. Wearing a beard soon became a status symbol as it proved one was rich enough to afford to pay the tax. Peter the Great of Russia introduced a similar tax in 1724, hoping to persuade Russian men to adopt a more smooth-faced appearance as was the trend in Western Europe.

1784
HAT TAX

Hats were expensive in eighteenth-century England, and owning several was a clear sign of wealth and therefore something worth taxing. The tax was imposed on both sellers and buyers. Several hat makers tried to rename their creations to avoid paying it, so in 1804 the tax was widened to include 'any headgear'.

FINANCIAL MARKETS

At regular markets people buy and sell things like food and clothing. At financial markets, people trade money-related assets. These include stocks and bonds. Stocks are shares in a company that the company sells to raise capital. Shareholders are paid dividends (regular sums paid out of the company's profits). Bonds are certificates issued by a government or corporation, promising to repay borrowed money at a fixed rate of interest. Financial markets can be physical places, like the New York Stock Exchange, or they can take place online.

THE FIRST BONDS

In the twelfth century, the government of Venice came up with a new way of raising money to fight a war. It offered its citizens certificates, known as prestiti, in exchange for a loan, promising to pay them back by a certain time, plus 5 per cent interest. These were the first government bonds. Before long they became a popular investment, and a market developed for the buying and selling of prestiti.

THE FIRST STOCKS

Founded in 1602, the Dutch East India Company was the first company to sell shares in its business to the public. The money it raised from this funded its voyages to the East Indies, and it paid its shareholders out of the profits from its trade in enslaved people and spices. The shares were traded in the Amsterdam Stock Exchange, also established that year.

THE DAILY NEWS

OCTOBER 1929 — NEW YORK CITY

THE WALL STREET CRASH

FINANCIAL MARKETS CAN BE VOLATILE. A RUMOUR OR A MINOR PIECE OF ECONOMIC NEWS CAN CAUSE BIG SWINGS IN PRICES. THE DESIRE TO MAKE MONEY OR AVOID LOSING IT IS A POWERFUL ONE, AND A HERD INSTINCT CAN SOMETIMES TAKE OVER WITH PEOPLE STAMPEDING TO BUY OR SELL. THE MOST SPECTACULAR EXAMPLE OF THIS WAS THE WALL STREET CRASH OF 1929.

THE ROARING TWENTIES

The 1920s was boom time in the United States. There was a spirit of optimism in the country and it became fashionable to play the stock market. Share prices soon rocketed to a point where they represented a value far greater than the total worth of their companies' assets. This was now a 'mania' – a period when everyone, from wealthy financiers to common investors, lost touch with reality and seemed to believe that prices could keep rising forever.

DISASTER

The crash occurred at the end of October 1929, during three calamitous days of trading at the New York Stock Exchange on Wall Street, when huge numbers of people decided collectively it was time to sell. With so many sellers, there were few buyers, and share prices plummeted. In those three days, billions of dollars were wiped off the value of American companies. And over the following years the market kept on falling. By 1932, stocks had lost nearly 90 per cent of their pre-crash value.

AFTER EFFECTS

As a result of the crash, businesses were bankrupted, banks closed, millions lost their jobs and the world plunged into a deep and lasting economic depression. This had a big political impact. In Europe, extreme right-wing parties exploited the misery of mass unemployment, blaming 'foreigners' such as Jews. Germany's Nazi Party rose to power in 1933. The consequences for the world would be devastating.

A cleaner sweeps the floor of the New York Stock Exchange following the Wall Street Crash of 1929

RICH AND POOR

We all need money, but some of us have more of it than others. This has always been the case. The most equal societies in history were and are hunter-gatherer communities, who obtain their food through foraging rather than farming. They tend to share what they have. Once humans began farming around 10,000 years ago, they were able to amass wealth and property and pass it on to their offspring. This was the beginning of inequality.

THE HISTORY OF INEQUALITY

Inequality – the difference in wealth between the richest and poorest in society – has varied throughout history. It reached a peak during the Middle Ages, with a handful of families owning up to a quarter of the land in England. Inequality declined steeply after the Black Death pandemic in 1347–1351. So many died, there was a labour shortage, so landowners had to pay workers more. Inequality reached another peak in Britain in 1900–1910, when 94 per cent of the country's wealth was in the hands of the richest 10 per cent. That declined steeply during the twentieth century, and by 1990 the richest 10 per cent held 48 per cent of the wealth. Since then inequality has begun slowly rising again.

CAUSES OF INEQUALITY

There are many reasons for wealth inequality. Some people have innate abilities that help them to acquire wealth. Some types of jobs will pay less than others, even when they are equally important or skilled positions. Geography can be a factor – some places have fewer work opportunities than others. Education is very important – the better your schooling or opportunities for apprenticeships, the more likely you are to earn a good salary. There are other factors, too. Women, ethnic minorities, disabled people, people who have a neurodivergence and older people sometimes find themselves at a disadvantage in the jobs market.

WEALTH CONCENTRATION

One of the biggest reasons for inequality is the way that wealth tends to get concentrated in the hands of the already wealthy. If you have lots of money, you can invest it in new sources of wealth creation. You could buy a property and rent it out, or decide to train for a new qualification. Economically disadvantaged people have none of these opportunities. The rich can pass on their possessions to their children and give them the benefit of a good education, so wealth concentration tends to continue down the generations.

WHAT'S WRONG WITH WEALTH INEQUALITY?

So long as the poorest in society have a reasonable quality of life, does it matter that there is a big difference in their wealth compared to the richest? Some argue that the richer people get, the more they will buy and the more businesses they will start, creating jobs and wealth for everyone. This theory is known as 'trickle-down economics'. Others point out that the wealthy do not always spend their money in the country where it is earned, but put it in tax havens. They also argue that wealth inequality reduces community spirit and increases social unrest, weakening society.

MONEY BACKED BY GOLD

Gold has been used since around 600 BCE as commodity money (see page 8). Because it is so rare and highly valued, gold coins were not often used in day-to-day transactions. Silver and copper coins were far more common. With the arrival of banknotes and representative money (see pages 24-27), governments began pegging their currencies to precious metal, making a unit of the currency convertible to the metal at a set rate. The first metal they pegged it to was silver. Later, the world switched to gold.

GOLDEN YEARS

When a country adopted the gold standard, its currency became convertible to gold and its banknotes could be exchanged for unit weights of gold at a fixed rate. For example, in the UK, one troy ounce of gold (31.1035 grams) was worth £4.25. The amount of money in circulation now had to be matched by the amount of gold in its central bank's reserves. This limited a government's ability to print money.

ADVANTAGES

The gold standard has some important advantages. By limiting the ability of governments to print more money, it keeps prices stable and prevents hyperinflation (see pages 62–65). Prices in the UK were much the same in 1914 as they were in 1880. The gold standard can also create certainty in international trade by providing a fixed pattern of exchange rates. Governments are unable to deliberately devalue their currencies to make their exports more competitive.

DISADVANTAGES

The gold standard gives an unfair economic advantage to nations that produce gold. New gold discoveries or sudden rises in gold production can lead to a growth in the money supply, and ultimately price inflation. The gold standard may act as a brake on economic growth because it limits the amount of money in circulation. Changes in the world's money supply are linked to the amount of gold that has been mined, rather than to the world's economic needs. It prevents governments from temporarily increasing the money supply to stimulate the economy or to offer humanitarian aid during national emergencies.

AN INTERNATIONAL SYSTEM

In the 1870s, the gold standard was formally adopted by the United States, France and Germany. Many other countries quickly followed suit. Under this new international system, almost all the world's major countries pegged their currency to the value of gold. Because each currency was linked to gold, they were also linked to each other, creating a seemingly stable system.

THE COST OF WAR

Gold's reign lasted barely 40 years. It ended with the outbreak of World War I in 1914. Suddenly, governments needed to print money to finance their huge military spending. The amount of gold in their reserves could not keep pace with the increase in money, so they had to drop out of the gold standard. After the war, efforts were made to curb the inflation caused by all the money printing (see page 22) and restore the pre-war international system. By 1927, many countries had returned to the gold standard, though not for long. They had to abandon it again when the Great Depression struck in the 1930s (see page 39).

BRETTON WOODS

After World War II, the victorious nations met at Bretton Woods in New Hampshire, United States, and agreed to adopt a new kind of gold standard. This time, the US dollar would be fixed to gold at the price of $35 an ounce, and all other currencies would be fixed to the dollar, maintaining their value to within plus or minus 1 per cent. The system worked reasonably well until the 1960s when the French government began exchanging its dollar reserves for gold, depleting US gold reserves. At the same time, the United States was suffering severe financial strain from waging the Vietnam War.

THE NIXON SHOCK

On 15 August 1971, US President Richard Nixon ended the international convertibility of the US dollar to gold. This was meant to be a temporary measure until the dollar's exchange rate with gold could be revalued, but gold convertibility was never reestablished. The United States and the world abandoned the gold standard. Currencies became free-floating, with their values determined by the market and backed only by the authority of their governments. The era of fiat money (see page 8) had begun.

THE FOREIGN EXCHANGE MARKET

During the periods of the gold standard, the world's currencies were fixed to each other with only minor changes possible in comparison to each other. There was therefore little profit to be made from exchanging British pounds for US dollars in the hope that the dollar might rise in value. That changed in 1971 with the abandonment of the gold standard. Suddenly, currencies were allowed to float freely, their values rising and falling as the markets dictated. This led to a huge surge in currency trading, also known as the forex (foreign exchange) market.

THE MONEYCHANGERS

Currency trading goes back to ancient times when moneychangers would help merchants exchange their coins for the local currency, taking a fee for the service. In the fifteenth century, the Medici bank of Florence opened branches in foreign locations where merchants could exchange money. The first forex market opened in Amsterdam in the seventeenth century, where traders from England and Holland could buy and sell currencies. In the 1850s, a US firm called Alexander Brown & Sons became a leading currency trader.

THE WORLD'S BIGGEST MARKET

A huge expansion in the forex market occurred in the early 1980s, around ten years after the abandonment of the gold standard. Today it is the biggest financial market in the world with an average daily turnover (the amount of currency traded) of US$4–5 trillion. It is a truly global market, running 24 hours a day and closing only on weekends. Whenever we change money to go on holiday abroad, the exchange rates we encounter are the net result of millions of transactions by forex traders around the world.

PAIRED PRICES

Currencies are traded in pairs, for example, US dollars for Japanese yen, or euros for British pounds. Currencies go up and down depending on many factors, including the economic situation of the countries involved, their political stability and the policies of their governments. Prices are quoted up to four decimal points – minute shifts in currency values can mean big profits or losses for traders if they are buying or selling in large volumes.

SPOT, FORWARD AND FUTURES MARKETS

There are three main forex markets. The spot market is when buyers and sellers exchange currencies on the spot. With the forward market, the buyer and seller agree to exchange currencies at an agreed price at a set date in the future, both believing the currency they will buy is going to go up in price relative to the currency they are selling. The futures market is similar to the forward market, except it is regulated (bound by rules) and happens on an exchange, such as the Chicago Mercantile Exchange.

WHEN MONEY STOPS WORKING

As we said at the start, money is like a magic trick that works because we all believe in it. But what happens if we all collectively stop believing in the illusion? The result is hyperinflation. Hyperinflation is a rapid fall in the purchasing power of a currency, causing prices to go up every day, sometimes every hour. Hyperinflation is pretty rare in developed economies, but it can be very scary for people living through it.

INFLATION VERSUS HYPERINFLATION

A healthy inflation rate is around 2 per cent, meaning that prices rise by 2 per cent a year. Sometimes, this can go up quite steeply. The UK suffered a 25 per cent inflation rate during World War I, for example. But hyperinflation is on a different scale. When prices rise by more than 600 per cent a year, a currency is said to be suffering from hyperinflation. In such a situation, prices are rising at an uncontrollable rate, and the government can do very little about it.

TOO MUCH MONEY

Hyperinflation often starts with money printing. During an economic recession, a government may increase the money supply to encourage banks to lend and consumers and businesses to borrow and spend. But if the increase in the money supply is not matched by economic growth, the result is a lot of money in circulation but not enough products to buy. There is a spike in demand, and so producers put up prices. People demand higher wages to pay the higher prices, feeding a cycle of inflation. If the recession continues, and the government keeps printing money, it may lead to hyperinflation.

NEW CURRENCIES

Governments must take drastic measures to stop hyperinflation. Passing laws to prevent price rises won't work. Retailers will resort to hoarding produce rather than selling it at a loss, leading to food shortages and sometimes starvation. One option is to peg the currency to a more stable currency or to gold. Some countries have even abandoned their currency and adopted another currency such as the US dollar.

HUNGARY

Hungary suffered a severe recession after World War II, when many of its factories were bombed. The government resorted to money printing. As a result, between the end of 1945 and July 1946, the Hungarian currency, the pengo, suffered the worst hyperinflation in history. At its peak, the monthly inflation rate was 41.9 quadrillion per cent (a quadrillion has 15 zeros), with prices doubling every 15.3 hours. At one stage, the government printed the largest denomination banknote ever: a 100 quintillion (18 zeros) pengo.

YUGOSLAVIA

The former country of Yugoslavia experienced hyperinflation for 24 months between 1992 and 1994. It peaked in January 1994 with a monthly inflation rate of 313 million per cent. People couldn't afford to buy food and depended on charity handouts or on relatives who lived in the countryside. For long periods, the country's petrol stations remained closed. People traded huge piles of their near-worthless Yugoslav dinar for a single German mark or US dollar.

ZIMBABWE

Hyperinflation struck Zimbabwe between 2007 and 2009. At its peak in 2008, monthly inflation ran at 79.6 billion per cent. It got so bad, nurses and teachers couldn't afford the bus fare to get to work. In April 2009, Zimbabwe abandoned its currency in favour of foreign currencies, especially the US dollar. In 2019, the government reintroduced the Zimbabwe dollar, and inflation – though not hyperinflation – soon returned. By July 2022, the annual inflation rate stood at 285 per cent.

HYPERINFLATION IN GERMANY

One of the most famous episodes of hyperinflation occurred in Germany in 1923. At its height, a loaf of bread cost 200 billion marks. People went shopping with wheelbarrows piled high with money. A woman sold her house before hyperinflation struck, hoping to live off the money. Soon it wasn't enough to buy her a loaf of bread. By November 1923, one US dollar was worth four trillion marks. It cost more to print a note than the note was worth.

ROCKETING PRICES

During the autumn of 1923, prices rose faster than people could cope with. One man who ordered a coffee found its price had doubled by the time it arrived at his table. Workers were often paid twice in a day because prices rose so fast their wages were practically worthless by lunchtime. Worst hit were people on fixed incomes like students and pensioners, or anyone living off savings.

THE COST OF WAR

After World War I, Germany was left with huge debts as well as reparations to be paid to the victorious allies. The German government resorted to printing lots of its own currency, the Reichsmark. The increase in the money supply caused a sharp rise in prices. Realising their money was losing value, people attempted to spend it quickly, causing a further spike in inflation.

WORTHLESS PAPER

Children played with wads of the useless Reichsmarks, constructing towers with them. Their parents used them to light stoves, line cake tins, and even for wallpaper. One woman dragged a suitcase of banknotes to her local grocery store. When she left it outside briefly, someone stole the suitcase but emptied the money onto the street.

THE RENTENMARK

Hyperinflation added to a growing political crisis in Germany. In early November, a small Fascist party called the Nazis, led by a young Adolf Hitler, tried and failed to overthrow the government. On 16 November 1923, the German government introduced a new national currency, the Rentenmark, pegged to the value of gold. One Rentenmark was valued at a billion Reichsmarks. Twelve zeros were cut from the prices in the shops. Eager to escape the nightmare of hyperinflation, people embraced the Rentenmark, and prices stabilised.

FROM COUNTERFEIT COINS TO FALSE NOTES

For as long as money has existed, people have tried to forge it for profit. Producing counterfeit (fake copies of) notes or coins is, of course, illegal, and it can cause all sorts of problems, not only for the person receiving it. If there is enough counterfeit money in circulation, it can reduce the value of real money, causing inflation (see pages 22–23). When people can no longer be sure if the cash in their pockets is genuine, it can cause them to lose trust in a currency.

FIRST FORGERS

Early forgers would steal precious metal from coins and mix it with base metal to make new coins. Many of these counterfeit coins, known as fourrées, would have a base metal core and a thin surface of precious metal to fool the recipient. The precious metal might be obtained by clipping or sweating real coins (see page 21).

Today, counterfeiters focus on forging banknotes. They will scan a genuine note at a very high resolution, then print it on a good quality printer. It will lack the security features of modern notes (see pages 68–69), but may still fool the casual eye. The unique paper used for US dollar bills is not available to buy commercially (see page 69), so some counterfeiters will bleach the ink off lower value $1 and $5 bills and reuse the paper to print $100 bills.

Counterfeiting has been used as a weapon of war to undermine the enemy. During the American Revolutionary War, British forgers, known as shovers, put fake dollars into circulation to decrease the value of the US currency. During World War II, the Nazis attempted a similar strategy, forcing Jewish artists to forge British pounds and US dollars.

FOILING THE FORGERS

Counterfeiting is a serious crime because it can undermine money itself, the lifeblood of the economy. In the European Middle Ages, forgers faced extreme punishments, some being hanged, drawn and quartered, or burned alive. In colonial-era America, banknotes carried the warning, 'to counterfeit is death'. Despite this, counterfeiting persisted. Since the late twentieth century, advances in computer and printing technology have made banknote forgery much easier, so anti-counterfeiting measures have had to become even more sophisticated.

RAISED PRINT

On many banknotes, certain words or images are embossed (slightly raised from the note's surface), and therefore identifiable by touch. As well as being a security feature, raised print can help people with sight loss.

COLOUR-SHIFTING INK

Colour-shifting ink displays two different colours depending on the angle the banknote is viewed at. This is used on US, Canadian and Australian dollar bills.

WATERMARK

A watermark is an image or pattern within paper that can be viewed when it is held up to the light. Watermarks often appear on banknotes to discourage counterfeiting.

MICROPRINTING

Microprinting involves printing patterns or characters that can only be read by a magnifying glass or microscope. To the naked eye it looks like a solid line. The entire lyrics of the Singapore national anthem are microprinted on the back of the Singapore dollar.

SECURITY THREAD

A security thread is a thin ribbon threaded through the banknote's paper, so that it appears in different places on both sides of the paper. It is made of metal foil or sometimes plastic and often has some text or numbers engraved on it.

PAPER OR POLYMER

Banknotes are often printed on special paper not available to the general public. The paper of US dollar bills is ¼ linen and ¾ cotton and contains blue and red security fibres. The banknotes of some currencies, such as the British pound, are printed on polymer, which is manufactured using a special process that is hard to counterfeit.

HOLOGRAM

Holograms (three-dimensional images) have been used as security features on banknotes since 1998 and currently feature on the notes of 97 currencies. The images vary when viewed at different angles, just like a 3D object would.

MONEY TURNS INVISIBLE

Since the late twentieth century, cash has started disappearing from our wallets. Today, we can present a card or a phone to a scanner at a shop or on the bus, and money is automatically deducted from our bank account. Every hour of every day, money is constantly moving around the world from one bank account to another, unseen by any of us but doing its job all the same. Money always did seem like a magic trick – an illusion that only works if we all believe in it. Now it is performing the ultimate trick and vanishing altogether.

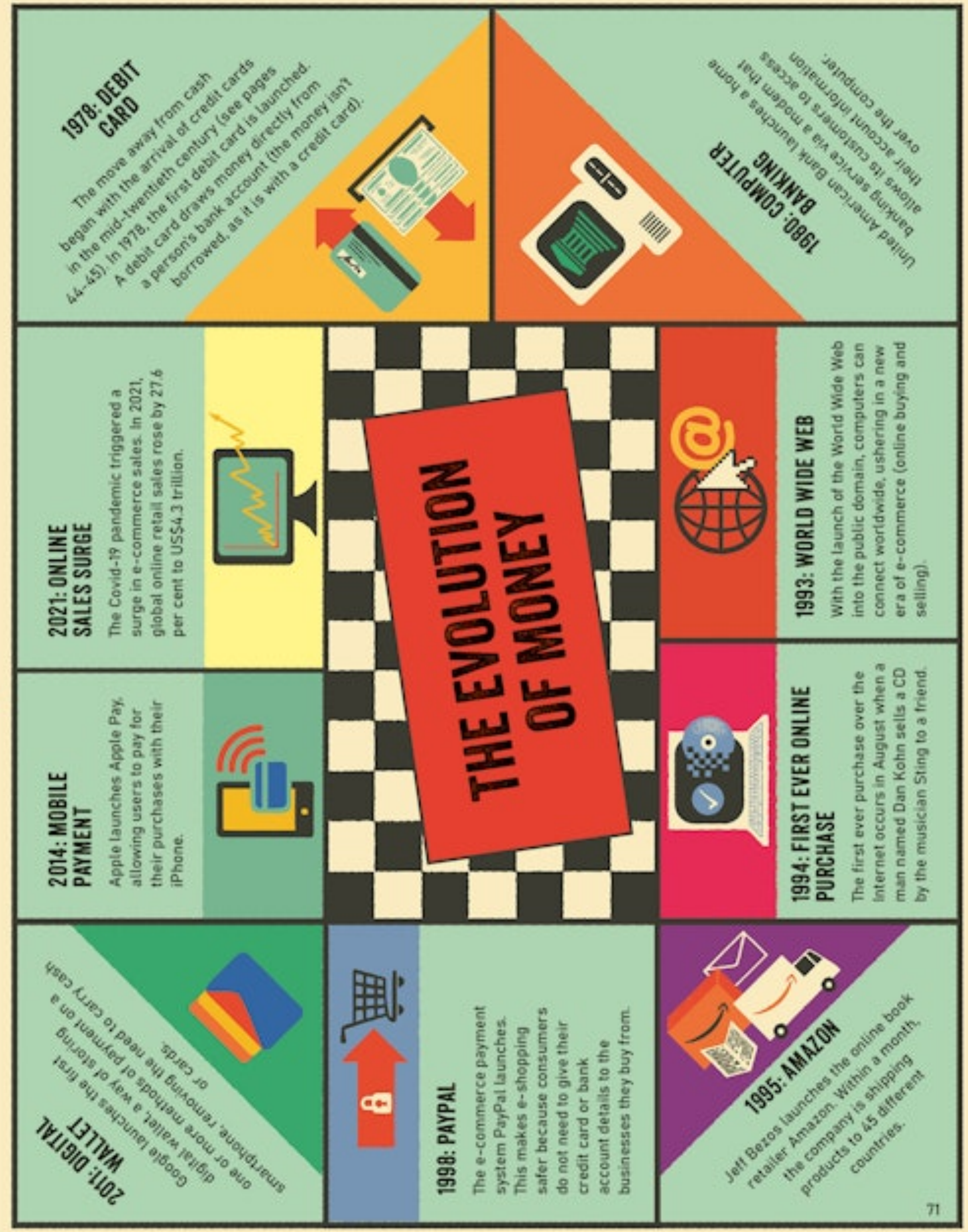
GOODBYE, BANKNOTES

Money has been disappearing for a very long time. Banknotes, after all, began as receipts for gold deposited in a bank – they represented money but weren't money themselves. Banknotes were invented for convenience, being easier to move around than gold. Yet banknotes are still physical objects, and today that has made them just as inconvenient to carry around as gold once was. It's easier these days to carry no money at all, but to send and receive it electronically at the click of a button. It's also safer: password-protected bank accounts are harder for thieves to access than a wallet full of cash.

WHY WE STILL NEED CASH

Even as electronic money becomes the norm, cash still plays an important role in society.

- It is the only form of payment that's possible without access to the Internet or electricity. You can use it if the power is down or if you lose your card.
- It is legal tender: shops and restaurants cannot refuse it.
- Guarantees our right to privacy: electronic payments can be tracked by businesses and governments; a cash transaction is private.
- Allows people without bank accounts, such as children, older people and lower-income groups, to pay for things and save money.



SCRIP

When we think of money, we mostly think of currencies like euros, pounds and dollars, but other kinds of money exist. These are not issued by a central bank, they are not legal tender and their usage is limited. Even so, they are regularly exchanged for real goods and services, just like normal money. The general term for these kinds of currency is 'scrip'. Common examples include gift cards and vouchers. Recently, two new kinds of scrip have emerged: complementary and virtual currencies.

COMPANY SCRIP

Historically, scrip was paid to employees as an alternative to cash, usually for exploitative reasons. During the nineteenth century, workers at mining or logging camps in the United States were often paid in company scrip rather than cash, so they were forced to shop in the company-owned store at which prices were often set artificially high.

COMPLEMENTARY CURRENCIES

Complementary currencies are rising in popularity. There are around 300 such currencies in use today. There are many benefits to these forms of currency, including boosting local communities, helping the environment and encouraging good behaviour.

Local complementary currencies have been introduced to boost commerce within a city or region. Examples include BerkShares (Berkshire, Massachusetts, United States), the Brixton Pound (Brixton, London, UK), the Eko (Findhorn, Scotland, UK) and the Chiemgauer (Bavaria, Germany). Local businesses and traders accept these currencies to encourage residents to shop locally.

The European Union issues carbon credits to companies to encourage them to reduce their carbon emissions. Companies must purchase credits to emit carbon legally, and they can earn credits by reducing their emissions. They can sell these credits to other companies.

The Fureai Kippu ('ticket for a caring relationship') is a complementary currency in Japan. People can earn units of the currency for every hour they spend helping an elderly person. This builds up credit in their account, which can be redeemed when they are in need of care themselves, or they can pass it on to someone else who needs help.

WHAT IS A VIRTUAL CURRENCY?

Virtual currencies developed in the early twenty-first century. A virtual currency is one that is only available electronically and has no physical form, such as notes or coins. It is stored and spent purely through mobile and computer applications. Virtual currencies aren't issued by governments or central banks, but by private businesses.

COUPONS

Businesses used to offer printed coupons offering discounts as a way of encouraging customer loyalty. Today, these come in the form of virtual currencies. Popular examples include airlines' frequent flyer miles, supermarket loyalty programmes and credit card reward schemes. These can be redeemed for certain products or discounts but not for cash. They are usually time-limited and subject to restrictions on the range of products eligible.

FICTIONAL CURRENCIES

Virtual currencies are often used within online games, such as World of Warcraft®. These fictional currencies have no connection to the real economy and cannot be spent outside the game. There may be an unofficial market for exchanging such currencies for real money, but this is usually banned by the game's manufacturers.

CRYPTOCURRENCIES

Cryptocurrencies are a type of virtual currency (see page 73). They exist only in digital form and are not backed by a government, bank or central authority. Instead, the system is regulated by the users themselves, thanks to the transparent way they send and receive payments. These transactions are recorded in a public ledger (a collection of financial records) called a blockchain. They are called cryptocurrencies because they use encryption (secret codes) to make transactions safe and secure.

BITCOIN

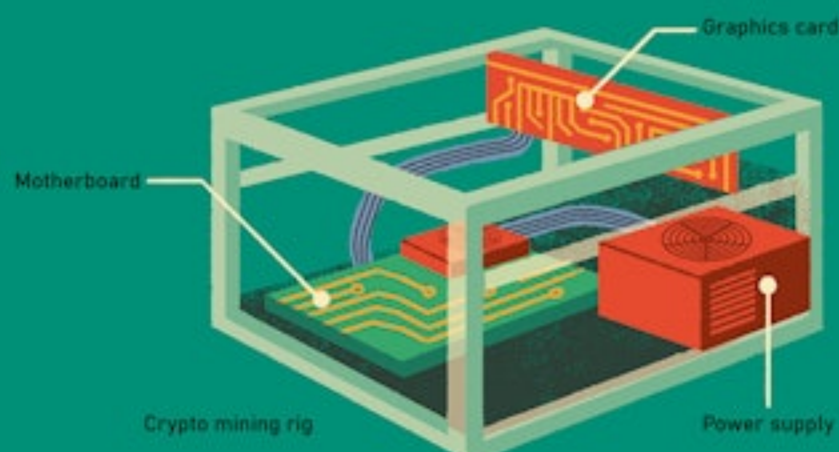
The first ever cryptocurrency was bitcoin, created in 2009. It was created by a person or group using the pseudonym Satoshi Nakamoto. The idea was to create a currency that users themselves control collectively, rather than a central bank or authority. Bitcoin remains the most popular and valuable cryptocurrency. It was originally designed as a medium of exchange, but there are not many places where cryptocurrencies are accepted as money, and bitcoin is mainly regarded today as a store of value.

VOLATILE VALUE

The value of bitcoin has fluctuated wildly over the course of its history. In October 2010, a bitcoin could be bought for around US$0.10. In November 2021, the price reached a peak of more than US$68,000. By the following October 2022, it had fallen to around US$20,000. Speculators (people trading to make quick profits) have at times driven cryptocurrency values up and down.

SCARCE RESOURCE

The value of cryptocurrencies is based on their scarcity – only a certain amount will ever be mined and put into circulation. Bitcoins are getting steadily harder to find and require more computer power to mine. It is estimated that the last one will be mined in 2040.



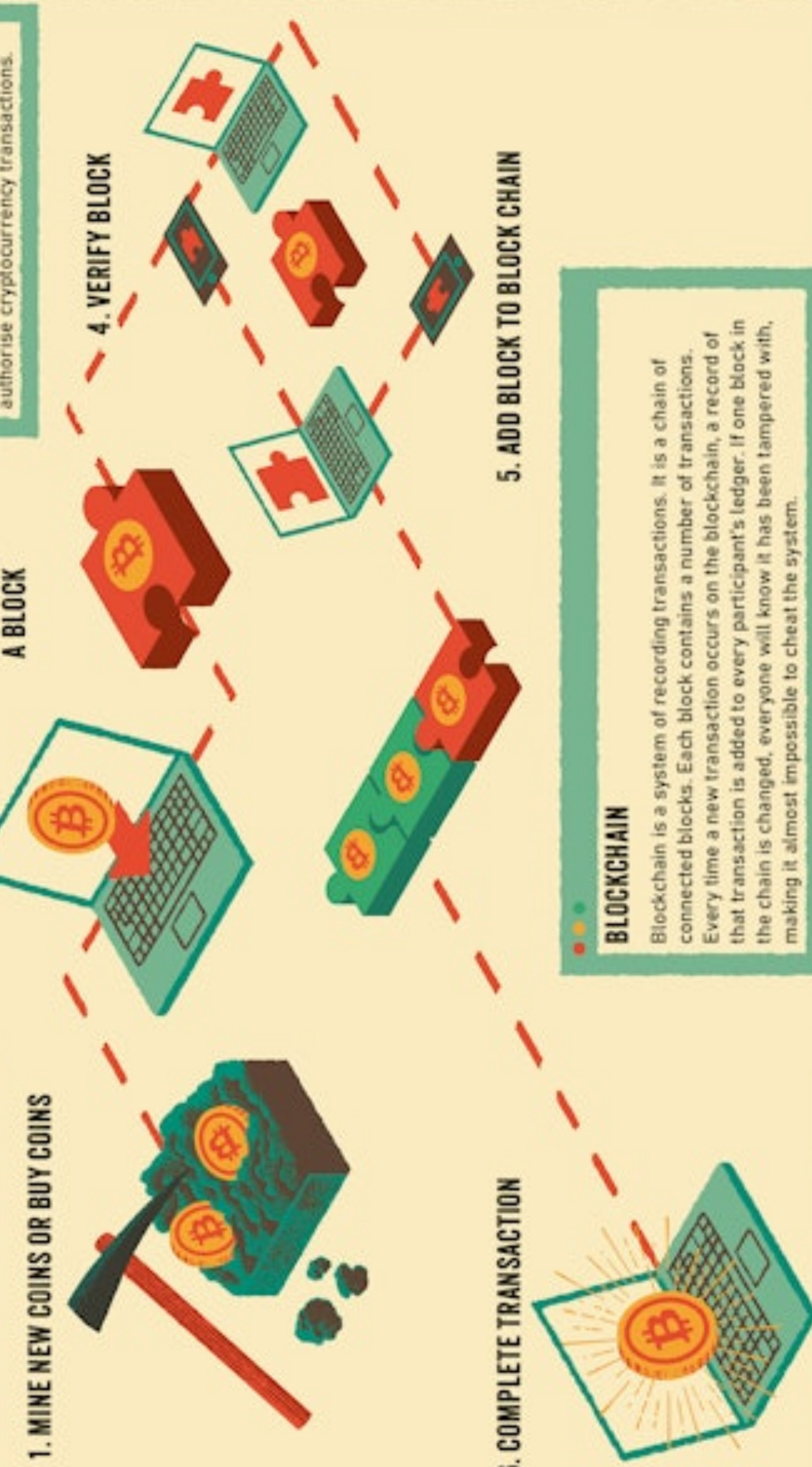
HOW CRYPTOCURRENCIES WORK

MINING OR BUYING COINS

Units of cryptocurrency, called coins, are created through a process known as mining. This involves using computers to solve complex mathematical problems, which generates coins. Cryptocurrency coins can also be purchased from brokers or cryptocurrency exchanges.

DIGITAL WALLET

Holders of cryptocurrency store their coins in a digital wallet. The wallet is not a physical object – it is an application on a computer that stores the keys that give them access to their coins. Wallets contain a public key (the wallet's address) and private keys, known only to the owner, that they need in order to authorise cryptocurrency transactions.



BLOCKCHAIN

Blockchain is a system of recording transactions. It is a chain of connected blocks. Each block contains a number of transactions. Every time a new transaction occurs on the blockchain, a record of that transaction is added to every participant's ledger. If one block in the chain is changed, everyone will know it has been tampered with, making it almost impossible to cheat the system.

THE FUTURE OF MONEY

Money began as a valuable commodity (such as gold), then turned into something that represented a commodity (banknotes backed by gold), and finally it became fiat money (banknotes backed by governments). Today, money is turning invisible as electronic bank transfers take the place of cash transactions. In the future, technological advances will probably lead to new virtual forms of money and credit. This could make financial transactions even easier and more efficient.

CENTRAL BANK DIGITAL CURRENCIES

Today, central banks are developing digital forms of national currencies known as CBDCs. Unlike cryptocurrencies, these will be backed by central banks and governments, so will not be as subject to wild swings in value. As CBDCs will be regulated, they won't need to use blockchain technology to verify transactions. CBDCs would be issued in units, such as dollars and cents, and be worth exactly the same as the cash units. Each unit would be uniquely identifiable to prevent counterfeiting. In some proposals, central banks would provide bank accounts for all citizens, creating a direct link between central banks and individuals.

THE RISKS

- **Spying** In the wrong hands, CBDCs have the potential to become tools of surveillance and control. With every transaction recorded, governments could see how we earn and spend our money.
- **Punishment** Governments could punish people for behaviour they disapprove of, such as attending anti-government protests, by deducting money from their bank accounts or by raising prices or interest rates
- **Controlled spending** To stimulate the economy, governments could force people to spend money rather than saving it by putting expiry dates on CBDCs.

THE BENEFITS

- **Faster and easier** Money transfers could occur directly between individuals without banks being involved, speeding up transactions and eliminating bank fees. It will also be easier to send money overseas.
- **Keeping track of money** CBDCs make it possible for central banks to keep track of every unit of currency and record transactions, helping governments combat crime, collect taxes and distribute welfare payments.
- **Access for all** Today, around 1.7 billion adults around the world don't have a bank account. By making money easier to access, CBDCs could improve financial inclusion.

FINTECH

Fintech, short for 'financial technology', is a catch-all term for the many ways that computer technology is transforming the financial services industry. Today, we can buy, sell, earn, borrow, save and invest using apps on our smartphones. Many of these are run by small start-up companies rather than major banks. In the future, the fintech industry could become a threat to these big institutions.

P2P LENDING

One example of fintech is the rise of P2P (peer-to-peer) lending websites that connect borrowers directly to lenders. People with savings can open an account on the site and deposit a sum of money to be dispersed in loans. People applying for a loan are assigned a risk category based on their credit history, which determines the interest rate they must pay. Lenders and borrowers can choose to haggle (bargain over the terms).

MONEY AND AI

Artificial intelligence (AI) will play an ever-greater role in the future of finance. AI can analyse our financial situation and spending habits, and could help us make wiser decisions about how best to spend and invest our money. AI can also be used in the fight against financial fraud by spotting suspicious credit card usage. Banks are increasingly using chatbots – AI programs designed to interact like human beings – to handle customer queries, saving on staffing costs.

GLOSSARY

auction a public sale in which goods or property are sold to the highest bidder

bank run an emergency when many customers try to withdraw their money from a bank at the same time and the bank is unable to pay them due to fractional reserve banking

bankrupt declared (by a judge in a court of law) unable to pay one's debts

bonds certificates issued by a government or corporation promising to repay borrowed money at a fixed rate of interest

capital wealth in the form of money or other assets that a person can use for investment or to start a company

central bank a national bank that provides financial and banking services for its country's government and its banking industry; central banks are in charge of issuing currency

cheque an order to a bank to pay a certain amount from the account of the person writing the cheque

collateral something pledged as security for repayment of a loan, to be forfeited (given to the creditor) if the loan is not repaid

counterfeiter someone who makes an exact copy of something valuable, such as money, to deceive others

credit the ability of a customer to obtain goods or services before payment, based on the trust that they will pay for them in the future

cryptocurrency a digital currency that is created and exchanged online, and is not issued or controlled by a government or central bank; transactions are checked and recorded by a system using cryptography (secret codes)

debasement reducing the value of commodity money by removing some of the valuable metal in its coins

denomination the face value of a banknote

depression a period of long-term economic decline

devaluation a reduction in the official value of a currency compared to other currencies

dividend regular sums paid to shareholders out of a company's profits

economy the system in which goods and services are produced and consumed and money circulates

exchange rate the value of one currency compared to another

fiat money money backed by the authority of a government rather than a valuable metal

fractional reserve banking a system in which banks keep only a small part of their customers' deposits in cash, lending the remainder to borrowers

gold standard a system in which the value of a currency is based on the value of gold and can be exchanged for gold

hyperinflation a rapid fall in the purchasing power of a currency

inflation a general increase in prices due to a fall in the purchasing power of money

insurance an arrangement in which a company promises to pay a person or business for losses caused by damage, illness or death in return for regular payments

interest money paid regularly at a particular rate for the use of money lent

karat a measure of the purity of gold, with 24 karat being pure gold

legal tender coins or banknotes that must be accepted if offered in payment of goods or services or to repay a debt

medium of exchange something given in exchange for something else – one of the functions of money

mint *noun* a place where money is made; *verb* to manufacture money

monopoly a company that has achieved complete control of a particular industry

mortgage a loan offered by a bank or building society to help someone buy a home; the home is the security for the loan

overdraft a deficit (debt) in a bank account that has been arranged by agreement between the customer and the bank

pawnbroker someone who lends money on the security of a valuable item

promissory note a signed document containing a written promise to pay a stated sum to a specified person or the bearer of the note on a specified date or on demand

recession a period of economic decline

representative money money that represents something valuable, such as silver or gold, and can be exchanged for it at a set rate

scrip a form of currency issued by a company or local authority that can be exchanged for certain goods or services, often within a set time period

shares equal parts of a company

stocks shares in a company that the company sells to raise capital

store of value something that can be stored and retrieved later without losing its value – one of the functions of money

tax haven a country or area where taxes are low; people and businesses may base themselves there to avoid paying higher rates of tax in their home countries

usury in the past this was the practice of charging interest on loans; today, it means lending money at unreasonably high rates of interest

value added tax (*abbrv.* VAT) a tax that is paid at each stage in the production of goods or services, and by the final customer

ABOUT THE AUTHOR

Alex Woolf is the author of over two hundred books, mainly for children and young adults. These include *Days That Shook the World: The Wall Street Crash* (Wayland, 2002) and *You Wouldn't Want to Live without Money* (Salariya, 2016). Alex lives in Southgate, North London, with his wife and two children.

ABOUT THE ILLUSTRATOR

Nick Taylor is an illustrator and graphic artist based in Nottinghamshire, UK. His background in printmaking constantly informs the image-making process, and his inspirations include vintage Penguin book covers, 70s science fiction films, old issues of *Graphis* magazine, discovering unheard vinyl treasures, the mysteries of the cosmos and his small but thoughtfully curated stamp collection.

ALSO AVAILABLE

MEDICINE

A MAGNIFICENTLY ILLUSTRATED HISTORY