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John Authers, author of *The Fearful Rise of Markets: A Short View of Global Bubbles and Synchronised Meltdowns*

“*More* is a glorious sweep through economic history. Open any page and Philip Coggan gives us new insights on the global economic system. His new book is an undiluted pleasure.”

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PRAISE FOR *PAPER PROMISES*, ALSO BY PHILIP COGGAN

“[An] illuminating account of the financial crisis ... convey[s] deep insights without a trace of jargon.”

John Gray, *New Statesman*

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Tim Harford, author of *The Undercover Economist*

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David Stevenson, *Financial Times*

“Bold and confident ... Coggan covers the terrain with characteristic calmness and objectivity, avoids over-simplification, and laces his arguments with his trademark erudition ... The alphabet soup of acronyms, from SIVs to CDO Squareds, is blissfully lacking ... Finally, the book is free from the shrieking ideology that afflicts virtually all contemporary debates over money. Indeed, it offers a clear explanation of the fresh ideological divisions that have arisen over how to deal with the crisis ... the book should be taken very seriously.”

Financial Times

MORE

The 10,000-Year Rise of the World Economy

PHILIP COGGAN

The
Economist

BOOKS

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PREFACE

When we think about history, the temptation is to focus on revolutions, wars and kings – what was once described as “maps and chaps”. And when we discuss economics, the focus is on the current measures of inflation and employment, and the complex equations and jargon that academics use to explain them.

It is easy to miss the big picture. Within the past 300 years, there has been an enormous change in human history, a change that has allowed the population to grow rapidly, and for many people to live longer and be taller and healthier than ever before. While there is still too much poverty, prosperity has extended even further in the last few decades, thanks in particular to the flourishing of the Chinese economy. This story is insufficiently told, and understood. Hence the motivation for this book.

Over 30 years ago, my first book, *The Money Machine*, was inspired by the need to learn about finance, and the discovery that there was no guide for the general reader. My idea was that I could do something similar for the world economy. Other, splendid, books on economic history exist, of course, but in general they exist to perpetuate the thesis that one factor or another was the crucial driver. This book is designed for those who want the full picture.

Had I realised, back in 2016, what an insanely difficult task this would be, I might never have started. As an *Economist* journalist, I

have a full-time job to do, never mind the mountain of reading that was required for this task.

Let me say, straight away, that this is a book written by a journalist, and not an academic. There is original reporting in this book in the thematic chapters. But the bulk of the book relies on the distinguished scholarship of academics who have come before me. They are fully acknowledged in the notes and bibliography, but let me add my thanks here.

A word of caution is needed on the statistics. Historians like Angus Maddison laboured mightily to estimate the size of the global economy at various stages, and others have combed the data for information on prices, incomes and longevity. Inevitably, huge margins of error are involved, and even modern societies struggle to get the economic numbers right. So the figures in here are only a rough guess as to the level of economic progress (see the Appendix for a full discussion). As this is a global book, dates are recorded using the common era (CE) and before common era (BCE) notation, rather than BC or AD.

Thanks are also due to Ed Lake and Andrew Franklin at Profile Books for believing in the idea behind the book and for waiting patiently for me to finish. Paul Forty ran the editorial and pre-press team and Susanne Hillen was an expert copy-editor. My colleagues at *The Economist*, led by Zanny Minton Beddoes, Edward Carr and Andrew Palmer, have also shown forbearance while I work on the project; the same goes for my long-suffering office mates, Simon Long and Helen Joyce. Mark Johnson helped organise my trip to Asia and guided me safely through a Malaysian thunderstorm.

Extra gratitude is due to those who have read some of the chapters and made useful suggestions: Geoff Carr, Tim Cross, Patrick Lane, Charles Read, Callum Williams and Simon Wright. All mistakes are of course my own and not theirs. Other heroes were Alex Selby-Boothroyd, who drew the charts, and Sophia Bradford and Zoe Spencer who found the pictures.

Many people were helpful on my travels round the world: Daniel Brucker at Grand Central station; Frances Houle and her team at Berkeley; Caroline Katsiroubas at Freight Farms in Boston; Cheryl Lim at Iskandar Malaysia; Eugene Tay at the port of Singapore; ranger

Doug Treem at Ellis Island; Shu Yang at the University of Pennsylvania; and John Yates at the AMRC in Sheffield.

The biggest thanks are due to Sandie, and my children Helena and Catherine, for putting up with me through 30 months of research and writing. I am sorry for all the weekends that were not filled with country walks and cinema visits. Sandie made many helpful suggestions and corrected my foolish mistakes. As for Rosa, the cat, who sat on the keyboard at crucial moments, you should be ashamed of yourself.

Philip Coggan
April 2019

INTRODUCTION

The urge to trade

Think small, at first. Take the most mundane consumer item in your house: a tube of toothpaste. Its journey to your bathroom involves thousands of people and hundreds of processes. The titanium dioxide that whitens your teeth has to be mined, probably in Australia or Canada, the calcium carbonate that acts as an abrasive has been extracted from limestone, and the xanthan gum used as a binding agent comes from grinding up plants. The toothpaste in my bathroom lists 17 different ingredients and that doesn't count the plastics that make the tube. All these materials must be brought to the factory where they are turned into the finished paste, and packaged into cardboard with a logo that experts have designed to catch your eye on the supermarket shelf. Then the product is sent by truck to distribution centres and eventually stacked on shelves by retail employees.

And then think big. Travel to a container port, like Felixstowe in Suffolk, on England's east coast, and you are in a land of giants. When I visited, a Maersk container ship, around 400 metres long, was ready to depart the dock. Its deck was filled with metal containers piled eight high; as many containers were below deck as above it. Three cranes, 80 metres tall, sat idly alongside. Their loading job was

done. Within a few weeks, thousands of consumers would be using stuff taken from one of those containers.

The world economy involves this mixture of the big and the small on a daily basis. The monetary sums involved are so vast – trillions of dollars – that it is easy to forget that the items themselves are the ones we use every day: the food we eat, the clothes we wear, the devices we use. No man is an economic island.

Around 90% of world trade is carried by ship. In Felixstowe, metal boxes are piled along the dockside as far as the eye can see. In the course of a working day, 2,000 lorries arrive to deposit goods for export and then trek out again with imported materials.

The port also has three railway terminals, which carry about half of all the cargo. At the end of one line, I watch a feat of engineering magic as a traverser (the only one in the country) slides an engine sideways. This allows the train to reverse direction and pick up a new load at the end of a different line. These small triumphs of ingenuity are needed to bring the goods to your house, and they have deep historical roots.

There are huge ports like Felixstowe dotted across the globe. Singapore's deep-water harbour is one reason why Sir Stamford Raffles chose it as a base for British trading in 1819; another reason is its strategic location at the south-eastern end of the Strait of Malacca, between the Malay Peninsula and Sumatra. Any boat wanting to travel from the Indian Ocean to the South China Sea needs to go through the strait. Today the port is the second-busiest in the world and Singapore is one of the planet's most prosperous nations, thanks to its position at the heart of Asian trade and finance.

Shipping containers are so uniform in appearance that it is difficult to tell what is inside them. But in Singapore, it was possible to catch a glimpse of what the ships were actually carrying. Lined up on the quay were Toyotas and Hondas made in Asia (and on the way to Europe), Mercedes and BMWs made in Europe (and on the way to China) and Mitsubishi pick-up trucks en route to the Middle East. The biggest ships can carry up to 8,000 cars apiece, and 1.1m vehicles pass through the port each year.

The trade that passes through Felixstowe, Singapore and dozens of other ports every day keeps the global economy humming. And

it forms part of an extraordinarily complex network. It is not just finished goods that are imported and exported, but components and raw materials. An iPhone includes displays made in Japan and South Africa, and sensors made in Taiwan, as well as other components made in Germany, France, Italy and the Netherlands. These parts are made from raw materials that come from Africa or South America and the whole thing is assembled in China. And yet the iPhone is widely thought of as a quintessentially US product.¹

Humans have been trading for thousands of years. It is a different business from sharing, which, after all, wild animals do; a pride of lions will share a kill. It is also different from symbiosis; the pilot fish eats the shark's parasites and in return is left uneaten by the shark.

Trade requires the conscious recognition of a mutually beneficial exchange. You have something I want; I have something you want. Perhaps my apple tree bears more fruit than I can eat before it rots, and your hens lay more eggs than you can manage for breakfast. It makes sense to swap. This kind of deal seems uniquely human. As the great economist Adam Smith remarked: "Nobody ever saw a dog make a fair and deliberate exchange of one bone for another with another dog." (However, chimps will trade grooming for food, and, in one experiment, capuchin monkeys were given silver discs as a currency and used it to buy sex.)²

At the global level, trade occurs because resources are unevenly distributed. Some areas of the globe are rich in minerals; some have the sunny conditions required to grow fruit or cotton; others have the vast plains that can grow wheat. Over time some cultures have benefited from their expertise in making pottery, textiles or manufactured goods. They make what they are good at, and then exchange the surplus with other places that are good at making or growing something else.

Early trade may have started as mutual gift-giving, as still occurs in a modern society when we celebrate each other's birthdays, or bring wine when invited for dinner. Over time, this gift-giving might have become more systematic. Both parties would have realised that they gain from the process. In the case of the apples/eggs swap, each gets a more varied diet. Over time, this leads to specialisation. For

some goods, this happens very quickly. Every medieval village had a blacksmith and a cobbler.

The same process leads to markets. These have existed at least since the time of the Phoenicians in the second millennium BCE, and have been found all over the world, particularly in small towns. Much of the trade will come from farmers bringing their surplus goods or livestock for sale. For specialists – those who sell wine, for example – markets will be a vital way of selling their goods. And once you have a market, buyers will compare prices. The cheapest producer will win. Over time, that will create the pressure for traders to become more “efficient” – producing more goods for a lower cost. Buyers and sellers must agree not just on the price of a good, but its quality, the place and time of exchange, and the nature and timing of payment. Innovations like markets, exchanges and financial instruments make this process easier.

Long-distance trade has also been around for thousands of years. The Visigoths refer in their laws to *negociatiores transmarini* – overseas traders. But for much of history, long-distance trade was both very expensive and risky. So trade only covered a small part of the economy, largely in luxury goods like jewels, spices or silk. Most of the stuff that people consumed was produced locally.

As ships grew larger and navigation became more reliable, it became possible to transport bulkier goods like timber, grain or slaves. In the last two centuries, trade has been transformed by the railway, the steamship and the internal combustion engine. So this book is in part a story of how trade became broader and deeper over thousands of years, to the extent that cross-border trade now encompasses more than half of everything the world produces every year.³ The global economy has been formed by the complex interplay of competition, government intervention, consumer preferences and the distribution of natural resources. Change one part of it and we cannot be sure how the rest of the system will respond – something that voters should remember whenever politicians propose simple economic solutions.

The state

The trader travelling by land could be robbed by bandits or his goods confiscated by local rulers as he passed through their territory. If he

travelled by sea he was at risk from storms or pirates. The ancients understood this risk and practised diversification. The Old Testament book Ecclesiastes advises: "Send your grain across the seas, and in time, profits will flow back to you. But divide your investments among many places, for you do not know what risks might lie ahead."⁴

Even at home, merchants might find that their local government had decided to seize their property. This certainly happened frequently in history and still occurs today. But this is a zero-sum game. If your crops are seized every year by the local bandit (or landlord), you will not bother to grow them next year. Long-term economic growth will not occur. As Thomas Hobbes, the gloomy 17th-century philosopher, wrote: "In such condition there is no place for industry; because the fruit thereof is uncertain."⁵

The existence of modern states, which protect the rights of private property and the peaceful settlement of disputes, was needed before economic growth could take off. A modern state provides courts that ensure that contracts can be enforced; that goods must be delivered when paid for, and payment made when goods are delivered; and that wages are paid when work is done. Businesses need public roads to deliver goods, schools to educate their workers, hospitals to heal them when they are sick, and so on.

Modern political debate all too often descends into a sterile debate along the lines of "capitalism is evil" and "government interference is wrong". In fact successful states have always benefited from a thriving private sector and the private sector has always benefited from the infrastructure provided by the state. The debate is where to draw the line; how to divide responsibilities between private and public sectors and how much of overall income should be claimed by the government.

The dividing line moved more in the direction of the government during the 20th century, but the move was not unidirectional. There were retreats in Russia and China and even in social democracies like Sweden. The first and second world wars showed that states need economic planning at moments of crisis. But it is unwise to rely on a few planners to foresee the future. Even a top industrialist can be caught out. Thomas Watson, the president of IBM for more than 40

years, thought that there would only be a market for five computers in the entire world.⁶

This book, then, is also the story of how governments have influenced economies, for good or ill, over the centuries. Many autocratic rulers realised that prosperous merchants were a good source of tax revenues and thus encouraged trade within and beyond the borders. Over the course of the last two centuries, governments have taken on a much broader remit, providing welfare for the old, sick and unemployed, and attempting to manage the economy so as to limit both inflation and unemployment. That shift has been good news for the population as a whole.

Finance

Just as our ancestors traded, they also lent and borrowed money. This too is a form of trade. You have spare cash; I need cash to buy a new cow, or finance a trading voyage. If my investment earns a profit, and I pay you interest, we both gain from the experience.

Finance plays a very important role in the economy. It allows us to manage our lifetime expenditure. When we start work, we have little capital and need to borrow money to buy a house or consumer goods like cars. When we are middle-aged and earn a higher salary, the debts are paid off and we build up money for our retirement. When we are old, we live off the income from our savings. In aggregate, the old lend money to the young.

Businesses usually need to borrow money to start to expand their operations. Borrowing is needed to fund government functions (countries rarely raise as much in taxes as they spend on services).

The finance sector acts as a middleman in these transactions. Fund managers and pension schemes take our savings and invest them in interest-paying debts and the shares of companies. Insurance companies invest the premiums we pay to insure our lives and property; the extra income keeps the cost of insurance down. Charities invest the money we donate; the additional income they receive can be spent on good causes.

As economies grow, their financial sectors tend to get more sophisticated, and get used by more people. For all the faults of the modern financial sector (and there are many), it is worth reflecting

on those economies where finance is underdeveloped; where citizens cannot get access to buy their own homes or start a small business. Better finance can help. In Kenya, for example, the rise of M-Pesa, a financing system that operates through mobile phones, has improved the lives of millions of people, making it easier for small businesses to operate.

It seems to be in the nature of financial sectors that they are subject to boom and bust. People need confidence to lend, and when they get nervous, the resulting squeeze on credit can cause economic havoc. In the run-up to the 2008 crisis, the financial sector clearly became too big for its Gucci boots, destabilising Western economies. Finance is a useful servant but a very poor master.

The real meaning of progress

There is a school of thought that belittles economic growth and the obsession with GDP statistics. Of course, there is more to life than goods and services. But to understand how modern humans have benefited from economic growth, think back 600 years to the early 15th century.

If you were born in Europe back in 1420, your initial battle was to survive the first year or two of life: infant mortality was 30% or so. The typical European peasant in the Middle Ages would have very little in the way of furniture but the odd stool to sit on (no upholstered armchairs), and a straw bed to sleep in (probably infested with fleas and lice); no privacy (all would sleep together, close to the fire, the only source of warmth); little in the way of cutlery (knives but not forks or spoons); and very little light at night (candles were very expensive).

The food choice was extremely limited and there was no refrigeration to keep it from spoiling. In premodern China, millet, wheat, rice and corn supplied more than four-fifths of all energy. Europeans survived on coarse bread and vegetables made into stews and soups.⁷ Meat and fish were occasional treats. Poor nutrition meant that people were smaller than they are today. There was no running water and nor were there flushing toilets. Any water had to be carried into the house, normally by women, from the village well, or from a river. In terms of entertainment, there were no printed books. In

any case, few could read and many had poor eyesight, in the general absence of spectacles. Of course, there was no radio or television. People rarely washed and had very few choices of clothes.

Medicine and dentistry were primitive, so woe betide those who got ill. Women had to have several children to ensure that one or two made it to adulthood, but each pregnancy was a high-stakes gamble. More than one in three women died during their childbearing years.⁸ Life expectancy was under 30. If your house was robbed or attacked, there was no police service to protect you, and if the wood, or straw, in your house caught fire, there was no fire brigade to rescue you.

If male, your working life would largely be spent on your own patch of land or the land of your social superiors. If female, you might be employed as a servant until old enough to get married. In marriage, as well as doing the housework, you would be expected to contribute to the crop- or livestock-rearing, or perhaps to earn a little money by sewing and spinning (hence the use of the term *spinster* for single females). Children would be put to work from a young age. Most people would spend their lives within a few miles of the place of their birth; roads were rudimentary and there were no railways or planes.

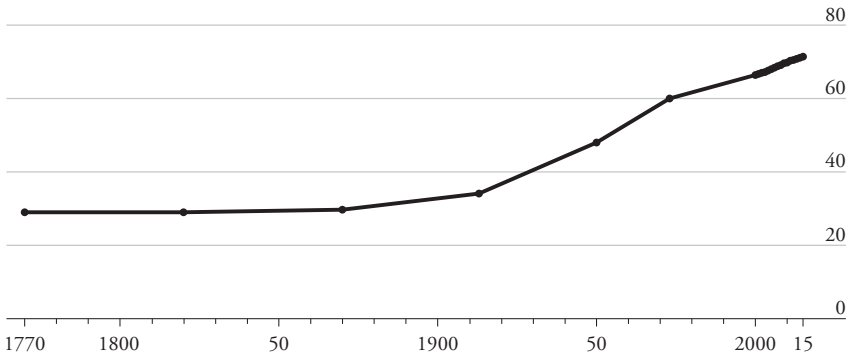
There were compensations, of course. Work was less intense. There were plenty of days off, although these were “holy days” rather than holidays; it was only in the last 100 years or so that most people, even in rich countries, could afford to head for the sun and stay in hotels. There was probably more of a sense of community than in modern societies.

The evidence is still strongly in favour of modern life. More children survive to adulthood and they grow up to be taller, better educated, and have many more choices over how to live their lives than they did in medieval times. They have a far greater chance of dying peacefully in their beds of old age (see chart). These advances would not have been made without economic growth.

As Steven Pinker recounts,⁹ back in 1800 no country in the world had a life expectancy higher than 40. Now the world average is around 70; an African born today can expect to live as long as a European born in the 1930s. In 2016, 4.2m babies died in the first year of life.¹⁰ That is a terrible number, but it has been steadily falling in

Living longer

Global life expectancy, years



Sources: “Estimates of Regional and Global Life Expectancy, 1800–2001”

by James C. Riley; WHO; World Bank

recent years. Back in 1950, the number of infant deaths was 14.4m, at a time when the global population was less than half its current size. Around 97m children were born in 1950 but 141m were born in 2016 so the infant mortality rate has fallen from 15% to 3%.

Economic growth also helps all sections of society. A study of developing countries between 1981 and 1999 found that, in countries with the strongest economic expansions, poverty rates fell 6.1% a year; in those with the sharpest contractions, they rose 23%.¹¹ Thanks in large part to the “green revolution”, the proportion of the world’s population dying from famine in the last 50 years is 90% lower than in the first seven decades of the 20th century.¹² The number of people living in “extreme poverty” fell by a half, or 1bn people, between 1993 and 2011. The proportion of the developing world population living in extreme poverty dropped from 42% to 17% over the same period. Life expectancy in developing countries has risen from 50 in 1960 to 66 in 2011.¹³

Of course, this is not a totally positive story. Many people have borne a terrible price for economic development. Prominent examples include the slaves transported from Africa to the Americas, the indigenous peoples whose land was seized by European settlers, or the workers who lost their lives, or their health, in unsafe factories, mines and building sites. Their stories will also be told.

Economic change can also lead to environmental destruction. This is not simply the result of “capitalism”, a word that tends to be used in a very slippery fashion. The deforestation of Easter Island in the middle of the last millennium was not the result of capitalism.¹⁴ The megafauna of Australia (like the giant wombat) that were wiped out by early humans were not hunted to extinction in the pursuit of profit. Indeed, the same could be said of the North American passenger pigeon, which had flocks that could darken the skies but which proved no match for farmers with guns. One of the great environmental disasters of the 20th century occurred in the Aral Sea, which lost three-quarters of its volume thanks to mismanagement by the government of the Soviet Union in the name of communism.¹⁵ Man is a voracious and destructive species.

But humans are also inventive and can find solutions to the problems they create. In the Western world, the smoke-filled air that left dirt on buildings and created London’s “smogs” has largely been eliminated; rivers are no longer so polluted that they catch fire.

Necessity’s children

Innovation and technology are also two important themes in this book. It is easy to think, from a modern perspective, that technological advance is all about computers. But much simpler devices have proved vital: the plough, the watermill, the sextant. There have been inventions throughout the course of history; what marks out the modern era is the speed with which these innovations have spread around the world.

Economic growth comes mainly from two sources: having more workers and making those workers more efficient, in the sense of producing more each hour. Productivity can be enhanced by relatively simple new gadgets, such as the cotton gin developed by Eli Whitney, which removed seeds and waste from the cotton buds (although, by boosting the cotton crop, this invention perpetuated the US slavery system). But output can also be improved by new ways of organising production, such as the moving assembly line that allowed Henry Ford to produce cars more cheaply. Financial innovation, such as letters of credit, or legal reforms like the creation of the limited liability company, made it easier for traders to take risks and expand their operations.