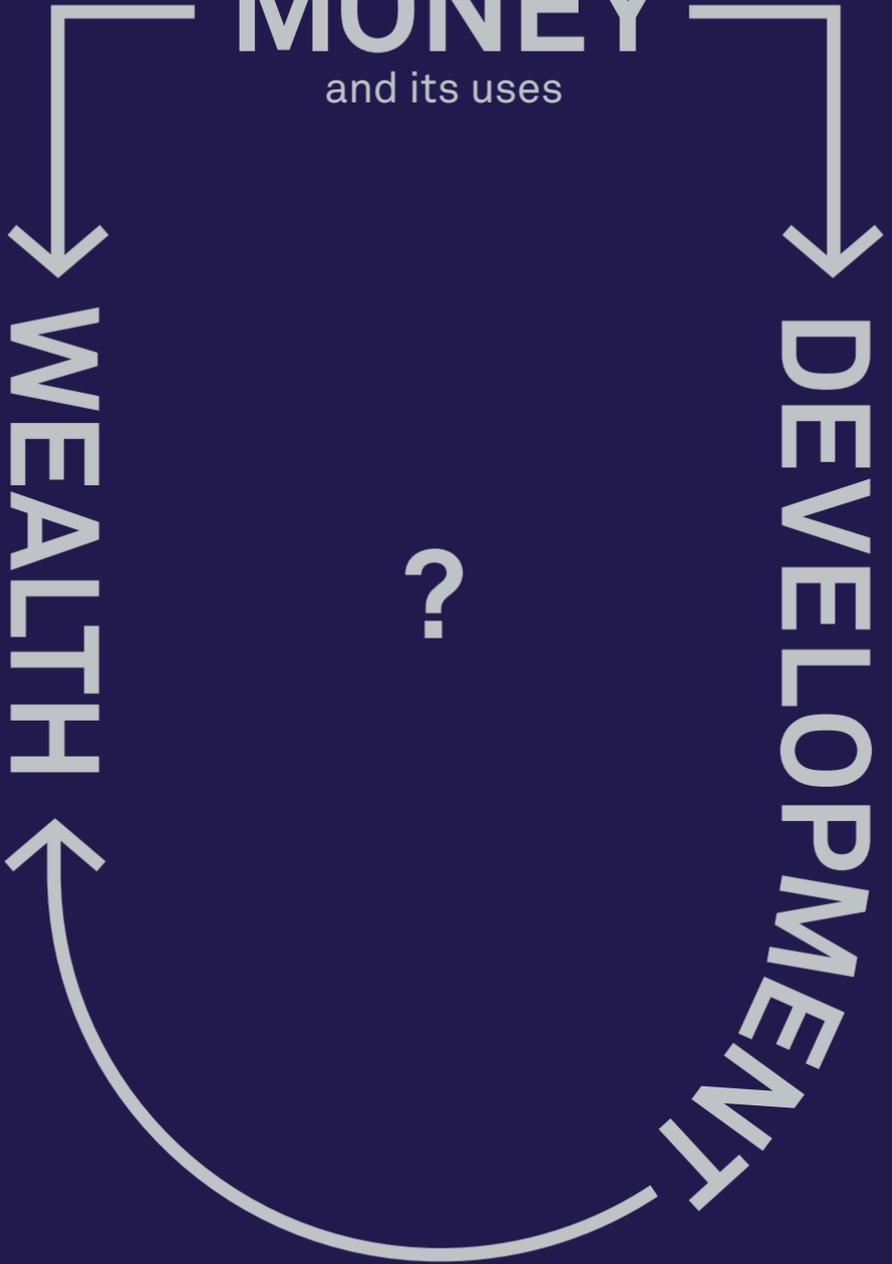


MONEY

and its uses



Dirk Bezemer

Published on the occasion of the farewell reception of Pierre Aeby as Chief Financial Officer (CFO) and member of the Executive Board of Triodos Bank.

Money
and its uses:
development
or wealth?

Dirk Bezemer

Biography

Pierre Aeby

Pierre Aeby (1956) was CFO and Executive Board member of Triodos Bank NV between 2000 and 2019. His first role, in 1980, was at the European Credit Bank in Brussels. This was followed by fourteen years with the Belgian Generale Bank (now BNP Paribas Fortis). Pierre joined Triodos Bank in 1998 as Managing Director of Triodos Bank Belgium. During more than two decades with the bank, as a consistently strong advocate for sustainable economic development, he has helped build its international presence and embed the Triodos ethos of consciously dealing with money.



Dirk Bezemer

Dirk Bezemer (1971) is Professor in the Economics of International Financial Development at the University of Groningen. He developed a research programme on the consequences of financial development for financial fragility and for equitable and sustainable growth. He published widely on economic development, on economic methodology, and on money, credit and financial instability. Dirk regularly engages in policy discussions and contributes to the public debate. He is a member of the Sustainable Finance Lab and he writes an economics column for *De Groene Amsterdammer*.



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Preface

This book came out of a series of conversations with Pierre Aeby, CFO of Triodos Bank. The idea was to create a text that discussed money, debt, credit, banking, saving, investment, the financial crisis and related matters in an accessible yet solid manner. It is not intended as a textbook: readability has been prioritised over rigour and completeness.

Our meetings were part of a wider discussion that began when we met as members of the Sustainable Finance Lab (SFL). SFL is a club of academics and bankers who care about the role of the financial sector in society, and its contribution to an economy that is sustainable – in the financial, social and ecological senses of the word. The club's aim is to foster more awareness about the choices open to us. Members undertake research, offer advice to policymakers and intervene in the public discourse on these issues. This book sits squarely within that objective.

Within this text, I examine the various uses of money and its economic impacts. The thread running through the book is that banks and their customers jointly create bank credit, which at the same time is society's money. Both banks and their customers determine how much credit (and therefore how much debt) will be created, and how it will be used. This goes not just for bank credit, but for all financial instruments and financial assets.

In previous research, I explored the impacts of different choices in the use of credit, and this was a recurring topic in our conversations. There is a critical distinction between money that primarily supports economic, social and human development and money that primarily supports asset markets and real estate. As Pierre succinctly put it, this is the distinction between development and illusion. We may strive for economic development and the enlarged opportunities it offers. Or we may pursue asset accumulation which offers nothing in and of itself, even though the illusion that it does is widespread. If there is one message that readers should take from this book, it is this: wealth is not development.

Economic development always originates as a vision. As Schumpeter made clear, development begins with an imagined future. It takes lending and investment to turn this vision into reality. Far from being dull or prosaic, banking needs to be visionary if it is to play its full role in society. The danger is that visions of development are in competition with illusions of wealth. The risk is that credit flows follow the lure of rising values in real estate, stocks, bonds and derivatives, and are attracted to the illusion that this will safeguard our future. Without actual, sustainable economic development, it will not.

My focus, as a macroeconomist, is on economy-wide outcomes of our financial choices in terms of income growth, income inequality, the stability of growth and the vulnerability to crisis. As a banker, Pierre's emphasis is on the intentions that drive

such choices, the alternatives that individual bankers and borrowers envision, and the freedom of choice they have in competitive markets.

I hope that both these sides – the systemic and the human – found their place in this book. I was privileged to have this conversation with Pierre, and to compare my economist's understanding of money and banking with his years of experience as a clear-thinking, clear-eyed banker. We hope some of the fun and the surprises of this conversation surface in the book.

My purpose in writing it has been to start more conversations. It is intended as a starting point rather than as a definitive text. Its structure is such that hopefully it can serve as a talking piece – something that helps broach difficult topics (assuming that money is difficult) by presenting them in an accessible format. The final part, on new forms of money and the evolution and reforms of the monetary and financial system, is the most tentative and most clearly invites a follow-up conversation. I hope this book will be a 'discussion paper' in the true sense of the word, igniting discussions about our financial system and its uses.

I would like to thank a number of people who helped improve the book. Catalina Navarrete and Joeri Schasfoort provided assistance with the graphs and figures. Dietwee managed the layout and Charlie Errington edited the text. Michiel Boesveld, Adri Dijkstra, Mark Gertsen, Joeri Schasfoort, Rens van Tilburg and Thomas Steiner read all or

parts of earlier versions. They came back with insightful comments and corrections. Thomas deserves a special thank you for initiating and coordinating the project, for his inputs in our discussions, and for his optimism that the project could be finished in time.

May 2019,
Dirk Bezemer

Introduction

What do we mean by money? What is money?
How do we use it? What are the consequences?
These are the questions I aim to address in this book.

When I started teaching money and credit in 2004, it was hard to find academic references or even popular readings about, say, credit creation, or the hierarchy of money. To give my students something to read and to back up my own research, I had to go back to obscure publications. The best I could find at the time was a 1968 book put out by the Public Information Center of the Federal Reserve Bank of Chicago titled '*Modern Money Mechanics. A Workbook on Bank Reserves and Deposit Expansion*'. It was revised regularly, most recently in 1994. Although now out of print, it can be found on the internet.

How different things are nowadays! Since the great financial crisis of 2008, a flood of books, pamphlets, films and plays about money, debt and bankers has provided students, academics – everyone really – with ample food for thought on money. The Bank of England and the Bundesbank have published papers explaining money creation. Activist clubs like *Positive Money* in the UK, *Ons Geld* in the Netherlands and *Vollgeld* in Germany and Switzerland agitate for public education on monetary matters and for monetary reform.

Henry Ford thought that if the public understood the banking and monetary system, there would be

a revolution. This hasn't happened yet, despite the best efforts of Occupy Wall Street and other such initiatives, but debates about money are everywhere today. Fifteen years after I started teaching in Groningen, my students are now learning about credit creation in secondary school.

This is just the latest swing in a pendulum that has been moving for two centuries. In the 1980s and 1990s, credit creation was more or less a taboo topic in monetary and financial research and teaching. The fact that most of our money is a liability created by private banks was all but obscured to students and researchers. You would search for it in vain in textbooks. You would never find it discussed in the pages of, say, the *Journal of Monetary Economics*, an academic flagship publication in the field. The nature of money, was not a respectable topic in academia.

It was not always so. In Joseph Schumpeter's time, money creation by credit creation was well understood. He wrote in the 1940s that '... it proved extraordinarily difficult for economists to recognize that bank loans and bank investments do create deposits... even in 1930, when the large majority had been converted and accepted that doctrine as a matter of course...' (Schumpeter 1954, p. 1114). Getting this understanding established was never easy. Schumpeter wrote that it had needed 'conversion'. Note his use of this religious term. Perhaps he wanted to signify that, for economists at least, a change in thinking about money and credit involved a profound change in worldview. But he would have been amazed to learn

that what was once accepted by the large majority would almost completely disappear from the economics conversation a few decades after his death in 1950. The reason is that a proper understanding of money involves a break with methods and beliefs that are central to neoclassical economics. This has been the dominant approach to economics at universities since the 1970s.

All this has now changed – or has it? When I read academic journal articles and central bank reports, the significance of credit creation is almost never discussed. I do read a lot about the natural rate of interest; a theoretical concept which is inconsistent with the role of credit creation in innovation and development – that is, with how market economies actually function. And yet the natural rate of interest is central to monetary theory and to policy thinking. Old habits die hard; little has changed in this respect since Schumpeter's time. Continuing from the quote above, he wrote about the need to 're-expound and to defend the doctrine at length,' and that 'some of its most important aspects cannot be said to be fully understood even now.'

One of those important aspects is at the heart of this book, namely the use of credit and money. Economists have long fought over 'money neutrality'; over whether a change in the amount of money does or does not have lasting impacts on, for instance, employment, income growth and consumption. An answer to that question involves the recognition that money is a form of credit and that the uses of credit matter to employment, income growth and consumption. In particular,

credit and money can be used to support innovations and productivity growth or they can be used to support markets in financial assets and real estate.

There has been a dramatic shift in the use of credit in recent decades away from the former and towards the latter. This shift has been behind the principal changes in the relations between the financial sector and the economy, and behind the changes in the impacts of money on the economy. Exploring the consequences of this shift is a key aim of this book. For our times, we should be adding new economic outcomes to the list. Beyond employment, income growth and consumption, inequality in the distribution of incomes and of wealth, and environmental and social sustainability have become critical issues.

We need to understand how these outcomes may be affected, or can be improved, by the uses of money and credit. To do so, we first need to consider the history of money, its constructive role in the market economy, and the scope for aberrations. This is the purpose of Parts 1, 2 and 3. Only then can we start to explore, as we do in Part 4, new forms of money and the evolution and reforms of the financial system, and ask whether they have the potential to support economic development more effectively in our own times.

Features

Part 1

What is money? There are many definitions. Often, they emphasise one feature of money. We will focus on the following characteristics: money is a means of settlement; it is a standard of value and unit of account; it is a store of value; it is a social institution, sanctioned by the state; it is a liability; and it is hierarchical.

Money: some history

To start with, let us briefly explore money's history¹. Where did money come from? We cannot be sure, but the best evidence we have is that in most places money first emerged as a form of debt (and, by implication, credit).

Money is rooted in debt relations

Debt may be as old as humanity – or in any case, as old as the division of labour among people, which roots it firmly in prehistory. There is no clear dividing line between explicit debt contracts and the reciprocity that governed economic relations in traditional (as opposed to modern) societies, but the transition towards a formal system must have happened in prehistory, for at the dawn of history and even before, we find debt contracts.

There is a logic to this ancient origin: debt relations are inherent to economic organisation. Any society where different people produce different things must have exchange. This implies credit and debt relations, since production is seasonal. The hunter offering a deer in winter in exchange for the farmer's

grain will have to wait for the other end of the trade until harvest time. As soon as the farmer accepts the meat in winter, he becomes a debtor to the hunter. This creditor-debtor relation will exist until the harvest is in and the debt can be repaid.

Managing the creditor-debtor relationship

Much of this reciprocity can be managed informally, without specifying repayment conditions. But network theory suggests that, even in small societies, the number of such creditor-debtor relations and their variation in repayment conditions – maturity, interest, denomination – will quickly become very large. There will be a need for recording to keep track of these complex networks. And so somewhere in prehistory, even before the advent of writing, humans started to register credits and debits. They named them and created symbols in wood, clay and metal to record them. Einstein is supposed to have quipped that humanity made three great inventions in prehistory: fire, the wheel, and double-entry bookkeeping.

Indeed, archeologists have found debt symbols made by prehistoric peoples. For instance, the Etruscans in northern Italy seem to have used pot shards which fitted like jigsaw puzzles, with one piece for the creditor and one piece for the debtor.² These and similar debt symbols often came to be used as means of payment. Generalising from this, it seems probable that debt relations and debt symbols preceded the use of money as a means of payment. After all, using debt symbols as the means of payment implies pre-existing debt

relations. Subsequently, a wide variety of debt symbols came to be used as physical means of payment. The best evidence, then, is that when money first appeared, it was as a form of debt.

That said, some other functions of money are much older. Cattle has long served (and still does) as a store of value, but it doesn't function so well as an everyday means of payment. The first known currency, the Mesopotamian shekel, was in use 5,000 years ago. However, stamped coins did not emerge until between 650 and 600 BC, when the earliest known mints operated in Asia Minor.

A famous example of debt-turned-money is from Mesopotamia, now Iraq. Archeologists have located thousands of clay tables in the region. They were in use as debt contracts in Sumer, a civilisation flourishing from the third millennium BC. These are often referred to as 'shubati', after the legal clause common on them meaning 'received' – a striking mirror terminology to our name for a debt symbol, an 'IOU' ('I owe you').

Exchanging symbols and tokens

Debt symbols acquire permanence and become exchangeable

Just as with the hunter and the farmer, creating debt symbols or debt records (such as clay tablets) loosens a time constraint. I cannot use the good you owe me to pay my debts, until you pay me the goods. But if I have a record of your debt to me, then I can use that record to acquire goods before you settle your debt. After all, the record is nothing if not a claim on goods. Recording debts made them transferable, so that they could be, and came to be,

used as means of payment outside the creditor-debtor relation within which they had been created.

Provided a debt token is accepted by all, it becomes a universal means of payment – it is money. Universal acceptance requires some form of coordination, often provided by authority. Some pre-existing symbol of a judicial debt often served well³ as the symbol for financial debt. The validity of this symbol also required a social authority, so that payment could be enforced and punishment meted out if necessary. This is why money, almost everywhere, is a legislative and political construct, even though it may arise out of private creditor- debtor relations. The Mesopotamian Code of Hammurabi, dating from around 1,754 BC, recorded the regulation of interest-bearing loans. This early form of banking was publicly regulated and, indeed, often itself a public activity⁴.

A physical debt symbol closer to home than Mesopotamia is the tally stick. The hunter and the farmer may have used a tally stick to record their half-finished transaction. Tally sticks have been common debt tokens and means of payment in northwestern Europe since time immemorial. They were in use up until the nineteenth century. To fashion a tally stick, a wooden stick is inscribed on two sides with notches that form a primitive alphabet. The notches specify the debt, the creditor, the debtor, and repayment conditions such as maturity, interest and denomination. The stick is split through the middle, and creditor and debtor both take one part. When the debtor

wants to repay, he just needs to find the person holding the matching tally stick. A recombined stick has fulfilled its purpose. But before that happens, the creditor can also use the stick as means of payment – he can use his claim on, say, grain at harvest to pay off a claim someone else has on him. The system for recording credit and debt is also a system that allows payment to be made.

Shared records bridge time gaps and underpin economic development

Exchange, economic development, commerce and innovation, are all difficult to conceive without a functioning system for recording credit and debt. All involve the bridging of time gaps that credit is designed to do. We see the sequence from exchange with debt to debt-as-money occurring time and again in different eras and different civilisations – from tally sticks in medieval north-western Europe and letters of credit, used by the medieval Knights Templar as long-distance means of payment, to today's money.

Because of the need for enforcement, debt issued by state authorities, or those very close to them, is especially suitable as means of payment. In fourteenth century Europe, the Medici family were private bankers to most of Europe's elite. The florin currency they issued was accepted throughout Europe in trade transactions. There are other instances where private debt structures were stabilised by being made convertible to publicly issued debt, which functioned as money. The Bank of England (a nominally private bank founded as the Crown's banker in 1694) later accepted private letters of credit (bills of exchange) in return for official notes, which were the Bank's liabilities.

An instance of outright public issuance is the *Assignat* money newly issued from 1790 by the Constituent Assembly during the French Revolution. This was a public debt liability used as means of settlement, backed by land and other property seized by the revolutionaries from Crown and Church. All these monies were debts, in the sense of promises to pay.

The promise

Credit is built
on a promise

Modern money is debt. The current British five-pound note reads: 'I promise to pay the bearer on demand five pounds.' It is signed by the chief cashier of the Bank of England. But while all money today is debt, not all debt is money. There is supermarket credit, car credit, inter-firm trade credit, crowdfunding credit, corporate bonds – everyone can create a liability upon himself. This credit superstructure is built upon the stability of the official currency, which is a public liability. Of all the private liability issuers, only banks can issue money as their liabilities are universally accepted within the state's jurisdiction. The state validates their money by promising to accept it in payment of taxes (and builds yet more confidence by guaranteeing deposits, overseeing banks, and so on). Though money is a private bank's liability, it is the public, legal sanction imposed by the state on tax evasion that makes it truly money, as we explore below.

The fact that money is credit (and debt) is cause for worry for some. Debt levels have increased enormously in recent decades. Could the reason

be that we create our money as debt? Could a solution be to redesign the money system, and move towards a type of money growth that need not involve growth of private debt? This analysis informed proposed solutions by activists for monetary reform in the 1930s (after the 1929 crash) and again recently (after the 2008 crash). We will return to these ideas in Part 4.

The story of the farmer and the hunter and our dips into the history of banking and credit illustrate how money is a means of settlement, standard of value and unit of account, and store of value; and how it is a social institution sanctioned by the state and a liability that is part of a larger financial hierarchy. We will now consider each of these features more closely.

Money is a means of settlement

Money is the ultimate means of payment. The current US dollar note reads: 'This note is legal tender for all debts, public and private.' Whenever you have a debt you must pay, you can settle it by handing over money. In a monetary society, you cannot do without money. The fact that it is universally accepted as the settlement mechanism for transactions distinguishes it from other assets, such as shares, derivatives, gold, silver, commodities and art. These other assets may be used to settle in certain conditions and between certain parties – for instance, as inheritance tax, managerial compensation, or as payment in a business merger – but only money is accepted always and everywhere within the state's jurisdiction.

Without money, most transactions are just impossible. Assets and goods are exchangeable for money and vice versa, but money cannot be bypassed. As Robert Clower put it, 'money buys goods and goods buy money but in a monetary economy, goods do not buy goods.'

We do not live in a barter economy. In fact, considering the long history of debt and its widespread use, it seems fair to say that true barter economies were always rare. Thinking about the nature of our economic system as if we do live in a barter economy, without money, would be to misunderstand the economy. Money, credit and debt come into many if not all economic decisions.

Using money
to settle and
survive

In a monetary economy, we live under what Hyman Minsky called a 'settlement constraint' and this is also a 'survival constraint'.⁵ Settlement is the key thing we need to do in economic life all the time. We need to be able to pay our way. That is what it means to settle. In societies that use money, as practically all do, the ability to settle is required to survive financially. The alternative is bankruptcy.

Settlement, which brings closure to a transaction, is so fundamental that the word 'finance' itself was derived from it. Finance comes from the old French 'finer', which means bringing to an end or finalising a transaction; in other words, settling.

Money is a social institution...

Institutions set the rules of the game in a society. Driving on the right-hand side of the road, using

the Latin alphabet, obeying court orders, and honouring legal contracts are all institutions. They make it possible for societies to function. They give order to social relations, they provide incentives and prevent accidents. They also constrain behaviour: a societal rule makes it clear how to act, but it also excludes actions by making them illegal. As Douglass North put it⁶, institutions both ‘liberate and constrain human behavior’.

Money is like this. What is or is not acceptable as a means of settlement must be decided in society; it is not something given from outside society. By all agreeing to accept something as money, we make it possible to conduct transactions far more efficiently. Money liberates us from having to decide the means of settlement for every new transaction and every new person we deal with. But money also constrains – there are restrictions on what we can and cannot do once money is used. Most goods and services can only be acquired with money; getting them in exchange for other goods becomes virtually impossible once everybody expects to be paid in money. Commercial sellers are practically obliged to accept money as payment. No one is allowed to counterfeit the official money.

... sanctioned by the state

Like many social institutions, the decision of what is acceptable as money today is made by the state. The texts on British and US notes quoted above are signed by public officials not private individuals.

The state authorities in eurozone countries agreed that they would use the euro from 1999 onwards. At a stroke, that decision abolished francs, guilders, marks, liras and pesetas. In the same way, historically, the decision about what unit of account to use was often made by emperors, kings, princes, and other forms of government.

It is not difficult to see why it is the state and not some private party who decides what qualifies as money. It is a decision that needs the force of law, so that contractual payment can be enforced. Law-making is the business of the state, not of private parties. Indeed, it would be difficult for many different private parties, with their private and conflicting interests, to agree on what to use as money.

Different, smaller groups with shared interests might agree on different forms of money. But why would I want to accept some form of money that I can only use in a very limited area or within a certain community? It is difficult to establish these private monies more widely. Their use would likely be limited to a specific community (often geographically restricted) with shared commercial ties. Historically, a patchwork of regional currencies has been the norm, mimicking the patchwork of political entities before the emergence of strong nation states. Their abolition in favour of strong, national currencies supported the integration of the economy and the expansion of the nation state.

In a modern debate, animated especially by Bernard Lietaer⁷, local currencies, operated in parallel to

the official currency, are seen as solutions rather than problems to be solved. In this view, local currencies may be a protection against crisis and return control to local communities. They may stimulate local economic activity more effectively than a national currency. This is typically the aim of parallel, local currencies such as the Brixton pound in London, the WIR in Switzerland, or Sardex in Sardinia. We return to this in Part 4.

The link with taxation

The state
claims tax
from its
citizens in its
own money

There is a special reason why we are willing to agree with the state when it chooses something to be used as money. That reason is taxation. Living in the territory of a state means that you are liable to pay taxes to that state. If the state decrees that taxes are payable in money, you had better make sure that you have the money. Tax payment is a legal obligation to support the common interest of all in infrastructure, education, healthcare and the like. Non-payment is a punishable offence. So everyone within the state's territory will want to accept the state's money in payment of goods or services. Everyone has a liability to pay tax, so everyone wants to accumulate the money needed to pay tax. This is why state money is so much more likely to be broadly accepted and so much more stable than private monies. That makes state money also a very good means of payment for all sorts of private transactions, not just tax payment.

Historically, as states in the nineteenth century expanded their control, they used their increasing power to mainstream the money system.

The unification in the nineteenth century of the many German principalities and counties into a nation state was the precondition for German monetary unification in 1871⁸. When states come into being new forms of money emerge; when they collapse, their money vanishes. The Soviet rouble did not exist before the Soviet Union was founded, and it ceased to exist when the Soviet Union collapsed in 1992. Likewise, the Yugoslav dinar, the Czechoslovak koruna, and the East German mark, which all disappeared because the states that upheld them disappeared, while the euro and the US dollar appeared because states decided to create them. Money is a ‘creature of the state’, as Abba Lerner put it.

Money is a liability (and an asset)

Money only ‘works’ when it is a liability – that is, I can only use money as a universal means of payment when everybody else is practically obliged to accept it. Money is a liability because my counterparty is ‘liable’ (i.e. obliged) to accept my money.

What is the purpose of carrying money if I cannot use it to make payments? In practical terms, anyone in business is obliged to accept money in any transaction that she enters into. To refuse a money payment as settlement undermines confidence in your business.

The liability nature of money is linked to the fact that money is a tool to bridge time. The hunter already has the meat, but the farmer does not yet

Credit is created then destroyed when goods are exchanged

have grain. They both need something which will be a guarantee to the hunter that eventual settlement will occur. This need to bridge time is a fundamental characteristic of economic activity.

Unless everything can be stored for as long as needed, such exchanges of goods will have two parts that are separated in time. These are linked by credit and settled in money. The delivery of the first good is accompanied by credit creation. Delivery of the other good is accompanied by credit destruction. In between, money exists. This operates just as it did when the farmer and the hunter created and destroyed a tally stick to exchange their goods.

If money is a liability, then it must also be a financial asset (that is, a claim). For each euro I hold, someone has a debt of one euro. This is elementary bookkeeping: every liability is someone else's asset. The money I hold is my asset. I can use it any time to claim goods or services. I can do this by walking into a shop – any shop.

This is the special thing about money: it is clear whose asset it is, but in everyday life it is not clear whose liability it is. That only becomes clear when the money is spent. I can exercise my claim against anyone participating in the economy who has accepted the obligation to accept money from me. He or she gives up a good or delivers a service and obtains an asset (the money) equal to the value of that good or service.

The link with production

The value of money is underpinned by the value of what it can claim. This is the economy's production. State taxation makes us want to hold money, but the state can only tax when there is something to be taxed – when there is an economy where value is produced that can be expressed in money and then taxed. Ultimately therefore, the value of money depends on the value of (and demand for) what is produced in the community.

This also clarifies that the state is not a free-standing entity, manufacturing tax claims out of nowhere. It represents us, the community. In an economic sense, the state exists as a representation of this 'common weal', of the wealth produced within the community which is the basis for taxation and for money. It is just as true to say that the economy's strength is what gives money its value, as it is to say that state taxation is what gives money its value. They come down to the same thing: the state can only levy tax on what we produce.

All of this helps to explain why in modern nation states, money takes the form of currency which is the liability of the state. There is an internal logic to it. The state holds tax claims on us; these claims are the state's assets. It loses those claims each time we pay our taxes. The state must give up a tax-claim asset in exchange for money; by implication, money is the state's liability.

By stipulating how tax needs to be paid, the state defines what will count as money. For eurozone

countries, the euro is the 'money of account'. We use this to count our output and our wealth: I earn so many euros per months, I have so many euros in my bank account. With this standard of value in place, anyone who issues liabilities can denominate them in euros. They can indicate their value by referring to the standard validated by the state. In this way, standard-setting by the state supports private activity, and private liability issuance.

States that issue their own money cannot go bankrupt

State money is a strong anchor for private liabilities, since the state cannot go bankrupt in its own money. Going bankrupt means being unable to meet payment obligations. Strong states with monetary sovereignty will never be unable to meet payment obligations in their own money. They can always issue new liabilities and make payment.

States which use the euro are in a different position. They have no control over money creation as they cannot individually take control of the ECB (European Central Bank). In this sense, state liabilities in euros are closer to liabilities in a foreign rather than a domestic currency. But otherwise, whoever creates the money, whoever is, in practice, its source, can never be short of money. The money that returns to the state in taxes and bond sales was first created by the state through the central bank, or by private banks licensed by the state to issue their liabilities on par with state money. Because of the special nature of central bank money, it stands at the top of the domestic money hierarchy, discussed below.

Self-imposed constraints

We may note that nowadays, governments have outsourced money creation to their central banks. Central banks, though often removed from politics, remain part of the state. Many states have introduced legislation that forbid the central bank from issuing money to cover the state's payment obligations⁹. The underlying idea is that it is better if the state depends for its spending on money collected from its citizens in taxes and issuing government bonds.

If the public, represented in the financial markets, does not want to buy the government's bonds, then the government could actually have problems meeting its payments obligations even though it is a source of its own money. This self-imposed problem is often viewed as a disciplining device. It should improve the behaviour of the state by limiting its spending power beyond taxation to a level which the markets approve. This amounts to letting the markets rather than the state decide public spending levels. Whether this is always the best arrangement is an interesting question.

Meanwhile, the liabilities of a strong and stable state, denominated in its own money, will always be in demand. This strong standard makes it possible for other, private liabilities to flourish. This is especially true for bank deposits, which are private liabilities that 'trade at par' with currency. They are issued by a special set of private parties, namely those who have most direct access to state liabilities. That is why banks have the strongest

(i.e. most trustworthy and most widely used) liabilities. Banks, who uniquely have accounts at the central bank, can, within certain limits, obtain state money for use as reserves from the central bank in those exceptional cases where they cannot obtain reserves on the interbank market. This is the 'lender of last resort' role of the central bank. It may not happen often, but the fact that the central bank stands ready to supply reserves when needed supports the link between bank money and state money. It also creates trust between banks on the interbank market, since they know that other banks have access to central bank funds.

Bank deposits
are treated
like money

For these reasons, bank liabilities are unique among private sector liabilities in that they truly are as good as money. They are in fact treated as money itself. Bank liabilities are what we use as money in everyday life. Over 90 percent of our money is bank deposits, and very little is notes and coins. Money creation happens if banks issue liabilities, when they make a loan. We explore this process in detail in Part 2.

The large role of the state in defining the nature of modern money is a concern for some. Is a money system of this kind not a way for the state to wriggle its ugly tentacles into our private dealings? Is it not an immoral means for the state to get its grubby hands on our hard-earned cash when it taxes? Those who share these concerns will welcome private monies. We will explore this analysis and the viability of private monies in Part 4.

Money is hierarchical

There is a hierarchy of money. At the very top are notes, coins and bank reserves. These are central bank liabilities, which the state promises to accept in tax payment to itself. The central bank is part of the state apparatus, intimately interwoven with the tax authority and other parts of the state bureaucracy. Central bank actions have to be continually coordinated with policies of other parts of the state. This is important to realise when there is much loose talk of central bank independence.

Next come bank deposits, which banks promise to convert into notes and coins on demand. Bank deposits are one step removed from the ultimate issuer of liabilities (the state), and the state – in fact, the central bank, which is part of the state – commits itself to delivering notes and coins to the banks on demand, at their par value. That is (to repeat) why bank deposits are treated as fully equivalent to notes and coins – they are, except in the rare event of a bank run.

Money is a social contract, built on trust

At times of stress, such as during bank runs, the differences within the hierarchy become clear. In normal times, bank deposits are accepted always and everywhere, but in a financial crisis, the public may want to ‘take their money out of the bank’ – that is, they want to exchange bank deposit money for banknote money. In effect, they do not consider bank deposits as proper money anymore; they have lost faith in its ability to let them make payment.

What this makes clear is that money is really ‘fiduciary’ (derived from the Latin ‘fiducia’: trust, faith), just as credit (derived from the Latin ‘credere’: to believe or trust) is a promise to pay which can only work if it is believed and trusted. Faith, trust and belief are not constant over time; they fluctuate. This is the fundamental basis of the financial cycle; we study this in Part 3.

Money is defined in both space and in time. A euro coin is money in a certain society, in the territory of a certain state or group of states. That is space. And a bank deposit is money in normal times, but perhaps not in a crisis. That is time. Money, after all, is a social agreement, and social agreements exist in particular places and times.

And sometimes, social agreements break down. For one example, we may note that there is also a hierarchy among national currencies. Their place is defined by how widely acceptable and, therefore, how liquid they are. US dollars, yen, euros, sterling and Swiss francs are pretty high in the hierarchy, but Iranian rials, for instance, less widely accepted. Disregarding this can be costly. At the end of the 1980s, the Iranian authorities tried to enforce the social (and state-decreed) agreement to use rials in payment buying dollars in the official market was restricted to trade activities). In fact, that agreement had already broken down among large parts of the population, who had lost trust in the currency and preferred dollars. The result was a black market where one US dollar bought 1,400 rials against 70 rials in the official market.

Money and moneyiness

In such conditions, when social agreements around money break down, it becomes clear to all that money is hierarchical – a notion that seems only theoretical in normal times. It becomes clear that there is an asymmetry in the different forms that money can take. Deposits, notes and coins may all be denominated in euros, but they are not all the same thing. In times of extreme stress, we prefer notes over deposits. We flee to the safest form of money. And since money ultimately is the state's liability, at times of stress we all want to hold the state's liabilities and to shed private liabilities. That is why in a financial crisis notes and coins – which are central bank liabilities – may be more in demand than bank deposits, and a bank run can occur.

Different ways
of measuring
the money
supply

This hierarchy is reflected in the money aggregates defined by central banks. The ECB defines M1 as the sum of currency in circulation and overnight deposits (bank reserves), M2 as M1 plus deposits with an agreed maturity of up to two years and deposits redeemable at notice of up to three months, and M3 as M2 plus close money substitutes like repurchase agreements (repos), money market fund shares or units, and debt securities with a maturity of up to two years.

Theoretical distinctions provide the rationale for these statistical delineations. The higher the 'M' number, the further we move from the source of money. Overnight deposits at the central bank are literally state liabilities, and so is currency in

circulation. Short-term bank deposits are convertible to these state liabilities at par, either immediately or fairly quickly: they are claims on state money. Repos, money market funds and bills (short-term bonds) trade in very liquid markets, so that they are easily convertible to bank deposits. These are claims on claims on state money.

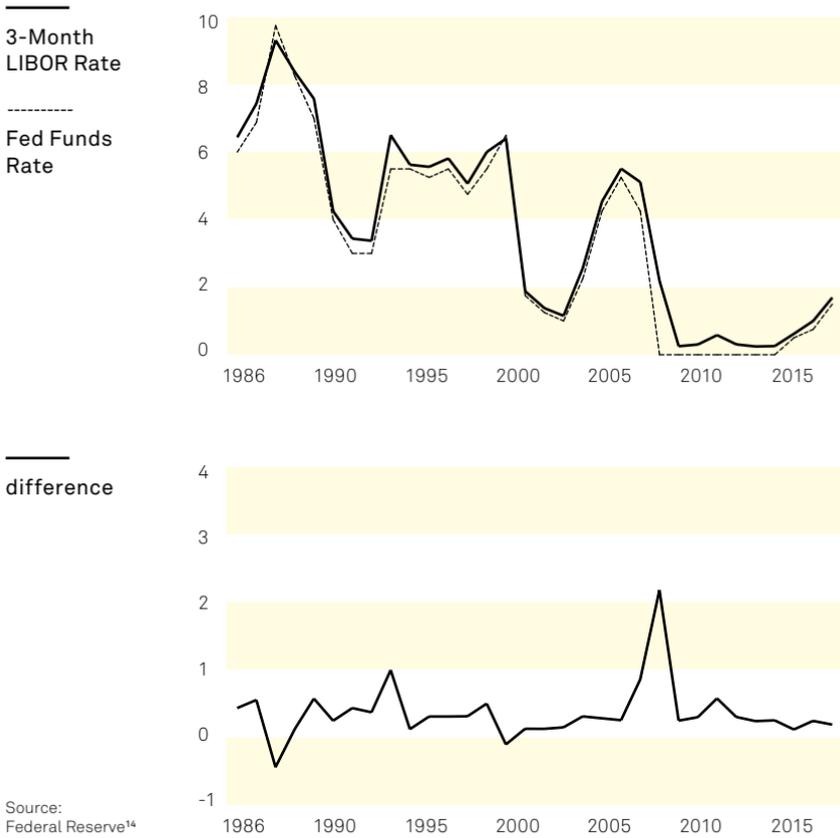
In monetary theory¹⁰, the hierarchy continues beyond money to include assets which are not money, such as longer-term government bonds, corporate bonds, shares and so on. All can in their own sphere acquire a degree of 'moneyness', and all can and will be used in exchange for money, and sometimes even as means of payment in the financial markets (although not normally in the real economy).

This extended hierarchy is important to understanding how financial markets function. It sheds light for instance on yield-curve dynamics and how government bond yields behave in crisis times. But because they are not used widely in the real economy, there is a distinction between money assets (used primarily as means of settlement) and wealth assets (used primarily as store of value). This will be important when we think about price formation of financial (and other) assets in the markets for stocks, bonds, real estate, derivatives, patents, art, and so on.

The flight to quality in times of stress: when assets become claims

Just as the hierarchy based on access to official (state-issued) money crystallises during times of stress, so it tends to get blurred in loose monetary conditions, when lending standards are generous

Figure 1: The hierarchy of money in the eurodollar market



Source: Federal Reserve¹⁴

and acceptability of non-money assets as if they were money assets increases. The eurodollar market is a good example¹¹. Eurodollars – also known as international dollars – are dollar accounts offered by banks outside the US with access to onshore US banks. They are therefore one step further removed than US banks from the source of dollars. International trade and investment heavily relies on obtaining dollars in the eurodollar market. As a result, the eurodollar

market has expanded to become larger than onshore dollar money markets. Traders regard eurodollars as only marginally less safe than dollars. The London Interbank Offer Rate (LIBOR) against which banks lend eurodollars to each other closely tracks the Federal Reserve's overnight rate (the Fed Funds rate), at which onshore US banks lend to each other in the US interbank market.

The size, liquidity and apparent safety of the eurodollar market led some analysts to wonder if eurodollars were not replacing US dollars in the global money hierarchy – was the world not in fact really operating on a eurodollar standard, rather than a US dollar standard? Was the Federal Reserve still in control of the dollar? The 2008 financial crisis quelled such doubts. Many US banks could not or dared not continue lending in the eurodollar markets. In the flight to safety that precipitated the crisis, many eurodollar positions were liquidated in favour of onshore dollar assets. For the first time since LIBOR was introduced, it rose far above the Fed funds rate (Figure 1), signifying the sudden increase in perceived risk of holding eurodollars. The hierarchy of money re-asserted itself.

The financial hierarchy, with state liabilities at the top, is not merely of theoretical interest. For some, the state's key role in the modern money system appears to offer entry points for practical improvements in how the money system works. Since the state controls the top of the financial hierarchy, could it perhaps use its power more consciously than it does today, or more extensively? If private

credit flows depend on access to state liabilities, then could the state not use this power to improve the volumes or direction of credit flows? We noted the current consensus that the private markets should decide – by buying or refusing to buy bonds – how much states can spend beyond taxation. The ‘credit guidance’ idea in some sense is a reversal of this consensus: it gives a state institution (the central bank) a say, via its lending decisions, in how much and where the private markets can spend. Credit guidance is decidedly out of favour now, but European states have done this in the past and in other parts of the world, notably Asia, such central bank policies are still widely employed. We explore the possibilities and pitfalls of this idea in Part 4.

The value of money

Questions about the value of money can be taken in two ways. We might ask what arrangements we need to have a stable currency. We have already seen that the state needs to accept the currency in tax payment. This is a necessary, but not yet a sufficient condition for currency stability. The second question about the value of money is more common: what determines whether we will have inflation?

Inflation is a statistical measure of the annual percentage change in the prices of goods and services. Statisticians define a basket of goods and services which the typical household consumes, and measure the change in the price of that basket. Any rise is described as inflation.

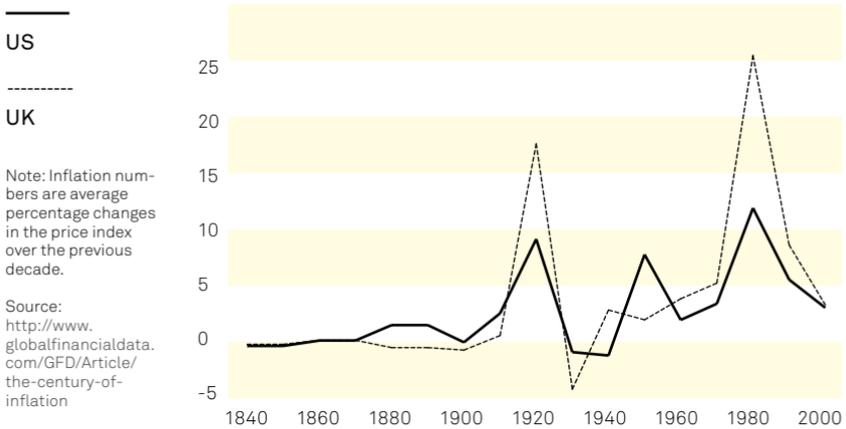
But inflation measurement is notoriously difficult. For one thing, what is a typical household? In most countries, life is more expensive in cities than in rural areas. Should we have separate urban and rural inflation rates? And how do we factor in quality improvements? If the latest iPhone is three times better than the previous version but only 50 percent more expensive, is that inflation? I might think that I am getting less phone for my money since I am spending more, in which case there is inflation. Or should I look at quality and conclude that I am getting more phone for my money? The solution proposed by statisticians is to apply 'hedonic' inflation accounting, which attempts to account not only for price changes, but also for changes in quality. It is worth recognising that any inflation number is the result of many such choices.

The Great Deflation and the Gold Standard

Measurement issues aside, why do we have inflation (or deflation) at all? Milton Friedman wrote that '[i]nflation is always and everywhere a monetary phenomenon in the sense that it is and can be produced only by a more rapid increase in the quantity of money than in output.' If we consider only the quantity of money used in transactions of goods and services, then this is true, as far as it goes. The problem is that it does not go very far. Friedman was mistaking proximate causes for ultimate causes.

He correctly recognised that inflation is partly determined by the expansion of output (which is,

Figure 2: Average annual inflation rates in the US and UK, 1820-2000 (%)



incidentally, a non-monetary phenomenon). Rapid productivity growth or a fast increase in productive resources may both cause long periods of deflation, when output rises faster than money. This was the case during the ‘Great Deflation’ from 1870 until 1890. The prices of goods and wages decreased, and money became more valuable. Figure 2 shows the price index change and annual inflation rates in the world’s major economies, the UK in the nineteenth century and the US in the twentieth century. Both rates were negative or very low from 1840 to 1900. The only other period of sustained deflation was the 1930s Great Depression.

Beyond monetarism: the political factors driving inflation and deflation

The Great Deflation was the result of a combination of historical circumstances. There were innovations in transport and agriculture, an unprecedented expansion of trade, and mass migration to the New World. The major economies had domestic political systems that gave no effective voice

to workers, keeping wage growth limited¹². The industrialising world had a global monetary system (the Gold Standard) which linked the growth of the money stock to the growth of the global gold stock. This required international cooperation between central banks and governments, which was possible in the unusually long period without major wars between Napoleon and the First World War. That war presaged the end of the Gold Standard.

During the Gold Standard era, maintaining the Gold Standard system took precedence over maintaining production or employment. Limiting the growth rate of money to the growth rate of the gold stock was seen as more important than using the growth of money to support the growth of the economy, or the growth of wages, which are the incomes for the majority of the population. Historians Peter Temin and Barry Eichengreen¹³ labelled this policy attitude the 'Gold Standard Mentalité'. That mentality, they suggest, may still be among us in Europe, even though the Gold Standard is not. Reforms in markets for labour, goods and capital are deemed necessary to maintain the euro; wage growth in the euro era has been very low since the introduction of the euro.

When world leaders tried to replay the Gold Standard era after the First World War, conditions had changed. Working men (and later, women) had the vote. Trade unions and social democracy were on the rise. Wages could not be restrained so easily. International coordination between governments and central banks was replaced by competition.

The monetary centre of the world was shifting from the UK to the US, which had less interest in a gold standard and more interest in a silver standard (which it possessed in huge quantities) or even better, a dollar standard (which it got, after another world war). The 'exchange Gold Standard' of the 1920s and 1930s never worked well and broke down in the mid-1930s. No inflation ensued, because by then the world was in recession.

This all goes to show that inflation depends on much more than the output/money ratio. It depends on cooperation between central banks and on political decisions that affect global markets. For instance, the inflationary 1970s were the result of the decision by the oil-producing countries to form the OPEC cartel and jack up oil prices, the input to virtually everything in the inflation basket. Inflation is, as much as anything, a political phenomenon.

Goods are not assets: the Great Moderation

There is another reason Friedman was wrong. Money is not only spent on goods and services. Most money is spent on assets, like stocks, bonds, futures, real estate and insurance policies. These assets are not in the inflation basket, so no consumer price inflation will be registered even if asset prices rise rapidly. There can be fast money growth with low inflation if most of the money is poured into the asset markets, quite independently from the growth in output.

Asset inflation and credit expansion during the Great Moderation

An example of this is the Great Moderation era of low and stable inflation in most advanced economies from the mid-1980s until the 2007 crisis (when inflation dropped dramatically). Again, a unique set of historical conditions coupled with policy decisions made the Great Moderation possible. This was a period of modest output growth in most advanced economies and fast growth in money, but without rising inflation.

Among the historical conditions that made this possible were the rise of China as an industrial power from the late 1980s and the end of communism in Europe around 1990. The supply of cheap labour and cheap goods that engulfed the Western world kept consumer prices low.

Just as in the nineteenth century's Great Deflation, this was a time when wage restraints were politically organised. Trade union membership was falling so effective wage claims were weak. In response to the inflationary 1970s, governments, unions and business in many countries made deals to keep wage claims low. The Netherlands led the way with the 1982 'Wassenaar' deal. But they made no deals to keep profit claims, house prices or stock market valuations low. This ensured that any growth in money would be channelled into asset markets. The Great Moderation of the 1990s and 2000s saw a decidedly immoderate explosion of credit.

Simultaneously, money growth through bank lending increased tremendously as financial market liberalisation took hold from the 1980s,

the result of another policy decision. This combination of circumstances and policy choices ensured that, while wage growth was minimal and inflation remained low and stable for much of the 1990s and 2000s, asset prices soared.

The broad causes of price inflation of goods and services are growth in output, growth in money, and the historical and political conditions that govern the allocation of money over different sections of society – notably, the allocation of money to employees as wages, to entrepreneurs and producers as profit, and to wealth owners as rents. In recent decades, as an increasing share of new credit-money creation has been directed to support trade in financial assets and real estate, a decreasing share of money growth has found its way to goods and services markets.

Price inflation of goods and services has therefore been low, but price inflation of real estate and stocks has been large, fuelled by the growth in debt.

These trends cast a different light on questions about the value of money. Money values have been quite stable in terms of goods and services, but they have eroded in terms of assets. Wealth is kept in the form of assets. It includes productive capital such as machines and factories, but also financial capital such as stocks and bonds. And it includes real estate (land, housing, offices, and other buildings) – easily the biggest asset market in every economy. In monetary economics, the dominant concern has been the (limited) concept of inflation in consumer prices. But it is the inflation in asset

markets, which fall outside the inflation statistics, which explains much of the impact of the financial system on the economy. In fact, it is precisely in the allocation of credit-money to real estate and financial markets over goods and services that a seismic debt shift has occurred. This debt shift not only helps to explain low inflation, it also accounts for failures of the financial system as a supporter of economic growth and stability from the 1980s. We explore this in Part 3.

But before focusing on failures in the financial system, we need to understand how money functions. In order to fully understand the value of money, we need to think about its uses and the role of money creation in the economic system. To this we now turn.

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Functioning

Part 2

We have explored what money is and why its value may fluctuate. We now turn to the role of money and of the financial system, both banks and financial markets, in the economy.

Bank money creation

Let us consider again the fable of the hunter and the farmer. Just as the farmer needed to issue a liability on himself to trade with the hunter, so buyers today do the same. They hand over a liability that will be accepted as money. And just as the farmer could hand over any other credible liability (instead of a liability on himself), so today we pay in liabilities that are not personalised. They are not personal liabilities, but claims on the community that can be used for goods and services anywhere, from any seller.

The state
licenses banks
to print money

The state organises this by licensing selected organisations (commercial banks) to issue liabilities on themselves, which it promises to accept as if it were money. To make that credible, the state also promises the public that those liabilities (bank deposits) will (almost) always be exchanged one on one with the central bank's liabilities (notes and coins). And to make it all work, the state gives the commercial banks access to a settlement system with the central bank (their reserve accounts with the central bank) so that their deposits can be converted into reserves, which is the 'currency' that banks and the central bank between them use.

The fast-forward jump in time from the hunter and the farmer to banks today does of course leave out centuries of monetary history. Money and banks arose at different times and places in vastly different ways. But the essence of banking today can still be understood by analogy with what the farmer and the hunter did. New money creation supports economic activity.

New money in the Zarello business

To see this, let's go through the process of money creation in banks. Meet Will, a would-be start-up entrepreneur. Will has developed a new way to manufacture organic mozzarella cheese. Real mozzarella is made from buffalo milk, though often it is also made from cow milk. Will claims to have found a way to make it from goat milk. It tastes just like the original, but is much cheaper and healthier. Because of patents he is prohibited from calling it mozzarella, but Will is confident that his Zarello will sell – if only he can manage to produce it for the market. His problem is money: with help from friends, plus his own savings, he has €4,000. Not enough.

How credit is created in a closed circular economy

Will develops a business plan and goes to his bank. He estimates that he needs an additional €10,000 to get into the Zarello business. At this point the trust nature of credit and money becomes very clear. The loan officer decides to create money based on her conviction that Will is a capable entrepreneur who will be able to sell his product and repay the loan. As a result of her faith in Will's capabilities the bank gives him 'credit'.

For the system to work well, the banker needs to make decisions based on trust, and to do so with a high degree of integrity: she should not follow her sentiments (for instance, her enthusiasm), nor look at her personal interest (for instance, her bonus), but only at the interest of the customer (Will should not end up in bankruptcy), the bank (which should not lose money) and, more broadly. She should be aware of her responsibilities towards society in contributing towards sustainable economic development and the stability of the currency. Reflecting this responsibility, a banker's oath was introduced in the Netherlands on 1 April 2015. It has since been pledged by about 90,000 bank employees¹⁵. Banking is serious business indeed.

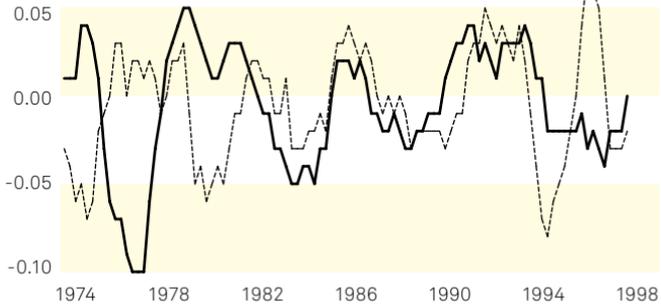
The loan officer makes a positive decision and Will gets the loan. What happens at this point is *not* that the banker looks in the bank vault to see if a saver has perchance recently deposited €10,000 there, which she can give to Will as a loan. The banker just adds €10,000 to Will's bank by changing a number in her computer from €4,000 to €14,000. There you are, Will.

Suddenly Will's ideas and energy can change reality. Credit turned into money is that powerful. Money is a tool to move resources – maybe towards more productive projects, towards exciting innovations or greener production structures. Or maybe towards less commendable uses. Credit-money is perhaps the single social institution with the greatest force for change.

Figure 3: Money (M3) and credit in Germany, 1972-1998

—————
Bank credit to
nonfinancial
corporate
sector

Money
2 years later



Note: 'Credit' is credit by licensed banks to the private non-financial sector at market value, in domestic currency and adjusted for breaks. Vertical axis numbers are changes in year-on-year growth rates, averaged over 3 years. Money growth is lagged by 2 years.

Sources: BIS, Federal Reserve Bank of St. Louis and author's calculations

Will's loan is newly created money, but that need not mean it is 'easy money'. The demands on Will may include a requirement to supplement the bank financing with his own money. In the Zarello business, there may be uncertain market and industry variables, which require that some financial security for the bank is built into the agreement.

In cases where there is less uncertainty and future cash flows are easier to project with confidence, a bank may be prepared to offer as much as 100 percent finance on an unsecured basis. To take one current example, the very reliable data on wind conditions and the guarantee of long-term subsidies are two factors that allow windmills to be financed on favourable terms.

Whatever the precise contract details when the loan is made, in accounting terms Will and the banker mutually accept each other's liabilities, expressed in the state's standard of value (the currency), sanctioned by the legal system and made enforceable by the public authority.

Will accepts the liability to repay the loan after two years with 5 percent annual interest. In return, he gets an asset from the bank: his bank deposit. The banker accepts the liability to pay Will's bills up to €10,000 euros to whomever Will wants. This liability is Will's money. In return, the banker gets Will's promise of loan repayment as an asset. In these balance sheet terms, money creation looks really simple – because it is.

Credit creation supports economic activity

Bank lending is money creation, and money creation supports economic activity. One indication of this link between money in the economy and credit created for use in the real economy (that is, not in the asset markets) is their close fit on the macro level when other conditions affecting money creation are stable. Figure 3 shows three decades of the growth in money and in credit in Germany between 1969 and 1998 (the time-series we used stops there, just before the introduction of the euro). After the inflationary 1970s and before the disruption of the 1990 German unification, the two graphs very much move together: bank lending is money creation. The credit series is lagged by two years, as there is a time lapse between new credit creation and the net response in money deposits, depending on factors such as liquidity preference. The fit is not perfect as there are other sources of money than bank credit creation (including net international capital inflows and government spending).

Back to Will. He can now pay a builder to build a Zarello workshop, and he can pay a farmer to buy milk. If the banker makes the wrong decision, and

Will goes bankrupt, the banker has already paid Will's bills up to €10,000 and she has made future commitments based on the loan repayment and interest income that she is expecting. If this repayment and interest go missing as Will is bankrupt, the bank will have to use its own capital to fulfil its payment obligations. Too many wrong decisions and the bank itself will go bankrupt, causing its savers to lose their money.

In effect, the bank has to make good on the value of the money it has created, if Will doesn't. It is as if Will's bank account, which appeared to be full of newly created money, turns out to be empty. The money that was first created as a bank deposit, is effectively destroyed. This is the bad scenario. A banker's job is to avoid it.

Note, meanwhile, that this is all very similar to the prehistoric farmer and hunter in the fable. The farmer needs meat now, but cannot pay for it until the harvest. Will needs a workshop now, but he cannot pay for it just yet; first he needs to make a profit on the Zarello. The solution for both is to issue a liability, a promise that they will pay in the future – Will in money, the prehistoric farmer in grain. In fact, the farmer may also pay in tally-sticks money, which after all is equivalent to grain and meat and other products. Had Will and the builder of his workshop lived in an earlier age, Will might have given the builder a tally stick.

The only addition today is that Will gives a 'tally stick' to the bank (he assumes a liability to repay the bank), and the bank in turn assumes a liability

to pay the builder so that Will doesn't have to. The bank is an intermediary between Will and the builder. It offers a form of debt (bank debt) which is acceptable to all, so that debtors like Will can credibly promise to pay creditors like the builder. The prehistoric farmer and hunter needed to bridge the time gap between deer hunting and harvesting. Will needs to bridge the time gap between investment expenditure and receipts of revenues from the sale of Zarello. Otherwise, they are doing the same thing. The principles of money creation are very old indeed.

State spending

So far, we have discussed an example of private money creation. The other way in which money may enter the economic system is by public money creation. Just as the state has the power to license banks to create money, so (eurozone states excepted) it can create money itself. Just as banks and their customers 'inject' new money into the economy when a loan is spent, so the state adds to the economy's money stock when it spends. Money creation happens each time governments pay out, for instance, an unemployment benefit, or when they pay for infrastructure construction.

State
spending is
public credit
creation

Accounting-wise, money creation by bank operations and the state's 'spending money into existence' are quite similar. A bank assumes a liability upon itself when it creates a loan and the matching deposit, which is money. The government, when it spends money, instructs its bank – this may be the central bank or, as in the Netherlands, a private

bank – to reduce the government balance at the bank and to increase the balance of the bank of whoever is receiving, say, unemployment benefit. New money has now been created, which would not have existed had there not been an unemployment benefit system.

This operation is the exact opposite of taxation. Government spending and bank lending increase the amount of money in the economy, government taxation and bank loan repayment decrease the amount of money. When the government runs a deficit, there is a net increase in money, with the beneficiaries and perhaps also the uses decided by the government. This suggests that there is a role for the state, as well as for private banks and their customers, in regulating the amount of money and its uses.

Note that it does not follow that taxes finance spending, as is commonly held. Taxation is not strictly needed before the state can spend, just as saving is not needed before the bank can create money and Will can spend. That doesn't mean taxation is unimportant: the state needs to tax in order to maintain the demand for its currency. Taxation is also one way to regulate the money supply (though it is not consciously used for that purpose by governments).

The importance of state spending in the functioning of the economy figured prominently in early theories of economic development and in the Western European experience of post-war reconstruction. From the 1940s and 1950s, when the economic

development problem came to the fore as a separate research field in economics, theories of state-led development¹⁶ emphasised that state spending was vital to kick-start economic development in an underdeveloped economy. In doing this, the state can solve a coordination problem that the private market cannot resolve. This is illustrated in the following example.

Catalysing innovation by investing in public goods

Suppose a country has great potential for coffee production, but no roads and harbours to transport the coffee to the global market. Farmers are therefore not investing in coffee plantations, despite the potential. By the same token, construction companies will not build roads and harbours unless they can reasonably anticipate their use by coffee farmers earning enough money to pay toll money. If there are no coffee farmers, no infrastructure is built. This is a catch-22. The farmers are waiting for infrastructure and the builders are waiting for coffee production, so no one acts.

Public sector investment is an effective way to deliver public goods

There is a need for investment in either infrastructure or coffee plantations (neither of which is profitable in current circumstances) so that the other investment will follow. This requires some party which is motivated not just by agricultural profit or construction profit, but by the country's future overall development, which can pay upfront and recoup costs later. Sometimes private parties do this, for instance when mining companies build their own roads, but in most cases only the state satisfies the conditions to act. It can pay upfront

because it can create money; unlike a bank, it need not recoup the money from one party but can recover costs later by a tax claim on all parties' profits once they are realised. In fact, the tax burden need never arise as the state claims the same share of a growing economic pie, all going well. State-financed investment can be a win-win decision for the public and private purses – much like bank-financed innovation. Of course, this scenario includes a lot of assumptions, especially about the state's capabilities to do all this. These assumptions are often not satisfied, particularly in developing economies.

The development of the renewable energy sector over the last 30 years demonstrates that state subsidies can be highly effective. In the industry's infancy, the technology was expensive and performed poorly. The energy price was not competitive with other sources of energy, such as fossil fuels or nuclear power. National governments and the European Union introduced subsidies which enabled entrepreneurs (financed by investors and bankers) to build large-scale wind and solar farms. This created demand for windmills and solar panels. The increased demand attracted investment in the production of windmills and solar panels, and stimulated R&D. Over the years, the productivity of these technologies increased dramatically, allowing states to reduce progressively their subsidy schemes. It is now expected that renewable energy will become competitive without subsidies in the best places.

Here is an instance of how state investments have been crucial in projects where the return to society was much larger than the benefits accruing only to renewable energy farm owners. Society benefits from lower carbon emissions, access to a new source of energy (with no foreseeable limitations), less dependency of markets on existing energy sources, and so on. In this case, the state was truly an 'entrepreneurial state'. It supported private entrepreneurs not just by maintaining law and order and a stable economic environment, but by acting as an entrepreneur itself.

Innovative infrastructure and the entrepreneurial state

Just as banks' reason for existence is to be entrepreneurial in supporting innovations that are privately undertaken, so a key role for the state is to be entrepreneurial as it supports the creation of an innovative public good. There is no hard-and-fast distinction between private and public financing: banks can participate in the financing of the creation of public goods and the state can co-finance private innovations. But public goods will typically not be created when only private finance is available. Even some landmark innovative private goods (such as the iPhone) would not exist without state initiative and financing¹⁷. Private parties have no legal means to capture revenues from a public good so they will not incur the costs to create them. This is why the state's capacity to create money is so important.

Energy and infrastructure within the state's jurisdiction are examples of public goods. The definition of a public good is that no one can be excluded from its use; its development benefits society as a whole.

That is why the public sector is the party best suited for investing in public goods, such as the education system. By creating a high-quality education system, and perhaps even giving everyone free access, a government can enormously increase economic development (not to speak of personal development). It fosters the skills of the labour force and society's capacity for innovation. Likewise, a public transport system reduces the private economy's transport costs and carbon emissions. It brings down the transport component of all product prices and it supports labour market mobility and the exchange of goods and ideas.

The list of public goods can easily be extended, it could include high-quality media, state-sponsored research and development centres for industry and public food certification schemes. Even unemployment benefits (which do not directly finance investment of any kind) have positive economic spillover effects, by maintaining aggregate demand for the economy's output from those parts of the population who have no income. This was recognised by Keynes in his pathbreaking analysis of the importance of aggregate demand in explaining (and preventing) depressions.

Giving and getting

Even though both banks and the state create money, there is an important difference between bank lending and much of state spending. Unlike bank loans, which need to be repaid by the borrower, state spending is in the nature of a gift. Like bank loans (and unlike spot exchange transactions),

state spending is money created out of nothing. No one needs to give up current money in order to receive state spending (unless the state chooses simultaneously to increase taxation and sell bonds – neither of which are prerequisites for state spending). Unlike bank lending, there is no future repayment requirement for money that the state spends. This is readily apparent for unemployment benefits, child allowances or state pension schemes. They are described as transfers – not payments or investment – and are, in effect, gifts. Gifts and subsidies are a different category of spending from loans and exchange transactions. They have a special significance for economic development, as the example of the coffee farmers illustrates. Gifts may also be given by private parties as philanthropic investments in, for instance, schools or hospitals. Their importance relative to government transfers is larger in Anglo-Saxon economies than elsewhere, but typically this is small compared to government spending.

Gifts and subsidies are necessary for economic development wherever public goods are needed, since repayment of public goods cannot be enforced. As we have seen, public goods are everywhere, and therefore transfers and free investments are necessary, not just in underdeveloped economies, but everywhere and continually. No one using a school or hospital needs to repay in full the value of what they receive. This is economically rational, because the value created by schools and hospitals exceeds the benefits their direct users accrue from them. The benefits go to society as a whole, not to a specific investor in schools or healthcare.

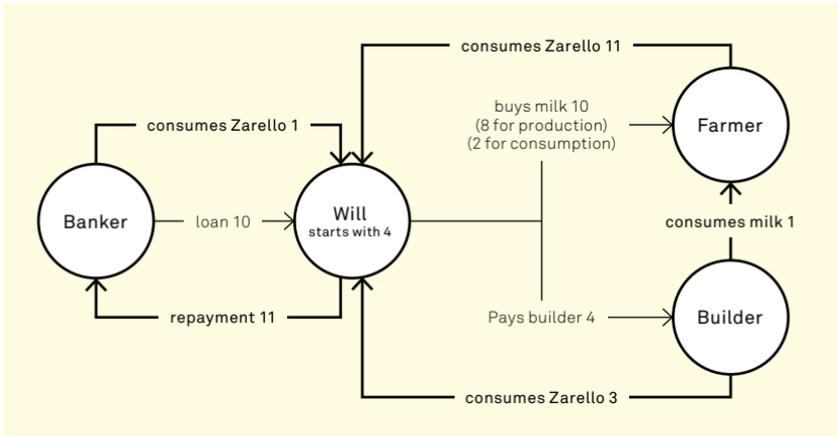
Better educated and healthier people extend society's potential in productive, social, cultural and other domains. The results are often very long term, far beyond the typical investor horizon of less than ten years. Attempts to make schools, hospitals, prisons and roads profitable as if they were private companies ignore the importance of free investment in public goods as a gift or subsidy.

This argument can be extended into the realm of those private goods which have many public-good features – with highly coordinated production, large upfront investment costs, long investment horizons and large spillover effects. Mariana Mazzucato¹⁸ has made the case that many of the transformative innovations and products in today's economy would not have existed without public involvement and financing. Her prime example is the iPhone. One implication is that the revenues from such publicly funded innovations should not be captured exclusively by private corporations. Below we will return to the different functions of money used in exchange transactions, loans, and gifts/subsidies.

Money circulation

Newly created money (whether by the state or by banks) becomes circulating money and, all going well, it will benefit economic development. Let us return to Will, who had €4,000 and took out a €10,000 bank loan. Will now wants to build a small Zarello workshop. The builder he approaches gives him an estimate of €4,000. Will pays this – that is, he orders the banker to pay the builder. The banker

Figure 4: Money creation, money circulation and economic development: an example



Note: Numbers are in '000 euros. Will obtains a €10,000 2-year loan at 5% interest and produces Zarello cheese. Blue flows of money are before production, green flows of money are after production.

Source: Author's own, with thanks to Joeri Schasfoort.

transfers the money to the account of the builder, who banks with the same bank. In fact, all the banker does is change numbers in her computer. Will's account balance is altered from €14,000 to €10,000. The bank increases the builder's account by €4,000.

Now the builder orders materials and later he pays workers. Again, numbers in bank accounts are changed: the builder's account falls, the bank accounts of the suppliers and then the workers rise. The workers go shopping, and again account balances are adjusted, now in favour of shops. And so on. The money that was first created, now circulates in the economy.

Meanwhile, over the next two years, Will spends the remaining €10,000 in his account. He buys milk as input to his Zarello, and he also buys €2,000 worth of milk for his own consumption. (In this simple

model economy, all people eat is cheese and all they drink is milk.) He produces the Zarello and sells it to consumers – the farmer, the builder and the banker – for a total value of €15,000. This allows him to repay the bank loan with interest and provides him with enough money to live on for two years without depleting his savings. Will is now a successful entrepreneur. He has rebuilt his starting capital, he owns a Zarello workshop and everybody loves his cheese. He is ready for a great future. Figure 4 illustrates the money flows.

Of course, this is a simplified example. For instance, no one saves – we will come back to that – but it illustrates the basic principle that money creation and circulation can be a powerful force for innovation. It helps to turn ideas into reality and it enriches our choice of cheeses: no mean feat.

Money
creation and
circulation
turn ideas into
reality

‘Circulation’ is actually a metaphor: in fact, the money never leaves the bank (or if there is more than one bank, it never leaves the banking system). The banker administers each of the transactions in the economy. The financial transactions are the mirror image of transactions in the real economy. Throughout the process, the money is expressed as numbers in bank computers. No one carries bank notes around, and no precious metal or other stuff is in any way involved in money creation. Some readers may worry therefore about there being no real value in such money.

But this is fine: money was always a number, whether scratched on a tally stick or written into a clay table. It was always a symbol of our debts.

And underlying those numbers, there is real value-added, and in our example it tastes good. The new money, created as credit, stimulated economic activity, employment and output before it was destroyed when Will repaid the loan. Credit creation supports the economy, provided it makes new economic activity possible in the first place (which is not always the case, as we shall see). Credit is an 'enabler' so long as it supports production and innovation.

Creation, destruction and economic growth

In the above example, the 'circular flow', as Joseph Schumpeter called it, is completed. Schumpeter was not so much interested in the money flows, but in the flows of labour and products and services that mirrored the money flows. That is, the increase in economic activity and output that economic development is all about.

In the process, money has been created 'out of nothing' and has disappeared 'into nothing', if you like. This is fine from a bookkeeping perspective. In accounting, value is created out of nothing all the time. Think of goodwill in a firm's balance sheet, that represents future cash flows. In firms there is equity creation, in banks there is money creation. The value is coming from the future, since the values of loans and other assets in balance sheets reflect the net present value of expected future cash flows generated by entrepreneurs like Will. In this sense, money does not come out of nothing. It comes out of a shared vision of future possibilities.

Economic development requires an expanding money supply

We are now ready to appreciate in a more general, macroeconomic sense why credit creation is so significant. Without it, the economy could not develop, in the sense that new things happen in the economy when innovations take place. A growing and developing economy, in this sense, where additional value is created, requires that the transactions that make this development possible can be undertaken, and this in turn typically requires an expanding money supply through money creation, at least initially. In the longer term, as technologies make production cheaper, more innovation may actually mean that less money creation may be needed to run the economy. But initially, when investment in new activities must be made before existing activities are liquidated, an expansion of the money supply is typically required.

An expanding money supply will not happen if money is simply shifted around between savers and investors. More money needs to be truly created, that is: brought into being. As an aside, this necessary growth of the money supply does not have to mean that the economy is using up more resources. Value-added can also be created by pro-sustainability innovations. If we all start spending more on electric cars, building insulation, public transport, car and bicycle share schemes and green energy, and more so than we used to spend on fossil fuel cars and the like, that is economic growth. It is an increase in value-added. Economic development (with or without GDP growth) and increasing sustainability of the economic system can go together.

Successful economies depend on innovations, like those electric cars. This is an argument also originally made by Schumpeter, and one which is just as relevant today. He explained that innovations very often do not serve the interests of those who control current financial resources. The fortunes of large corporations and wealthy individuals may be reliant on industries and production processes that will be rendered obsolete by the innovation. If no new money was ever created, then innovators, with good ideas but no money, would have to obtain funding from the wealthy, who may well have vested interests in existing sectors, processes, or products. This is unlikely to succeed at the scale needed to propel innovations. But banks can create money for innovations by outsiders immediately, without limit, and without bothering with the opinion of the vested interests. A society with a stagnant credit-money supply will have stunted productivity growth and innovations.

Sustainability
and financing
value-added
innovation

A good example of the continuing need for the financing of innovations is the green transition. We need to start investing massively in a carbon-free economy, but there are trillions of euros of high-carbon assets, held largely in pension funds. In a green transition, these financial assets become 'stranded assets'; they are useless in the new economic structure. If we already know the transition is coming but nevertheless hold on to these assets as carriers of financial value, then (putting it harshly) the assets that will become stranded preserve fake values that destroy opportunities

for future generations. The problem is that their owners, and the asset allocators that manage them on behalf of their owners, have no short-term financial interest in investing in a green transition which destroys their asset values. They would be shooting themselves in the foot. We return to this problem in Part 4.

The role of banks has changed in the century since Schumpeter wrote. In particular, the advent of market-based banking¹⁹ has undermined banks' role in innovation. This is a business model in which banks sell their loans to financial markets and obtain funding in the financial markets, rather than from customer deposits. Banks have become less involved in the real economy; their riskiness has increased (through leveraging and low capital buffers) and as a result they have proven vulnerable to market upheavals, are now over-regulated, and therefore unable as well as (it often seems) unwilling to take real market risks on innovations. The fundamental analysis that money is bank money, and that growth of liquidity ultimately depends on bank lending still stands, but the practical connections between banks and innovative firms have greatly weakened. Markets, both public share markets and private equity capital, have taken over much of the financing of innovative technology, beginning with the dotcom boom of the 1990s.

The special role of the banking system

It is questionable that this is the right financing model for society. Banks, state financing vehicles, stock markets, crowdfunding, venture capital and

bond markets are all alternative ways of obtaining external finance for firms and individuals.

At the individual level, the entrepreneur cares little whether investments are financed by issuing shares or borrowing from a bank. But at the system level, we should care. New shares can only attract money that has already been created as loans by banks. They cannot increase the money supply. Money flowing into the shares of one company cannot be spent on another innovation. But with loans, things are different. A bank loan made today does not detract from the financial system's ability to generate money in the future.

Bank are systemically important because of their role in credit creation

There are no technical limits to bank credit creation at the system level, although there are clear limits at the level of the individual bank. Individual banks are heavily regulated by their central bank. They are only authorised to create money up to a certain multiplier of their own equity (capital). If they want to expand, they have to raise equity. In addition, banks need to keep a regulated level of liquidity (reserves) so that they can at any time repay deposits to their customers and execute payments on behalf of their customers.

So any bank may lack the capital to make more loans, or it may hit the floor of its required reserves and not be allowed to lend more unless it attracts more reserves. But these are not constraints for the system as a whole. If lending is a profitable business, investors will provide capital to banks. The money created by banks in the past and now circulating in the economy, will return to the banking system as

capital. Likewise, reserves are no constraint on lending at the level of the banking system. Central banks will provide reserves to the banking system as needed, to prevent interbank rates rising too much as banks bid up the price of reserves. Money created by banks is also, ultimately, what constitutes a company's equity, and makes it financially viable.

In sum, it is money created by banks that is later used in different forms of non-bank lending, or investment. Banks are unique because they create the money of account, unlike other financial institutions. And because money creation is vital to a dynamic, innovative economy, so are banks.

A final point about the systemic importance of banks and credit creation has already been noted in Will's case, but it bears repetition. Money is a way to realise ideas. Ultimately, ideas drive the process of economic development. By creating money, we create the opportunities to realise what we want to do. Will's imagination and the banker's belief in Will, his project and his skills all come into play. Money creation is a deeply social process. It emerges out of the interaction between Will and the banker. It reflects the human genius for ideas, organisation and innovation, to bring into existence the future that both parties envision. Banks borrow money from the future in order to create value that does not yet exist. It all starts with imagining that future.

In this sense, economic development ultimately depends on 'human wit and will' as the German economist Friedrich List²⁰ put it. The constraints

and barriers to economic and social development are often not physical. To the extent that we can mobilise new resources and realise inventions starting with innovations, the constraints and barriers to economic and social development are in our minds and in our social organisation. Money is a key part of that social organisation. It makes it possible for innovators, those with new ideas, to claim resources and then transfer them from existing industries to new ventures.

Credit creation, and the mutual acceptance of debt that it implies, is a wonderful innovation. The economy could not develop without it. Imagine if Will had been convinced that 'debt is bad' (a common sentiment). Imagine if no bank had been there to lend. No Zarello would have been produced, no jobs would have been created. And Will would still be just a wannabe entrepreneur.

Financial markets and saving

Our conceptual exploration began by introducing credit as a means of connecting good ideas with the money to realise them. The next conceptual stage, once money is circulating – that is, once we have a monetised economy – is that there are other ways for entrepreneurs to finance their ventures.

In an economy with financial markets, Will can issue liabilities directly to investors instead of the bank, promising them a fixed return per year, equivalent to the interest paid to the bank. These are 'bonds', since Will 'binds' himself to

the repayment; he promises it. Or Will can promise some of the profit – these investors hold ‘shares’ in the profit, also known as ‘stock’.

We often refer to stocks, bonds and similar liabilities collectively as securities – again a telling name, referring to the underlying productive process that should safeguard the value of the financial asset.

If a bank’s distinct role in the economic system is to provide new purchasing power, the special role of financial markets is to offer investment vehicles. Those who have more money than they wish to spend find ways to hold that wealth in financial markets. They could of course just keep it in a bank account, in which case banks could lend it out. Banks, after all, can create money but they may also pass on existing money from savers to investors. But shares and bonds offer a greater choice of risk and return combinations.

Markets
allocate
existing
money; they
do not create
money

While markets can finance investment just as well as banks, they have a limitation. As noted, no money is created in financial markets, it is shifted from creditors to debtors. Bank are money creators, markets are money shifters. There are no economies without banks, but there are many economies without stock markets.

At this point you might wonder if we haven’t skipped an important step. Surely, we first need to discuss *saving*, before financial intermediation and investment are possible? In fact, saving comes into the story only once financial markets have been

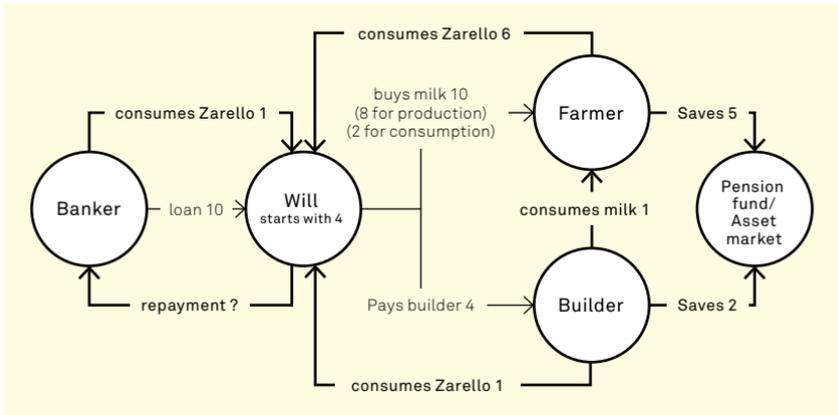
introduced. Saving occurs when a person's income exceeds her expenditure. She then has savings – the extra letter s makes the difference between the verb that is the act of saving and the noun that is the positive financial balance.

Savings and the demand for financial and non-financial assets

Savings are what is left over from income (wages or profit) after consumption. Business saving is what is left over from sales after capital owners and employees have been paid and the entrepreneur has spent on consumption. Household saving is what is left over when wages have been received and the household members have spent on consumption. The 'circular flow' of the economic process goes from lending to saving, rather than from saving to lending. Think about the sequence. Sales constitute the cash flow that makes profit and wages possible from which saving can be done. But sales result from investment, and investment in turn often first requires lending, as in the case of Will. It all starts with credit.

When saving takes place, asset markets come into play. Income that is not consumed may be held in a bank account or a safe, but typically it will not stay there. This financial balance is then invested in, for instance, a stock or a bond (as financial assets). Or it may be held as land, buildings, art, gold, jewels, bottles of quality wine, tulip bulbs, or any other real asset, productive or otherwise. The saver will spend the money on an asset. In Figure 5, saving is introduced into Will's economy. The farmer and the builder save money by paying into their pension fund, which invests it on their behalf in an asset.

Figure 5: Economic development with financial markets: an example



Note: Numbers are 000 euros. Will obtains a €10,000 2-year loan at 5% interest and produces Zarello cheese. His customers save.

Source: Author's own, with thanks to Joeri Schasfoort.

The seller of the financial asset (who is not in the picture) may of course in the future use the money to consume goods, such as Will's Zarello. In this case, the money that was saved in the real sector and then spent on an asset returns to the real sector. But this is atypical. More usually, the seller of the asset is a financial investor who uses the money received for some other financial investment. A financial investment is very different from Will's investment in his Zarello venture.

Let us think through what it means to have financial markets. What are the implications for Will? The financial investments mean that money is now circulating not only in the real economy, but also in the financial markets where financial assets and financial instruments are bought and sold. The money value that was represented in income is locked into assets. Money representing income has become money representing wealth. This creates a new situation.

Financial assets and the potential for leaks in the circular flow of money

One implication of having financial markets, or asset markets in general, is that there is now a potential ‘leak’ in the circular flow of money. The repayment flow now has a question mark. Will could only repay his loan because enough money was spent on his products. Suppose now that Will was operating in an economy with financial markets, and that in those markets a boom in share prices was going on. Suppose that the profits to be made in share markets are so large that all consumers decide to devote part of their money to buying shares, rather than buying Will’s Zarello. In the example, savings totalling €7,000 mean that Will’s sales fall by €7,000. Will would not be able to repay his debts. He may go bankrupt.

This would be fine if the shares that enjoy such popularity are issued by a new entrepreneur, who replaces Will with a more innovative product. After all, that’s just what Will did with the mozzarella producers. This is the famous ‘creative destruction’ that Schumpeter (him again!) also wrote about. Creating innovations implies moving resources to new ventures, and therefore the destruction of obsolete businesses. Money, which is a claim on resources, is the tool that does the moving. One day, Will’s Zarello will have become obsolete.

Alternatively, Will could obtain money to survive in other ways than by selling Zarello. He could go to the bank and ask for his loan to be rolled over – that is, for the bank to allow him to remain in debt for a bit longer; in effect, lending Will the money that the farmer and the builder saved. In the scenario without saving, the financial liabilities

issued by Will were financing real assets. Now we have an economy with additional financial assets (in the pension fund) balanced with new financial liabilities (for Will).

Another route for Will to survive is to convince the pension fund manager to buy a stake in his business. Will gets money to repay his loan; in return he gives the pension fund a claim on his future profit. The farmer and the builder invest in Will's business, via their pension fund. Whether Will borrows the money or finds an investor, the economy's balance sheet has expanded. There are more assets and more liabilities.

These examples are solutions – wise or otherwise – for Will to continue his Zarello business. But what if pension funds or individual investors buy shares *without* any benefit to Will, a new entrepreneur, or the productive economy in general? What if the builder and the farmer just save, without any productive investment taking place? This is not possible if you believe that $I=S$, as the textbooks put it. A common idea is that if there is not enough investment, this can be addressed by saving more, so that more can be invested. Let us consider this idea more closely.

Does saving equal investment?

Not all saving
is productive

Savings are by definition 'invested', that is, the money income that was not consumed is by definition held as a (real or financial) asset. This is why economists say that 'investment equals saving'. This is an identity: it is true by

definition. In macroeconomics, this identity is often (confusingly) used as shorthand for 'productive investment equals saving'. This is not an identity, because it is not true by definition. In fact, it is virtually never true. Saving is always first financial saving, and typically only part of the financial saving is used to make or buy capital goods, which is productive investment. And yet in academic macroeconomics, saving (S) is habitually equated to productive investment (I). This is the ' $I=S$ ' condition often encountered in macroeconomic models and textbooks. Many macroeconomists will object to the distinction between 'productive' and 'unproductive' saving to start with. There is an argument that saving and investment is productive by definition, or it would not occur. Why would anyone give up consumption of goods and save, in order to invest without getting more produced goods back for it? Why indeed. And yet this is far from rare, as we will see in Part 3.

Meanwhile, because this does not seem to make sense, it is typically assumed away by $I=S$, with I equating to productive investment. This may be a justifiable simplification of the economic model in some contexts. But it is also a source of great confusion, which we will avoid here. Savings are used for either real investment or financial investment. And it is precisely the financial investment, defined away in many models, that explains many of the questions we address in this book.

Does lending require prior saving?

There is also a widespread intuition that saving is required *before* lending can occur – an attractive idea since it corresponds to everyday experience. I can only lend out what I did not spend when I consumed. But the same is not true for the banking system as a whole, because banks create money. All the money that is saved and then invested in financial markets and elsewhere, was at some point created and ‘lent out’ by banks. Banks first lend, thereby creating money, and only later is the money saved and invested.

The banking system creates new money when it credits depositors’ accounts

The bank system level must be carefully distinguished from the level of the individual bank. Whoever wants to start a bank needs to have money before he can start making loans and facilitating payments. But that money was first created by other banks; that is, in the banking system²¹. Therefore, the bank system does not need to have money before it can make loans.

The term ‘lending’ is actually confusing in the case of banking, because ‘lending’ in everyday language means giving away what you have in expectation of getting it back in the future. With lending, you first need to have it; it already exists. But banks do not lend money that they have. They create the money in the act of lending. This is why those working in banking would often rather say that they ‘credit an account’ rather than ‘lend’. Only in primary financial markets – that is, only in the case of new bond and share issues by firms – do savers- investors truly give what they have to firms when they buy securities.

If we do not get the lending-saving sequence right, we might be tricked into thinking, for instance, that poor countries that do not invest much (and where in consequence economic growth is slow) just need to save more, so that they can invest more and grow out of poverty. However, for poor countries (and everyone else), this is bad advice. Saving more isn't really an option for those on low incomes; they probably invest so little for reasons unrelated to their level of saving.

More saving does not help; fortunately, in the right conditions, it is not necessary. Banks can create the money that will set in motion the circular flow of economic development. No prior saving is needed. Once incomes rise, savings will also grow, unless all additional income is consumed. That correlation must not be mistaken for causation from savings to income growth.

A clear example is China, which developed its economy since the 1978 reforms not because the Chinese started saving so much, but because of its strong domestic banking system. That system now appears to be highly leveraged and very risky, but the possible losses that may result from this are still very small relative to the enormous income gains that the Chinese banking system has supported over the last four decades.

This is not to say that no initial capital is needed, and all money required for development can always be created from scratch. A good illustration is micro-finance in support of economic development. This typically starts with an NGO who spends

money as a gift to develop a micro-finance program. (We note again the importance of transfers, gifts and subsidies). The next step is a micro-finance institution that borrows money from banking institutions to finance micro-loans. The last step is a banking licence, where money is created by the micro-finance bank itself to grant the micro-loans. Up to now, seed capital is needed at every stage to facilitate the programme's expansion. But in the last stage, the micro-finance bank has entered the money creation phase. It is no longer dependent on prior savings by some other party.

Summary

Will's model economy was a good starting point to see the fantastic potential of credit creation. With saving on a large scale, we have moved into a new kind of economic system: financial capitalism. Once there is a large pool of savings, and enough people who earn more than they spend, the conditions are right for securities markets to develop. Deep securities markets make it easy to obtain and dispense of securities. They are liquid, and this is a great advantage both to investors and to producers. Attracting investment and saving becomes so much easier if producers can always find a financier in a liquid market and investors can always find a savings product. Investors need not wait for new shares or bonds to be issued; they can simply buy them from other investors on what is now the 'secondary' market.

This is convenient, but as we have seen, there is a downside. Money is locked into this system of asset markets, as we've already noted. The investor no longer needs to know what she is financing. There is no contact with the producer anymore. The investor may hold the share for its value, without knowing what it finances. This begs the question how the investor should value the bond or the share. If there are too many savings and no new issues, asset prices will rise quite independently of the performance of the firm that once issued the shares. And savings can always increase without any real investment taking place, if banks are willing to create savings as new money and borrowers are willing to borrow. They might well be,

if asset markets seem to offer good returns. There is now room for positive or negative sentiment to determine share values, quite apart from the performance of the firm that issues the share. Speculation has become a possibility, as has financial instability. And beyond speculation looms the more pervasive problem of rents.

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Failures

Part 3

So far, we have considered how money functions to support the economy. We now turn to failures in the financial system.

Asset markets and market-based banking

The description in Part 2 of how the financial system functions to support the economy is not all there is to say about the reality today. There has been a shift in the use of debt, and in the impact of finance on the economy, in recent decades. Lending for investment and innovations occurs, but perhaps more often than not, the financial system today hurts rather than helps the economy. The financial system's failure to support the real economy in our time is connected to asset markets. Asset markets bring many benefits to the economy, but they also open up the possibility of asset market speculation, which generates debt growth that does not benefit the real economy.

Financial assets can detract from the real economy

Conceptually, we can see this by looking at Will's economy with and without saving and financial markets. Without asset markets, there is a one-to-one relation between bank lending and investment resulting in more production. With asset markets, this relation no longer necessarily exists. An increase in savings may circulate in the real estate, bond, stock and other asset markets without making any difference to production. The important word is 'may': savings may also be re-lent into the productive sector and support

production, consistent with the assumption that 'savings equal real investment'. Asset markets could support the real economy, but very often they do not. In this section, we look at features of asset markets that help to explain why this relationship is fragmenting.

Before exploring what this means, we should be clear about what it does not mean. First, this is not to say that we can do without asset markets or should strive to abolish them. Asset markets are where we hold our wealth; this is an indispensable function of the financial system. Rather we need to study what happens in asset markets if we want to understand pathologies in the financial system – especially the pathology of rising debt without a matching rise in production, efficiency or innovation.

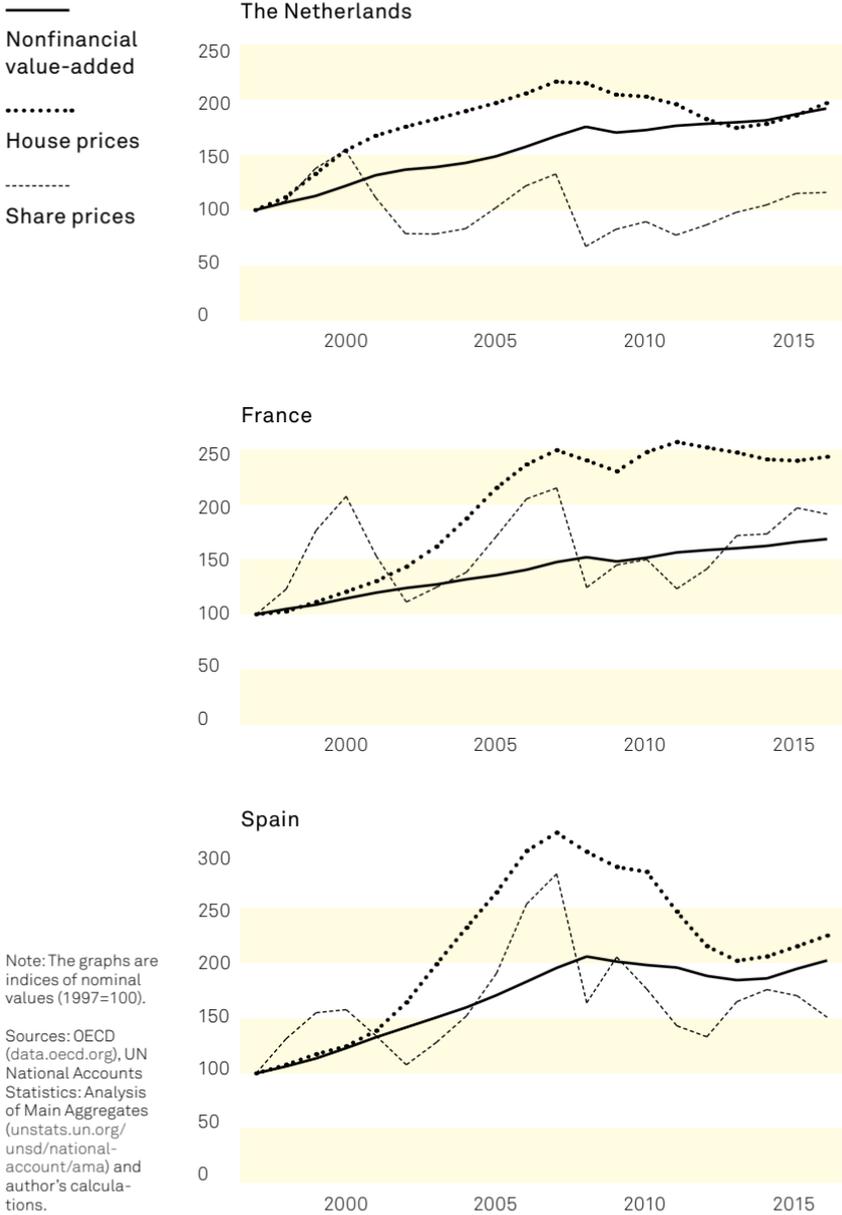
Second, this section, titled 'failures' and focusing on asset markets, follows a section called 'functioning' where the focus is on banks. This does not imply a rigid dichotomy between banks and markets. It does not mean that bank lending supports the economy while markets for shares, bonds, commodities and real estate do not; that banks are functional and markets are dysfunctional when it comes to economic development. That would be too simplistic. It does not even mean that the *potential* for pathologies is always in asset markets and never in banking – something that may seem to follow from Will's simple model economy.

In Will's economy, the bank only lends to support his productive activity. In Part 3, we go beyond this useful but simplified picture.

In practice banks lend also, nowadays primarily, to households to support real-estate markets and to other financial firms supporting financial asset markets. There is no neat distinction between banks and markets because banking itself has become part of the asset markets – a development known as 'market-based banking'. Another aspect of market-based banking is that banks sell their loans in the financial markets, a transaction known as 'securitising' a loan. The loan itself becomes an asset, with a value that fluctuates, and in which speculation is possible. For these reasons, drawing a clear dividing line between banks as loan originators and markets as the places is not helpful in understanding the financial system today.

A key outcome is that in Western economies, the fantastic potential of banks to support innovation and growth is hardly realised anymore today. It is important to understand that potential and recognise where it happens to keep alive the vision of what banking and the financial system could do. This understanding and this vision was developed in Part 2. But today, much of bank lending is only a growth in debt without a growth in production, innovation or efficiency. This rise of bank debt (and other debt) relative to income reflects the failure of the entire financial system – both banks and markets – to support the economy.

Figure 6: Asset market valuations and real sector value-added, 1997-2016



A different domain

To see this, we first need to understand that asset markets are in a different domain from the real economy. The value of assets is not a reliable reflection of the value added in the real economy, as is often tacitly assumed. When share prices go up, this need not signify comparable growth in profit or incomes. When house prices rise, there may not be proportional growth in the gross domestic product.

Figure 6 illustrates this for the Netherlands, Spain and France over the two decades 1997-2016. The value of the two most widely owned asset classes, stock and real estate, appears to rise and fall quite independently of the development of non-financial value-added, which is measured as the country's gross domestic product without the financial and real-estate sectors, and with net subsidies excluded. The value added in the non-financial sector is a proxy for income growth; it sums all incomes earned in non-financial sectors.

In all three countries, there was a strong rise in house prices in the first decade, though much stronger in Spain and France than in the Netherlands (where house prices had already risen much earlier in the 1990s). This was followed by house price deflation in Spain and the Netherlands and stagnation in France. Stock prices in all three countries followed two boom-bust cycles relative to value-added over 1997-2007, with the biggest cumulative losses in the Netherlands. Thereafter, stock prices roughly moved in line with

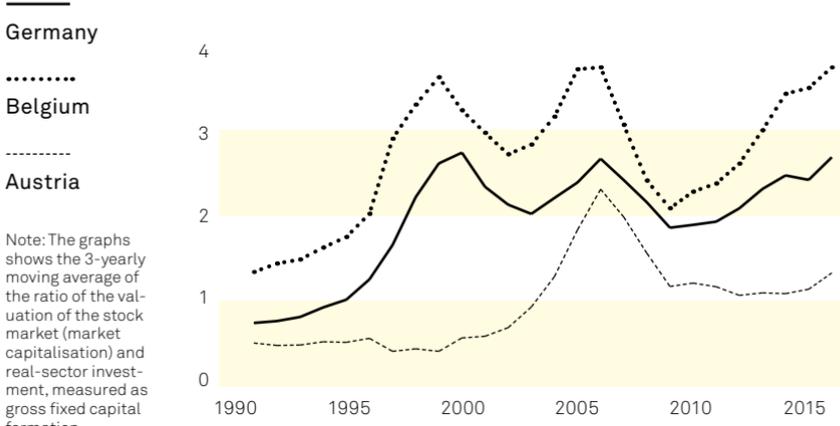
value-added in the Netherlands, they rose relative to value-added in France from 2011, and they continued to be volatile in Spain.

In short, asset markets seem to have their own dynamic. Only in the very long run (decades) is there convergence between income and asset price levels. Their medium- and short-term behaviour is markedly different. To be sure, there is a correlation between changes in income growth and in the growth of asset prices, but the magnitude of these changes can differ greatly. The levels of (for instance) house prices and incomes may diverge for long periods. It is possible to become asset-rich without much change in income, and to suffer large wealth losses with a stable income. This appears to contradict the idea that saving out of income is what constitutes our wealth, and conversely that savings held as assets finance the investments that we need to generate incomes. If these linkages were all there is, then changes in wealth and changes in income could never diverge much. This begs the question: what is the relation between asset prices and incomes? How do asset markets relate to the real sector?

Asset prices, investment and fundamental value

A key reason for the rise and fall of asset values relative to real-economy values is the disconnect between financial investment and productive investment noted at the end of Part 2. Savings (and loans) need not be used to finance productive investment. Saved money might equally well continue to be invested in financial products or

Figure 7: Stock market capitalisation relative to investment roughly doubled between 1990 and 2018



Note: The graphs shows the 3-yearly moving average of the ratio of the valuation of the stock market (market capitalisation) and real-sector investment, measured as gross fixed capital formation.

Source: OECD.

real estate, without any stimulus to productive investment and output. In fact, this is just what has happened in most economies worldwide since the financial liberalisation that started in the 1980s. The growth in tangible investment has increasingly fallen behind the growth in financial and real-estate investment.

The value of stocks doesn't predict fundamental value

Figure 7 illustrates this for Austria, Belgium and Germany since 1990 (and this is equally applicable to many other economies). The graphs show the valuation of the stock market (market capitalisation) relative to real-sector investment, measured as gross fixed capital formation. Stock market valuations – the volume of tradable stocks multiplied by their respective market prices – are often interpreted as investors' valuation of the collective potential for profit of the firms that issued the shares. This expected future profit potential, the firms' discounted future cash flow, is sometimes called 'fundamental value'. Much financial

theory and practical market thinking is based on the assumption that changes in a firm's share price reflect changes in the market assessment of future profit. By this logic, market capitalisation captures investors' investment preferences across the entire stock market. If stock market valuations increase over time, this should lead to more investment in the real economy. After all, investors think there will be more profit in the future, and investment should follow profit opportunities.

To some extent, this is true. Growth in market capitalisation and growth in investment are correlated over time. But again - just as in the previous figure - something strange is going on with the *levels* of stock market capitalisation and investment. Stock market capitalisation relative to investment roughly doubled between 1990 and 2018. That is, the effectiveness of stock markets in inducing productive investment has halved. If that effectiveness had been stable, if stock market valuations rose and fell in line with investment, the graph would be flat, as it was in Austria in the 1990s. But for some reason, stock market valuations have ballooned out of proportion to the rise in investment.

One explanation for this is that stocks are traded in secondary markets. Money paid for shares is (mostly) not money paid to firms, so it is not money that directly finances investment; it never ends up in the business. In this simple 'follow the money' perspective, it is clear that high share prices in and of themselves do not make more investment possible in the sense of providing the money for investment to the business.

We can also think about the relations between share prices and investment in a slightly more sophisticated way. It might be argued that higher share prices make it easier for firms to issue new shares and collect money for investment, or to borrow money from banks and other lenders using their increased equity as collateral. One problem with this argument is that over the last two decades, on a net basis, firms have hardly issued new shares; on aggregate, they have bought their own shares back more than they issued new shares. This increases demand and raises the share price, but in the process the firm's funds for real investment decrease rather than increase! As an aside, it may also be noted that these share buybacks reduce the number of shares in the market, so that the rise in market capitalisations in the future is disproportionately due to rising share prices.

More fundamentally, the reasoning that rising market valuations should go with more real investment relies on the assumption, already noted, that share prices reflect profit opportunities. If that were so, the firm's managers will want to invest more when share prices are high. This need not be the case. Investors may just be enthusiastic about buying the shares from other investors. Rising prices will generate more enthusiasm, which propels prices even higher. Trading driven by algorithms may have the same effect, and a boom in the share market may result.

The role of sentiment

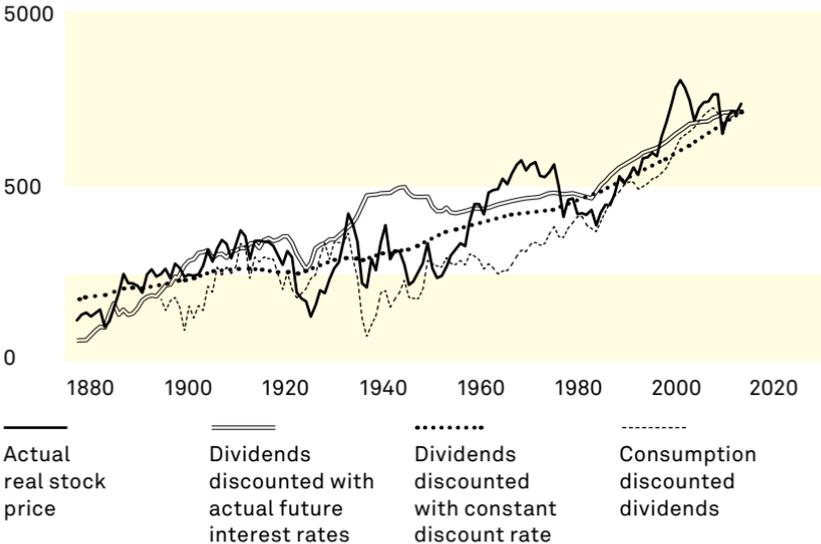
If the share price is driven by investor sentiment or computer algorithms, then share price increases are no indication that the firm is making more profit. There is therefore no rational basis for the firms which issued the shares to increase their levels of investment. With no change in its future profit opportunities, its appetite for investment is unchanged. In this scenario, the firm has neither additional investment resources, nor more reason to want to invest. Even so, its share price can rise, so long as there are enough investors wanting to buy shares from each other in the secondary market to bid up its price.

Investor behaviour is led by emotion as much as reason

But is this a realistic scenario? Why would share prices rise without any change in the performance of the firm or the market in which it operates? This is indeed only possible if share prices can be driven by investor sentiment and decouple from reality for long periods of time. Investors would never let this happen if they had adequate information about the firm and the market, the ability to use this information to forecast future firm profits, and if they based their investment decisions on this ability.

But those conditions are often not fulfilled in real-world financial markets. Investors operate in an environment of unknown unknowns, and responses to this include backward-looking expectations and behaviour driven by emotions, such as herding. This helps explain financial booms. There may not be a tendency to equilibrium, because financial

Figure 8: Stock prices diverge from firms' values: The US stock market, 1860-2014



Source: Shiller, R (2013) Speculative Asset Prices. Nobel Prize Lecture, December 8, 2013, at: <http://www.nobelprize.org/uploads/2018/06/shiller-lecture.pdf>

investments for capital gains do not follow the same logic as investment for production. Asset markets are not markets for products and services, where buying a good or service is driven by the need to consume it or to use it in the productive process. Those buying financial assets are often motivated by the desire to sell at a profit. With backward-looking expectations, rising asset prices can lead to more, not less demand. Speculation is not investment.

Taking this into account, there is no reason to expect that stock prices will reflect a firm's underlying value. Nobel laureate economist Robert Shiller has shown that indeed, they often do not. In Figure 8, the three grey graphs show firms' discounted future cash flow (their fundamental value), which should be the basis for their stock prices according to finance theory. The black graph shows actual

stock prices. It is clear that large gaps between actual prices and fundamental values can persist for over a decade.

This, you might now say to yourself, is all very bad. But perhaps a speculative boom must run out of steam quickly – how much, after all, can we collectively save for speculative ventures? With a given income, you cannot just go on consuming less and less, so that you can save more and invest that in speculative assets.

Access to
credit and
financial
instability

The problem with this argument is that there is credit. Banks and their customers between them create new purchasing power, and there is nothing to stop them spending this new money on speculation. Credit-money is a tool to move resources, but also to buy assets, if we so choose. Because there is no technical limit on how much money can be created, and also no limit on how high asset prices can go, speculative booms with credit can go on for a very long time – far longer than if we would have to first save the income with which to speculate. That is why the worst speculative bubbles are leveraged bubbles.

But surely speculation and instability in financial markets are the exception, and order is the norm? Surely supply and demand mechanisms mean that markets are normally in equilibrium? To ask the question is to answer it. This may be true in some markets, but not in financial markets – at least not according to a theory called the ‘financial instability hypothesis’ developed by the American economist Hyman Minsky. This states that

instability is not the exception, it is the norm. The theory brings together many of the elements discussed so far: money, credit, investment, speculation, debt and mass psychology. Its conclusion is that instability may be more normal than we want it to be – indeed, that a continuous tendency towards bouts of instability is woven into the fabric of financial capitalism. The theory is often summarised in Minsky’s famous phrase that ‘stability is destabilising’.

Financial instability

By now we understand that credit-money is not just a handy device to make exchange easier (although it is also that). It is also indispensable for innovation, entrepreneurship and economic development. This is why capitalism has produced more innovations and faster growth in living standards than any other economic system we know of. Schumpeter’s lasting achievement was to explain how. Minsky, who as a young man studied with Schumpeter in Harvard in the 1940s, added to this another consequence of sophisticated financial systems: to destabilise the economy. No one may intend this, but it is the outcome of the way the system works.

Money makes the difference

Minsky’s theory of finance-driven instability stands in stark contrast to the way we usually think about the economy – as a system that tends to stability, through the operation of supply and demand in goods and labour markets. Minsky was

saying the opposite: it is the tendency to instability that is innate to financial markets, and therefore to the economic system. Here's why.

It all starts with money; with the fact that capitalism is financial capitalism, not just because we use money (we did that before the advent of capitalism) but because financial markets are key determinants of capitalism's successes and failures.

The fact that you have money in your pocket implies that you are thinking about the future. The only reason, after all, to hold money is because you want to spend it in the future: a bank note is good for nothing except spending it. Since you haven't spent it yet, but will do so in the future, you must decide what to spend it on. You must form expectations about the best future spending patterns. Those expectations can easily decouple from reality, and they can change suddenly.

Asset allocators in the FIRE sector govern the global economy

What goes for you, goes for everybody with money. All money investments are driven by expectations. In particular, it applies to the big investors in the global economy: the pension funds, hedge funds, wealthy individuals and all those other asset allocators who between them decide how trillions of dollars will be spent. It is no exaggeration to say that asset allocators working for institutional investors decide on the course of the global economy in the future. Their decisions steer investments in some directions, and away from others. They make and break firms and indeed whole industries. Collectively, the 'finance,

insurance and real estate' industry is where the bulk of the economy's financial flows gather, and where their future direction is decided.

Finance, insurance and real estate are put together into one statistical category in the US income statistics for a reason. This is where the bulk of financial liquidity is managed; the money we use in the real economy is only a small amount compared to this. Finance is comprised of banks and financial markets which handle the enormous payment flows connected to credit, debts and securities. Insurance includes the insurers (including pension funds) who each month receive a big chunk of all incomes in premiums and pension policy payments. Real estate-related firms deal in the biggest asset market in every economy and manage the enormous flows of monthly mortgage payments secured on those assets. The acronym for the finance, insurance and real estate industries as a statistical category is the FIRE sector. And it is precisely the point of Minsky's theory that they form a combustible mix.

Financial instability

Primary and secondary wave financing have contrasting effects

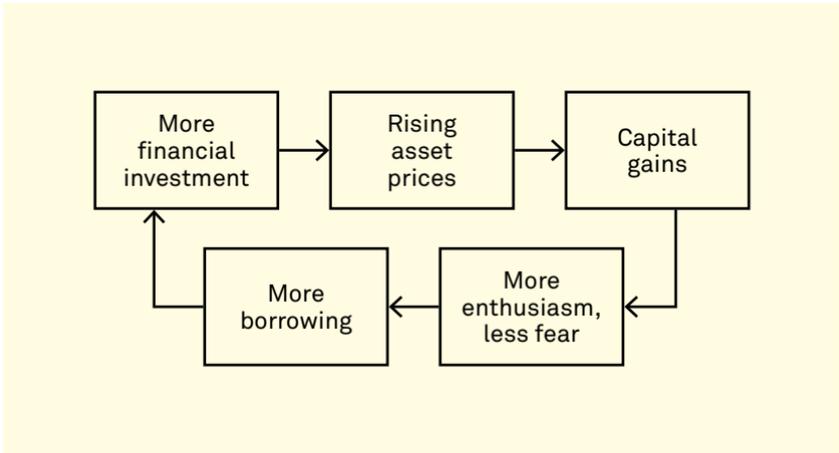
How do asset allocators make their decisions, and what are the impacts? To understand this, we need to look beyond the bulk concept of 'finance' and examine the uses to which it is put. This inquiry can build on another aspect of the work of the prolific Schumpeter: his theory of the two waves of finance in the financial cycle. Schumpeter sharply distinguished between the volume of credit financing innovation and development

(the 'primary wave' of credit) and the (typically larger) volume of 'secondary wave' of credit, financing consumption, over-investment and speculation which follows. This tendency for the uses of finance to degenerate over the course of a financial cycle was later developed into the theory of financial instability by Minsky.

Minsky suggested that what went for credit in Schumpeter's time, goes for financing more generally. This holds true in the twenty-first century as much as in Schumpeter's and Minsky's time. A financial expansion typically starts because of some real innovation or market opportunity. But when investment in that new opportunity is exhausted, expectations of increasing returns have already become so entrenched that investors will continue to borrow and invest, inevitably in less productive assets. To maintain return levels, they are likely to seek higher leverage and more risk over time. There is, then, an innate tendency for financial resources to shift to less productive and more risky uses. Banks, firms, households, governments, perhaps even central banks are all complicit in this process. Minsky viewed this as the generic reason why we have financial crises time and again.

The dynamic is that starting from a stable, safe position, investors are continually updating their expectations based on the past. In stable times, they expect more stability, and therefore increase their borrowing and investment. This starts a rise in asset prices, which appears to validate investment decisions. Expectations are then upgraded again to include yet more asset price growth with

Figure 9: Stability is destabilising



Source:
Author's own

stability. And so on. Figure 9 illustrates the dynamics of this circle of investors' joy and borrowers' enthusiasm.

The result of this feedback loop from rising asset prices, to more enthusiastic assessment of the future, to rising leverage and rising returns is a financial boom which, if not aborted by policy or by some external event, turns into a bubble and becomes unsustainable. The asset markets inevitably reach a point where asset prices are out of reach for too many investors, where debt levels become too large to be serviced, or where the stories investors tell each other to justify ever higher asset prices stretch the credulity of even the most enthusiastic borrower. A small piece of bad news in such an asset market, or a seemingly insignificant event that appears to question the continued rise of asset prices, is then enough to tip the balance between enthusiasm and fear.

Beyond that tipping point, the circle of joy becomes a circle of doom. Once the circle has continued for long enough, servicing debts in the future has come to depend very much on the continued increase in asset prices and on the capital gains that will be realised as a result. Rising asset prices are increasingly dependent on the continued injections of liquidity provided by additional borrowing, and less related to fundamental valuation drivers, such as productivity, innovation or new markets. In this fragile situation, it is enough that the rate of growth of borrowing flags only ever so little – and asset price rises will start falling. As investors start selling assets before prices fall still further, prices will fall at increasing speed. Instability turns into crisis, caused, ultimately, by the initial tranquillity that encouraged a little more risk and a little more leverage. Stability is destabilising.

Financial markets in and of themselves do not tend to some equilibrium as assumed in many theoretical models. They tend to instability and this is what will result, unless it is counteracted by policy. The sting is that policymakers and the public will be part of the euphoria that characterises every financial bubble. Therefore, the upshot of Minsky's financial instability hypothesis is not to blame banks or the financial sector and expect the solution from an all-knowing and well-intentioned state. It is to educate policymakers and the public as well as financial sector actors about the nature of the financial system, and to agree on industry structures and policies consistent with this insight.

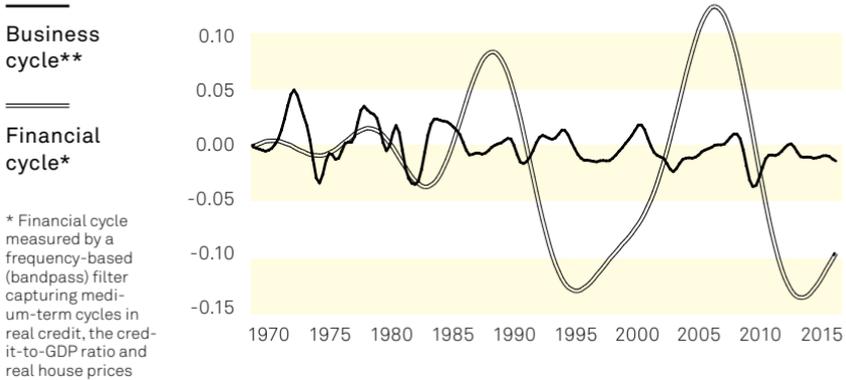
Minsky's name was briefly famous in the financial press after the 2008 crisis when 'the Minsky Moment in the Markets' became a catchphrase, synonymous with the meltdown of the system. But the deeper lesson, that stability is destabilising, is easily forgotten in the next boom, when conditions feel stable again. Time and again, the primary wave of finance supporting true innovations is followed and overtaken by a secondary wave financing products which are derivative to the original innovations, which aim to capture capital gains (e.g. in stocks and real estate) caused by the initial productivity boost, and which ride the wave of what appear to be self-validating expectations. Until, inevitably, they are not.

Stability is
destabilising

The globalisation revolution of the 1990s and early 2000s ended in the real-estate boom and bubble that led to the Great Financial Crisis of 2008. The technological revolution of the 1980s and 1990s ended in the 1999 dotcom bubble. Earlier, the stabilisation of the US economy after the inflationary 1970s led to the Reagan boom of the 1980s that ended in the 1987 Black Monday crash and the Savings and Loans crisis of the late 1980s, which was at the time the biggest post-war financial crisis in the US.

Before that, the economic expansion of the roaring 1920s ended in the 1929 New York stock market crash and the 1931 Credit-Anstalt banking failure in Vienna that triggered a Europe-wide banking crisis. Before that, the Gilded Age (or First Globalisation Wave) in the last three decades of the nineteenth century ended in the banking

Figure 10: The US financial and business cycles, 1970-2015



* Financial cycle measured by a frequency-based (bandpass) filter capturing medium-term cycles in real credit, the credit-to-GDP ratio and real house prices

** Business cycle measured by a frequency-based (bandpass) filter capturing fluctuations in real GDP over a period from one to eight years

Source: Borio, Claudio E.V. and Drehmann, Mathias and Xia, Fan Dora, *The Financial Cycle and Recession Risk* (December 1, 2018). *BIS Quarterly Review* December 2018. Available at: <https://ssrn.com/abstract=3316364>

panics of 1893, 1900 and 1907. And before that, the nineteenth century transport revolution in railroads ended in the 1873 banking panic. This is the recurrent pattern: stability, innovation, economic expansion, optimism, increasing financial and decreasing real investment, rising asset prices and returns, tipping point, crash (or soft landing), stability. Real and financial factors come together to produce these ups and downs, but in Minsky's theory, the boom could never be so big, nor the crash so damaging, without the financial factors. As the motto of the Financial Times states: 'we live in financial times'. Under financial capitalism, the form that the market economy has taken since the nineteenth century, we ride the financial cycle.

The financial cycle

A financial cycle exists because financial developments do not occur as constant growth in loans and other financial products; they come in waves of upswings, peaks, downswings and troughs, financial expansions and contractions, because of

the factors we just explored. In order to visualise this, upswings and downswing of financial cycles can be summarised in the movements of credit and real estate prices in one number. When the growth of this financial cycle variable is rising, this is a financial cycle upswing. Figure 10 shows an estimate of the financial cycle for the US over 1970-2015²². The business cycle (movements in the gross domestic product) is also mapped in this picture, as the solid curve.

Two things are noteworthy. The amplitude of the financial cycle – that is, the vertical deviation from trend growth - used to be in the same order of magnitude as the business cycle until the early 1980s. Since then, the upswings and downswings of the financial cycle have become many times the size of typical amplitudes of the business cycle. This reflects the expansion of the financial sector in these decades at a rate that was many multiples of the expansion of the economy. The share of the gross domestic product, the sum of all profit and wages, accruing to the financial sector has risen enormously, from 4 percent in the 1970s to 8 percent now in the US²³. In other words, on average over these decades, the financial sector has grown twice as fast as the overall economy.

The financial cycle is larger than the business cycle and it lasts longer

We can also see that the financial cycle has become not just larger but also much longer than the business cycle. Whereas the U.S. business cycle is on average eight years, the latest full expansion of the financial cycle lasted from the 1994 trough to the 2007 peak. Earlier financial cycles had peak-to-trough lengths lasting from 1978 to 1983 and

then from 1988 to 1994. Such a large and long cycle suggests that the impact of the financial cycle and of the expansion of the financial sector on the business cycle has dramatically increased in recent decades. For instance, much of the expansion in bank loans has been in mortgages, and this has driven up house prices and increases the upswings and downswings in the housing market, with impacts on consumption and investment. Finance has come to dominate rather than serve the economy.

Are financial cycles helpful or hurtful?

Innovation
and the good
bubbles thesis

A financial boom-bust sequence need not only be a bad thing. More financial resources in the upswing make it possible to move more real resources to the economy's innovative places. In the larger scheme of things, that gain may be larger than the short-term damage suffered in the bust. In this sense, there may be 'good bubbles', an argument forcefully made by Carlota Perez²⁴. Without the dotcom bubble of the late 1990s, many miles of optical fibre cables would never have been installed on sea beds. The infrastructure for the ICT society that followed the bubble might not have been built without the bubble. Perhaps the innate instability of financial capitalism and its unrivalled capacity for innovation are two sides of the same coin. That coin is the wave-wise nature of development – of innovation, but also of financial stability. This is how capitalism works, both on the financial side of leverage and speculation, and on the real side of investment and innovation. Without financial waves, without financial bubbles even, we cannot have innovation – or so the argument runs.

This is an intriguing hypothesis on the connections between financial waves and innovation waves. It does not imply we should now start celebrating the financial cycle and its excesses. For one thing, the cycle may be inevitable and indeed useful, but that does not imply that its excesses – financial crises and debt deflations – also are. Surely it would be more desirable to have a financial cycle that does not periodically spark a financial crisis – or in any case, does so only rarely? Since a crisis becomes more likely with higher peaks and deeper troughs of the cycle, inevitably this seems to imply that we must find ways to tame rather than embrace the financial cycle.

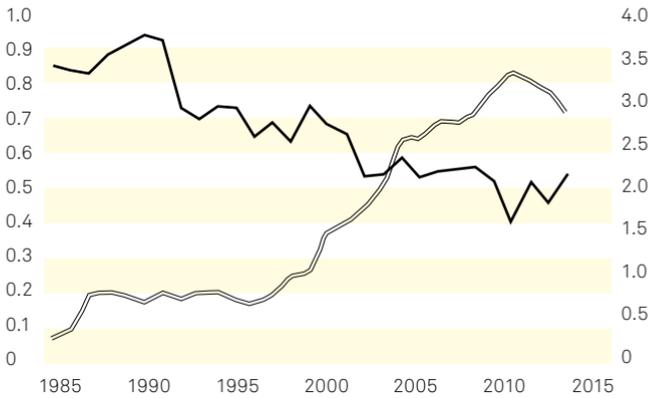
Another reservation with respect to the ‘good bubbles’ idea is that as yet, there is no clear empirical evidence for its practical relevance. If anything, the scarce evidence we have (reviewed below) suggests that innovations suffer in the upswing of a financial cycle, especially (and understandably) if that upswing is driven by real estate - one of the least innovative sectors in the economy. This evidence may be biased by the fact that the latest boom and bust were largely real-estate driven. But equally, it is simply not clear yet that financial booms are good for innovation.

Even granted that bubbles may have good effects on innovation in the longer run, there remains the issue of the financial sustainability of this mode of economic development. In the US, every post-war economic upswing started at higher levels of leverage. The growth in debt in a financial boom is never matched by deleveraging in the financial

—
ratio of
investment
to operating
income
(left axis)

=====
ratio of
financial
assets to
capital
stock
(right axis)

Figure 11: Real investment and financial assets in UK non-financial companies, 1985-2013



Note: "Based on data about all publicly listed non-financial companies in the UK over 1985-2013
Source: Tori, D and O Onaran (2018), "The effects of financialisation on investment: evidence from firm-level data for the UK". *Cambridge Journal of Economics* 42:, pp 1393-1416

downturn. This means that over time, ever more growth in debt is needed to produce a given growth of value added in the economy. For instance, in the US over the three decades from 1954 to 1984, every dollar of value-added growth was matched by two dollars of growth in private debt. The ratio was two to one. During the 'Great Moderation' years 1984-2007, that ratio was four to one. Clearly, a society cannot go on adding more debt to its balance sheet than the income it produces to repay that debt. This is akin to a Ponzi scheme, and Ponzi schemes must collapse.

Questioning whether another financial development model is feasible seems reasonable – a model that does not eradicate financial (and business) cycles, but which avoids the excesses of financial boom and bust that seem to have enveloped Western economies. To make that argument, we first need a clearer understanding of the costs of financial boom and bust.

The cost of the financial cycle

The volatility that is part of the financial cycle interferes with the allocation of financial resources. For banks, over the last two or three decades it became more attractive to ride the housing wealth wave by lending against real-estate collateral, rather than lending for productive purposes. Housing wealth fluctuations have encouraged rising consumption in the upswing and cutbacks in the downswing. This increased the real economy's fluctuations. The same goes for stock markets and markets in other financial assets and instruments. Their size, volatility and attraction to investors have undermined the real economy. Since most advanced economies are consumption-driven, the financial cycle has come to shape the business cycle.

Firms focus more on financial performance

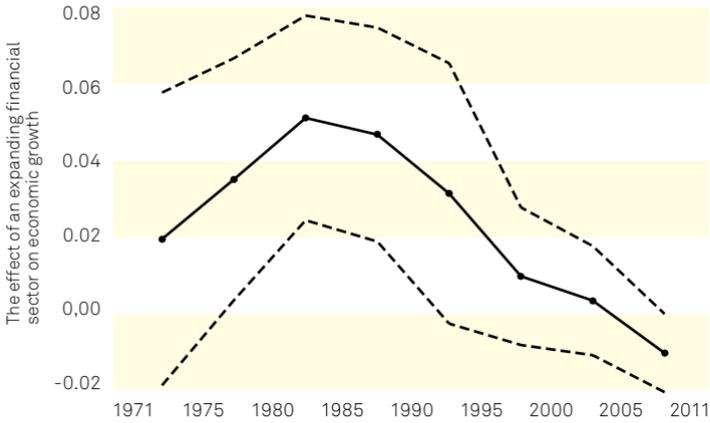
Firms in the real economy take their returns increasingly from financial transactions, rather than from producing and selling goods and services: General Electric has become GE Capital. In a path-breaking 2005 study, Greta Krippner showed that the ratio of financial profit to non-financial profit earned by US corporations doubled from 20 percent to 40 percent between 1984 and 2000²⁵. This trend has been followed, with a lag, by businesses in most Western economies. For instance, in UK publicly listed non-financial companies, the ratio of investment to operating income has gone down from 0.9 in the late 1980s to around 0.5 in 2013, while financial assets as a ratio to the capital stock have increased from around 0.2 in the 1990s to around 0.7 since the Great Financial Crisis. There has been a dramatic shift in the way these firms invest their financial resources.

As a result, increasingly, UK non-financial firms booked their returns in similar ways to financial firms: as dividends, interest, fees and capital gains, rather than as profit from sold output, as one would expect from non-financial firms²⁶. This orientation on financial profit rather than profit from production is another way in which the financial cycle shapes the business cycle. In both ways – through a reorientation towards financial profit and through real-estate-induced consumption swings – the real economy’s level of growth has fallen, and its business cycle has changed.

Why did the financial sector expand so much more rapidly than the real sector, and why did the real economy financialise so much? Is the finance industry, as Goldman Sachs CEO Lloyd Blankfein claimed in 2009, made up of ‘the most productive people in the world’ that everybody wants to emulate? Or do we see Minsky’s cycle at work, moving the economy away from production and towards leveraged asset trades? A variety of causes since the 1980s have led to an expansion of financial transactions (also within the real sector). Was this in support of, or at the cost of, innovation and production?

One way to find the answer to that question is to ask whether economies with larger financial sectors grow faster. Until the 1980s the answer was yes. But the answer has been no since the 1980s, which was when financial deregulation kicked in. In Figure 12²⁷, the vertical axis measures the extent to which the allocation of credit to the non-financial sector benefits growth in the

Figure 12: The effect of financial expansion on economic growth, 1971-2011



Notes: The vertical axis measures the percentage increase in average annual real GDP per capita growth that is associated with a one percentage point increase in the ratio of bank credit to GDP. The solid line is the point estimate, the dotted lines give the statistical uncertainty interval around the point estimate.

Source: Bezemer, D., Grydaki, M., & Zhang, L. (2016). More Mortgages, Lower Growth? *Economic Inquiry*, 54(1), 652-674.

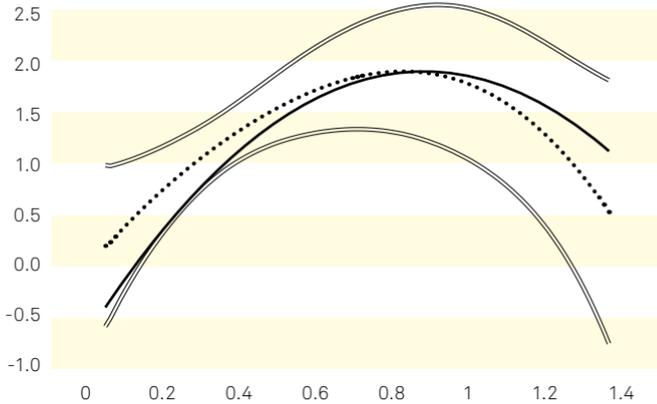
economy, as an average over many economies. This is computed as the growth of the gross domestic product (GDP) for a given increase in bank credit to the non-financial sector (to firms and Households) scaled by the country's GDP²⁸. The larger the number on the vertical axis, the more economic growth each euro of credit is supporting.

There is too much credit when obligations exceed benefits

We see that until the early 1990s, expansion of the financial sector was associated with more economic growth (all lines are in positive territory). Since then, there is no longer a significant correlation between credit expansion and economic growth: the margin of error of the credit-growth correlation includes zero on the vertical axis. In fact, many studies find²⁹ that the impact of the expansion of finance on the economy tends to become negative, harmful rather than helpful, as the financial sector grows. In a 2012 study that has

Figure 13: Too much credit is bad for income growth, and many countries have too much

Note: The graph plots the relation between the amount of bank credit as a share of GDP (horizontal axis) and the percentage points of income growth that result from a one percentage point increase in the size of the financial sector (vertical axis), as an average over 1960-2010 for more than 60 countries. Note that since both axes measure a ratio, they have no units.

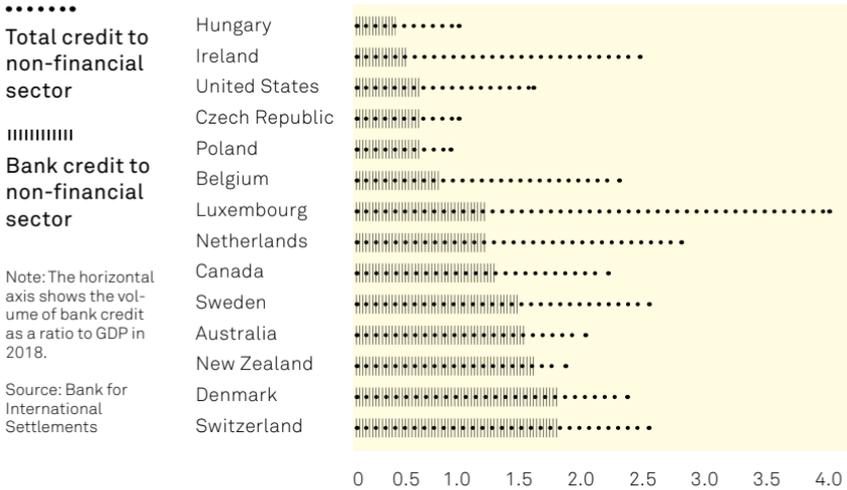


Source: JL Arcand, E Berkes, U Panizza – Too much finance? *Journal of Economic Growth* Volume 20, Issue 2, pp 105–14

quickly become famous, Jean-Louis Arcand, Enrico Berkes and Ugo Panizza compared, for more than 60 countries and over half a century (1960-2010), their economic growth with the size of their financial sectors. They measured this size (figure 13, horizontal axis) as all outstanding loans to the non-financial sector, scaled by the country's gross domestic product.

Their key result is shown in figure 13. Larger values on the vertical axis indicate that one euro of additional credit causes more growth in income. In the left part of the graph, the rising curve means that countries with more credit have faster income growth. The stagnation and then decline in the graph beyond a total credit share of GDP of about 0.8 means that on average, beyond this point countries with larger financial sectors have less income growth. In short, there can be 'too much finance', which was the title of their study.

Figure 14: Many countries have too much



Data published by the Bank for International Settlements show that many countries are well above that point. As figure 14 shows, there is simply too much finance in too many countries.

Financial markets squeeze out the real economy

If credit ‘works’ as described in Figure 4, with only the bank lending to Will, this is surprising. How can more money for Will’s investment lead to less economic development and growth – even with saving and financial markets?

One answer is that it is to be expected that the positive effect diminishes as more credit is made available to firms. This is evidence of the diminishing marginal returns of using credit, as with any input. An analogy with production illustrates this. The first robot may double output compared to no

robots; but adding the eleventh robot to ten already installed achieves a much smaller proportional growth in output. If credit is viewed as just another input in the production process, a falling credit-growth correlation is only to be expected as the amount of loans outstanding in the economy rises. But that, in turn, begs the question: why would lenders and borrowers want to over-supply credit, beyond the point where it adds to economic growth?

Comparing Will's business in Figure 4 to the situation with financial markets (as shown in Figure 5) suggests other reasons for the falling correlation of credit expansion with income growth. In Figure 4, economic growth prospects determine how much Will decides to borrow. In Figure 5, Will's view on growth is only part of his rationale for borrowing; he also has to raise €7,000 to cover his existing shortfall with the bank.

This story offers one explanation for the graph by Arcand and co-authors. With an expansion of asset markets, more financial development on the horizontal axis is associated with a fall in the effectiveness of each euro of bank credit in supporting production and sales on the vertical axis. More finance is not good for income growth if part of it is used for investment in assets without productive benefit. Decisions which are attractive or at least rational for all actors involved can produce this undesirable outcome. Another implication illustrated by this story is that growing asset markets generate a drain of payment flows from the real economy to the financial sector. Will needs to pay €700 interest on the €7,000 loan he took out

to repay his shortfall in the previous period. This is an additional drain on the real economy that would not have occurred in an economy without savings and asset markets.

A third implication is that the financial sustainability of economic growth is in danger. Since Will cannot repay the €7,000 loan from his sales revenues, he must roll it over or, more likely, borrow yet more. If the builder and farmer go on paying into their pension funds, Will must keep borrowing more to stay in business. With rising debt-to-income levels, Will is playing a Ponzi game.

There is too much credit when obligations exceed benefits

This simple scenario may not be all that far removed from reality. A recent study by researchers at the Bank for International Settlements demonstrated that with strong growth of credit, the costs of serving the financial obligations resulting from loans and other financial contracts will after a few years exceed the benefits in terms of enhanced production and productivity³⁰. The net result is that expansion of the financial sector has not supported but diminished economic growth. There was a general overgrowth of the financial sector versus the real economy, resulting from a long boom of over-lending that started decades ago – a ‘financial supercycle’, as Minsky dubbed it. The over-supply of credit since the 1990s was made possible by low interest rate policies and a range of deregulatory initiatives, including reducing reserve requirements, allowing banks to operate more internationally and using retail banking funds for investment banking. Financial practice responded to these conditions by legitimising higher leverage, often through the

use of inappropriate risk models and by encouraging originate-to-distribute lending models in market-based banking.

What works for the individual may not be good for the system

Another part of the answer to the question of why finance has grown beyond its constructive role in the economic system goes beyond Will's one-person business, to consider the behaviour of corporations, and especially of listed companies. Corporate governance models that emphasise short-termism, where managers' and shareholders' interests are not aligned to the firm's long-term profitability and its contribution to the wider economy may also lead to over-lending. In banks, loan officers' incomes may be linked to the number of loans they make. The prestige of top people may be linked to the size of the bank, so that the governance structure may shift towards encouraging over-lending. Working in the context of these warped corporate governance models, over-lending remained attractive to individual lenders and borrowers, even when there were negative systemic consequences. The case for financial regulation rests on this clash between privately beneficial decisions and publicly detrimental outcomes.

In such an environment, loan contracts may be concluded which benefit each of the individual parties to the contract – the borrower (managers and shareholders), the lender (the bank) and the consultants bringing them together – but which nevertheless reduce the borrowing firm's profit and productivity.

Over-lending

Beyond the problem of too much finance (a quantitative problem), there is another problem. The quality of investment tends to degenerate over the course of a financial cycle³¹. The reason is that the profit made in the first, innovative phase of the cycle fosters expectations of higher profits. This induces more demand for finance to realise those higher profits, and more pressure to loosen financial regulation.

Rising asset values can encourage more borrowing and misallocation of resources

The result is that, typically, more liquidity will be created than can be productively invested. This increase in liquidity then flows into real estate and financial markets. Here the expected returns can be realised, since it is the liquidity itself that induces the price increases in real estate and financial products that underpin rising returns. The result is yet more optimistic expectations fuelling more investment, with rising leverage. In an upswing, the financial cycle becomes ever more driven by sentiment, and ever less by the innovations and productivity that started it, as we have seen.

In modern economies with sophisticated financial markets, this dynamic doesn't happen in an isolated casino. Banks, non-financial firms, households, central banks and government are all involved. As increasing over-lending occurs, financial resources are increasingly misallocated. The financial sector expands into dysfunctionality. Over the course of the upswing in the financial cycle, the allocation of credit will move towards

less innovative industries, and within the innovative industries it will tend towards less productive investments. Finance supporting production – innovative or otherwise – loses ground to finance supporting the trade in already existing assets, including real estate. This increases debt but not incomes, and so raises the debt/income ratio. It decreases the effectiveness with which finance supports growth, and it increases the burden that finance places on the economy in the form of fees, interest and principal repayment.

Misallocation of credit

With debt growth producing less and less income growth, misallocation of debt must be increasing. This was confirmed by Stephen Cecchetti and Enisse Kharroubi at the Bank for International Settlements.³² They found, across the developed world, an increasing tendency for finance to be allocated to less innovative industries. The faster the growth of the financial sector, the smaller the growth of productivity in the economy, measured as GDP per worker. In fact, in most of the observations reported in this study, productivity is falling as finance expands. This also holds true for growth of employment in the financial sector: on average, the larger the growth of the share of labour employed in the financial sector, the smaller the growth of GDP per worker in the rest of the economy.

Low-R&D
industries

When Cecchetti and Kharroubi delved into the causes, they established that in a financial boom, credit (both bank credit and other credit) to more R&D-intensive industries declined more than to

other sectors. Their research showed that rapid financial-system growth in an economy tends to be associated with lower industry productivity growth in R&D-intensive industries, compared to industries where little R&D is undertaken. The productivity growth in R&D-intensive industries is on average between 1.9 percent and 2.9 percent lower than in other industries. This difference is observed only in countries where the financial system expands rapidly, and not in other economies.

Not all productivity gains are connected to, or result from, more R&D activity. But taken together, this is startling evidence that growth of the financial sector may have reduced economic growth via a 'productivity channel'. With more credit, high-productivity industries grow more sluggishly relative to low-productivity industries. And this, in turn, is connected to the observation that rapid financial-system growth punishes R&D-intensive industries. In this study, industries which are low in R&D include textiles, tobacco, wood, printing, publishing, petroleum and metals industries, and the machinery and equipment, ship building and rubber and plastics producing industries. R&D-intensive industries include the chemicals, pharmaceuticals, accounting and computing industries, as well as industries producing equipment for electrical, optical, medical, communication and transport (including aircraft) uses.

A boom in finance leads to misallocation not just of financial resources, but of human capital. One part of this is a brain drain, as Christiane Kneer has shown³³. A boom in finance, with the capital gains

that this entails and the remuneration that can be paid based on these capital gains, drains high-R&D industries of their intellectual talent. This is the proverbial story of the engineer turned trader and physicist turned investor. Kneer offers quantitative support for this. As an average finding over 13 advanced economies since 1980, employment growth in manufacturing industries which require higher skilled employees has been lower in countries which did more to deregulate their financial markets. Along with the fall in real-sector employment of the talented, productivity and value-added grew more sluggishly in these same countries. In other words, free (or freer) markets in finance do *not* lead to a better allocation of talent.

Why do the more innovative industries suffer most from financial deregulation? Part of the explanation, complementary to the brain drain story, is that the time horizons for lending to R&D-intensive industries are longer than those for lending to (presumably less complex) production processes. Financial booms shorten time horizons so lending to R&D-intensive industries compared to other industries falls. This is especially relevant to sustainable development, which may require time horizons of 20 to 30 years.

Financialisation and rent extraction

The increasing dysfunctionality of finance in recent decades is part of the broader process of financialisation. Traditionally, researchers have called the deepening of financial markets ‘financial development’ – a term with a decidedly positive

connotation. When the problematic side of late twentieth century financial–sector expansion became clear, analysts needed a vocabulary to discuss this. Starting with Giovanni Arrighi’s work³⁴, ‘financialisation’ became the term to indicate the dark side of financial development³⁵. Gerald Epstein defined financialisation as ‘the increasing importance of financial markets, financial motives, financial institutions, and financial elites in the operation of the economy and its governing institutions, both at the national and international level’³⁶. This is multifaceted, including social, political, psychological and economic changes in how money and finance intersect with the economy and with society.

Financialisation detracts from income growth

For the purposes of this book, financialisation can be distinguished from financial development by its negative impact on productivity and incomes and by its focus on asset markets. With financial development, financial resources support the creation of goods and services and the formation of incomes – think of Will and the Zarelo market. In contrast, financialisation is the growth in value of financial instruments and financial assets (including real-estate assets) which warps the economy’s structure and extracts value from it. In these two broad ways, financialisation detracts from income growth, as opposed to financial development which supports income growth.

In the previous section we studied how financialisation warps the economy’s structure, and how it decreases the value-added created in goods and services market. In the remainder of Part 3, we

explore how value extraction occurs as rents are created. In Will's economy in Figure 5, he was paying interest to the bank, while the builder and the farmer were paying into their pension funds. In these two ways, a part of the real economy's income in each production period was flowing out of the real economy to support asset values and financial firms, without enhancing future production capacity. Will's model economy functioned better without asset markets and the increased lending that they induce. This situation of lending and value extraction through asset markets is very different from lending and value addition through investment, as in Figure 4. In both scenarios, real-sector firms pay for financial services, but the consequences are radically different – sustainable development versus playing a Ponzi game. To discuss the difference, economists have developed the theory of rents. Before we turn to real-world examples of this dynamic, we need to define and explore the concept of rents.

Rents defined

By the word 'rents', economists do not mean income from renting out a house. Rents include any revenues connected to ownership of an asset above and beyond the costs required to maintain the asset. Rents accrue because those who receive them 'rentiers' own something that is in short supply – land, housing, capital, patents, credit, or any other financial, physical or intellectual asset. Think of a pharmaceutical firm which overnight increases the price of a drug by a factor of fifty after buying the right to produce it³⁷.

This firm is reaping rents. It is increasing its revenues by raising its selling price without an increase in its cost that would necessitate this rise. There was no change in production, no innovation, no change in demand, nothing that justifies the price increase, except the change in ownership.

Rents accrue through ownership not through effort

Just as profit is linked to production and wages to work, so rents are linked to ownership. The classical example is land used but not owned by a farmer. Rents accrue to the landowner. One question that may arise is the following. If using the land benefits the tenant farmer, then why are rents (the revenues to the rentier-landowner, paid by the farmer for the use of land) not like any other cost? This is why rents are defined as those revenues *above* what is necessary to maintain the land. The farmer is losing more income in rents than the cost that would be sufficient to let the landowner maintain the land in good condition. Likewise, the growth of asset markets in Will's model economy meant that Will was borrowing more and paying more interest. The bank's asset was its credit creation capacity, which Will needed to produce. In the 'Ponzi' scenario, the bank was lending more, and claiming more interest, than was needed to continue offering financial intermediation services to Will. The €700 increase in interest payment on the loan that Will needed to make up the shortfall due to savings is a rent, as defined above. It was an additional cost without additional benefit to Will, compared to the scenario without asset markets.

This example illustrates an important characteristic of rent reaping: it is systemic. It can often only be

analysed at the level of the economic system and not at the level of individual firms, like the bank. The bank did not orchestrate saving and asset market investments by the builder and the farmer so that it could reap rents. Yet these developments did allow the bank to reap rents by increasing its lending (another part of the rent was in increasing payments by the builder and the farmer, the assets' prices will have risen due to increased demand; we analyse this below). Rent-reaping may not be intentional (though too often it is), but that does not make it less problematic.

Rents may be good for the property owner but bad for economic development

The principle underlying rents is that not all that is sold at a price is necessarily adding value to the economy. In this it differs from profit and wages, which are the rewards for production value-added. Rents, profit and wages are all revenues, but they are not all incomes. Incomes (profit and wages) are value-creating, rents are value-extracting. Rents are revenues for one party (e.g. the financial sector's revenues) that simply detract from another party's income (e.g., the real economy's income). They are a drain on the economy's incomes, rather than a cost contributing to formation of the economy's incomes. For instance, financial intermediation services may be provided, but at a cost that decreases rather than increases profit in the real economy compared to the cost level needed to maintain the service. This is what we observed in figure 13.

Rents are not an aberration in the sense that they are rare departures from the proper functioning of the market economy. They are pervasive. Rents

accruing to owners of land and other assets are capitalised into asset values. Like the financial instability analysed by Minsky, the accumulation of rents is part of the normal process of economic development, but it is not therefore desirable or harmless. The nineteenth century political economist John Stuart Mill wrote: 'the ordinary progress of a society which increases in wealth, is at all times tending to augment the incomes of landlords; to give them both a greater amount and a greater proportion of the wealth of the community, independently of any trouble or outlay incurred by themselves. They grow richer, as it were in their sleep, without working, risking, or economising.'³⁸

Rent extraction by financial-sector and other firms exists because firms and households in the real economy need to use financial assets such as loans, insurances and bonds, intellectual assets such as patents, and real assets such as land and buildings. As financialisation has increased, real-economy firms and households have been paying an increasing share of their incomes in order to obtain these assets.

If you pay more you get more, normally. But higher payments have not typically been balanced by higher quality real estate or more real estate. The end result is that firms and households have been paying more and going deeper into debt to obtain the same assets. Servicing these financial obligations means a continuous outflow from the non-financial sector to the financial sector. This imposes costs on production and innovation through the extraction of rents.

Why would non-financial firms and households want to pay more for the same? Why would they want to incur costs that do not bring future benefits? This is only possible if the seller can push the sale by exploiting some form of monopoly ownership. This allows the seller to increase the cost for the rest of the economy, without there being any necessary improvements in the services they deliver. Rents may accrue to owners of land, credit, housing, patents and other intellectual property rights, transport systems, electricity networks and any other asset which has monopoly characteristics. Rents may drive up the price (without adding to the value) of food, finance, shelter, transport, energy, and medicines.

The problem of rents is old. It is in fact one of the oldest issues in economic thinking, and nowadays one of the most neglected. Many economic reformers have taken up this topic as they focused on reform of the money system, land ownership and asset markets. Right at the start of modern economic theory, in the eighteenth and nineteenth centuries, we find its founding fathers worrying about excessive rents, typically in relation to land ownership, as we saw in the quote from Mill. Other prominent examples include Henry George (who advocated a land tax), Silvio Gesell (who endorsed George and also advocated a new kind of money that would lose value by design, to stimulate its spending rather than hoarding) and Rudolf Steiner (who advocated perishable money just as Gesell, combined with a macroeconomic distinction in the uses of money for transactions, loans and gifts).

The problem that the analysts of rents saw was that for all assets (above all, land) that are in short supply, rentiers can behave just as monopolists do in goods markets. They can ask excessive prices and reap rents. Often these excesses are justified in the public discourse by cost. We are told that the pharmaceutical firm needs the rent to invest in R&D, or the landlord needs the rent to do up the house. Rents are then treated as if they were profit: reward for effort. But profit is the difference between revenues from sale and costs. Rents are not the result of any costs – they exist independent of costs, because they derive from ownership.

Rent reaping: two examples

The problems which rents may create in connection with land and real estate can be illustrated with the case of an organic farm³⁹ in Egypt, which started 40 years ago in the desert 60 kilometres from Cairo. The farm was founded on the idea of sustainable development; it produces food and textiles and employs close to 2,000 people locally. Because of its proximity to the expanding city, the farm owns land that is in demand. The land is effectively in monopoly ownership, since city expansion requires land, and land is in fixed supply.

The increase in the value of the land offers the opportunity to reap rents, perhaps by building housing and renting them out, or by selling the land to developers. This is the ‘best’ short-term financial decision for the seller. A high price must be paid by the counterparty, either in the form of high mortgages or high housing rents. If this happens with all

land close to Cairo, the result will be high costs of living and of doing business in Cairo⁴⁰. The decision that is financially optimal for the farm is not optimal in a wider context. This is a key feature of rent reaping. The negative spillovers of extracting rents are not experienced by the seller, but they are felt at the level of the economic system.

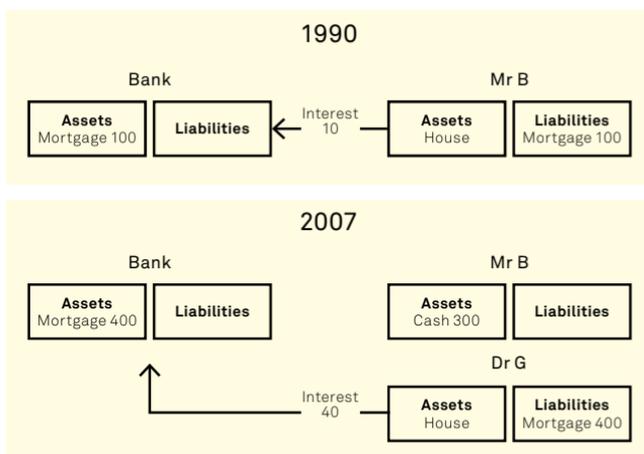
Real-estate price inflation delivers windfall profits to mortgage lenders and property owners

An example of the impact of rents closer to home is the fourfold increase in house prices between 1990 and 2007 in the Netherlands. Recall that the source of rents is ownership – rents are not a reward for increasing value-added or a result of an increase in costs of necessary inputs. Did this fourfold increase occur because the costs of building a house or of maintaining existing homes in good condition increased fourfold? It seems not; wage levels, for instance, have grown less than threefold since 1990 and the general price level increased only by about half. An alternative explanation is that the increase occurred because the plots of land on which housing stands are in short supply. With strict zoning regulation, they may even be in fixed supply. This gives the owner the power to reap rents. If demand for housing increases for whatever reason, house prices will rise. Often that reason is an increase in mortgage lending, as Favara and Imbs have shown⁴¹, and this is where rents link to the financial sector. The more house prices rise, the more banks can lend to new home buyers, and the more revenues banks receive without home buyers getting anything (e.g. better or more housing) in return.

Another reason for rising house prices may be that infrastructure improves. Those lucky enough to own a house, and the banks who finance the house buyers, will again reap rents, this time thanks to public-sector efforts. The windfall, in this case in the form of a capital gain, is independent of their own efforts, and unconnected with any change in the costs of house building or the quality of financial intermediation.

The following example illustrates this. Suppose in 1990 Mrs Alpha, who owns her house free and clear, retires and sells her home for €100,000 to Mr Beta. To finance the purchase, Mr Beta borrowed the money as a 30-year mortgage loan. Mrs Alpha may be rich enough to invest the money again or she may live off the money for the rest of her life, enjoying her retirement. The bank has created €100,000 ‘out of nothing’ and nothing has changed in the economy of production and innovation. House ownership has

Figure 15: Rising debt-financed real estate prices to rent extraction



Source:
Author's own,
with thanks to
Joeri Schasfoort

changed – a purely legal change, with (so far) no economic significance – and debt has increased.

In 2007, Mr Beta sells the house to Dr Gamma at a price of €400,000. Dr Gamma borrows the money as a 30-year mortgage loan. On a net basis, the bank has now created an additional €300,000 (taking into account loan repayment by Mr. Beta). Mr Beta enjoys the money. And so on.

This money is ‘unproductive’. It was not used for investment and innovation before passing as wages and profit into the hands of consumers and entrepreneurs. There are no newly produced goods and services resulting from these loans. The money is invested in assets. So far, nothing new; this is what we studied before. But two other things have happened. There is more wealth inequality, and there is more debt and therefore, assuming all else equal, there is more debt servicing required for the same house. Of course, in recent years, everything else has not been equal: interest rates went to near-zero levels after 2012. This decreased rents in the form of interest payments. It allowed banks and their customers to create even more debt and it led to a second house price rally from 2014, which increased rents again, both as transfers from asset sellers to asset buyers and as revenues received as debt service by banks and other lenders.

The rent character of these money flows is clear from the fact that in order to live in the same house, the younger generation to which Dr Gamma belongs has to transfer more money to Mr Beta’s generation and has to pay more to the bank. Put differently,

in order to live in the same house that Mr Beta lived in, they have to give up more of their income but they get exactly the same thing back.

Rents impose costs on production and constrain income growth

As house prices are driven up by bank lending or for other reasons, financial assets and financial liabilities in the economy increase (there is financialisation), and (all else being equal) so do rent extraction and inequality. As long as house prices are rising faster than incomes, each generation has to go deeper into debt relative to income and pay more to the previous generation and to the bank. This detracts from consumption (in the case of a household), it increases costs of production (as firms pay more for commercial real estate), and it distorts incentives (as it becomes attractive for firms to play the asset trade game rather than to produce and innovate, and for employees to work for banks doing this). In this way, rents do not support the productive process, they are imposed on the productive process. The economy would function better without the continuous outflow of money in the form of interests, dividends, fees and other payments, and without growing inequality, waste of talent, cyclical fluctuations and warping of incentives. Rents are yet another way to understand why more credit can lead to less economic development not more. When more of the economy's income is used for payment of rents rather than consumption or saving and investment, future income growth suffers.

How does this connect to the idea that the economy is a circular flow of investment, production and income? In fact, there is not just one

circle, there are two. A financial circle of asset markets, borrowing and lending intersects with the economy's circular flow. We saw in Will's example that savings invested in assets may detract from the economy's productive potential. Rents do the same; they swell the drain of money from the circular flow of production, innovation, profit and jobs, and towards the financial circuit of assets and speculation. The effect is worse than the effect of saving. When firms and households save they give up income and acquire assets. Rent payment is only giving up income. This permanent drain may be large or small depending on economic structure and policies, but it is always there. Like the tendency to financial instability, it is innate in the market economy. It is hardly an exaggeration to say that the foremost financial policy problem is to contain rents. That was certainly the perspective of Classical economists like Mill.

Rents and the financial sector

Rents are often explained in the context of land and real estate. What goes for real estate, goes for any asset that is in short supply. A prime example of this is the monopoly rights that banks have to create credit. Depending on the freedom allowed to them by the regulators, this gives them opportunities to push loans, raise their fees, invent new financial products, or reap rents in other ways.

This may seem a surprising claim to make, since credit can be created 'out of nothing', unlike land which is in fixed supply. How can credit then be so scarce that its supplier behaves like a monopolist?

As always, scarcity is relative. When pharmaceutical firms increased by many multiples the price of existing drugs that were already on the market, like insulin, they did this despite the fact that the drug was easy to manufacture. They did it ‘because the market could bear it’⁴², as one reporter put it. Demand for insulin will not falter as prices go up, and this is how the pharmaceutical firm increases its rents.

Banks are credit monopolists, they earn financial rents

Likewise, banks can increase their rent; the difference is that they do this most effectively not by increasing the price but by expanding supply (or ‘loan pushing’⁴³). The market for credit can bear a large expansion of credit (and therefore a large increase in rents reaped) without signs of credit demand being fully satisfied. One reason is speculation, if credit is used to increase the prices of assets that increases the demand for credit. In this feedback loop, expansion of credit uptake is self-sustaining. As we have seen, such financial-cycle upswings can persist for a very long time. During that time, banks can continue to increase supply and reap rents.

Credit is typically in short supply, and this allows for rent creation

A more fundamental reason is the special nature of credit. Credit, by giving access to money, confers a claim on any and all goods and services, rather than providing a particular good or a particular service. Therefore, conventional arguments about market saturation driving down demand do not apply without qualification. Consumers may have enough of some good or some service after consuming much of it. But they will not have enough of consumption itself (at least not in Western,

consumerist societies). The offer of more money for consumption or for production to satisfy consumption will continue to be taken up except in conditions of severe recession or financial stress. The demand for bank loans habitually outstrips the loan supply since, in normal times, there are always people willing to obtain money by borrowing. Banks and other lenders command a resource that is in (relative) short supply. That is why lenders need to ration credit if lending is to be sustainable⁴⁴ – that is, they need to allocate it on grounds other than the price of credit (namely, the creditworthiness of the borrower and his project).

In normal times therefore, banks can increase their loan supply since the demand is there (that is what it means to be in a rationed market). Banks can (but need not) reap rents as a matter of normal business practice. They can also reap rents by using their credit creation privilege to demand higher interest rates, but this would attract the riskier borrowers – not a good move for the bank. The alternative is to reap rents by lending more. This logic implies that more lending, (in fact, too much lending) will happen unless it is actively counteracted by policy. The only real constraint on the expansion of debt is regulation. Since financial markets were deregulated in the 1980s throughout the Western world, the volume of bank credit has exploded.

It is individually attractive to reap rents, but collectively damaging. It may also appear attractive to any individual firm or household to borrow more. Borrowing and having more money than

others is an advantage in the market. But when all borrow more to bid for assets in the same market, that advantage disappears. Asset prices just rise and everyone is back to square one, at higher levels of leverage. Asset sellers are now richer and everybody else realises they too need to buy assets to get rich. Another round of borrowing, now more widespread, promises new advantages. And so on. The costs incurred as additional debt service that seemed to be justified by a comparative advantage in the market, turn out to be rents: payments without benefit except to the rentier who captures them. This is the dynamic already described in Minsky's theory of financial instability. The focus here on rents highlights how wealth is redistributed while the 'circle of joy' is doing its rounds.

Dysfunctionality in the financial system: the need for regulation

In this way, loan demand is insatiable, and without regulation loan supply is there to meet it. There may be no benefit to economic development, as levels of output and incomes earned in the economy are just the same. In fact, those earning incomes (rather than reaping rents) suffer. Each month, the real economy experiences a larger drain of interest and principal repayment (unless interest rates start falling to allow for ongoing debt growth, which is exactly what happened as financialisation gathered steam). Each month, the financial sector injects into the asset markets a still larger amount of money as new lending.

At the individual level, it is rational for both banks and borrowers to participate in the process. At the system level, the economy becomes increasingly

dysfunctional. The burden of debt and interest depresses aggregate demand for goods and services, stifles initiative and quells innovation. Families pay an increasing part of their income to maintain a mortgage or rent a home. Firms see their profit fall as the costs of structures and land increase. The cost overhead of the economy rises and its competitiveness falls. Alternatively, if interest rates fall to make the debt burden more bearable, then the economy's vulnerability to a rise in interest rates increases, the room for policy action shrinks, and debt grows more rapidly. Because of all these effects, rents are worse than a zero-sum game. What the rentier takes in increased revenues as rents, the producer or worker loses in increased costs. The longer-term effect is that the circular flow of production and consumption shrinks.

In this way, financial transactions may burden rather than support activities that generate value-added. Financial firms have been pushing costly and complex insurance products and mortgages to firms and households. The financial sector has pushed (or at least enabled) unprofitable mergers and acquisitions, and excessive payouts to managers and shareholders. All of this is characteristic of rents. Much of the financial boom of the 1990s and 2000s was supply driven, aided by aggressive marketing programmes and outright fraud. The same dynamic is at work in the credit-card lending boom, student loans and predatory lending. This saddled the non-bank private sector with risky financial products, high debts, high real-estate prices, therefore higher costs of doing busi-

Figure 16: Value-added growth in the financial sector and the rest of the economy, 1997-2016 (% per year)



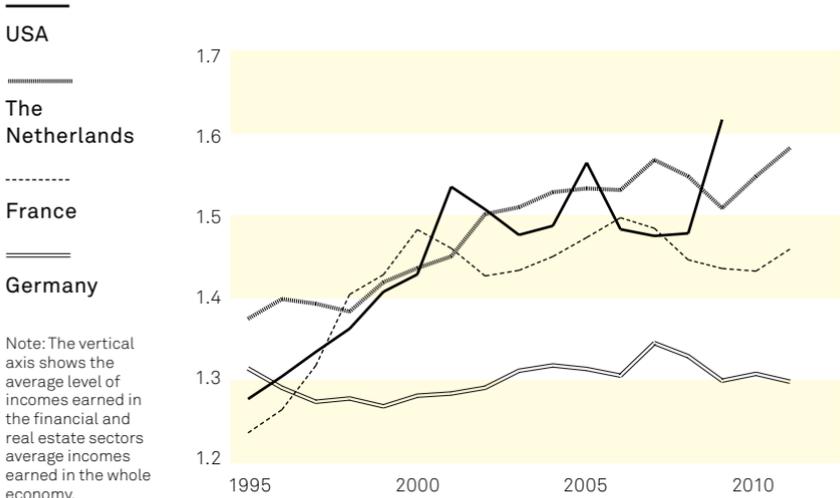
Source: UN National Accounts Statistics: Analysis of Main Aggregates (unstats.un.org/unsd/nationalaccount/ama) and author's calculations. With thanks to Jacob Assa for organising the data.

ness, and less income growth. But while incomes in the rest of the economy stagnate, in the financial sector and for those who own assets they rise. The result is an increase in income inequality.

Rents exacerbate income and wealth inequality

One way to show this is to compare the growth in value-added between 1997 and 2016 in the financial sector (banking, investment and insurance) and in the rest of the economy (excluding real estate). The value-added of a sector measures the sum of all incomes earned in that sector. Figure 16 shows a number of countries where the rise of financial sector incomes was larger, often much larger, than incomes in other sectors. In fact, the data show that, among 28 economies, only in Germany, Hungary and Japan was financial sector income falling it was simply falling in those three countries! Almost everywhere else it has been growing, and in most countries it was growing faster than the rest of the economy.

Figure 17: Rent extraction as rising incomes in the financial sector, 1995-2011



Note: The vertical axis shows the average level of incomes earned in the financial and real estate sectors average incomes earned in the whole economy.

Source: Social-Economic Accounts, World Input-Output Data, release 2013 and author's calculations.

This relative rise of incomes in the financial sector adds to income inequality, since incomes in the financial sector were already higher than in other sectors. Figure 17 shows this for four European economies over 1995-2011. The level of incomes earned in the financial and real-estate sectors as a percentage of incomes earned in the whole economy is more than 100 percent everywhere from the start. In three of the four countries, Germany excepted, it rose strongly between 1995 and 2011.

This increasing inequality is part of the problem of rents. In an April 2015 talk⁴⁵, Nobel laureate economist Joseph Stiglitz noted about the growth of inequality that “..... the underlying problem is the whole structure of our economy which has been oriented more and more at increasing rents than increasing productivity – [rather] than real economic growth that will be widely shared with

our society ... A tax on land rents, will address some of the underlying problems. This is an idea that Henry George had more than 100 years ago ...” This is indeed an alternative to the pervasive rent reaping in real estate: a land tax to be paid on every transaction. This would contain the rise in the value of land, and to the extent that land sales take place, it would effectively channel rents to the government. Rents which exist, for instance, because of Egypt’s urbanisation are then available to address challenges raised by urbanisation, instead of ending up in private hands solely on the basis of fortuitous ownership and not as a reward for adding value. This is more generally true: a recent study of 34 OECD countries over the period 1970–2014 found that a real-estate tax would dampen the growth rate of house prices⁴⁶, which drives the rise in rent.

Since rent reaping is so pervasive, it is important to recognise the different forms in which it may appear. In the remainder of this section, we study four ways in which rent reaping has developed over the last few decades.

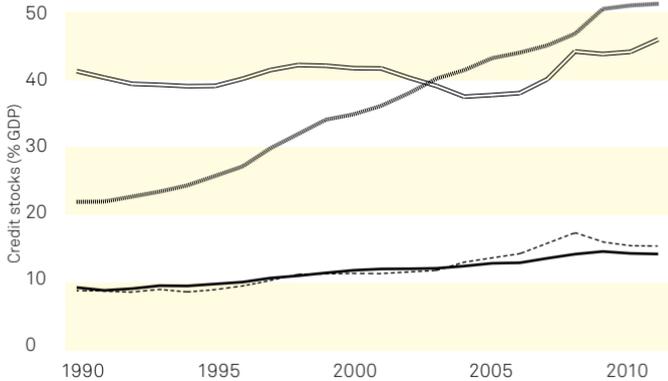
Four ways rents are created

I: Debt shift to real-estate markets

We have seen that a speculative boom may already be harming the economy even before a crisis occurs (or where no crisis occurs) by misallocating credit. In Part 2, we encountered this during the Great Moderation, which was also a time of great misallocation.

Figure 18: The relative rise of mortgage credit in all bank credit

— Consumption
 — Mortgage
 - - - - - Fin. business
 = = = = = Non-fin. business



Note:
 The figure plots a balanced panel of 14 economies over 1990-2011: Canada, Switzerland, Chile, Germany, UK, Greece, Hong Kong, Hungary, Japan, the Netherlands, New Zealand, Portugal, Singapore, and the US.

Source:
 Bezemer, D., Grydaki, M., & Zhang, L. (2016). More Mortgages, Lower Growth? *Economic Inquiry*, 54(1), 652-674.

Until the 1980s, most bank lending went into the real economy – that is, most bank loans supported investment (the formation of fixed capital) and revolving funds for working capital. Most bank lending supported economic growth in this way. Economic growth is conventionally measured as the growth of the Gross Domestic Product (GDP), which is the value-added realised in production and consumption. Alternatively (and identically, statistical discrepancies aside) GDP can be measured as the sum of all incomes earned in the economy.

The balance of debt is shifting from productive to financial assets

If bank loans and other credit from the financial sector support economic expansion, then bank balance sheets and GDP grow in tandem. The ratio of the volume of bank loans in the economy to GDP will be quite stable. This is the case for loans to non-financial business. Figure 18 illustrates this for a balanced panel of economies, where bank loans to non-financial business were stable at around 40 percent of GDP. But if loans are increas-

ingly funding transactions in assets, both financial assets and real-estate assets, this will do little to stimulate economic growth. Due to these loans, and not due to business loans that support production, lending by the financial sector (and private debt in the non-financial sector) will rise faster than the economy grows. And indeed, one indication of the growth of rent reaping is that mortgages and loans to financial businesses rose from about 25 percent to about 65 percent of GDP between 1990 and 2011, pushing up real estate and financial asset prices. As a result, the ratio of the total private debt to GDP also rose strongly. This shift has occurred since the 1990s in most Western economies (and since the 1980s in the US).

In some countries there is evidence of debt shift across the longer term, due to longer time-series of credit data. For instance, France in 1976 had five times more credit to non-financial corporations than to households (which were almost all mortgages). By 2018, that ratio had halved to 2.5, as mortgage lending growth far outstripped the growth of lending to business. Increasingly, loans were financing asset market transactions rather than investment and innovation.

This has had three consequences for the real economy, which we have already encountered. The first is productivity loss, as less investment occurs and less of that goes to R&D-intensive firms, leading to less innovation. The second result is a rise in inequality and polarisation, as asset owners and the financial sector benefit from rent-reaping opportunities at the expense of the

rest of the economy. The third consequence is more instability, and greater damage from instability. More investment in asset markets increases the probability of a financial crisis and increases the damage once a crisis happens⁴⁷.

II: The rise of finance for finance

Financialisation and rent reaping are also apparent in the rapid growth in the volume of claims and liabilities *between* financial institutions: 'finance for finance'. Mostly these claims were nominally linked to real-sector assets, such as mortgage-backed securities. These are securities derived from loans to non-financial firms and households, which is why they are also known as mortgage derivatives. They are sold by banks as financial assets. Despite their link to the real economy, the values of these assets largely decoupled from the trends in profit and productivity in the real economy.

Source:
Author's own

Figure 19: A shift in the use of debt

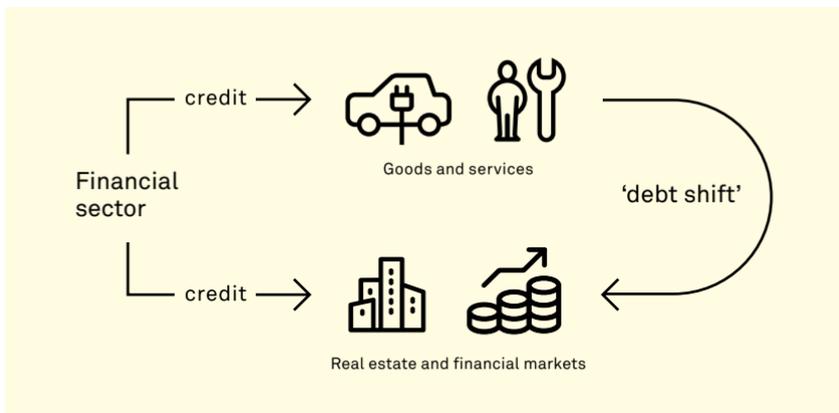
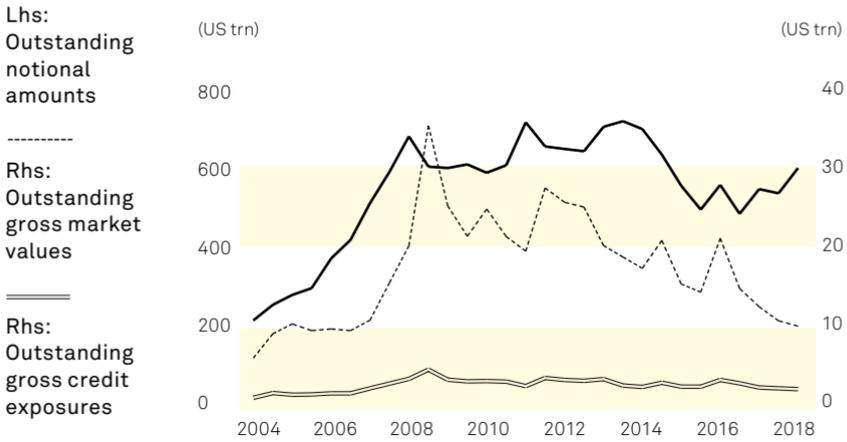


Figure 20: Global derivatives



Source: Bank for International Settlements

The rise in the price of securitised loans that could be sold at a profit made it more attractive for banks to issue loans so that more securitised loans could be created and sold. This has been a major driver of the rise in debt in the real sector.

The growth in derivatives creates additional costs for the real economy

Derivatives are another example of assets that are created and traded primarily between financial firms. The volume of derivatives worldwide is enormous. The Bank for International Settlements estimates⁴⁸ that the 2018 notional value of derivatives was close to \$600 trillion (Figure 20, left-hand axis), which compares to the entire world's GDP of \$75 trillion. This notional value is the value at which the derivatives were issued. We see that the notional value of derivatives tripled in the years 2004-2008 leading up to the Great Financial Crisis. This was an important cause of the crisis. In the years since, notional values stabilised, declined in 2014-2016, but have since picked up again with more derivatives being issued.

The market value of derivatives may be different from the notional value, since they are financial products that are traded. The market value is the light-green line (values are on the right-hand axis). It rose steeply from 2007 to 2009 and then started a long-term decline that is still continuing, interspersed with short-lived recoveries.

How large is the exposure of the real economy to these financial products? The most cautious risk measure is the gross credit exposure, which is the part of outstanding derivatives that is a legally enforceable bilateral agreement leading to direct payment obligations (the lower line). This rose considerably over 2006-2009, indicating the real-sector impacts of the financial positions. It has recently been quite stable, at around \$2.6 trillion at end-June 2018.

Derivatives extend the tradability of credit exposure, which makes it much more attractive for banks to issue loans. Quite apart from the real-sector uses of loans, the growth of derivatives markets has been one cause for the growth in debt. This contributes to the misallocation of credit that we discussed above. It also creates ongoing costs to the real economy as firms and households need to service increasing debt, and these costs are again in the nature of rents.

The overgrowth of mortgage-backed securities and other derivatives created massive instability during the financial crisis of 2007. Without the extensive network linkages between banks and other financial institutions which had been

investing in each other for two decades, the crisis would never have spread so rapidly, nor would it have sparked a global recession.

By creating derivatives, and derivatives of derivatives, financial traders can achieve leveraging and leveraging again, so that very large increases in return on assets can be realised. This results in large volumes of innovative products being held as assets and liabilities in the financial markets, typically outside the narrow banking system that interacts with the real economy. While creating large profits in the upswing, the deleveraging that a downturn in prices forced (as in 2008) is proportional to the previous leveraging and the expansion of derivative volumes. Significant price movements and the reduced volume of derivatives undermined the ability of financial institutions to service their financial commitments, and a wave of bankruptcies resulted. Ultimately, the pain went beyond the financial sector and into the real economy – both directly and in the longer-term.

The direct effect was that, with so many financial institutions in or on the brink of bankruptcy, banks stopped lending to each other. This interbank market freeze, as well as the collapse of many assets markets, suddenly reduced lending to the real economy, both to households and firms. This was followed by a global trade collapse in 2009 and by recessions in many advanced economies.

The longer-term effect was that a significant proportion of banks, firms and households were faced with strongly reduced net worth or even

negative equity. Rebuilding balance sheets, by writing off loans and increasing saving, took many years and resulted in stagnation of the real economy beyond the immediate recession. In this way, excessive levels of liabilities between financial institutions relative to income, for a time supported by unusually high asset prices, caused financial instability, with repercussions to the real economy.

III: Short-termism, shareholder dominance and payouts

In a short-termist culture, companies focus on financial not economic objectives

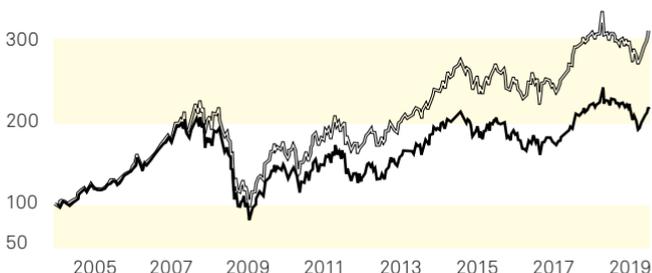
The culture of short-termism and shareholder dominance that has developed in recent decades is another cause of rents imposed on the economy by financial structures and practices. Just like over-lending, this implied a transfer of cash flow from productive firms to other parties (their shareholders) purely by virtue of (perceived⁴⁹) ownership, not as a reward for entrepreneurship. The mindset of 'quarterly capitalism' has come to demand large payouts from firms to their shareholders – funds that could have been reinvested but were not. Between them, dividends and share repurchase programs have massively increased the transfer of cash flows from firms to share owners⁵⁰. Buybacks have become large in Europe since about 2009, and they explain much of the stock market gains. Figure 21 shows that in the subgroup of firms who bought back their own stocks, value equalling 87 index points of yield was transferred to shareholders, on a total rise of about 200 points since 2009.

MSCI Europe

MSCI Europe Buyback Yield

Note: the graph show Morgan Stanley Capital International's (MSCI) yield index for listed firms in Europe. Source: MSCI Europe Buyback Yield Index, <https://www.msci.com>

Figure 21: Index (March 2004=100) of yields for listed European firms that buy back their own shares (open line) compared to all firms (black).



The 449 US companies in the S&P 500 index that were publicly listed from 2003 through 2012 used 54 percent of their earnings – a total of \$2.4 trillion – to buy back their own stock. And this was not replacing dividends, as a more flexible way to make payouts to shareholders – it came in addition to dividends, which absorbed an extra 37 percent of their earnings⁵¹. That left very little for investments in productive capabilities.

In fact, as Figure 22 shows, over the last two decades share buybacks have exceeded the issuing of new shares all the time except for a few brief episodes. The scale of share buybacks has meant that on a net basis, the global equity markets have not been providing money to business over the last two decades, as popularly believed. Instead, business has been providing money to the asset markets (or rather, to investors). The truth is that the real economy supports the asset markets, rather than the other way around.

Figure 22: Global equity issuance minus equity buybacks is negative most of the time

Note: Global equity issuance minus equity buybacks, as a % of market capitalization"

Source: Financial Times, 17 August 2018



Stock buybacks are often a rational response by individual managers and firms, but the response is to a warped incentive structure. The problem is a systemic one. Among the reasons often cited to explain stock buybacks is lack of investment opportunities⁵². In turn, the dearth of investment opportunities may be blamed on stagnating middle-class incomes and declining effective demand, on Chinese exchange rate policies or cheap labour elsewhere.

The problem is that there is no counterfactual. How do we know that investment opportunities were exhausted? The investment was not made, but was that for lack of opportunities or because of shareholder pressure and short-termism? We know there is enormous shareholder pressure and short-termism, but we do not know that investment opportunities have been exhausted.

It is a difficult case to make on a systemic level. Investment opportunities may run out for this or that firm occasionally, but stock buybacks have been massive, long-term and widespread. Was it

impossible for all these firms to find productive use for all this money? There may be some merit, for some firms, some of the time, in the combined arguments of paying down debt, flexibility of payouts, and difficulty in finding investment projects – but *a priori* the far more plausible explanation is the well-documented rise of ‘quarterly capitalism’ and the enormous pressure this puts on firms to increase payouts.

The case for reconsidering excessive payout pressure needs to confront a number of myths⁵³. One is that whatever shareholders demand they must have, since they are the owners. But it is well documented that legally, shareholders are not the firm’s owners. Excessive payout pressure has developed due to changing perceptions over the last decades of the balance between the firm’s various stakeholders, in turn supported by free-market ideologies that neglect the interests of other stakeholders and the spillover effects to the wider economy. There was no legal change justifying the increase in payouts from 50 percent to around 90 percent of profit in the last decades. What changed was the collective mindset.

Share buybacks were *not* part of the democratisation of stock market gains, another widespread myth. Share ownership in the US is concentrated among the wealthy, with just 4 percent of households owning a majority of all shares. The lower-income 50 percent of households own just 9 percent of all shares, and 84 percent of all stocks are owned by Americans belonging to the wealthiest 10 percent of households⁵⁴.

Dividend payouts and share buybacks don't boost production or innovation

Yet another misunderstanding is that payouts are one way to move capital from mature corporations to young, more innovative, newer, faster-growing firms. But the era of rising payouts has seen a decline in the share of total investment going to younger firms, and in the last decade it has been near record lows. Investment (including R&D spending) by US corporations listed less than five years has decreased from over 10 percent at the top of the dotcom boom in 1999 to 7 percent in 2014. The investment share for high-tech firms in the drugs, computers, communications, medical and scientific equipment, and software and data processing industries has followed the same trend⁵⁵. Nor is there evidence that the money is benefitting non-listed, smaller firms. It is also not true that investors use the larger payouts to invest more. In 2014, total shareholder payouts by US firms in the form of dividend and share buybacks were more than \$1.2 trillion, but US investors put less than \$200 billion back into the productive economy via IPOs and venture capital. Even assuming that all of that \$200 billion was paid from buyback revenues, five out of six payout dollars did not support IPOs and venture capital⁵⁶.

So where do payouts go? American consumption has increased strongly since the 1990s, and the rise was not among households in the lower income brackets, whose consumption was flat⁵⁷. Consumption inequality has increased by 30 percent between 1980 and 2007, the same number as income inequality. The top 5 percent have increased their share of consumed income over 1989-2012⁵⁸. Putting it all together, the American

consumption boom, which coincided with the payout boom, must have been a rise in consumption primarily by the top income earners – who after all, own most of the shares. Mostly, payouts were not used productively, but were used to boost consumption (if they were spent on goods at all). They were part of the rents, the tax on production and innovation, that the financial structures and the financial mindset of the last few decades have imposed on business and consumers.

IV: Mergers and acquisitions

Yet another form in which those rents come is through the waves of mergers and acquisitions⁵⁹ (M&As) that have characterised Western economies since the 1980s. Again, this is most obvious for the US economy. Many M&As absorb vast financial resources, and most do not add value in the form of profit or productivity. Rather, M&As and similar asset trades subtract rather than add value. They drive up asset prices, create virtual wealth, and induce a drain from the real economy to finance rising payments of fees, interest and principal repayment, much like the over-lending boom. Indeed, to the extent that the deals were leveraged, it was the over-lending that pushed the M&As⁶⁰.

M&As benefit management and advisors but often do not lead to efficiency improvements

Just like the payout excesses, the M&A boom was a manifestation of short-termism. For all actors involved in the deal, it makes financial sense to do it. For the firms that are being joined, and for the economy, it may not. The actors include the management and the investment bankers who

often initiate M&As. It is no coincidence that the M&A waves coincided with the era when investment banking rose to prominence in the financial universe. Between 1981 and 1989, reliance on investment banks to handle mergers and acquisitions increased from 75 percent of merger deals to 100 percent⁶¹. Despite the millions of dollars per deal this generated to the bankers and to management, there was a strangely high failure rate of new acquisitions. The official rationale for M&As is that, firms can realise synergies or achieve scale together that could not be achieved alone. If that were true, then the profit or efficiency of the new firm should rise relative to the old firms. On average, that is not case. Researchers⁶² have noted that “these deals are not wealth creating: there is a negative relation between the advisory stake and the viability of the deal”. In one study, targets where the bidder’s advisor holds a stake in the target are overvalued by more than 10 percent compared to deals in which the bidder’s advisor holds no target stake.

Also, if the synergy argument holds true, then, by implication, M&A deals can be explained according to firms’ characteristics. Those firms more in need of market expansion, or those better able to capture other synergies, will be more likely to enter into an M&A deal. Researchers have tried to associate a large array of firm characteristics and deal features with the success (or lack thereof) of the deals (in terms of share prices or firm profit), but the combination of the strong rise in the incidence of M&A deals with their high failure rate remains somewhat bemusing.

Only when one sees it as part of the financialisation process, and as an opportunity to skim off rents from productive firms, does the rationale become clear. Taking the deals for what they are – leveraged asset trades in pursuit of capital gains and fees, not value-added growth – they were not failures; they were resounding successes. Firms were loaned up to the hilt and financial fees ran into the millions.

The same researchers⁶³ analysed how firms are targeted by financial conglomerates in which affiliated investment banks advise the bidders. They show that these investment bank advisors take positions in the targets before M&A announcements, with their positions then positively related to the likelihood there will be a bid, the premium of the target and, of course, the termination fees.

What drives these waves may not be firm features and new market opportunities, but the availability of finance looking for returns, as several researchers attest. Giovanni (2005) writes that ‘in particular, the size of financial markets, as measured by the stock market capitalisation to GDP ratio, has a strong positive association with domestic firms investing abroad’. Hayward (2003) concludes diplomatically that ‘overall, these results suggest that professional firms lead clients to complex solutions with problematic outcomes’. Such processes should not be considered or regulated as real-sector processes, but as financial speculation resulting from unproductive credit.

Mergers
with positive
economic
consequences
support
innovation

This is not to say that mergers cannot support the economy by fostering innovation, though the consensus appears to be that they are more akin to ‘poison pills’⁶⁴. Where the effect is positive, this is likely to be in larger not smaller firms and in specific industries. Precisely because mergers lead to larger firms and reduce competition, they allow for the creation of the ‘good rents’ that support innovation. In research⁶⁵ on more than 5,000 publicly traded U.S. manufacturing firms from 1980 to 2003, it was found that a proxy for innovation (citation-weighted patent stocks) on average increases post-merger innovation in acquiring firms. Firms with large market share experience a greater boost in innovation; the merger effects on innovation are larger in the long run; and they differ across industries. In this study there is only one sector (of the six that were considered) where the positive impact on innovation of a merger was larger than in a reference group of other industries. This occurred in the computers and electricals sector, perhaps because of the significant network and spillover effects associated with these products. This finding might imply that anti-trust authorities should treat the merger applications of these firms differently than those of firms in the other five groups of industries considered, which included clusters of industries under the labels of Chemicals, Drugs, Electricals, and Mechanicals.

Even if a positive effect of M&A on innovation can be identified, this is not a full cost-benefit analysis. Also in this particular study, there is no attempt to put a dollar number on the benefits of

M&As and compare this to the (supposedly enormous, but also unknown) costs of M&As in terms of fees and interest but also in terms of the costs of change and upheaval in organisations. It bears repetition that there are powerful individual incentives to undertake costly M&As quite apart from, and possibly in contradiction to, the benefits that a firm may hope to reap.

Rent reaping in the US: the \$3.7 trillion bill

What was the combined effect of these and other ways of rent reaping? There is only one study⁶⁶ in which an attempt is made to put a number on the rents earned in the financial sector and the resulting losses suffered in the productive economy. It estimates how much lower the incomes (both wage income and profit) in the financial sector would have been without rents. This captures only part of the total rents; asset owners outside the financial sector also reap rents at the cost of other actors in the real economy. The study relates to the US economy.

Estimating
rents in the
financial
sector

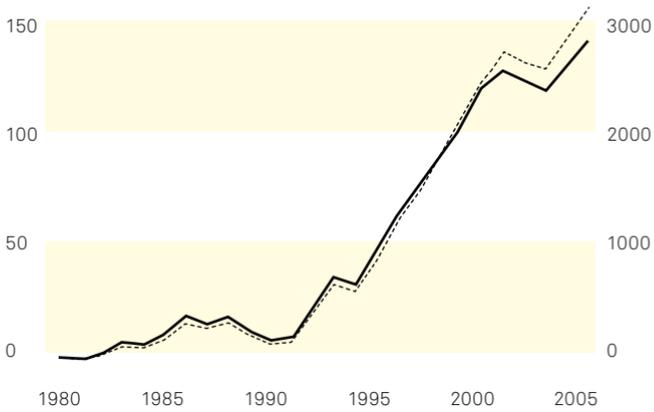
Starting with rents accruing in the form of wages, we may ask how much of the variation in wage levels in the financial sector can be explained statistically by variation in education and skills. The difference with actual wages is considered to be rents, resulting from lack of competition. Figure 23 shows this estimate for the US financial sector's rents in the form of wages over 1980-2005, as a total number (left hand axis) and per worker in the financial sector (right hand axis). Until the deregulations of the early 1980, these rents were about

Figure 23: Rents accruing to the financial sector in the form of wages over 1980-2005

Per worker
(2014 dollars,
right-hand axis)

Total
'(billions of
2014 dollars,
left-hand axis)

Source: Epstein, G and J Montecino (2016), "Over-charged: The High Costs of Finance". Roosevelt Institute Report, July 2016. <http://rooseveltinstitute.org/over-charged-high-cost-high-finance/>



zero. Since then, and especially since 1994, they have risen steeply and continuously to an annual level of \$150 billion by 2005. Adding up these rents over 1994-2005, and assuming a very conservative 2 percent return, the compounded sum comes to \$1.4 trillion (adjusted for inflation, in constant 2014 dollars). This actually underestimates the real number as bonuses, which are typically higher in the financial sector, are not included in the data.

The other component of rents is excessive profits due to lack of competition. In real terms, profits in finance rose fivefold, from around \$100 billion in 1985 to almost \$500 billion in 2005. The question is how much of this was rents from activities that did not support counterparties, and how much was profit earned from value-adding financial services that allowed non-financial firms to invest, smooth income, take risk or be more productive. Haldane⁶⁷ distinguishes between *risk management* – that is, trading and other speculative activities that merely

redistribute risk and income from one party to another without adding income or income-generating capacity – and *risk taking*, which involves pre-transaction research and due diligence to identify the riskiness of loans and other investments. Risk management is not providing a service to customers; it is playing the system, betting on price movements in whatever is traded. This is widely considered to be a nil-sum game, but since the downside risk is often shifted to less technically aware customers (via opaque contracts) or to taxpayers (via bailouts), profits made in risk management actually remove value from the non-financial economy.

In a study by Haldane and Madouros, the historic returns on fixed assets are recalculated assuming that there would have been no trading and other speculative activities that merely redistribute risk and income from one party to another (that is, no rent extraction). The authors find that this adjusted rate of return would have been 6.8 percent, compared to an unadjusted rate of 17.8 percent. Two-thirds of the profitability was due to speculative activities that are just rent extraction! Allowing for a margin of uncertainty by assuming, conservatively, that only half (not two-thirds) of the \$4.6 trillion compounded profits over 1990-2005 were rents resulting from extractive riskmanagement, this would result in a compounded figure over this period of \$2.3 trillion. Adding this \$2.3 trillion to the \$1.4 trillion of excess wages that was another form in which rents are extracted, the estimate for total rents amounts to \$3.7 trillion.

The realism of this figure can be checked by estimating it from the user's perspective⁶⁸. Every dollar of additional profit is a dollar in additional costs paid by users. One measure for the use cost per unit is the total income of the financial sector divided by the total assets intermediated by the financial sector. This estimate meandered around 0.018 over 1960-1980. Taking into account the technological improvement connected to digitalisation, one would have expected the user costs of finance to fall after the 1980s. Instead, it increased to an average 0.023 over 1990-2005. There is no obvious explanation for this rise, other than rents. On this interpretation, a proxy for the annual rents per dollar of intermediated assets is the annual difference in user costs for each year over 1980-2010 with the average level over 1960-1980. Multiplying by the volume of intermediated assets, the resulting annual figure rises from around \$100 billion per year (in constant, 2014 dollars) to above \$300 billion in the early 2000s. This flow of annual rents can be compounded into one figure for the 1990-2005 period as above (i.e. conservatively assuming a 2 percent return). This gives \$4.2 trillion total of rents – a lower bound estimate since we have not even compared this to the more plausible fall in user costs due to technology. This figure is in the same order of magnitude but substantially higher than the \$3.7 trillion estimated from excess wages plus excess profits. It can be concluded that \$3.7 trillion is a defensible rent proxy – if anything, it is too low.

Wealth or development?

In Part 3 we introduced a distinction in the uses of credit and money, for wealth or for development. Credit in the service of economic development was the subject of Part 2. The innovation and production that new credit-money may spur is an engine of development and a solid foundation for growing prosperity. This potential has been used to great effect in the history of capitalism. But that is not the end of the story of credit and the economy. Financial development (credit and money used in support of economic prosperity) has a dark counterpart in the form of financialisation, where credit and money support asset markets. Assets are wealth, and the turn from financial development to financialisation was a turn from a focus on development to a focus on wealth. Financialisation has a number of negative side effects which in our time have come to overshadow the positive effects of financial development. They result from a focus on wealth rather than a focus on development.

Rising asset values increase financial wealth, but hinder economic development

That may seem strange. Wealth is often thought of as the natural consequence of economic development, and therefore uninteresting in itself. Indeed, economists worry a lot about income inequality and very little about wealth inequality. Wealth, after all, is often thought of as nothing more than the accumulation of income. If we take care of income growth and of the income distribution, then wealth and its distribution will take care of itself.

This misses the role of credit. Lending against asset values increases asset values. It is possible to become richer without an increase in income. But then again, it might be asked, what is wrong with that? Why should wealth be juxtaposed with development? Wealth certainly feels good, and to be richer seems to be more successful. But as so often in economics, what appears beneficial at the individual level may not have positive system-wide consequences.

Financial wealth is by definition balanced by financial debt. Money is also accumulated in other, non-financial forms of wealth – above all, in land and housing. It is wealth for the owner that requires others to go deeper into debt in order to use the real estate or other asset. Wealth concentration has its structural problems, quite apart from ethical questions about wealth (and income) inequality. Thinking seriously about the role of money in the economy requires that we problematise wealth: all too often, it detracts from development. When it does, rents are typically involved. This raises a key question for the final Part of this book: can we do better?

Notes for further reading

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The uses of money matter. So far, we have seen that money used for investment, innovation, production and exchange supports the wider economic system, but speculation, instability and rents represent failures of the financial system to support the wider economic system. They lead to a slowdown of innovation, productivity and development, to more instability and more income and wealth inequality.

Can it be otherwise? We turn now to the future of money.

Forms of money and money reforms

Minsky's theory suggests that instability is part and parcel of capitalist economies. Other pathologies follow from the cyclical speculation process that he describes, but Minsky's theory also offers entry points for institutions and policies that may counteract this tendency. Likewise, the Classical analysis of rents is a description of what happens if economic dynamics are left to themselves and money is allowed to accumulate in real estate. This too offers entry points for reforms to reduce rents, increase levels of investment and improve the distribution of wealth and incomes.

A central concern so far has been to contain the use of money in asset markets (leading to speculation and rents) and to promote its use in production and consumption (leading to prosperity and development). Beyond these long-standing concerns,

Can new forms of money or reforms in the financial system help achieve social and economic goals?

other and more contemporary issues may be added. Even if money is productively used, there may be negative effects of production such as climate change and loss of biodiversity, pollution and soil degradation, low labour standards and labour market segregation. This invites us to explore the scope for uses of money that support societal or political goals, such as social inclusion and ecological sustainability⁶⁹.

This raises questions about changing the *form* in which we use money, and about *reforming* the financial system. Since this is about future possibilities rather than observed trends and facts in the past, we have more questions than answers in this area. This chapter aims to provide a framework for thinking about future forms of money, about money reform questions and about the evolution of money.

‘Forms’ of money may refer to the monetary instrument, such as national money. The question then is whether alternative forms such as cryptocurrencies or parallel currencies may improve the functioning of money and support the realisation of societal goals.

‘Reforms’ of the money system refer to alternative uses of existing money forms. For instance, loans may be given out to finance different activities – for asset market transactions and for production, for fossil fuel-based activities and for green investments. Here the reform question is whether the allocation of loans for different uses can be improved by changing the financial and monetary governance system.

Table 1: the future of money

New money forms	Financial Governance reforms	System Reforms
Chicago Plan money Local/parallel moneys Central bank digital currencies (CBDCs) Crypto currencies and blockchain technologies	Subsidies and Gifts Credit Guidance Private Sustainable Finance FinTech Helicopter Money Public Banking Community banking	Job Guarantee Basic Income Guarantee Green New Deal

Another area of reform is in financial organisations and the governance of those organisations. Should we aim for more stock market finance and less bank lending? Or for less (bank or market) intermediation generally and more peer-to-peer financing, for instance via crowdfunding platforms? For a few large, international banks, or for more local, small banks? For less private banking and more public banking? And how should organisations be governed – what should be the norms and regulations under which financial organisations function? Under what rules should banks be allowed to be in investment banking and in deposit taking? These questions are interrelated. For instance, governance rules for small, local banks may need to reflect their different lending patterns from large, international banks.

Beyond reform, there is evolution. The monetary system evolves without anyone intending the specific outcomes. It all started with tally sticks and clay tablets and here we are with electronic

money, without a grand masterplan. Actions by individual players in the monetary and financial system have system-wide effects that typically cannot be foreseen, but which can be analysed. For example, this goes for central bank policies that depress interest rates and lift bond markets: the official aim is quite narrowly to raise inflation, but the actual consequences are that it transforms the role of money, raises debt levels, lowers the exchange rate and redistributes wealth. The same goes for issuers of crypto currencies or tech companies which start to offer banking services. Their aim is to make profit in a niche market. The system-wide effect is to induce traditional banks to revolutionise their business models.

Table 1 surveys different dimensions of the future of money and of the economic system in which the financial system is embedded. This is far from an exhaustive list, but it will help to structure the discussion. It should be noted that the distinction between new money forms and financial governance reforms is not so clear; FinTech is both, and all new forms of money require governance reforms.

It is also clear from the table that the future of money will build on past practices, modes of banking and financial governance. Public banking has existed for thousands of years (Mesopotamia had public banks in the third millennium BC), but there is renewed interest in the role of public banks to address future challenges, such as the green transition. Likewise, FinTech may seem revolutionary, but it could also be viewed as a

continuation of the centuries-old process of turning private liabilities into means of payments – just as, say, in the eighteenth century, bills issued by British traders were exchanged for notes issued by the Bank of England.

New money forms

The Chicago Plan

The increase in money in asset markets rather than in the production of goods and services leads to the accumulation of value in assets and of debt at the expense of new value creation in the economy and growth in incomes to pay off debt. A widely discussed proposal in response to the debt problem is to nationalise credit creation and do away with private debt growth as an inevitable by-product of monetary expansion. The proposal revamps a plan from the 1930s promoted by Chicago economist Irving Fisher, known as the Chicago Plan⁷⁰. Civil society initiatives with names like *Positive Money* in the UK, *Vollgeld* in Germany and *Ons Geld* in the Netherlands suggest taking the money creation monopoly away from banks, and putting it in the hands of a money creation committee which should be public, but not under the control of politicians – much like independent central banks⁷¹.

Replacing private banks with a state body in charge of creating new money

If money is a liability by nature, then the question that arises is whose liability money would be if the Chicago Plan was adopted. It turns out to be the state's liability (as is now the case for currency) only without a licence for private organisations

to issue their private liabilities at par with state money. The Chicago Plan does not so much promote 'debt-free' money as nationalise the debt that balances money growth.

Under the Chicago Plan, banks could still play the role of financial intermediaries, and decide on the allocation (but not on the growth) of money. Alternatively, this too could be placed in public hands. Various versions of the public money idea are circulating.

The idea is that the Chicago Plan could solve the debt problem, since no private debt growth would be necessary for the growth of the money supply. It could solve the problem of the financial cycle and bubbles and crashes, to the extent that these are viewed as caused by excessive money growth. And it could solve an accountability problem in the money system, where a public good (credit and money) is created by private agents who are not accountable to the public for their actions.

Counter-arguments include the fungibility of private non-bank liabilities with official money. Firms and households will create mutual liabilities which, if money growth is restricted, may come to function as near-moneys which replace real money. Purchasing power could still grow and bubbles could still develop. Private sector debt creation, and its fungibility with state money, may be a key feature of money in market economies, and not something that can be regulated away by decree and planning. In Part 1 of this book we saw how money is essentially (not coincidentally)

hybrid⁷² (both private and public) and endogenous (that is, it is not stuff injected into the economy from outside, it is created within the economy)⁷³. If these qualities are baked into the very nature of money, then creating purely public, exogenous money is like creating dry water: impossible.

The Chicago Plan aims to control money supply growth not credit allocation

In this respect, the Chicago Plan has some similarities with monetarism in the 1970s and 1980s, which focused on money supply control from outside the economy as the way to manage inflation. This relies on a stable relation between money and prices. But this stability broke down in the 1980s and 1990s as money was increasingly poured into asset markets so that its increase did not cause consumer goods price inflation. If credit (and money) allocation is more important than quantitative growth in understanding its impact on inflation and other economic outcomes, the Chicago Plan offers no ideas on how to improve those outcomes.

Another issue that has been raised is the likelihood that a public money creation committee will correctly decide next year's money growth, better than a decentralised banking system. The proposal places great faith in the public sector's ability to assess this, and its ability to remain immune from the financial euphoria that, according to Minsky, will envelop all in a financial boom.

There has been extensive debate on this idea. In the Netherlands, there was a public debate and exchange of views in Parliament⁷⁴ and in Switzerland there was a referendum on the intro-

duction of 'Vollgeld'⁷⁵. A good summary of academic criticism and the responses can be found in a *Cambridge Journal of Economics* special issue⁷⁶.

Community non-bank money: local and parallel moneys

Parallel currencies are currencies issued by firms, households, local communities, or governments below the national level. They can increase local purchasing power, and therefore local economic development. Proponents of local moneys suggest that communities can use them to avoid many of the problems attached to the international financial system which come into the local economy with the use of official money. These problems include speculation, the use of opaque insurance and debt instruments, the absence of relationship banking, and the tendency of money to become concentrated in urban conglomerations so that finance for local development in rural areas is in short supply. By encouraging local use of local money – for instance, by price discounts on transactions settled in local money – the local economy can be stimulated.

Local and parallel currencies can encourage local investment and innovation in the productive economy

Local moneys are usually thought of as parallel currencies, which function alongside the official money. In fact, it is their convertibility into official money which makes them viable. In this perspective, local moneys add one more layer to the hierarchy of money, at the bottom. This introduces the problem of how to prevent a flight to safety out of local moneys in a crisis. It raises the question how local money will fare if the official money system no longer supports it.

Against these doubts there is the evidence of many practical examples of local moneys, for instance WIR in Switzerland⁷⁷ (one of the oldest), and transactions networks in Sardinia (Italy), Catalonia (Spain), and Bristol (UK) supported by the Dutch organization STROO⁷⁸. Cuba operates a system with a local peso and a separate convertible peso for tourists. So far, the evidence on the effects and viability of local money over the entire financial cycle is scarce, in part because it is not clear what the yardstick for success should be.

Local money may be managed by civil society initiatives or by local authorities. The best-known proponent of parallel money, Bernard Lietaer, advocates payment of local taxes in local currencies. In the depth of the 2009 recession, the state of California temporarily used its own IOUs as a parallel medium of payment, alongside the US dollar. In the 2015 Greek euro crisis, plans were discussed for Greece to issue its own money for domestic transactions, alongside the euro for international transactions. The question is whether these should be viewed as last-ditch, desperate measures when the official system is collapsing or as a viable alternative in normal times.

Local moneys are usually parallel moneys, but the reverse is not true. Parallel moneys need not be planned consciously; they may emerge spontaneously. US dollars are acceptable in most of Latin America, Hong Kong dollars are used in mainland China alongside renminbi, and euros are used in Croatia alongside kuna. Dollarisation is also a form

of parallel currency, but it involves loss rather than increase of monetary control. History suggests that in all such cases, the reach of a new currency will be linked to the reach of the issuing authority. This illustrates that local control over local moneys is vital if they are to achieve their aims.

Central bank digital currencies (CBDC)

Central banks may soon issue money digitally for the public

A new form of money that may soon exist is central bank digital currency (CBDC)⁷⁹. This would be money issued by the central bank, but digitally not in paper and metal form. Discussions about the introduction of CBDC reflect the decline and possible disappearance of physical currency due to ICT development. While forced by technology, CBDC would have advantages. The expectation is that CBDC would be more convenient and safer for money users. The state would maintain its seigniorage revenue and could potentially recoup the seigniorage currently enjoyed by commercial banks.

Its introduction would provide a policy entry point for the central bank once physical currency disappears. It opens up the new possibility that firms and households can deal directly with the central bank, were the central bank to not only introduce a wholesale CBDC (for use in financial markets) but also a general purpose CBDC (for use by the general public). By varying interest rates on CBDC accounts, the central bank could influence the market, independently of banks. A general purpose CBDC would be the most radical change, and its consequences are difficult to foresee. By offering

a safe haven for money and a payment system in times of stress, a general purpose CBDC account for the public could help avoid the financial system's dependence on commercial banks, which seems to make their rescue in crisis times unavoidable. It might even increase competition for commercial banks. Concerns about CBDCs centre on the need for the central bank to channel liquidity back to commercial banks in times of crisis, lest they have large funding gaps precisely when they most need access to funding.

It is fair to say that all this could have been achieved by having one or several public banks. This is however politically contentious. CBDC accounts would also be publicly owned and managed, but technology, it seems, is always a more convincing argument than political preference.

Crypto currencies

Crypto currencies are highly volatile. They are used for speculation as well as for payment

Crypto currencies are digital tokens that are used by some as means of payment; Bitcoin is the best known. Opinion is divided about whether 'currency' is a misnomer. It could be argued that they are not currency since they cannot be universally used as means of payment and they are no one's liability – two essential features of currencies according to the theory in Part 1. A key argument against their status as currency is that governments do not accept crypto currency as tax payments. In this view, private parties can agree among themselves to use anything they like as means of payments, but that does not make it a currency. This also implies that in the future, crypto currencies could

become real currencies, if governments adopt them. This transition from private to public money has happened many times in history.

Are crypto currencies money?

If a currency is defined simply as that which some private parties use as means of payments, crypto currencies already meet that definition. To proponents, they hold the promise of free dealing between private parties without the involvement or interference of government or central bank, and with maximum freedom for the individual. The Bitcoin market is however far from a free, competitive market. It is dominated by six early investor funds⁸⁰ who hold 70 percent of Bitcoins.

Crypto currencies are used not only for payments but also as speculation vehicles, with extremely volatile prices. In the most famous rally, the price of one Bitcoin rose more than twenty times in one year, from \$754 on 15 December, 2016 to \$16,722 on 15 December, 2017 before collapsing to \$2,815 by 15 December, 2018. These spectacular movements are not unlike those of tulip bulbs in seventeenth century Holland.

The multilateral, network-based blockchain database records crypto currency transactions

The technology underlying crypto currencies (blockchain) is equally contentious. To some it is little more than a glorified spreadsheet, to others it is a revolution in bookkeeping. Blockchain technology transforms accounting from the charting of a bilateral creditor-debtor relation stored in one place into a multilateral payment flows network stored at multiple locations. Beyond crypto currencies, it is applied in information management systems in areas as diverse as healthcare and trade.

The blockchain registers payment in what is not an official currency and in this sense these payments are postponed settlement. One way to view crypto currencies and the blockchain register is by analogy with trade credit between firms. Eventual settlement will have to be in money. Interfirm trade credit (which is massive – a quarter of GDP according to some estimates⁸¹) is not money. It does temporarily replace money, but only by virtue of being exchangeable for money. Firms do not ‘pay’ each other in trade credit, since credit is a promise to pay money. Bitcoins perhaps work as a money substitute because they are convertible to money; they are promises to pay money, like trade credit. If reliable conversion falls away (e.g. as the price becomes uncertain) the Bitcoin market becomes too shallow and there will be a drop in Bitcoin use. In this view, Bitcoin’s popularity would depend on stable or rising values.

Financial governance reforms

Rather than attempting to change the form of money – from debt-money to other money, or from national to local – we may also think about ways to use existing forms of money in different ways.

Subsidies and gifts

One governance change is to expand the role of (public) subsidies and (private) gifts in achieving societal goals by financial means. Money can change hands in goods-and-services purchases (money is exchanged for goods and services), in loans (money is exchanged for future money), in

equity markets (money is exchanged for ownership) and as a transfer, i.e. as a subsidy or a gift (money is exchanged for nothing). Direct investment in the equity of a company (e.g. by buying shares as they are issued) is perhaps closest to a gift in the sense that the right to repayment is relinquished in case of bad performance. Like loans, equity is an 'enabler', but unlike loans, the equity investor subordinates full recovery of the investment to the firm's success. The equity investor acquires a right to a dividend if the firm makes a profit, and obtains a share in the assets of the firm in case of liquidation of the firm.

The four types of transaction – purchases, loans, investments, gifts – have different economic consequences

Do these four ways of money circulation – goods-and-services purchases, loans, investment and gifts – have different implications for economic outcomes? They successively loosen the obligation of immediate repayment imposed on the receiving party. Schumpeter explained that an economy with only circulating money used in exchange and no new money creation used for investment and innovation, will be a stagnant economy. He emphasised the importance of the loan as the indispensable precondition for innovation and entrepreneurship, since it first provides the means of payment for innovation, before the firm can generate enough means of payment from innovation and production. If this is true for loans, the argument extends *a fortiori* for gifts.

Gifts financing (such as subsidies and private philanthropy) would be especially relevant to those projects which require prior financing (like loans) but which do not produce a stream of cash flow to

be captured for repayment. Public goods, as we have seen, often fit this description. In this perspective, Steiner⁸² developed a theory where transactions, loans and gifts each have their distinct function in the economic process. The role of gifts, in this perspective, is to finance intangible public goods, above all science, education and culture. This theory foreshadowed later insights into the importance of government spending by Keynesians and development economists. They follow the same logic: public goods need to be created, but they cannot be privately financed on a repayment basis, because the benefits are too dispersed. Yet, not creating the public goods holds back economic and human development.

The above categorisation into transactions, loans, equity and subsidies/gifts was based on the counterpart of the money received. Gifts were defined as an exchange of money 'for nothing'. In fact, they are balanced by an increase in society's net wealth. It adds to the wealth of those who benefit from the spillovers that public and private transfers and investments should create. Businesses are perhaps the biggest beneficiaries from education; they like to locate where there are educated labour forces. These benefits are net additions to the 'common weal'. All going well, the total increase in net wealth of beneficiaries and others enjoying the spillovers (wider society) outstrips the initial decrease in the government's or the private giver's net wealth.

The importance of money for transactions is broadly recognised; it is reflected in the core function of money as settlement medium.

Using public transfers and private gifts to further socio-economic objectives

The importance of loans, in line with Schumpeter's theory, is also well understood. Recognition of the importance of subsidies and gifts is not so widespread, even though government transfers are present in every economy, and private spending by foundations and wealthy individuals is significant. Government spending is typically between 40 percent and 60 percent of GDP in developed economies⁸³ and public cash transfer programs 'have been demonstrated to improve education and health outcomes and alleviate poverty in various contexts', according to a World Bank report⁸⁴. Global private philanthropy in support of developing economies amounted to US\$23.4 billion in 2013-15⁸⁵, and the amounts of money involved in giving within rich countries is even larger. In America alone, the *Giving USA Report* reported a record \$410.02 billion in contributions during 2017⁸⁶.

Can giving, both public and private, be harnessed more, or in better ways, for economic or social goals? Various proposals are circulating (and some have been implemented) that promote more structural use of subsidies and gifts in one form or another. The universal basic income proposal is one example, and this is discussed below. In each case, the yardstick for success or failure should be whether this increases society's wealth. What counts as an increase in society's wealth is ultimately a matter of public debate and political consensus. If it is defined broadly, to encompass financial, social and environmental wealth, this raises the question of how we measure and aggregate each of these dimensions.

It is noteworthy that rents are the exact opposite of gifts. Rents consist of money given up by firms or households without a balancing increase in goods or services received, or profit made. Rents directly decrease the net wealth of those who pay them and indirectly decrease net wealth of those who might have benefitted from the investments or spending that rent payers are now unable to do. By definition, the immediate addition to the rentier's net wealth is smaller than the longer-term decrease in net wealth in the rest of the economy. This is just the opposite of bank-financed innovation, smart government-financed transfers and investments, or judicious private philanthropy. In all these cases, the money given upfront by the financier is smaller than the benefits gained in the rest of the economy in the longer term.

Credit allocation guidance

Another proposal to address the allocation of bank lending has been to have more explicit rules and regulations regarding bank lending decisions. This proposal connects to the hierarchy of money. In this view, the special role which the state necessarily has in the money and credit system implies shared state/private responsibility for allocation decisions made in the financial sector. Central banks or treasuries would act within a growth and financial stability mandate – in some countries to be created in addition to an inflation mandate – by monitoring and limiting or stimulating lending to the various sectors in the economy. This could be based, for instance, on the now widely shared scientific consensus on the prob-

lems of excessive mortgage lending, or it could be based on other insights combined with societal goals.

Incorporating public decision-making into private-sector asset allocation

The core idea is not to let credit allocation be confined to private, profit-orientated decision-making, but to involve public decision-making. This recognises of the public goods nature of credit allocation and the leading role of the state in the hierarchy of the national financial system. Overt control and direction or ‘window guidance’ by central banks towards commercial banks was normal practice until the 1970s in most developed economies (often in the context of public banking⁸⁷). In most emerging and developing economies that remains the case. Window guidance often occurred in the framework of industrial policy.

Some guidance or regulation of bank’s choices between alternative lending options is already standard practice. For instance, the Targeted Long-Term Refinancing Operations (TLTRO) measures implemented by the ECB stipulate that cheap central bank financing is available only for loans to non-financial business, not for loans to households. The window guidance proposal goes further. It seeks to generalise this into a permanent rather than temporary practice by public officials rather than central banks. This would not just be for mortgages, but for any loan category for which a good case exists that allocation can be improved by public involvement in the decision-making process. It must be noted that there is currently no social or economic vision – e.g. for key strategic

sectors, or for sustainable economy – underpinning the ECB policy. The closest to this is the European Union’s capital regulation (CRR2). This new policy allows for a reduction in the risk weighting of a loan asset if an assessment certifies the credit as financing projects that contribute to environmental objectives including climate change mitigation or adaptation, sustainable use and protection of water and marine resources, and the transition to a circular economy, waste prevention and recycling, among others.

Counter-arguments to window guidance overlap with the criticism on public money proposals. They include the danger of political involvement in credit allocation decisions, which could lead to electoral credit cycles and cronyism. It is unclear that centralised government would make better allocation decisions than decentralised banking systems.

There is no good research on the average effects across many countries of window guidance, although there are country case studies – examples include Werner (2005) on Japan⁸⁸ and Monnet (2014) on France⁸⁹. Results of industrial policy in general are mixed: there have been many failures, where governments proved unable to pick the winners, and where cronyism and inefficiency ruined investment processes. But it is also true that no country has successfully made the transition to an industrialised middle-income country without at some point adopting industrial policies, including credit direction policies.

The case for introducing venture capitalist discipline in the public sector

In this respect, credit direction or window guidance policies are much like policies to encourage, facilitate and subsidise business start-ups. Their failure rate is high – typically, more than 90 percent of start-ups are gone after the first five years – but no healthy economy can afford to do without the dynamism of the continuous birth of new companies. The spillovers may be so large that even if only 10 percent of the money spent results in successful start-ups, it may be worth it. Likewise, even if most industrial policy fails, the little that succeeds may be worth it. The same argument is sometimes made for credit guidance as an instance of industrial policy.

A counter-argument could be that venture capital, not bank lending, is the financing form best suited to risky innovation. Bank loans carry fixed interest rates which would have to be punishingly high in risky markets with high failure rates. Banks depend on the interest for their income, so they have to charge it. Venture capitalists with enough financial buffers can afford to lose frequently to gain significantly once in a while. But if this is true for venture capitalists, it is true *a fortiori* for the public sector.

An alternative is financing by public banks, lending at low rates to innovative ventures. However, bank financing, which requires that the probability of success should be quite high, is very hard (even for public banks) in a context of fundamental innovations with high costs and uncertain risks and returns. This links in with the above discussion of gifts/subsidies, or equity financing as quasi-subsidies.

China is an example of the successes of credit allocation guidance. Public control of the credit system has been tremendously successful in industrialising the country and lifting tens of millions out of poverty. Nor is it a thing of the past. According to its central bank⁹⁰, Chinese credit guidance policies currently target shanty towns, micro-businesses, SMEs, infrastructure, agriculture, impoverished economic areas, ecological conservation and green energy. At the same time, there is evidence of widespread corruption; the policy has precipitated a real estate bubble and high debt levels, both of which remain unresolved. Would China now be better off if it had left credit allocation decisions to be made at the local level? And are the experiences of emerging economies today, or in developed economies up to the 1980s, relevant evidence for the debate on window guidance in advanced economies today?

Private sustainable finance

Public and private sector strategies that prioritise sustainability objectives

A related reform of the use of money would be to harness it in the service of the transition towards a (socially and ecologically) sustainable economy. One approach to this would be credit guidance, which entails overt instructions for use of financial resources. An alternative is to incorporate environmental, social, and governance factors into decision-making in the corporate and financial sectors⁹¹. Any such reform would need to deter short-termism, ensure lending and other financing decisions include environmental criteria and incentivise financial decision-makers accordingly. One idea might be to replace short-

term profitability goals with the Sustainable Development Goals.

This approach relies on aligning the private incentives of shareholders and investors with sustainable objectives so they use their influence to move towards sustainable business strategies. Sustainable investments do not necessarily lower returns for investors, but for private finance to have an impact on business strategy, investors need to be able to exert real influence, so its effectiveness is conditional on investment ownership not being too widely dispersed.

Firms that report on the social and environmental impacts of their activities have already taken an important step towards sustainable finance. Just as quarterly profit reports reflect short-term objectives, so regular impact reporting provides a mechanism for assessing a firm's long-term orientation towards sustainability. Impact reporting informs stakeholders on a firm's strategy and gives them a basis to reward, punish, or re-direct its activities. An EU directive⁹² has required all European-based firms with more than 500 employees to report on environmental and social performance at least annually since 2018.

The green transition and stranded assets

Among the challenges for a financial green transition is the problem of stranded assets. Financial assets whose value depends on the fossil fuel economy, such as bonds and shares issued by oil companies, will plummet in value once subsidies, regulations and innovations make green energy more attractive. But since invest-

ments in these so-called ‘brown’ assets are widespread, many people’s pensions may be affected.

One way to assess the impact of a green transition on asset values is ‘true’ pricing or ‘true cost accounting’. Using this method, Weyzig and others estimated in 2014 that the exposure of the European financial sector to high-carbon assets was over €1 trillion⁹³. The question that arises is how should the value loss be managed to minimise the damage? The problem is somewhat similar to that faced by proposals for debt jubilees, which would wipe out the value of creditors’ investments.

Corporate non-bank money systems (FinTech)

Fintech is defined as the use of technology and of technology-facilitated new business models in the provision of financial services, ranging from money transfers to financial planning⁹⁴. This includes peer-to-peer (P2P) lending platforms where online intermediaries match lenders with borrowers (bilaterally) and crowdfunding platforms where borrowers can collect money from many lenders (multilaterally). This new form of intermediation takes advantage of traditional banks’ regulatory restrictions and challenges. Research shows that P2P and crowdfunding lending platforms expand most in those places where traditional banks have been hardest hit by the financial crisis⁹⁵, where financial inclusion of the population is most limited or where the local economy is not performing well.⁹⁶

P2P lending fills the vacuum when banking services aren’t available

Peer-to-peer lending, it appears, is limited in areas with higher official bank branch density. A sceptic might suggest that this is nothing new. Moneylenders and loan sharks the world over have always operated in poorer neighbourhoods where poverty, lack of collateral, and limited literacy may restrict access to the official financial system. The same is not true for other FinTech services. An OECD study finds that 15.5 percent of digitally active consumers use FinTech products, which is more than the average for all consumers. This percentage rises to 40 percent among digitally active users with high incomes⁹⁷.

Online platforms are channelling capital from individual investors to small business borrowers

Another form of corporate non-bank money is private non-bank debt, which is money managed by investment firms (such as pension funds, insurers and sovereign wealth funds) and mediated by private non-bank intermediaries to be lent to businesses. In the US, this market has more than doubled from about \$300 billion in 2010 to about \$700 billion by the end of 2018⁹⁸. Private non-bank debt is a new asset class for investors and an increasingly important way for (small) companies to obtain loans.

What all these innovations have in common is that they offer new ways to get existing money to borrowers. In this respect they do for households and small firms what the bond and stock markets do for corporations. These are not new forms of money, but new ways of shifting money around (the irreverent description of financial market activity in Part 3), and new forms of creation of liquidity backed up by money. This fulfils a real function

in today's markets where traditional banks, often large organisations with vested interests and cultures that may not welcome change and innovation, struggle to keep up with technological opportunities.

Questions can be asked about the sustainability of many forms of FinTech in the medium term. Most of these initiatives and organisations have emerged since 2012 in the hothouse conditions of quantitative easing and ultra-low interest rates. They have never lived through a recession, and whether they are capable of surviving one remains to be seen. Meanwhile, a lasting effect has been to increase the rate of technological innovation in the established banking system and financial markets. Some of the non-bank companies now competing in financial markets have obtained bank licences, either through application or by buying a bank. Amazon, for instance, which has launched payments, cash deposit and lending services, is expected by many observers to apply for a licence in the near future.

Helicopter money

Helicopter money, also described as quantitative easing for the people, is not a new form of money but a new form of administering money. It is essentially a transfer from the central bank to firms or households and would therefore have similar characteristics to those described above in the discussion of gifts and subsidies. It is akin to the Chicago Plan in that money growth occurs without growth in private debt.

A one-time cash transfer to every citizen can increase aggregate demand

The idea is that if interest rates manipulation by the central bank fails to induce more lending by banks and borrowing by households, the central bank could induce spending directly by simply giving firms and households money. Operationally, this could be done in a number of ways. The central bank could transfer money directly to the accounts of firms and households, or the Treasury could do the same (e.g. as a tax rebate), financed by selling bonds to the central bank.

The purpose of helicopter money differs from that of gifts and subsidies. It aims to increase aggregate demand and inflation without specific ideas about its use (although there are variants such as Green QE and Strategic QE that do stipulate this). An important feature of the policy is that the money transfer would have to be understood by the public to be both permanent and a once-off event. If people expect it to be reversed in future (for instance, through increased taxation) then the money expansion will not result in increased spending. If they think the transfer could be repeated, this would create inflationary expectations.

Public banking

A public bank is a bank owned by (local, regional or national) government. Examples include the Bank of North Dakota, owned by the US state of North Dakota, German public savings banks ('Sparkassen') which are typically owned by cities or groups of cities, and the State Bank of India which is an Indian multinational bank owned by the Indian government.

Public banks proliferated in the late nineteenth and early twentieth centuries in industrialising economies, as a means for the government to generate, concentrate and direct finance to specific industrial strategy goals. Developing countries which gained independence typically founded one or more public banks to aid their developmental goals.

Publicly owned banks can allocate finance to meet social and environmental goals.

The argument for having public as well as private banks is most often associated with the need to finance projects which have a public-goods nature and which may be too risky or too long-term for private banks. Since public banks can operate as not-for-profit institutions, they may be able to provide credit to the economy at lower interest rates than private banks. Public banks can allocate finance to help meet social and environmental goals. They could, for instance, accelerate the green transition, support regional development or prioritise finance for small businesses which would otherwise be excluded from official financial intermediation services.

Historically, another function of many public banks (especially postal banks) has been to provide access to savings, payment and insurance services for people who live in thinly populated areas or who are otherwise not well served by private banks. These functions, and the arguments for public banking, are closely related to the aims of and arguments for public guidance of credit allocation, which historically was indeed most common when public banking was also popular (roughly, until the 1980s). Globally, today around a quarter of all bank assets are controlled by public banks.

Pros and cons of public bank ownership and the German experience

The importance of public banking for developmental goals was affirmed in the 2015 Addis Ababa Financing for Development Action Agenda⁹⁹. Opinion is divided on the benefits or the harm done by public banks; a sample of the opinions is provided in a 2013 discussion section in the New York Times¹⁰⁰. Arguments against public banks are those against state-owned companies in general: the risk of crony dealings if political and financial power rest in the same hands; over-lending to government; electoral lending cycles; and their perceived lack of ability to identify successful private sector. Nevertheless in 2012 an academic study concluded that the effect on income growth of having public banks is on average positive¹⁰¹.

Both the relevance of public banks for advanced economies and their problems are often argued with reference to Germany, which operates local (*Sparkassen*), regional (*Landesbanken*) and a national public bank (the KfW). The regional and local banks are sometimes argued to have sustained local economic credit markets when private banks could not (e.g. after the 2007 crisis), but also to have lent recklessly to local and regional governments, resulting in their current very weak financial state¹⁰². The KfW is lauded for its major role in financing green transition efforts in Germany and elsewhere¹⁰³, and is often cited as an example of the potential of public banks.

Community banking

There is no clear definition as to what constitutes a community bank, but they do have common

characteristics. They are typically small, they restrict their operations to a confined geographic region, and their managers and employees usually live locally.

Proponents appreciate the benefits of local control and cite this as their key advantage. Community banks can use local savings in support of the local economy, their structure keeps financial decision-making at the local level, they are accountable to local customers and other residents, and their business model is attuned to local conditions. Within this definition, local branches of larger, even international, banks may serve as community banks given the right governance structure.

The benefits of local knowledge and the challenges of scale

The economic case for community banking is that detailed information about borrowers and projects is key for risk and return assessments. If community banks are more likely to be able to obtain and use that information, then they will be able to lend at lower rates and offer better services. Economic arguments against community banks are the general arguments against small-scale, local businesses. Local dependence may make them vulnerable to fluctuations in the local economy, their small scale may limit their ability to access funding in wholesale markets at competitive rates, or centralise parts of the bank (such as administration, ICT tasks and human resource management) that would allow them to benefit from economies of scale. An academic study in 2004¹⁰⁴ concluded that regulatory and technological change has exposed community banks to

intensified competition on the one hand, but on the other hand has left well-managed community banks with a potentially exploitable strategic position. However, since the financial crisis regulators have set additional reporting requirements. These place a disproportionate burden on smaller banks, which have less scope than larger banks to employ the additional staff needed to comply with the many new rules they now face.

System reforms

Another route to a more sustainable use of financial resources is the public route. Government finance can be harnessed to increase spending on specific societal goals. This is much like the credit guidance idea, except it relies on state spending rather than private lending. The goal is ambitious. It aims to change not just the financial or monetary system, but the economic system. This requires fundamental change in the way finance is viewed.

Three state spending proposals: a basic income, the job guarantee and the green new deal

Three currently influential ideas come under this heading. The recently popularised¹⁰⁵ Basic Income Proposal was first mentioned by Thomas More in the sixteenth century; the Job Guarantee was originally proposed by Minsky (among others)¹⁰⁶; and the Global Green New Deal, first proposed by Achim Steiner of UNEP in 2008¹⁰⁷, was picked up in US politics in 2018. Each of these proposals has been detailed in many forms and means different things to different people. They all aim to solve the key problem with the use of money identified in this book. That problem is that market dynamics tend to misallocate credit into asset markets

where it becomes fuel for speculation. Meanwhile, innovation and employment in the real sector suffer.

In each of these three system change proposals, money would be spent directly by the state, rather than allocated via markets. The Basic Income Proposal distributes income to all citizens to combat inequality. Under the Job Guarantee Plan, it would be directly spent on providing employment, thus stabilising the cost of labour, which is (along with the interest rate) probably the most important price in the economy. Minsky's biggest worry was a repeat of the 1930s Great Depression. The Job Guarantee Plan supports aggregate demand and combats deflation in economic slumps.

The Global Green New Deal is the most all-encompassing of these plans. Like Roosevelt's 1930 New Deal, it is an economic policy strategy for ensuring a more economically and environmentally sustainable world by reducing carbon dependency, protecting ecosystems and water resources, and alleviating poverty. There are many variations in Green New Deal policy packages. Financially, they all rely on a mixture of direct state spending and coordination of private investment.

What future?

In Part 1, we introduced the features of money. We discussed in Part 2 how money can function constructively. In Part 3, we looked at the dark side of the monetary economy: its tendency towards instability, inequality and rent reaping that seems inherent (although not unavoidable) in financial

capitalism. In this part of the book, we have surveyed some current changes in the forms in which we use money, possibilities for reforms, the current evolution of money, and its role in larger systemic reforms that are currently on the table.

So it is time to make up our minds. Perhaps that requires reading up on the notes and readings suggested in this book. It may require reading more books, or discussing the issues raised in this book with others. Which problems do the various reforms and changes presented here solve? Which are left unsolved, and how bad is that? Which of our aims do the reforms serve? How well does the current monetary and financial system support the direction society should take?

Notes for further reading

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Afterword

Triodos Bank is a pioneering organisation and a front runner in sustainable finance. The Triodos story began in 1980. The bank was founded on the idea that money is a powerful tool for creating change in society that needs to be directed to the right projects and activities. Our people have built on this over the years to create an international, entrepreneurial organisation.

As bankers, we are practitioners in the use of money. We meet entrepreneurs, give them credit and share in their successes and challenges. We meet savers and investors, who want their money to be directed to businesses and activities that create a better world. Ultimately, we want to make connections with people. Our aim is always to use the money we control in ways that engage with real human experience rather than abstract capital market activities.

The bank's long-time slogan, 'consciously dealing with money', signalled our dedication to informing savers about where and how their money was invested. We made that happen through balance sheet transparency. Our motto today, 'change finance, finance change', acknowledges banks' pivotal role in shifting society.

Unlike many other banks, Triodos was largely unaffected by the financial crisis of 2008. It raised an intriguing question. Was this coincidental or had we insulated ourselves by focusing on the real economy and avoiding capital market activities?

To help us address this, we decided to reach out to the academic world. To advance our understanding, we stimulated research focused on sustainable finance. This led to the bank supporting the foundation of the Sustainable Finance Lab (SFL).

Within our own organisation, we arranged lectures and workshops on the nature and functions of money. Most of these were prepared together with my colleagues Thomas Steiner and Adri Dijkstra. We had passionate discussions on how money is used: in transactions, through lending and with gifts – the three axes of Triodos Bank's work.

Money is a powerful development tool, but it can also be very damaging if used without care for people and the planet. In our desire to understand why this happens, we discussed the nature of money creation, the importance of connecting to the real economy, and our observation as bankers that, increasingly, capital markets were disconnected from the daily realities we encountered in the real economy.

We soon realised that most people, and that includes bankers, are really quite ignorant about money, even though we use it every day. We were unable to find any solid materials to ground our discussions. There were university textbooks on money theory, but these were often highly theoretical and too remote from our observations and everyday experience as bankers. There were also publications from specialist groups, but in their eagerness to solve the problems money poses, these were all too ready to adopt theoretical

approaches that were difficult to apply in practice and which rarely addressed all the dimensions of our customers' needs.

I am therefore very grateful to Dirk Bezemer for having accepted the challenge of writing the material we need to engage with each other about money and its uses. He listened carefully to our observations and questions and wrote a text that does not try to propose solutions but rather provides firm foundations for constructive dialogue. The document he has produced will inform the conversation within Triodos Bank and hopefully stimulate discussions with academics, other bankers, financial institutions and policymakers.

I have greatly enjoyed our conversations, which benefitted from the differing perspectives of the professor and the banker. To offer an analogy, whereas the professor looks at the forest and tries to talk about the trees, the banker is looking at the trees and trying to reach conclusions about the forest. Two perspectives, the same reality.

Dirk presents his incisive academic views on money and economics in an accessible way to address the concerns we have as sustainable bankers about the direction taken by today's financial world.

This book is not the definitive text on money; it is not meant to be. It is intended instead to trigger debate. I hope it can help a broader public to better understand money. I believe it is a myth that bankers truly understand what money is.

If I am right about that, thinking about what money is used for should not be left just to us.

People use money every day. We are, all of us, directing money towards different businesses, organisations and people, empowering them to continue their activities. In this sense, we are all bankers and all our voices should be heard in any democratic debate about money.

Money is a simple thing that modern society has made complex and opaque. The question for all of us is what real value this adds to humanity.

The more we have a dialogue on the meaning of money, the closer I believe we will come to truly understanding how it is that this extraordinary human invention enables civilisations to flourish and develop. Armed with this knowledge, each of us can then embrace the positive and minimise the negative consequences of every decision we make about how we spend, lend or give our money away.

Thank you, Dirk, for this book, your insights, your enthusiasm and your hard work. Thank you too to all my colleagues at Triodos Bank for sharing your ideas about money and helping to put them into practice.

May 2019,
Pierre Aeby

Notes

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