Money and Payments in Theory and Practice

Sergio Rossi

Routledge International Studies in Money and Banking

Money and Payments in Theory and Practice

Departing from conventionally held beliefs, Sergio Rossi argues in *Money and Payments in Theory and Practice* that money is not a financial asset and banks cannot create purchasing power on their own. The author asserts that the nature and workings of money and payments have not been thoroughly understood in both theory and practice.

This book focuses on the working of money and payments in a multi-bank settlement system within which banks and non-bank financial institutions have been expanding their operations outside their countries of incorporation. Rossi sets off from a positive analysis of the logical origin of money, which is the essential principle of double-entry bookkeeping through which banks record all debts and credits for further reference and settlement. The analysis carried out in this book shows that both money and banking have profound implications for real economic activities. The author also provides theoretical as well as empirical advances in explaining money endogeneity for the investigation of contemporary domestic and international monetary issues.

Money and Payments in Theory and Practice points out that the origin of inflation may lie in a structural discrepancy between the architecture of our domestic payment systems and the banking nature of money. Sergio Rossi puts forward a positive as well as a normative approach to dispose of inflation through a structural change at the payment systems level.

This innovative work will be essential reading not only for scholars in monetary economics, but also for professionals concerned with monetary policy and payments system issues.

Sergio Rossi is Associate Professor of Economics at the University of Fribourg, Switzerland.

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Preface

This book is the result of my research journey into monetary macroeconomics so far, in an attempt to uncover the principles governing money and banking independently of the behaviour of economic agents and policy makers. Since my undergraduate studies in the 1980s, I have been considering economics, and in particular macroeconomics, as having its own laws, which are neither natural nor behavioural, but monetary and structural. In particular, I consider macroeconomics as neither a branch of physics or mathematics nor a domain of psychology or sociology, but as a self-contained science, which has thus to define its own building blocks without relying on apparent similarities with other close sciences. Once we consider notably that money is a mere book-entry device in a bank's ledger, we notice straightforwardly that physical concepts such as quantity and velocity are not applicable to monetary macroeconomics, as its unit of measurement is neither physical nor dimensional, but purely numerical. Further, considering the accounting principle of double-entry bookkeeping as the essence of any payment in the real world leads us to investigate the workings of our payment systems, national and international. Payment systems analysis – a field of research that economists have been neglecting or even ignoring so far – should indeed be the starting point of both monetary theory and policy making, in order also to clear the air for a novel approach to monetary issues that are still to be solved in the twenty-first century. In spite of the fact that the behaviour of economic agents affects undoubtedly the value as well as the number of those economic transactions that are daily processed through our payment systems, the workings of the latter systems are governed by the principles of money and banking, which are not and cannot be affected by the agents' forms of behaviour. If so, payment systems analysis has to consider whether the payment structures existing in the real world respect these principles or not, in which case it is the duty of monetary policy makers to design the appropriate structural reforms to make theory and practice coincide. The first step into this analysis is logically to uncover what these principles are, while the second step is to uncover where and why these principles are not respected yet, in order to determine, as a third step, what structural change ought to be proposed and then put into practice to make theory and practice coincide in the realm of money and payments, within as well as between countries pertaining to different currency areas.

The research project reported in this book is a modest contribution to uncovering those principles that lie behind money and payments in our capitalist economies of production and exchange, domestic as well as across borders. It aims to point out both the shortcomings of traditional monetary thinking and the advances made possible by a novel analysis of money and banking that disposes of any physical and behavioural appraisal of its object of enquiry. Its purpose is to draw the reader's attention to the importance of defining the object of monetary macroeconomics in conformity with its objective nature, rather than with our subjective perception of its function, and to show how this Aristotelic approach fits with a Platonic view, as Plato himself so cogently puts it in the words of Socrates:

> Friends, I can't persuade Crito that I am Socrates here, the one who is now conversing and arranging each of the things being discussed; but he imagines I'm that dead body he'll see in a little while, so he goes and asks how he's to bury me! But as for the great case I've been arguing all this time, that when I drink the poison, I shall no longer remain with you, but shall go off and depart for some happy state of the blessed, this, I think, I'm putting to him in vain, while comforting you and myself alike. So please stand surety for me with Crito, the opposite surety to that which he stood for me with the judges: his guarantee was that I would stay behind, whereas you must guarantee that, when I die, I shall not stay behind, but shall go off and depart; then Crito will bear it more easily, and when he sees the burning or interment of my body, he won't be distressed for me, as if I were suffering dreadful things, and won't say at the funeral that it is Socrates they are laying out or bearing to the grave or interring. Because you can be sure, my dear Crito, that misuse of words is not only troublesome in itself, but actually has a bad effect on the soul. Rather, you should be of good cheer, and say you are burying my body; and bury it however you please, and think most proper.
>
> Plato, *Phaedo* (115c–116a)

My purpose is certainly much less ambitious than Plato's, as it is confined to the realm of monetary macroeconomics, particularly to the nature, role, and workings of money and payments in a monetary economy of production and exchange, domestic as well as across borders. I hope, nevertheless, to have succeeded in raising the reader's interest in a thought-provoking way, calling into question widespread beliefs and contributing to a better understanding of the economics of money and payments in theory and practice. A new horizon to scientific knowledge and policy making opens out in front of our generation of (theoretical and applied) economists, provided that they are willing to look beyond surface phenomena as Plato's quote exhorts. Since economic policy affects so many lives, for better or for worse, it is a collective duty of the economics profession to strive for a better understanding of the world in which we live, as a precondition to make it a better place for everybody.

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Writing this book has been for the author the result of several years of research in the huge and expanding realm of monetary macroeconomics. In the course of analysing and preparing the material that led to this research monograph, I have incurred many debts, so much so that a number of friends and colleagues have been reading and commenting upon various drafts of research work that gave rise to this book. Participants in several international conferences and workshops at which I presented parts of this work, as well as e-mail correspondents around the world, have been providing, in a constructive way, critiques and suggestions, but also a set of questions, to improve my analysis and whose answers are now integrated, in one form or another, into this book. In this respect, I thank very much all of them, and in particular Philip Arestis, Riccardo Bellofiore, Jörg Bibow, Duncan Cameron, Anna Carabelli, Alvaro Cencini, Daniel Chable, Eugenia Correa, Jérôme Creel, Paul Davidson, Oscar De Juan, Ghislain Deleplace, Meghnad Desai, Anthony Endres, Lars Erikson, Korkut Erturk, Trevor Evans, Eladio Febrero, Heiner Flassbeck, Giuseppe Fontana, Alberto Giacomin, Nicola Giocoli, Claude Gnos, Augusto Graziani, Harald Hagemann, Omar Hamouda, Geoffrey Harcourt, Jochen Hartwig, Eckhard Hein, Peter Howells, Jesper Jespersen, John King, Marc Lavoie, Bill Lucarelli, John Maloney, Basil Moore, Phillip O'Hara, Alain Parguez, Giovanni Pavanelli, Antonella Picchio, Jean-François Ponsot, Riccardo Realfonzo, Louis-Philippe Rochon, Carlos Rodriguez, Claudio Sardoni, Malcolm Sawyer, Bernard Schmitt, Mario Seccareccia, Andrea Terzi, Hans-Michael Trautwein, Domenica Tropeano, Achim Truger, Eric Tymoigne, Randall Wray and Alberto Zazzaro. I also greatly enjoyed and very much benefited from my stay at Chemnitz University of Technology, Germany, as the Commerzbank Guest Professor of Monetary Economics (April–May 2005), and I express my gratitude to the members of the local Economics Department, in particular Fritz Helmedag and Thomas Kuhn, for having provided such an ideal environment for my research activities. I am also grateful to Nadège Bochud, Grégoire Cantin, Dante Caprara, Mathieu Grobéty, Szymon Klimaszewski as well as Darlena Tartari for their valuable research assistance, to Nunzio Canova for his bibliographic assistance, and to Denise Converso–Grangier for secretarial activities. Terry Clague and Robert Langham,

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Abbreviations

BIS	Bank for International Settlements
CCB	correspondent central bank
CCBM	correspondent central banking model
CCC	central counterparty clearing-house
CCP	central counterparty
CLS	Continuous Linked Settlement
CMS	collateral management system
CSD	central securities depository
DD	domestic department (of a central bank)
DVP	delivery versus payment
ECB	European Central Bank
ED	external department (of a central bank)
EMU	European Monetary Union
ESCB	European System of Central Banks
EU	European Union
GDP	gross domestic product
IMF	International Monetary Fund
imu	international money unit
ISI	international settlement institution
IT	information technology
LVPS	large-value payment system
MA	money (of country) A
MR	money (of country) R
OLG	overlapping generations
PVP	payment versus payment
RTGS	real-time gross settlement
SDR	Special Drawing Right
SEPA	Single Euro Payments Area
SSS	securities settlement system
TARGET	Trans-European Automated Real-time Gross-settlement Express Transfer

Introduction

This book concerns the nature and role of money and banking systems in our capitalist monetary economies of production and exchange, national and international. It focuses on the working of money and payments in a multi-bank settlement system within which banks and non-bank financial institutions have been expanding their operations outside their countries of incorporation. It sets off from a positive analysis of the logical origin of money, which is based on 'the antiquity of the law of debt' (Innes 1913: 391). What Innes (ibid.: 393) defined as 'the primitive law of commerce' is the essential principle of double-entry bookkeeping, which records all debts and credits for further reference and settlement. This is the thread that runs across the whole book, which is structured in order to take the reader through monetary theory and policy issues following an order of increasing difficulty. The main themes of this book, which also provide its structure and chapter headings, are (1) money and credit, (2) banks and payments, (3) the central bank and the state, (4) international settlement systems, and (5) monetary policy strategies. In a nutshell, this book shows that money and banking have profound implications for real economic activities, contrary to the established neutrality tradition in monetary analyses and policy making. The book also provides theoretical as well as empirical advances in explaining money's endogeneity for the investigation of contemporary domestic as well as international monetary issues, concentrating not on technicalities but on a set of very powerful analytical insights through an investigation of money in a world of banking, in which money is essentially a double entry in banks' bookkeeping systems. In so doing, the analysis carried out in this book substantiates the flow nature of money, considering most notably also the central bank's role in the settlement of interbank transactions in a multi-bank system, where any money unit is endogenously provided as a means of final payment between any two agents, namely the payer and the payee. In this framework, the book points out that the origin of inflation lies in a structural discrepancy between the architecture of domestic payment systems and the banking nature of money. It thus puts to the fore a positive as well as normative approach to dispose of inflation through a structural change at the payment systems' level. In addition, this book addresses the structural problems of the contemporary international settlement architecture, showing how a positive and normative analysis along the

lines that Keynes put to the fore in the 1940s (namely his plan for an international clearing union) can provide the means of better understanding the complex workings of our open economies, to be able to design and put into practice macroeconomic policies – not least monetary policies – that are better suited to the nature of modern capitalist systems, thereby limiting the potential for financial turmoil and economic crisis around the world.

The first chapter deals with the fundamental analysis of the nature of money and credit. It aims to answer a number of questions that have been extensively discussed in the literature and that, in spite of this, are still to be answered satisfactorily from a logical point of view. In particular, Chapter 1 asks: What is money? How is it created? Where does its value come from? What is the causal relation between money and credit? Has money always been endogenous to the needs of the economic system or has it become endogenous as time went by? Indeed, although a cursory reader might think that these questions only make sense in a textbook, in fact they cannot be sorted out in a section, or two, of a research monograph, since answering them in a logical and consistent way is the collective task that monetary economists still have to carry out today. To be sure, answering these questions provides the track on which monetary theory and policy will then proceed to analyse and to deal with a number of macroeconomic disturbances such as inflation, unemployment and exchange rate fluctuations. Chapter 1 will answer these questions on the ground of endogenous money analysis, along the lines of the theory of money emissions developed by Bernard Schmitt. In so doing, this chapter will critically address the more orthodox, exogenous money view in order to point out the analytical shortcomings of the latter view as well as the problematic application of its monetary policy prescriptions to address real-world phenomena in a fruitful way. The first chapter of this book will also show, however, that the less orthodox approaches to the same set of questions do not yet provide a valid alternative to more orthodox monetary thinking. Indeed, although a number of post-Keynesian writers and monetary circuit theorists have thoroughly investigated the workings of an endogenous money system, their analyses are still unsatisfactory, because they still fail to understand the fundamental difference existing between money and credit, which reflects also the essential distinction between money and income. Chapter 1 is intended as a contribution to clarifying these all-important aspects of the current debate, so much so that the underlying issue is a theoretical as well as a practical problem that affects the real world of economics. Indeed, its solution conditions the ways and means of macroeconomic policy in both domestic economies and the international monetary arena, which the whole range of traditional economic analyses has been considering in terms of equilibrium and disequilibrium states of the world. Now, contrary to contemporary monetary economics – orthodox as well as heterodox – the concept of equilibrium does not feature in this book. Indeed, the view of a monetary equilibrium is at odds with both the numerical nature of money and the definition of income. Equilibrium is a contingent state of the (econometric) model used by the observing economist for his or her own purpose of explaining to him or herself how

distinct and opposite forces balance each other with high or low frequency. In this framework, which is a figment of the economists' imagination, 'a monetary equilibrium is a concept presupposing the existence of the demand for and supply of money as two distinct and opposite forces. But, if demand for and supply of money are to define two opposite forces, it is necessary that money exists independently of produced output. It is only in this case, and on condition that it had a positive value of its own, that money could be held as a net asset' (Cencini 2001: 1). In fact, the nature of money being that of a double entry in a bank's bookkeeping, money is not an asset but an asset–liability, since it features on both the assets and liabilities side of a bank's ledger at one and the same time, that is, every time a payment is carried out through banks, which they enter on both sides of their balance sheet simultaneously. In fact, the value of money is the result of an integration between the numerical and real emissions of banking and production systems respectively. This integration gives rise to income and occurs on the factor market every time firms pay, through banks, the production costs of current output. Thus, then, income is current output and vice versa, as the two faces of the same object, which exists in the form of bank deposits. As a result, total demand (income) and total supply (current output) are two identical magnitudes, which leads to the conclusion that the idea of macroeconomic equilibrium and disequilibrium has to be replaced by the concept of identity in order to analyse the functioning, as well as the malfunctioning, of our monetary economies of production and exchange, domestic as well as across borders. If so, then supply of and demand for income are actually one and the same thing: when income is formed in an economic system, it defines both a supply (current output) and an identically equivalent demand. Further, since money is a double entry in banks' bookkeeping system of accounts, it follows logically as well as in point of facts that income is always totally deposited with banks. This amounts to saying that income is demanded (namely by the agents entered on the assets side of banks' ledgers) and simultaneously supplied (by the agents entered on the liabilities side of the same ledgers). 'Double-entry bookkeeping is a rigorous instrument that leaves no room for hypothetical adjustments between supply and demand, and rings the toll for any analysis based on the concept of equilibrium' (ibid.: 2). Now, money being an incorporeal thing, that is, a numerical entity issued by banks every time they carry out a payment on behalf of one of their clients, while income is the result of production activities that firms carry out in every period of time with the contribution of workers, it follows that banks create the payment but not its object (output, that is, income). This is tantamount to saying that money carries out payments while bank deposits finance them, the distinction between money and bank deposits being ignored in the literature and central banks' statistics so far. It also means that money and credit are indeed separate things, even though they are intimately related one to another.

Chapter 2 expands on this conclusion. It explains why a purely numerical form, which does not pertain to the set of real goods, services and assets, can actually be a means of final payment in a monetary economy of production and

exchange, in which output is measured and circulated via the use of what is essentially a bank's double entry in its own books. In particular, Chapter 2 investigates both banks and payments in light of the numerical nature of money and its intimate relationship to credit, which occurs through a bank's financial intermediation. Indeed, a money emission always implies a financial intermediation by banks. As such, the emission of money is tied to a transfer of income through one or more banks. Income, however, and as we pointed out above, defines a purchasing power which has to be produced; it cannot be the result of a mere entry in the banks' system of accounts. This then means that production and banking systems intervene together in the process whereby money is issued through a credit operation, which shows that the traditional dichotomy between the real and the monetary sector of the economy is, in fact, another dismal fiction of the economists' imagination. To grant a credit to one of its clients a bank needs indeed a deposit, which is the actual result of production in the form of income and, as such, does not necessarily have to pre-exist the provision of credit by the bank. Indeed, production is the event that gives rise to income in the economy as a whole, which banks lend instantaneously to firms in order for the latter to cover their production costs. We thus note that income, not money, is a positive asset, and this holds for the economy as a whole. Indeed, even a single producer gives rise to an income (to wit, output) that is net for the whole economy, which is the reason why production is a macroeconomic event: it is notably an event that affects the situation of the whole set of economic agents – contrary to a microeconomic event, like the payment of taxes or the redistribution of income within the private sector, which as a matter of fact modifies the situation of a number of agents but does not affect the situation of their set. In light of these conclusions, it is no longer possible today to conceive of money as a medium of exchange: in reality, money does not exchange against (non-money) goods (including services and assets), in the precise sense that any payment is not a relative but an absolute exchange: the object of a payment is really *transformed* through this very payment. Clearly, a payment's object (be it material or immaterial) changes its form owing to the intervention of the bank that carries out the payment. For example, when a bank pays wage earners on behalf of firms, physical output is exchanged against itself (income) through the intermediation of both money and banking: 'Deposited on the assets side of the bank's balance sheet, output relinquishes momentarily its physical form to acquire a monetary form: it changes itself into an amount of money income deposited on the liabilities side of the bank's balance sheet' (Cencini 2005: 295). As another example of absolute exchange, when consumers buy produced output, the latter gives up its monetary form (income) and recovers its physical form, a value-in-use that may be physically enjoyed by its owners. It is the book-entry nature of money that elicits absolute exchanges within the domestic economy: money and output enter an absolute exchange through banks acting as intermediaries in a process whereby the result of this absolute exchange is lent, spent or invested on the factor or product markets, perhaps via the chronological detour of financial markets, as Chapter 2 shows. It is therefore through a thor-

ough analysis of banks and payments that this process may be understood absolutely, from both a positive and a normative perspective.

The third chapter represents a further step into the analysis of money and payments in theory and practice. Taking stock of the steps accomplished in the first two chapters, it delves into central banking practices, addressing issues such as the central bank role as settlement institution for interbank debt obligations, as well as the nature and function of state money and the related government intervention into our monetary economies of production. This chapter critically discusses the state theory of money that has recently been proposed in some academic quarters, according to which money is a creature of a state's power rather than a creature of banks' role in a monetary economy of production. The arguments developed in this chapter, and in the book so far, lead to the conclusion that the state theory of money is in fact based on wrong premises and particularly on a misconceived nature of money emission. Governments have definitely a series of duties and powers, but cannot and indeed do not define the value of money. Even though the state may and does indeed provide legal tender laws, the latter concern the validation of money, not its value, which is an economic, not a legal issue, and actually depends on production. If so, then the central bank is not the government (or the state) bank, but the settlement institution through which the general government sector, and particularly the central government level, pays and is paid finally for the real goods, (labour) services and assets that it buys or sells. In fact, historical and empirical evidence shows that there exists a variety of pay societies gravitating around a private settlement institution, which is the true cornerstone of any network of debt obligations that may exist in an economic system. Indeed, economic transactions involve some form of payment, which very often must be processed by a payment and settlement system before the transaction between the buyer and the seller is finally completed in any kinds of (factor, product or financial) markets existing in any national economy, in which bank deposits are used to discharge any forms of debt obligations. Now, a developed market economy typically has a series of payment and settlement systems, including wholesale (large-value) and retail (small-value) payment systems. Payment and settlement systems are notably one of the main components of a country's monetary and financial system, and ought to be the starting point of monetary analysis and policy making. This chapter shows that banks as well as non-bank financial institutions have to rely on the national central bank as a settlement institution, across whose books transfers between them take place in order to achieve interbank payment finality. The 'singleness' of money in any national economy, indeed, is provided by the national central bank, which homogenizes the various means of payment issued by local private banks by issuing its own means of payment (that is to say, central bank money in the form of an asset–liability that is recorded in the central bank's ledger), which is used as a vehicle to settle debts at interbank level finally.

Payment finality is crucial in any money-using economy. It is the assurance that even in times of financial system uncertainty, turmoil or crisis, the

transaction being undertaken will, at some point in time, be complete and not subject to reversal even if the parties to the transaction fail or go bankrupt. Indeed, payment finality is a crucial issue nationally as well as internationally. With respect to cross-border flows the problem in this regard concerns not only economic agents (both banks and non-bank agents, such as financial institutions, non-financial businesses, households and states), but also each country defined as a whole; that is to say, as the set of its residents. Owing to the banking nature of money, any national currency is a mere acknowledgement of debt of the country (or currency area) issuing it, and as such it is only a promise to pay for a current or a capital account transaction (that is, foreign trade in terms of real goods, services or securities); it is notably not a means of discharging debt finally. Of course, any national currency (not only the US dollar) may be used in payment for any kind of transactions between any two countries. This, however, does not transform this currency into a means of final payment: the international circulation of claims to a bank deposit in any (key-currency) country is the circulation of a mere promise of payment and, as such, cannot transform the promise of payment into a final payment. A means of final payment is required for that purpose. Now, in the current international monetary architecture and indeed across currency areas, the various existing protocols for a delivery-versus-payment operation with central bank money do not and cannot provide for international payment finality through the links that national central banks have established on a multilateral basis. In this respect, the problem is not national but international: it concerns the countries as a whole and not their residents. In this connection, moving from a positive to a normative analysis, the fourth chapter of this book points out the lack of an international settlement institution, as well as the ways and means to provide such an institution as a structural change to the current international monetary architecture. To be sure, today's lack of an international means of final payment implies that countries use national currencies as objects of trade, which are thereby subject to the forces of supply and demand on the foreign exchange market, where exchange rates may and do vary daily according to a currency's excess demand (either positive or negative) with respect to another currency. Chapter 4 shows that exchange rate fluctuations are a result of the current international monetary architecture, which 'denatures' national currencies when they are traded on foreign exchange markets. 'Every attempt at taming erratic exchange rate fluctuations without modifying today's system of international payments has therefore a cost' (ibid.: 22). These costs may occur in the form of either interest rate fluctuations to try to limit exchange rate volatility, with all the ensuing macroeconomic effects, or abandonment of monetary policy in order to join a currency area formed by countries that are still far from converging in macroeconomic terms, and that suffer therefore from the 'one-size-fits-all' monetary policy decided at the level of the single currency area. The European Monetary Union is a case in point here. The loss of monetary policy in those countries that joined the European currency area has been inducing a series of negative effects that seriously hamper output stabilization and real economic growth in the euro-

area's member countries. The deflationary bias elicited by the single monetary policy in this area is aggravated by the fact that capital can move freely within the currency area, so much so that those member countries that are suffering capital outflows sooner or later will experience increasing unemployment levels. In fact, the solution to the problem of exchange rate fluctuations does not require disposing of national currencies to replace them with a single currency. It requires a structural change in the international payment system. The key in this respect is to introduce a system of absolute exchange rates, in line with the system of absolute exchanges that exists in every country – within which payment and settlement systems make sure that national currencies are used as means, and not as objects, of payment. In other words, the reform of the international monetary architecture required to avert any further exchange rates volatility is to design and to put into practice a truly international system of payments, in which every transaction across borders is settled between countries via an instantaneous circular flow of money from and to the settlement institution. Chapter 4 shows how this structural change can occur, leaving to business accountants as well as computer engineers and to political scientists the difficult but ancillary tasks to devise a computer program, respectively to design a gathering of government representatives, in order to operationalize this international monetary-structural reform in a not too distant future, which opens up a new frontier of scientific knowledge for monetary policy strategies oriented to the domestic needs of a capitalist economy of production and exchange, within as well as across any country's borders.

In this respect, Chapter 5 addresses a long-standing problem of our monetary economies of production, namely inflation, which the chapter shows as originating in a structural mismatch between the book-entry nature of money and the existing payment systems. In keeping with an analysis of money in a world of banking, this chapter puts to the fore an investigation of inflation targeting strategies that is positive as well as normative, in so far as it points out a structural change that, once implemented through the appropriate computer program for banks' bookkeeping, will eradicate the bug that, unnoticed so far, has been affecting the way in which banks record the investment of firms' profit on the labour market for the production of capital goods. In particular, since bank deposits originate in production activities, total income recorded with banks defines the intrinsic limit to those loans that banks may grant to their non-bank clients. If, as to date, banks can lend more than the income deposited with them, this is because the structure of their bookkeeping systems provides no distinction between money and credit. Clearly, banks today simply respect the principle requiring loans to be backed by equivalent deposits, without being aware of the fact that some of these deposits might be made up of money instead of income; that is, they might result from money creation instead of production (Cencini 2005: 311). As a matter of fact, being the result of production, income cannot be multiplied through banks' loans, although it may of course be transferred a number of times before being spent on the market for produced goods and services finally. The monetary policy intervention of central banks has

therefore to make sure that banks are not led to mix up money and income. This intervention requires introducing a structural change in banks' bookkeeping system of accounts, which ought to make the payments machine fully consistent with the conceptual distinction between money and income. In this respect, Friedman (1968: 13) noted correctly that '[t]here is therefore a positive and important task for the monetary authority – to suggest improvements in the machine that will reduce the chances that it will get out of order, and to use its own powers so as to keep the machine in good working order.' The point here is not, as Friedman (ibid.: 13) argued, to line up the growth rate of bank deposits with the growth rate of output, nor to limit wage and price flexibility, or to modify the administered interest rate in an attempt to control the general price level or the targeted price index that is a proxy of it. In fact, the task of national monetary authorities is to make their domestic payment systems and hence the banking systems comply with the structural laws that the book-entry nature of money elicits for the sound working of our capitalist economies of production. Chapter 5 shows notably that inflation is a decline in the purchasing power of money that results from a still unsound structure of domestic payments, which does not respect absolutely the distinction between money, income and capital. The solution that this chapter points out is therefore to improve the structure of domestic payment systems in order for the latter systems to function in line with the banking nature of money, and hence to avoid any discrepancy between the theory and practice of payments within a currency area's borders.

1 Money and credit

The nature and role of money and credit never cease to fascinate economists. In fact, a number of other scientists have also been attracted by the study of money, and of its essence in particular, as Ingham (2004) shows in painstaking detail with respect to sociology. Indeed, since the writings of Plato and Aristotle, money has been at centre stage of economic debate, and several controversies on its origins and functions have been animating the history of monetary thought (see e.g. Realfonzo 1998; also Smithin 2003). The principal questions that are still debated today go to the roots of money's nature in modern economic systems (see Smithin (2000) for a survey). They ask notably: What is money? How is money created? Where does the value of money come from? The list of questions seems to be endless in this domain, if one merely browses the enormous monetary economics literature, just to remain within our profession.

To answer these and many other questions, one has to disentangle first the nature of money. In spite of its simplicity, this is in fact an extremely complex question, so much so that, as Schumpeter (1954/1994: 289) pinpointed, 'views on money are as difficult to describe as are shifting clouds'. Despite 200 years of monetary economics, it is indeed no exaggeration to claim that 'the definition of money can still be regarded as an almost unresolved issue' (Bofinger 2001: 3).

Now, following Goodhart (2005: 817), one can distinguish two main theories about the nature of money: metallism and chartalism. Although the origins of both theories may be traced back to the work of Aristotle and Plato respectively, the labels *metallism* and *chartalism* were first used by Knapp in 1905 only (see Knapp 1924). As a matter of fact, metallism and chartalism are schools of thought that have been confronting since the inception of monetary analysis, whose origin may be found in the sixteenth century (see e.g. Goodhart 1998, Bell 2001). They led also to many debates between the banking and currency schools in the eighteenth and nineteenth centuries (see e.g. King 1804, Ricardo 1809/1951, Fullarton 1844, Mill 1844). Indeed, both metallism and chartalism aim to explain the origins, nature and value of money in a logical as well as historical framework, but according to different, and in many ways opposing, paradigms, as Schumpeter (quoted in Ellis 1934: 3) pointed out when he observed that 'the commodity theory and the claim theory . . . are incompatible'.

The basic tenet of metallism, from which this theory takes its name, is that money is a commodity, often in the form of a precious metal. By way of contrast, the essence of chartalism is that money is a social relation independent of any material representation of it: 'money is a "claim" or "credit" that is constituted by social relations that *exist independently of the production and exchange of commodities*' (Ingham 2004: 12). Let us consider these two perspectives on money's nature in turn.

The essence of money

The commodity theory of money: a critical appraisal

The definition of money that stems from metallism stipulates that 'any commodity to be called "money" must be *generally acceptable in exchange*, and any commodity generally acceptable in exchange should be called money' (Fisher 1911/1931: 2). More specifically, metallists consider money as 'a creature of the market', in the sense that it has been generated by a search process which agents spontaneously carried out to solve the problem of the so-called 'double coincidence of wants' existing in barter trade. As Jevons (1875: 3) noted in this respect, when two individuals meet, one not only has to have what the other wants but also has to want what the other has and wants to offer. This double coincidence of wants being difficult to observe in practice, the use of a medium of exchange arose from the market exchange process. 'Think, indeed, of the peculiar difficulties obstructing the immediate barter of goods in those cases, where supply and demand do not quantitatively coincide; where, *e.g*. an indivisible commodity is to be exchanged for a variety of goods in the possession of different persons' (Menger 1892: 242).

In minimizing their transactions costs, traders discovered that commodities have what Menger (1892: 242) dubs '*different degrees of saleableness*'. As commodities are more or less saleable in respect of the greater or less ease with which they can be disposed of at any convenient time and at current market prices, according to Menger (ibid.: 244–5) the market mechanism of supply and demand induced traders to identify a commodity generally accepted in exchange for all sorts of real goods, services and assets. This commodity then becomes a medium of exchange in the Friedman (1974: 8) sense that '[it] enables the act of purchase to be separated from the act of sale'. In this view, 'a monetary system of exchange is one in which the vast majority of transactions involve money on one side' (McCallum 2004: 81–2). To put it in the famous Clower (1967: 5) phrase, '*money buys goods and goods buy money; but goods do not buy goods*'.

Thus money exerts the function of an intermediary in the exchange of (non-money) goods, a definition that begs the question of money's nature, as Clower (1967: 4) himself noted when he stated that '[we have] to express analytically what is meant when we assert that a certain commodity serves as a medium of exchange'. In fact, the economics profession has been defining money by its functions at least since Hicks (1967: 1) conventionally affirmed that 'money is

what money does' (although see also Walker (1880: 1) for the same statement). Yet, as Bofinger (2001: 4) cogently noticed, this definition is prone to circularity, and is thus useless analytically: 'If it is not clear what "money" is, it is also not possible to describe the functions of "money".'

Neglecting or even ignoring this vicious circle in defining money by its functions, and although money might wield other functions as well, metallists consider that money is essentially a medium of exchange, which existed as a stock in a variety of forms such as rocks, leather, furs, spice, salt, tobacco, and even slaves or wives, and more recently in the form of precious metals (gold and, to a lesser extent, silver) owing to their intrinsic and, in fact, physical properties (the most important properties being their homogeneity, divisibility, portability and durability; see Clower 1967, Spindt 1985). In light of these characteristics of the most often and widely used media of exchange, metallists maintain that the advent of paper and bank monies further reduced transactions costs and those costly market 'frictions' that money would help 'lubricate' (on the concept of frictions in monetary economics see Niehans 1978: 16). In this view today, 'probably the most prominent concern is that the continuing rapid development of information technology (IT) could lead to the disappearance of money as more IT-intensive methods for conducting transactions come to predominate' (McCallum 2004: 81).

As a matter of fact, the Mengerian view of money as a commodity, or as a good that buys other (non-money) goods, has led economists to adopt an evolutionary approach to money's nature, in which the very object of their analysis is bound to disappear in a not too distant future, owing to the full dematerialization of the money stuff driven by IT (see Dembinski and Perritaz 2000). Whether this destiny will provoke a revolution in the analysis of money is an open question that we cannot answer at the time of writing. Indeed, if the answer to this question were affirmative, the basis of mainstream teaching in any economics course on 'money' would (have to) change soon and radically (see Schmitz (2002) for a critique of Menger's definition of money and of the neoclassical models currently based on it).

Indeed, the Menger approach to money's nature and functions has been taken up by a number of neoclassical economists, led by authors such as Brunner and Meltzer (1971), Ostroy (1973), Jones (1976), Alchian (1977), and Kiyotaki and Wright (1989, 1991, 1993), the latter two authors developing a so-called search theory of money's origin that is now the mainstream approach to monetary economics (see Gravelle 1996: 402, Goodhart 2005: 818). The challenge taken up by Kiyotaki and Wright, and also by their numerous followers (see e.g. Kehoe *et al.* 1993, Matsuyama *et al.* 1993, Williamson and Wright 1994), was to provide a logical answer to the crucial question as to why 'every economic unit in a nation should be ready to exchange his goods for little metal disks apparently useless as such, or for documents representing the latter' (Menger 1892: 239). As Niehans (1978: 14) puts it, '[t]he problem was to explain precisely why money stocks are useful. It is clear that, except perhaps for irrational misers, cash balances are not one of the genuine consumer goods appearing in consumer

theory. . . . It is also clear that money is not one of the genuine producer goods, appearing in an ordinary production function.' Clearly, neither a money-in-the-utility-function approach nor a money-in-the-production-function approach can be helpful in order to understand and provide an answer to the rationale for the uses of money in both production and exchange (see Handa (2000: 56–67) for a survey of these two approaches, according to which money could be introduced indirectly in a utility or in a production function in light of the payment services that it provides – more on this in Chapter 2).

The metallists' answer is that the value of commodity money derives from the value of the commodity used as a medium of exchange, such as gold. As to the value of paper money, they argue that it derives from the intrinsic value of its metal backing (Menger 1923). They want it for proof the fact that, in several countries, and particularly for monetary policy purposes, paper money has been *de jure*, but very often also *de facto*, convertible into a stock of precious metal at a fixed rate of exchange for quite a long historical period (see e.g. Morgan 1943: 138). To substantiate their view further, metallists argue that paper money is the 'general equivalent' of all real goods and services on sale. As Ingham (1996: 513) and Bell (2001: 153) notice in this respect, this argument stems from Walras's (1954) general equilibrium analysis, according to which money is the *numéraire* against which all other non-money items (real goods, services and assets) are exchanged. Indeed, as Walras (ibid.: 188) claims, '[o]ur standard of measure must be a certain quantity of a given commodity'. This definition, as is well known and widely accepted, includes money in the set of commodities, and thus raises Ricardo's (1817/1951) problem of finding an invariable measure of value in the actual set of commodities existing in the whole economy.

In fact, Ricardo's (1951: 43) lifelong attempt at finding an 'invariable standard measure of value, which should itself be subject to none of the fluctuations to which other commodities are exposed', was bound to fail, as he was looking for a physical (be it material or immaterial) thing that does not and cannot exist in the real world. Indeed, according to Ricardo's (ibid.: 361) definition of value:

> The only qualities necessary to make a measure of value a perfect one are, that it should itself have value, and that that value should be itself invariable, in the same manner as in a perfect measure of length the measure should have length and that length should be neither liable to be increased or diminished; or in a measure of weight that it should have weight and that such weight should be constant.

In the real world, however, no commodity can have an invariable value, as commodities have to be produced by labour (and capital), and this occurs at variable costs owing to several factors, among which wages and technology are the most prominent factors (see Chapter 2 for analytical elaboration). Consider, for instance, a commodity such as a precious metal, say gold. As Ricardo (1816/1951: 55) himself noted in his *Proposals for an Economical and Secure Currency*, '[w]hile the precious metals continue to be the standard of our cur-

rency, money must necessarily undergo the same variations in value as those metals'. Clearly, the value of precious metals is subject to variation for a number of reasons (related to their production costs), which cannot make sure that a commodity like gold has invariable value, independently of the time horizon considered (from one business day to several centuries and beyond). Indeed, the problem highlighted by Ricardo has no logical solution because it is couched in a physical world, in which every thing, like a commodity, is a dimensional item and, as such, can be seized by several dimensional units of measurement in order to express its length, weight, density, brightness and so on. Essentially, as Keynes (1936/1973: 38) noted, all commodities are heterogeneous owing to their (multifaceted) dimensional nature. As such, they are incommensurable. If money is actually the standard of value, therefore, it has not to be itself a commodity, because otherwise it would itself need to be measured using another standard of value, in which case infinite recursivity makes this measurement logically impossible within the realm of physical magnitudes.

It is therefore necessary to consider the nature of money abstracting from the physical world, and its related dimensional units of measurement, to understand the peculiar as well as proper nature of money. Indeed, Smith (1776/1976) was well aware of the fact that money has not to be mixed up with a particular commodity. Although in his time money was reified into a precious metal, which blurred the distinction between money proper and money's worth, he observed lucidly that '[t]he great wheel of circulation is altogether different from the goods which are circulated by means of it. The revenue of the society consists altogether in those goods, and not in the wheel which circulates them' (Smith 1776/1976: 289). As he explains:

> When, by any particular sum of money, we mean not only to express the amount of the metal pieces of which it is composed, but to include in its signification some obscure reference to the goods which can be had in exchange for them, the wealth or revenue which it in this case denotes, is equal only to one of the two values which are thus intimated somewhat ambiguously by the same word, and to the latter more properly than to the former, to the money's worth more properly than to the money.
>
> (ibid.: 290)

Having noted that money proper and money's worth are two concepts that do not have to be mixed up, both analytically and in practice, however, Smith makes no attempt to define the nature of money. Indeed, this definition has been lacking at least since the commodity theory of money was put to the fore, because 'the real problem is not one of classification but of a better analytical understanding of the functions of a medium of exchange' (Niehans 1978: 16, fn. 39).

General equilibrium analysis provides some clues worth considering in this respect. In this analysis, money enters every monetary exchange as the general equivalent of any non-money good. As such, money 'plays a distinctive

asymmetric role as one side of virtually all transactions' (Starr 1980: 263). Now, as Walras (1954: 188) argued, the *numéraire*, that is, money, should be understood for what it is essentially and not for what it is physically: 'the word *franc* [meaning the standard of value] is the name of a thing which does not exist.' Both Pigou (1949: 3) and Robinson (1956: 28) argued in the same vein, pointing out that money is not a physical thing. To put it clearly, two definitions of the *numéraire* exist in the history of monetary thinking: a physical and a numerical definition. In this respect, according to Pasinetti (1993: 63–4), there is

> an important asymmetry between monetary regimes in which the numéraire of the price system is physical, and monetary regimes in which the numéraire of the price system is a purely nominal unit of account, not linked to any quantitative specification of any particular physical commodity.

In fact, it is well known that neoclassical economics, following Walras, considers the *numéraire* as a physical thing, namely, the *n*th commodity within a general equilibrium system encompassing *n* equations of supply and demand, one for each commodity. Therefore, in the words of Hicks (1967: 3),

> although Walras does take one of his *n* commodities as numéraire (or unit of account) it is an essential part of his theory that the numéraire does not enter into the exchange in any different way from any other of the commodities.

As a matter of fact, in Walrasian economics

> [t]he numéraire is not money; it is not even a partial money; it is not even assumed that it is used by the traders themselves as a unit of account. It is not more than a unit of account which the observing economist is using for his own purpose of explaining to himself what the traders are doing.
>
> (ibid.: 3)

In short, in general equilibrium analysis money is inessential in the sense of Hahn (1973: 231): it is not necessary to consider money as a unit of account in order to determine the mathematical solution of a general equilibrium model (Rogers 1989: 63). As Fuerst (1994: 582, fn. 2) points out, 'the Walrasian auctioneer obviates any need for a medium of exchange', which amounts to saying that, apart from money, that is, the *n*th commodity taken as *numéraire* in general equilibrium analysis, '[a]ny of the other *n*–1 commodities might have been taken as numéraire' (Hicks 1967: 3).

To obviate this internal critique, many neoclassical authors introduce some frictions that hinder the instantaneous (factors and/or goods) market clearing, and that money can help alleviate (see e.g. Brunner and Meltzer 1971, Grandmont and Younès 1972, Clower 1977, Starr 1989). If this strategy avoids the criticism of money not being essential in general equilibrium analysis since it

averts the double-coincidence-of-wants problem, the problem remains that, according to this analysis, the nature of money is that of a commodity, which logically requires that its value be measured with a numerical unit of account, not to be included in the set of commodities. This takes us back to the Ricardo problem noted above.

In order to solve this problem, Debreu (1959) considers the numerical definition of the Walrasian *numéraire*, and assumes axiomatically – as he spells out in the subtitle of his major work – that 'with each commodity, say the hth one, is associated a real number, *its price*, p_h' (ibid.: 32). Now, while it is undisputable that money prices are real numbers, Debreu's approach to the definition of money and prices does not really explain how it is possible to associate a real number with a particular real good, service or asset. As a matter of fact, this association being axiomatic in Debreu's analysis, it stems from a convention that the author wants the economics profession to accept as such with no misgivings in order to pave the way for a mathematical treatment of macroeconomic magnitudes and phenomena. 'The majority of economists seem to accept this procedure mainly because it allows them to reduce economics to a branch of mathematics' (Cencini 2001: 21). Yet, '[t]o claim that goods are numbers because we need them to be numbers is scientifically unacceptable' (ibid.: 21).

Indeed, monetary economics has to explain analytically why and how commodities can be replaced by real numbers, and particularly why the nature of money is numerical and not physical, as Walras's general equilibrium analysis purports it to be. Simmel (1907/1978) was well aware of this analytical requirement, and therefore called for a distinction between the essence of money and the material used to wield its functions. As he pointed out,

> the particular qualities that the material adds to money led to its being subsumed under those goods to which, as money, it stands in contrast. . . . [S]o far as its pure essence is concerned, it must be interpreted simply as money, quite apart from all secondary qualities that connect it with the contrasting party.
>
> (ibid.: 119–20)

In agreement with the functional definition of money that is usually traced back to Hicks (1967), Simmel argued that one day technical progress will release money from its physical form, which will bring money's essence into light. In his view, money is indeed not a physical thing but a social phenomenon, that is to say, a form of human interaction that involves society as a whole.

> When barter is replaced by money transactions a third factor is introduced between the two parties: the community as a whole, which provides real value corresponding to money. The pivotal point in the interaction of the two parties recedes from the direct line of contact between them, and moves to the relationship which each of them, through his interest in money, has

> with the economic community that accepts the money, and demonstrates this fact by having money minted by its higher representative. This is the core of truth in the theory that money is only a claim upon society.
>
> (Simmel 1907/1978: 177)

In this connection, according to Goodhart (1989: 34),

> [t]he substitution of fiat, paper money, for metallic coin as the main component of currency in the last 200 years provides strong support for the Cartalist view that the monetary essence of currency can rest upon the power of the issuer and not upon the intrinsic value of the object so used.

Let us therefore turn to the definition of money adhered to by chartalists.

The chartalist theory of money: an analytical assessment

Chartalists challenge the metallists' view of money on a number of points, and indeed used to consider themselves as anti-metallists, in the sense that they had no positive theory with which to oppose metallism originally (see e.g. Knapp 1924, Schumpeter 1954/1994). They consider that

> the use of money does not necessarily imply the physical presence of a metallic currency, nor even the existence of a metallic standard of value. . . . [T]here is overwhelming evidence that there never was a monetary unit which depended on the value of a coin or on a weight of a metal; . . . in fact, there never was such a thing as a metallic standard of value.
>
> (Innes 1913: 379)

As Innes (ibid.: 382) argues, 'the monetary standard was a thing entirely apart from the weight of the coins or the material of which they were composed. These varied constantly, while the money unit remained the same for centuries.' In a nutshell, the chartalists' view is that money's value is, and has always been, independent of its material support (be it in metallic or paper form). If so, what is money and where does its value come from?

The argument put forward, and elaborated upon, by chartalists is that money is a unit of account that originates in a political (that is, sovereign) act establishing by law, or by social convention, what object(s) people may dispose of in order to settle their debt obligations (see Keynes 1930/1971: 6, fn. 1, Lerner 1947: 313).

In this view, money originated historically as a unit of account and preceded market exchanges, which, as chartalists argue, are a much later phenomenon (Polanyi 1977: 123). Indeed, according to a number of historians, anthropologists and sociologists, the market is only one possible 'form of integration' of individuals in a community or in a society (see Polanyi 1944, Grierson 1977, Ingham 2000). As Zazzaro (2003: 228) notes,

> [r]eciprocity – a form of socially obligatory donation – and redistribution – the assignment of individual or group production to the authority of the community and the subsequent sharing out of goods to members of the community according to customs in force – are equally important, widespread social forms of integration, in which money may still perform its functions as a means of payment, unit of account and/or medium of exchange.

As a matter of fact, even in ancient, stateless societies human relations were hierarchical and communitarian. They implied a unit of account in order to measure and regulate the reciprocity of obligations as well as the redistribution of commodities. They also implied a means of payment in order for individuals to settle their social debts, such as those arising from status, kinship, convention or religion (see Malinowski 1921, Einzig 1966, Polanyi 1977). As a result, the value of money does not stem from its material support, be it a metal or paper object, but is based on 'the antiquity of the law of debt' (Innes 1913: 391). In fact, what Innes (ibid.: 393) calls 'the primitive law of commerce' is the essential principle of double-entry bookkeeping, which records all debts and credits for further reference and settlement.

Indeed, debt–credit relationships, and records, have neither logically nor historically to do with a particular physical support. In other words, the value of money has no link with the stuff that carries out money's function(s). According to chartalists, it is society, or the state as argued by neochartalists today, that lies at the heart of it. The argument centres here either on a social tacit agreement that money, like language, is useful to an individual only insofar as it is useful to others, to wit, in order to enter into exchange, or on the political power of the state to impose that payments labelled in a given unit of account are made to the latter by the administered population. As Smith (1776/1976: 328) claims in this regard, '[a] prince, who should enact that a certain proportion of his taxes should be paid in a paper money of a certain kind, might thereby give a certain value to this paper money' (see also Innes 1913: 398–9).

In particular, if the state is willing to accept a given paper money in the settlement of taxes and other debts that agents owe to it (such as fees, fines, duties, tithes, interests, user charges and so on), this induces all taxpayers to accept these pieces of paper as money, because non-bank agents know for sure that everyone who has to pay taxes will accept them in turn (Tobin and Golub 1998: 27). This argument may also be found in the now widespread overlapping generations approach to explaining money's existence and functions (see Balasko and Shell 1981, Geanakoplos 1987, Woodford 1990, Handa 2000). As one of its advocates puts it, 'one person gives up goods (objects that appear as arguments of utility functions, directly or indirectly) for fiat money only because the person believes that someone else will subsequently give up goods for fiat money at an acceptable rate of exchange' (Wallace 1980: 49). This line of reasoning has indeed led some late twentieth-century economists to put forward the so-called taxes-drive-money approach (or 'state theory of money'), according to which

the state plays a prominent role in the creation, circulation and validation of money (see Wray 1998, Bell 2001).

To substantiate their approach on factual as well as historical grounds, proponents of the state theory of money note as empirical evidence that the state has been keeping track of its outlays as well as of its receipts with various accounting methods as time went by, in particular with elementary bookkeeping systems and/or fiscal notes of different sorts, some fragments of which were indeed found in centres of state power (e.g. palaces and temples). This shows that money does not need to be reified into a precious metal in order for it to be a means of payment: it would be enough that a government keeps a double-entry book by means of which its economic transactions are recorded and settled with a mere book-entry device. In the (neo)chartalists' view, in fact, state money is fiat money, in the form of token money but even more so in the form of a double-entry bookkeeping in a state's ledger (see Chapter 3).

In the view of chartalists, the state can and does create money by a stroke of the pen, at its will, as it is in a position to spend before earning an income, that is, tax receipts. To wit, fiat money is a form of credit that its issuer asks for, and obtains, from those agents giving up goods and services in exchange for it. As Wray (1998: 80) puts it,

> [w]hen the government creates fiat money to purchase goods and services . . . , this shows up on the books of the public as a credit of fiat money and a debit of goods and services sold to the government . . . This is 'net money creation' because it is not offset by a private sector liability.

Within the private sector, state money is therefore considered as a net asset, since, for this sector, it is an asset to which there corresponds no liability. The state's acknowledgement of debt is then deposited into the banking system by its recipients, and this creates bank reserves that may subsequently result in an expansion of both banks' assets and banks' liabilities. This is tantamount to saying that state money is exogenous and that bank money is a multiple of it, as in the money multiplier story described by metallists: 'money drops vertically to the private sector from government through government purchases of goods and services' (Wray 1998: 111; see also Wray 2003: 91).

In this respect, a key assumption in the (neo)chartalist approach is that the state is able to issue debt (fiat money) that has a final settlement power per se. 'This means the [US] government can buy anything that is for sale for dollars merely by issuing dollars' (Wray 1998: ix). In fact, any purchase of real goods, services or assets calls for a final payment. Payment finality means indeed that 'a seller of a good, or service or another asset, receives something of equal value from the purchaser, which leaves the seller with no further claim on the buyer' (Goodhart 1989: 26; see also Kahn and Roberds 2002). This is however problematic in the approach that chartalists advocate, since in their view the state obtains real goods and services, including labour services, or assets, as a counterpart of nominal tokens (that is to say, bank notes and/or coins), which the

state 'fabricates' at a trifling cost – just as metallists argue adhering to the seigniorage view (see Wray 2003). Indeed, as Graziani (2003: 60) points out, '[i]f a simple promise of payment could perform the role of final payment, buyers would be endowed with a seigniorage privilege, namely with a right of withdrawing goods from the market without giving anything in exchange'.

In fact, when the state pays for its purchases on the factor and goods markets with fiat money as in the chartalists' view, it is merely surrendering to its creditors a promise to pay in the form of perfectly liquid financial claims (that is to say, bank notes and/or banks' reserves). This payment by the state cannot be considered as final. It is indeed a mere *promise* of payment finality: it is only when the public disposes of fiat money at state pay offices, namely for the payment of their tax liabilities and any other debt obligations, that the transactions between government and the private sector economy are cleared. In this case, payment finality occurs by a sort of barter trade where money is a medium of exchange: privately produced goods and services (including also labour services) are bartered against all sorts of fiscal obligations, with state (fiat) money as an intermediary asset. This is so because the seller of a real good or (labour) service to the government really pays for his fiscal obligations only when this very same agent returns the corresponding amount of state (fiat) money to its issuer – no instant before. In short, the economic system described and advocated by chartalists is essentially a barter trade system, and not a monetary economy of production and exchange. Further, and perhaps more important, although money's *validation* may be explained by the taxation powers of the state, the state cannot determine money's *value* (that is, its purchasing power) by law – or by social convention. In the framework put forward by chartalists, in fact, this value is established only when real goods, services and all sorts of assets are eventually exchanged one against the other by barter trade, with money acting as an intermediary good – which brings us back to the shortcomings of the commodity theory of money. Let us expand on this.

When an agent agrees to exchange part of his 'initial endowments' of goods, (labour) services or assets for a number of money units issued by the state, he does so because he knows the value of state money he receives and that he keeps as 'a temporary abode of purchasing power' (Friedman 1974: 9), as it will enable him to buy some other goods, services or assets, or to pay for his own tax obligations later. Yet, how can this agent assess the amount of purchasing power of the sum of state money he receives, hence determine the price at which he sells his goods, services or assets, if the value of the latter sum of money depends on the terms with which his 'initial endowments' are eventually exchanged against some other goods, services or assets, or against some of his own fiscal obligations?

According to Wray (2003: 91), 'the "real" value of the dollar will be determined by the "effort" involved in obtaining it, that is, the labour services or basket of commodities one must provide to obtain a fiat money dollar'. This is a clear indication that a labour theory of value is necessary to determine, as well as to measure, this effort in terms of money. Let us follow Wray's example here,

to 'presume that the state only wants to purchase labour services . . . and offers to pay a dollar of state notes per hour of labour services hired. Setting to the side obvious labour heterogeneity complications, the fiat money dollar will be worth an hour of labour' (ibid.: 91). Clearly, in this example, a one-dollar note has the power to buy the result of an hour of labour, that is to say, the corresponding output. In light of Keynes's (1936/1973: Ch. 4) concept of wage units, the dollar paid out by the state to its workers for an hour of labour is actually the monetary measure of the output produced by them over the same period of time. Generalizing this principle, we might argue that each newly produced good or service is measured, in economic terms, by the number of money units paid out to those wage earners who produced it. This is so in the public sector as well as in the private sector economy, as we shall consider extensively in Chapters 2 and 3.

If so, then the value of money cannot be merely the result of the state declaring 'what thing should answer as money to the current money of account' (Keynes 1930/1971: 4). Nor can this value essentially depend on the willingness of the state to accept the legally established money in payment of taxes and other fiscal obligations. Money's value is based, in fact, on production and banking systems working together to associate a real object (that is, produced output) to a numerical counter (money) issued by banks via a double-entry bookkeeping system, with the aim to settle individual-to-community (that is, part–whole) relationships (see Ingham 1996, 2000). Contrary to what the advocates of chartalism claim, taxation powers, fiscal policy and government are not necessary conditions to account for, and to explain, the origins, nature and value of money. To be sure, chartalism does not preclude the existence of a variety of pay societies gravitating around a private settlement institution – in the form of a clearing agent, which seems to have originated as a great periodical fair, where traders cleared their debts and credits without the use of a single coin (see Innes 1913: 396–7). As a matter of fact and as we will see in the following two chapters, a multilateral settlement institution represents the cornerstone of any modern network of debt obligations that may exist in the real world, independently of political powers and government spending.

Indeed, no government can purchase goods from private sector agents before these goods have actually been produced, which requires firms to ask banks for credit in order to pay out wages to workers. This is a principle valid for the private and the public sector as well. It is well embedded today in the monetary theory of production advocated by a number of endogenous money proponents (see Graziani 2003, Rossi 2003, Fontana and Realfonzo 2005). Clearly, even when the state needs to pay out wages to public sector workers, banks must grant to it a credit line on which the state can draw when the wage bill has to be paid (we assume that there are no pre-existent deposits, in order to explain the formation of bank deposits without a *petitio principii*). The fact that, generally speaking, the state banks at the central bank does not change this analysis, or the underlying principle, because in this situation the central bank acts as any other bank would do: it just issues the means of payment in order for the state to finally pay its workers for the labour services they provide over the relevant pro-

duction period. As a result, production precedes government spending logically as well as in point of fact.

Now, although the creation of money is essentially tied to bank credit, money and credit are separate things. Indeed, as proponents of the theory of money emissions explain (see Rossi (2006a) for a recent survey),

> money is a flow whose instantaneous circulation has a stock of income (or capital) as its object. Banks create the flow but not its object, which is closely related to production. This is to say that money and credit are not one and the same thing.
>
> (Cencini 2001: 3)

To understand and elaborate on this point, it is necessary first of all to distinguish analytically money (which is an instantaneous flow from and to its issuing bank) from bank deposits (stocks of financial claims): every time an agent is paid, this agent is the beneficiary of a number of money units that are instantaneously and mechanically spent for purchasing a bank deposit (see Rossi 2003). By creating money, banks merely provide non-bank agents with the means of payment, the object of the latter being the result of banking and production systems working together. Indeed, bank deposits exist as a result of the monetization by banks of the production costs that firms incur periodically. Their purchasing power has therefore nothing to do with either social trust (creditworthiness of the banking system) or social convention (the general acceptability of the money stuff, perhaps induced by a state's law): it depends on the association of money and output that occurs on the factor market when wages are paid out (see Chapter 2).

Hence, the power of the state to tax and to define the unit of account is not necessary for an economy to be monetized. As Rochon and Vernengo (2003: 61) cogently argue, 'firms will produce even if states are relatively weak, and hence unable to tax or force payment in a particular token'. Money is essentially 'a creature of banks rather than a creature of the state' (ibid.: 61). To be sure, this was so even before the advent of 'banks' as such: in ancient societies, goldsmiths acted as bankers act today, since they kept books in which they recorded all debts and credits for further reference and settlement (see Rochon and Rossi 2006a). In this sense, 'money is memory' (see Kocherlakota 1998). If so, then, as Innes (1913: 407) observes, '[a] bank note differs in no essential way from an entry in the deposit register of a bank. . . . The only difference between a deposit entry and a bank note is that the one is written in a book and the other is on a loose leaf' (see also Riboud 1980: 31, Eichner 1991: 845, Lavoie 1992: 164).

Courbis *et al.* (1991: 329) clearly illustrate this point referring to the monetary history of the United Kingdom, at the time of the first goldsmiths in London, around 1660–1665. As they point out (ibid.: 324–5), book-entry payments existed long before bank notes, or their ancestors, say, a goldsmith's certificates, appeared on Earth. Further, like bank money, even fiat money is a form of credit money. As a matter of fact, the economic foundation of any form of

money is credit, not the state (ibid.: 329–31). Fiat and bank monies pertain therefore to the same category (see Mehrling 2000), although fiat money, particularly in the form of bank notes (but also coins), increased and extended monetary circulation beyond those agents having a bank account. This enlarged the size of money-wage economies, in which money and production are the two faces of the same medal, but in which money and credit are two separate things, as we are going to discuss in the following section.

The mechanisms of credit

Money and credit have often been mixed up, so much so that several authors consider the creation of 'credit money' as the creation of credit by banks. As monetary circuit theorists maintain in this connection, '[m]oney is in the nature of credit money and in modern times is represented by bank credit' (Graziani 2003: 25). In this view, which is shared by many endogenous money adherents, '[c]redit money is created whenever an agent spends money granted to him by a bank and is destroyed whenever a bank credit is repaid' (ibid.: 25). In fact, money creation implies a financial intermediation by banks. As such, the emission of money is tied to a transfer of income through banks. Income, however, defines purchasing power. As we noted already, this purchasing power has to be produced; it cannot be the result of a mere entry in the banks' system of accounts. This means, once again, that production and banking systems intervene together in the process whereby money is issued through a credit operation. If so, then the supply of money and the supply of credit are (to be kept) distinct.

> The supply of credit is the supply of a positive amount of income and requires the existence of a bank deposit (a stock), whereas the supply of money refers to the capacity of banks to convey payments (flows) on behalf of their clients.
>
> (Cencini 2001: 7)

Let us explore this issue.

Banks and credit

Consider first banks independently of production. If a bank is solicited by one of its clients to supply a number of (x) money units, say pounds, it cannot but write in its books a 'bipolar' operation: it enters the soliciting client, say client I, on the liabilities side of its balance sheet for exactly the same amount (x) that it enters the same client, and this simultaneously, on the assets side of the same balance sheet (Table 1.1).

As Table 1.1 shows, before production is taken into account, a bank can only give rise to an asset–liability relation with the same non-bank agent, here in the person of client I. In particular, the bank issues a unit of account – which is, let us emphasize, of a purely numerical nature – for measuring both the agent's debt

Table 1.1 Loans and deposits resulting from the opening of a credit line

Bank			
Assets		*Liabilities*	
Loan to client I	+£x	Deposit of client I	+£x

and the same agent's credit to the bank. The bank is thus simultaneously a debtor to client I – who is the recipient of an emission of a number of (x) money units – and a creditor of the same client, who owes this number of (x) money units to the bank issuing it in what is, substantially, a blank operation. This operation, devoid of substance as it is, however, is not deprived of meaning as far as monetary analysis is concerned. In fact, such an operation, which is indeed an off-balance sheet record that banks never book, depicts the credit line that a bank may open to one of its (creditworthy) clients before any amount is actually drawn on it.

In truth, as is well noted by Graziani (1990: 11), 'no one would borrow money from a bank before a payment comes due . . . since there would be no point in borrowing money and paying interest on it while keeping it idle'. The circular flow between the bank and its client I is indeed pointless unless a payment has to be made in favour of another agent, say client II. To quote Graziani (1990: 11) again,

> [m]oney therefore *only comes into existence the moment a payment is made*. At that moment, in one and the same act, money is created, the borrower becomes a debtor to the bank and the agent receiving a payment becomes the creditor of the same bank.

As a result, the off-balance-sheet operation virtually recorded in Table 1.1 has to be replaced by the double entry shown in Table 1.2.

It clearly appears from Table 1.2 that the bank owns a claim against client I that is balanced by an equivalent claim that client II owns against the bank – which is thus a mere go-between between non-bank agents: the position of client I offsets the position of client II in the bank's accounts. The claim owned by client II, in the form of a bank deposit, defines his credit against the issuing bank. This, however, does not mean that the bank lends the number of money units that it issues. In fact, the lending operation concerns the two non-bank agents involved in the payment: the payee (client II) grants indeed a credit to the payer (client I) via the bank, or the banking system, acting as an intermediary,

Table 1.2 Loans and deposits resulting from a payment order

Bank			
Assets		*Liabilities*	
Loan to client I	+£x	Deposit of client II	+£x

even though both non-bank agents may not be aware of this financial intermediation (see Gnos 1998). As a matter of fact, the bank is neither a net creditor nor a net debtor of the economy when it issues money, as it is simultaneously debited and credited with the number of (x) money units that it issues (see Table 1.2). Money is therefore an 'asset–liability' (Schmitt 1975: 13): it appears at one and the same time on both sides of a bank's balance sheet, thereby affecting at one and the same instant the payer's as well as the payee's position in the bank's accounts. Indeed, it takes no more than an instant – that is to say, a zero duration in time – to enter a payment in a bank's ledger: like the two faces of a same coin, any entry on the liabilities side of a balance sheet cannot be recorded independently of the corresponding entry on the assets side of it (and vice versa). This is so owing to the fundamental principle of double-entry bookkeeping, whose essence is substantially more than a mere social convention as far as this refers to the emission of money in any payment operation. Let us elaborate on this with respect to production.

Credit and production

Consider now banking and production activities. There is indeed the belief that money is issued by banks with a positive purchasing power, as banks purchase securities that firms aim to sell 'for raising the funds in order to carry out the investment programme' (Morishima 1992: 161). In this view, 'the banking system's ability to create money is ultimately restricted to its ability to find good credit risks supported by adequate loan collateral' (Dalziel 2001: 33). In fact, the ability of banks to buy securities depends on the availability of income, that is, purchasing power, which either pre-exists or is the result of the banks' monetization of newly produced output through the credit that they grant to firms. In the first case, the purchase of firms' securities is financed by savers, that is, those agents who do not dispose of their bank deposits and therefore allow the banks to use these savings in order to earn interest on the credit market. If so, then banks do not create income, but merely transfer the existing savers' purchasing power to firms, acting thereby as financial intermediaries between deposit holders and banks' borrowers. In the second case, the banks' monetization of current production gives rise to a new income, but whose origin cannot be explained by focusing on banks alone. In fact, income is the result of the joint operation of banks and firms, which channel workers' efforts into the production of saleable goods and services, with the necessary intermediation of banks as money and credit providers. As Keynes (1936/1973: 81–2) pointed out in this connection:

> The prevalence of the idea that saving and investment, taken in their straightforward sense, can differ from one another, is to be explained, I think, by an optical illusion due to regarding an individual depositor's relation to his bank as being a one-sided transaction, instead of seeing it as the two-sided transaction which it actually is. It is supposed that a depositor and

> his bank can somehow contrive between them to perform an operation by which savings can disappear into the banking system so that they are lost to investment, or, contrariwise, that the banking system can make it possible for investment to occur, to which no saving corresponds. But no one can save without acquiring an asset, whether it be cash or a debt or capital-goods; and no one can acquire an asset which he did not previously possess, unless *either* an asset of equal value is newly produced *or* someone else parts with an asset of that value which he previously had. In the first alternative there is a corresponding new investment: in the second alternative someone else must be dis-saving an equal sum.

One cannot be clearer than Keynes himself:

> If it is the banking system which parts with an asset, someone must be parting with cash. It follows that the aggregate saving of the first individual and of others taken together must necessarily be equal to the amount of current new investment. The notion that the creation of credit by the banking system allows investment to take place to which 'no genuine saving' corresponds can only be the result of isolating one of the consequences of the increased bank-credit to the exclusion of the others.
>
> (ibid.: 82)

Let us start from scratch, and consider the monetization by banks of production costs incurred by firms, which finance the latter costs through a sale of securities. When a firm obtains a bank credit in exchange for securities, the firm can rely on it for paying the current wage bill. When this occurs, the bank enters this final payment as shown in Table 1.2, where client I represents the firm and client II the wage earner(s). If so, then the bank does not create the income it lends to the firm, but the payment that it carries out on behalf of the same firm and that allows income to be formed. 'Income is the result of this payment, and it is because of production that it defines a positive purchasing power' (Cencini 2001: 66).

Indeed, the distinction between money and credit can be clearly perceived if, and only if, the distinction of money from income has been understood. Money is the numerical form of any payment, which is a double entry in a bank's ledger. Income is the result of production activities to which the banking system gives a monetary form, in order to commensurate the newly produced goods and services and thereby to pay the relevant production factors, that is, wage earners. As soon as income exists, banks may lend it, through a financial intermediation, to those agents, like firms, looking to finance their activities via the sale of securities. 'Banks, therefore, do not create value as they issue money, and their newly issued money takes on a real value only if it is associated with new production' (Bossone 2001: 870, fn. 19).

The object of any payment being necessarily provided by production eventually, it is plain that it cannot result from a creation *ex nihilo*. The credit that a

bank may grant to a firm is therefore related substantially to production. It is production that makes it possible for income to exist and to be lent to banks' borrowers. Yet, without banks, no income would be produced, as no credit would be available for firms to pay out the relevant amount of wages. To explain credit, it is therefore necessary to explain both the emission of money and the financial intermediation carried out by banks in any payment they issue, starting logically with the payment of production costs, which is an income-generating operation, as we shall better understand in the next chapter.

Before moving on, however, there remains an issue to be discussed in this chapter. In fact, according to traditional analysis, the credit supply is and can be controlled by the central bank, which affects the money stock, M, via the base money multiplier, m, as epitomized by the textbook formula $M = mB$, where B represents the monetary base (labelled high-powered money) supplied by the central bank. Banks would therefore be able to grant credit to the extent that they have enough reserves of liquidity, in the form of high-powered money (as in fractional reserve banking). The supply of credit would thus depend on the supply of money, which would itself depend on central bank policy. We will consider this issue as a gambit to Chapter 2.

Money and credit supply

Generally speaking, the textbook story admits that banks create money – in the form of deposits, D – as a multiple of central bank money. This story, however, sets off from the traditional hypothesis that the monetary base is an exogenous variable, like the reserve-to-deposit ratio R/D, and the currency-to-deposit ratio C/D, both ratios entering the determination of m (Mankiw 2003: Ch. 18). On this assumption, which is almost as old as the quantity theory of money that is backstage and that can be traced back to Hume (1752/1955), the central bank controls the credit supply via the determination of the monetary base according to the expected value of its multiplier. Further, in this view the money creation process carried out by the banks is closely related to the reserve requirements imposed upon them by the monetary authority, so that money creation depends strictly on the rules actually enforced by monetary policy makers. As a result, the direction of causation runs from bank deposits (reserves) to bank loans, which are thus supply determined and reserve constrained.

Several problems exist in this framework. First, the nature of (exogenous) money remains to be explained. In fact, the base money multiplier relation is not concerned about what M is essentially. Neither is the quantity theory of money purporting that $MV = Py$, where V represents the income velocity of the money stock, that is, bank deposits, P the general price level, and y real output. To be sure, the quantity theory of money has been developed when the function of money as a means of payment was exerted using a stock of precious metal such as gold or silver. At that time, therefore, M was identified with the stock of commodity money in circulation, say in the form of gold coins, or with the amount of paper money representing the gold money stock under the gold standard system.

Since the demonetization of gold, and of precious metals in general, however, the money stuff has been fully dematerialized, as noted in the previous section. This is so much so that today, owing to IT, it consists of purely electronic impulses in a bank's ledger (see Cencini 1995, Ingham 1996). If so, then one has to explain analytically why money is accepted in exchange for any kind of goods, services and assets, granted that it is an incorporeal unit created at a trifling cost by the banking system (including here the central bank). As pointed out above, this question can be answered neither in the framework provided by metallists nor along the lines adhered to by chartalists, since the latter fail to explain the value of money and in its stead focus on the state's validation of the unit of account (legal tender), which is indeed a legal and not an economic problem.

Further, and closely related to the preceding question, adherents to either the metallist or the chartalist view should consider that it is logically impossible for money to be, in one and the same economic transaction between any two agents, both a means of payment and an object of trade supplied or demanded for its own. Indeed, the problem here is of a logical nature: it consists in determining if the thing called 'money' can logically exert two different functions at one and the same point in time, notably in one and the same economic transaction. In particular, logic must establish if money, undoubtedly a means of payment in the real world, is also an object of trade (a medium of exchange, that is, an intermediary asset) that agents demand and seek to obtain for its own exchange value.

In fact, as a general equivalent, money is an object like real goods and services, with its own velocity of circulation, and hence it is the object of supply and demand as are all non-money goods in the economy. In this framework, as Friedman (1987: 5) notes, '[m]oney is treated as a stock, not as a flow or a mixture of a flow and a stock'. If so, then money is essentially a store of wealth, which gives rise to the logical problem of giving a price to money, even though the latter is a worthless token used to circulate output. Indeed, as Balasko and Shell (1981: 112–13) acknowledge at the beginning of their overlapping-generations analysis:

> Money does not in general serve as a proper store of value – i.e., money cannot have a positive price – in the finite-horizon economy in which the terminal date is known with certainty. The reason is obvious. Money is worthless at the end of the final period. Consequently, in the next-to-last period, individuals desire to dispose of money holdings in order to avoid capital losses. This drives the price of money to zero at the end of the next-to-last period. And so on. Individuals with foresight drive the price of money to zero in each period, i.e., the 'general price level' in equilibrium must be infinite. The natural way to permit money to be a proper store of value is to go beyond the finite-horizon model.

This is why overlapping generations (OLG) monetary models have been developed, to analyse the working of monetary systems assuming an intermediary asset (money) that trading agents adopt to avert, or at least reduce, search

and bargaining costs among the different generations of traders (the 'young' and the 'old'). These generations exist in any market period, and they overlap as time goes by.

> The OLG model starts by endowing the initial old with the initial stock of money. . . . In period *t*, the young individual receives more of the consumption good that he wants to consume but cannot store the excess since the consumption good is perishable. He sells it to the initial old for fiat money, provided that he expects to be able to exchange his holdings of fiat money for the consumption good in period $t + 1$.
>
> (Handa 2000: 628–31)

Among the problems raised by this paradigm, such as the origin of the money stock entering the 'initial endowments' of the first old generation, as well as the determination of the value of money exchanged for the consumption good, the essential problem of distinguishing the means of payment from the physical objects thereby exchanged is crucial but remains unaddressed in this framework. In fact, as pointed out by Smith (1776/1976), the means of exchange ought not to be considered as an object itself, but only as a great wheel, that is to say, an instrument, for the circulation of produced goods (see above).

Despite Smith's analysis, the idea of money as the instrument of output circulation has been lost in more recent monetary thinking, which focuses on the stock dimension of money instead of investigating its flow nature. As such, both metallism and chartalism analyses of money focus in fact on bank deposits; to wit, they concentrate actually on the stock dimension instead of on the flow dimension of monetary economics. Further, in this regard, both schools of monetary thinking consider money flows as if they were money stocks 'on the wing', to use Robertson's (1937: 29) terminology. This amounts to assuming that there is a given stock of 'money' (in fact, a sum of bank deposits) – whose origin remains obscure or unexplained – which circulates in the economy or is kept 'at rest' in the banking system (including the central bank), as in the famous 'hot potato game' described by Tobin (1987: 273). In this framework, to put it in the words of Friedman (1987: 4), '[o]ne man's spending is another man's receipts. One man can reduce his nominal money balances only by persuading someone else to increase his'. In such a framework, economic analysis can only focus on how money and non-money goods end up in the individuals' endowments. As Ingham (1996: 515) points out in this respect, '[t]here is no attempt to account for the "concept" of money as a *measure of value* (or *unit of account*) – or even to recognize that this might constitute an intellectual problem'.

In fact, the measure-of-value conception of money and its related function as a means of payment have been considered by proponents of the endogenous money paradigm. Yet, have they provided so far an explanation for the flow nature of money consistent with both its numerical essence and its intimate relationship to credit?

Endogenous money and credit

Generally speaking, endogenous money proponents argue that the money creation process is credit-driven and demand-determined (Moore 1988, Lavoie 1999, Rochon 1999). This paradigm is usually traced back to Kaldor (1970), although many other twentieth-century economists may be included in this strand of thought, which is akin to the banking school tradition (see e.g. Realfonzo 1998, Rochon 2001, Gnos and Rochon 2003). Whereas advocates of metallism and of money exogeneity focus on exchange to explain the nature, value and functions of money, adherents to money endogeneity in fact focus on production and particularly on the banks' role in financing it. As Lavoie (1984: 774) puts it, '[m]oney is introduced into the economy through the productive activities of the firms, as these activities generate income'. Indeed, as noted above, bank deposits exist as a result of the monetization by banks of firms' production costs (see Chapter 2 for analytical elaboration).

The fundamental causal relationship in this respect is that 'loans make deposits'. In the words of Kaldor and Trevithick (1981: 5), 'the supply of money is a *consequence* of increased loan expenditure, not the *cause* of it'. The money stock is the result of a money creation process driven by the firms' creditworthy demand for bank loans, which, when banks are agreeable, gives rise to bank deposits. Let us expand on this, considering the endogenous money theory advocated by post-Keynesian scholars, who follow in the steps of both Keynes's and Kaldor's monetary analysis (see Moore (1988: Ch. 8) for a comprehensive review of money's endogeneity in Keynes, and Rossi (2007) for an encyclopaedic survey of the endogenous money paradigm).

> To Post Keynesians, money is bank liabilities, that is, deposits (cash is irrelevant here). . . . Bank liabilities are to be sharply distinguished from bank credit, the advances which count as bank assets, even though bank credit is used to effect payments and is responsible for the creation of bank deposits. . . . In Post Keynesian thinking, the status of money is given to banks' liabilities, not their assets.
>
> (Chick 2000: 130–1)

A distinguished post-Keynesian scholar, Chick calls for a distinction between money and credit – two concepts that are 'often confused in the Post Keynesian literature and elsewhere' (ibid.: 130). When she comes to the definition of money, however, she holds that 'money takes the form of loans to banks (deposits)' (ibid.: 131) and further that '[t]he hallmark of this money is its liquidity or general acceptability, as a means of payment, or as the unit of account for debt contracts' (ibid.: 130). This view notably 'requires that there be a basic monetary asset which unambiguously represents the standard of value and is universally acceptable in the ultimate discharge of debts' (Dow and Smithin 1999: 77). In other words, '[b]anks are deemed to be so creditworthy that no holder of their debts would ever ask for reimbursement either in kind or in the debt of another agent' (Parguez and Seccareccia 2000: 103).

Now, this approach has a close affinity to the commodity theory of money, because it considers the money creation process as an exchange of assets between a bank and the non-bank public: the bank issues its acknowledgement of debt to the non-bank public (say client I), whom it enters on the liabilities side of its balance sheet (see Table 1.1), in exchange for non-monetary assets (say financial claims, or securities) that the public deposits with the bank and that the latter records on the assets side of its balance sheet. According to this interpretation, the creation of money is an exchange of two separate stocks which the bank and one of its clients trade between them, one against the other as a *do ut des*. Further, this interpretation identifies the creation of money by banks as the creation of net wealth, that is, as an asset for the economy as a whole, arguing that 'money counts as wealth now and the debt [of client I in Table 1.1] only has to be paid later' (Chick 2000: 136).

Although this interpretation appeals to common sense and personal experience, on the ground of a microeconomic understanding of money and banking, it raises a problem insofar as it does not take into due consideration the nature of money and payments as a macroeconomic phenomenon that concerns society as a whole and not a single agent only. By assuming that the 'life cycle' of money starts when banks grant credit to their clients and ends when the latter repay their debt to banks, several endogenous money advocates are led to infer that the existence of bank money has a positive duration in time. Owing to the principle of double-entry bookkeeping, in fact, any sum entered on the liabilities side of a bank's ledger has to be balanced by an identical sum entered simultaneously on the assets side, and vice versa. Hence, as the double-entry nature of any payment easily shows (see Table 1.2), money's existence lasts no longer than an instant, that is, it has no positive duration in time. Indeed, in the contrary case, which is still the view that most post-Keynesian scholars and a number of endogenous money proponents take today, the purchasing power of money would be the result of a creation *ex nihilo* by banks, which would grant credit 'either to permit the generation of real wealth or to acquire existing physical assets' (Parguez and Seccareccia 2000: 102).

In fact, the idea that banks can create wealth with a mere double-entry in their bookkeeping, separated from their production activities in the financial service industry (in particular, providing advice and intermediation services to the non-bank public), needs to be removed from monetary analysis. If money were actually issued by banks with a positive purchasing power before any production takes place, once output has indeed been produced total wealth would amount to twice the value of total output, a mistake that Smith (1776/1976) urged us not to make, as noted above. The idea that money has a positive purchasing power as a result of a bank's acknowledgement of debt that everybody accepts in exchange for goods, services or assets does not really consider the book-entry nature of money. In particular, this view does not take into account the fact that when a bank grants a credit to one of its clients, the same number of money units exists both as an asset and as a liability of the same sort. If so, then endogenous money scholars should elaborate on the investigation of the *process* (a flow) that leads

to the formation of bank deposits (stocks) in a monetary production economy. In this respect, Keynes's (1930/1971) analysis of bank money in his *Treatise on Money* could represent a good starting point, considering that the '[m]oney of account, namely that in which debts and prices and general purchasing power are *expressed*, is the primary concept of a theory of money' (ibid.: 3). Indeed, the money-of-account concept suggests that money as such, as distinguished from money's purchasing power, 'is neither a net asset nor a net liability, but simultaneously an asset *and* a liability whose function is that of "counting" the products and not that of defining their valuable counterpart' (Cencini 1995: 13). In a nutshell, to repeat, money is an asset–liability (Schmitt 1975: 13), as it is the numerical form in which both banks' assets and banks' liabilities are expressed.

If so, then monetary analysis has to explain why a purely numerical form, which does not pertain to the set of commodities, can be a means of final payment in a monetary economy of production and exchange, where output is measured and circulated via the use of what is essentially a bank's double-entry in its books. This is the task of the next chapter, to which we now turn in order to investigate banks and payments in light of the numerical nature of money and its intimate relationship to credit.

2 Banks and payments

Banks and payments are a *sine qua non* condition for production and exchange, national as well as international. It is through their study that economists can hope to understand the workings of a monetary production economy in order for them to solve a number of structural problems, such as inflation and unemployment, which still pervade all money-using economies at the beginning of the third millennium, though to different degrees as well as with different macroeconomic costs. Now, while the analysis of banks and the banking sector is often done on microeconomic grounds, with emphasis on asymmetric information, banks' risks, and/or moral hazard problems, a monetary macroeconomics investigation of banking and the payment machinery is missing from both economics textbooks and the more advanced literature on this subject matter, generally speaking. The growing, yet scant, literature on payment systems and protocols focuses either on history (see e.g. Kahn and Roberds 2002) or on legal issues and technicalities (see the various, detailed reports by the Committee on Payment and Settlement Systems resident at the Bank for International Settlements; e.g. Committee on Payment and Settlement Systems 2006a), which are certainly important from an operational monetary policy point of view, but which can certainly not be exhaustive in terms of a monetary macroeconomic analysis and for a thorough understanding of the underlying structures. This chapter attempts to fill this void in the literature. It starts from the book-entry nature of bank money, and its link to production activities as pointed out in the previous chapter, to elaborate on the workings of modern payment systems which exist today in any domestic economy of production and exchange. Our aim is to develop thereby a money and banking analysis of domestic settlement systems, which (1) points out the underlying structures that are important from a monetary macroeconomics point of view, in this chapter and in the next, and (2) brings also to light the missing elements in the international monetary space as of today, on which we will elaborate in Chapter 4. The result of this analysis is, hopefully, a more elaborate and in-depth explanation of the workings of a monetary production economy with bank money and credit, which may be used as a framework for understanding and implementing monetary policy aimed at problem solving in the twenty-first century.

The monetary macroeconomics of banking

The dual function of banks

Building on a distinction between monetary flows and stocks that gets rid of all physical conceptions of money, as explained in the first chapter, this section concentrates on the two important functions of modern banking, namely the emission of money as a means of payment and the transfer of money balances (bank deposits) between agents. Indeed, in his *Economic Journal* article on 'A framework for monetary and banking analysis', Fischer (1983: 4) clearly illustrates the dual function of banks in a monetary economy, pointing out that '[b]anks do two things in this economy. First, they act as financial intermediaries. . . . Second, they provide transactions services, making payments as demanded by the households.' In this passage, Fischer focuses explicitly on exchange of existing products, and indicates first the function of financial intermediation carried out by banks, which might suggest that this function is more important or more specific to banks than the second. In fact, the distinctiveness of banks lies in the so-called payment industry, as banks, and banks only, can carry out transactions services for the non-bank public through their being able to issue the means of final payment, as noted in the first chapter. Indeed, there is an ever increasing number of non-bank financial intermediaries (savings-and-loan associations, building societies, pension funds and so on) in today's advanced economies, so that banks are not unique in this activity, in which they never were actually special. In fact, if there ought to be a priority in analysing banking at the macroeconomic level, the order has to be reversed, as, from a logical point of view, it is first of all necessary to explain the formation of bank deposits before moving on to explain both their transfer (on credit or financial markets) and their final expenditure (on product markets). Now, in order to explain the formation of a bank deposit, it should be plain that explanation has to start from *tabula rasa*, that is to say from zero, notably to avoid the temptation to explain a deposit formation by having recourse to a pre-existent bank deposit whose origin would either remain unexplained or depend on exogenous elements such as Friedman's (1969: 4–5) helicopter money or Wray's (1998) state money, which are also to be found in the still dominant overlapping generations approach to monetary macroeconomics noted in Chapter 1.

Indeed, as explained in the previous chapter, the formation of a bank deposit that is new to the economy as a whole occurs as a result of a payment on the factor market – which the banking system may advance on the credit market, but this operation requires that some 'first principles' are explained in a very simple didactical framework before being understood clearly. It is therefore the 'transactions services' function of banks, as noted by Fischer (1983: 4), which constitutes the starting point of a monetary macroeconomic analysis of banking. More precisely, these transactions services depend on the emission of the means of payment that agents need in order for their economic transactions to be finally settled (recall the definition of payment finality explained in the first chapter).

If so, then the principal, and specific, function of banks is to issue the means of payment; that is, to act as a settlement institution for non-bank agents or, still more explicitly, as a 'money purveyor' – an expression that Keynes (1973: 91) used in the early drafts of his *Treatise on Money* (1930/1971), and which he distinguished from that of 'credit purveyor' as we shall explain later.

Now, the money-purveying function of banks has to be investigated in terms of flows, which, as we know from the previous chapter, are not stocks moving around as in the Robertson (1937: 29) conception of money 'on the wing'. In other words, the essential role of the banking system lies in the process, that is to say, an action, whose result is the creation, transfer or destruction of a bank deposit within the domestic economy as a whole. Hence, a process analysis has to be elaborated upon in order to understand the characteristics of banking from a monetary macroeconomics perspective. The first and perhaps greatest difficulty in this regard, however, is that the emission of money, which is a flow (let us recall it), is an instantaneous event; that is, it has no duration in time, even though its result has indeed a stock dimension in the form of a bank deposit being either created, transferred or destroyed in the economy as a whole. The difficulty here stems from the fact that, for more than 200 years, money has been considered as a stock (in the form of precious metals earlier on; of bank deposits today). As such, it has of course a physical dimension and, more important here, also a positive duration in time (even if this duration may be very short; a few seconds in the case of bank deposits). A stock, as a matter of fact, may move around if someone decides so, and its velocity of circulation may be measured with respect to chronological time. In fact, provided that we are able to distinguish conceptually between a flow, that is to say, money, and the actual result of this flow, namely a bank deposit that is either created, transferred or destroyed (as we shall explain below), we can easily grasp that this flow is instantaneous if we consider that it occurs as a double entry in a bank's ledger. To be sure, any payment, which is an action, requires both money, as a means of payment, and a record testifying settlement of the underlying economic transaction. In this respect, as pointed out in the previous chapter, a bank's double-entry bookkeeping is the necessary and sufficient condition for guaranteeing payment finality between any two non-bank agents. Let us investigate this point with respect to the market in which payments give rise to a new bank deposit for the economy as a whole; that is, the labour market.

Consider the payment of the wage bill for the set of firms existing within the domestic economy, which have to remunerate workers for those labour efforts that the latter provide during the period over which wages accrue – usually paid once per calendar month, but this periodicity is not important for our analysis and may actually vary for a number of reasons we will ignore here. Indeed, if there were no workers to remunerate, bank deposits could not exist and hence be spent finally (see Lavoie 1984: 774, Rochon 1999: 31), as there would be no production at all and financial markets would be meaningless. To avoid any unnecessary complication in the analysis of the payment of wages on the labour market, we shall address here neither the reasons lying behind the amount of the

workers' remuneration nor the distribution of the available income between workers (that is, real wages), on the one hand, and share as well as stock holders (profits), on the other hand. We abstract therefore from any value judgement about both the functional and personal distribution of income, to concentrate only on a positive analysis of the deposit-generating process as recorded by banks' double-entry bookkeeping.

If we start from *tabula rasa* (to avoid assuming the existence of the very object that we want to explain, that is, a bank deposit, which would amount to a *petitio principii*), then the set of firms, F, have to finance their expenditure on the labour market by obtaining a loan from banks in order to pay out wages to the current period workers, W. As Lavoie (1984: 774) puts it, '[t]hese flows of credit then reappear as deposits on the liability side of the balance sheet of banks when firms use these loans to remunerate their factors of production'. Indeed, this illustrates the loans-make-deposits causality first spelled out by Withers back in 1909 (see Realfonzo (1998: Ch. 6) for a history of monetary thought investigation of this causality). In book-entry terms, the result of this payment, which is an action whose outcome is a stock variation over time (let us emphasize it), is depicted in Table 2.1.

The result of the payment of wages, illustrated in Table 2.1, shows that banks provide only the number of money units asked for by non-bank agents (the set of firms in Table 2.1) – on the assumption, needless to note, that the firms' creditworthiness satisfies the benchmark set by the bankers (there may always be a fringe of unsatisfied customers, of course). Indeed, both the design of the product and the materials to fabricate it pertain to and are delivered by non-bank agents, namely firms and workers taken together, which form the productive system. We thus notice, incidentally, that the emission of money as means of payment is a credit-driven and demand-determined process, quite in line with the endogenous money literature and tradition that have been revived at the end of the twentieth century by authors such as Moore (1988), Lavoie (1999), Rochon (1999), among many others (see Rochon and Rossi (2003) for a recent collection of endogenous money contributions). Further, it is production that gives a purchasing power to money, which, as such, is merely a numerical form of no value whatsoever (Bossone 2001: 870). This production may be present (on the factor market) or expected (on the financial market), the important point to underline at this stage being that banks alone cannot give value to the money units they issue through their double-entry bookkeeping. The remuneration of workers by firms through banks notably associates physical output with a number of money units in the payment of the wage bill. This creates exchange

Table 2.1 Loans and deposits resulting from the payment of the current wage bill

Bank			
Assets		*Liabilities*	
Loans to firms F	+£x	Deposits of wage earners W	+£x

value and gives money its purchasing power. As Marx (1939/1973: 217) pointed out in this respect, '[p]roduction is not only concerned with simple determination of prices, i.e. with translation of the exchange values of commodities into a common unit, but with the creation of exchange values'. If we abstract from the monetization of (present or future) production, banks are unable to create purchasing power on their own, as noted in Table 1.1. Dissociated from physical output (in the form of real goods and/or services), bank money would be 'a mere phantom of real wealth' (ibid.: 234). In fact, those advances that banks may grant to non-bank agents for consumption purposes allow the latter agents to obtain and to spend today a purchasing power that a future production will create (see below). Consequently, bank deposits are a 'liquid, multilaterally accepted asset' (Chick 2000: 131), because they are the material outcome (that is, a stock) of two intimately related actions (namely flows): (1) emission, on the monetary side, of the numerical means of payments (money) by the banking system, and (2) production, on the real side, of physical output (to wit, money's worth) by the productive system; that is, firms and workers taken together. (Although we abstract here from the state, which we shall introduce in the next chapter, the general government sector of a given country could be added with no misgivings to the set of (private and public sector) firms as well as to the set of (private and public sector) consumers without modifying our analysis, as it is both a producer (symbolized by F) and a consumer (symbolized by W) of real goods and services.)

Now, granted that the result of a payment on the labour market is a stock (in the form of bank deposits) that is recorded in a bank's bookkeeping, the latter cannot illustrate the underlying flow; that is, the emission of money as a means of payment. It should not be a surprise, therefore, that analysis of a bank's ledger, or balance sheet, is not enough to uncover the nature of money and the workings of payments. Indeed, as a general rule, the nature of things as well as phenomena cannot be derived from factual observation: both rarely coincide with their factual appearance. A theoretical framework is therefore always required to understand the empirical givens, such as the amount of both banks' assets and banks' liabilities recorded in a balance sheet as illustrated in Table 2.1. To this understanding, a process (that is, a flow) analysis may be of some help, provided that it is consistent with the conceptual definition of flows pointed out above. This means that the emission of money requires a circular-flow analysis in which the circuit of money lasts no more than an instant, in order to reproduce the fact that a payment is an instantaneous event and so is money. Indeed, '[m]oney and payments are one and the same thing' (Schmitt 1996: 88), in the sense that the emission of money occurs *within* payments, while money balances (bank deposits) exist *between* payments. If so, we can illustrate the emission of the means of payment with an instantaneous circular flow from and to its issuing bank, for instance the bank through which the set of firms, F, pay out wages to workers, W (Figure 2.1).

As Figure 2.1 shows, the emission of money, here for the payment of wages, implies the creation and simultaneous destruction of the relevant number of

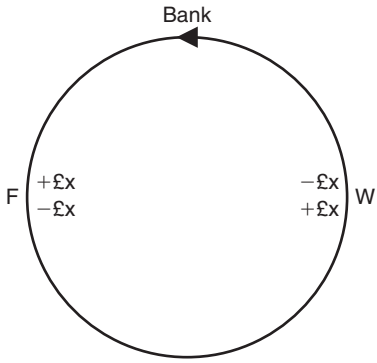

Figure 2.1 The emission of money as a flow on the labour market.

money units in order for the payment to be carried out on the labour market. 'It is double-entry book-keeping that requires a perfect and instantaneous balance between creation and destruction' (Cencini 2001: 69). As a payment is an instantaneous event that implies the financial debit of the payer and the financial credit of the payee, as shown by any bank's ledger (see Table 1.2 and Table 2.1), the emission of money is limited to the existence of this event, an instant as we know. Payments on the labour market are each made possible by an instantaneous flow through which a number of money units (say £x) is created and destroyed on both F and W as shown in Figure 2.1. Wage earners spend mechanically the number of money units they receive simultaneously, in order for them to acquire a bank deposit as a mark of payment finality on the labour market. As noted above, this mark of payment finality is recorded in a bank's ledger, and has a positive duration in time, as is shown in Table 2.1. As a matter of fact, wage earners own a claim on a bank deposit, whose purchasing power they may exert sooner or later after they have obtained it (but not simultaneously, because otherwise the deposit would not be formed), and are therefore entitled to ask the bank in which this deposit is recorded to carry out payments up to the amount deposited with the latter bank. To put it in a nutshell, money carries out payments, while bank deposits finance them.

Indeed, if we consider Table 2.1 again, we observe that, as deposit holders, workers, W, have a credit to firms, F, via the bank in which these deposits are recorded. Hence, it is W, and not the bank, that grants a credit to F eventually, even if deposit holders may not be aware of this credit operation, which in fact occurs through banks in their capacity of financial intermediaries. Clearly, the object of the credit that workers have on firms is a product that has been formed on the labour market, and that is going to be consumed on the product market as soon as wage earners (or deposit holders) spend their deposits and acquire the equivalent part of produced output on sale. Until these deposits are spent on the market for produced goods and services, their holders own these products in their financial definition, to wit, as bank deposits. Indeed, firms owe these

products to the set of deposit holders, from whom they eventually borrow – through banks – the amount they need to finance their production costs, that is, the wage bill. As a matter of fact, if we consider the set of firms as a whole, F, then all costs of production are wages only, because inter-firm purchases cancel out at the macroeconomic level (Graziani 2003). This is fully in line with Keynes's (1936/1973: 213–14) definition of labour as the sole true factor of production. Certainly, land and capital also contribute to production, but land requires labour at least to collect its products (if not more efforts than that), and capital is a set of machines and equipment, which have themselves been produced by (past) labour (with probably the contribution of some (older) capital that was itself the result of some past labour). Indeed, only labour can be at the origin of a new form into which matter as well as energy may be moulded, to provide (higher) utility to human beings. Crude oil, for instance, has to be extracted (using both labour and capital) and transformed (through a process designed, or at least discovered, by human beings), in order for it to become fuel and a series of oil-based products that are useful all over the world.

Now, if we want to represent the financial intermediation carried out by a bank in the labour market as depicted in Table 2.1, we have to consider that the income which the bank lends to firms, F, is the result of the workers' effort (labour), a result that exists in the form of bank deposits (see Table 2.1). If so, then the bank's financial intermediation has to be illustrated as in Figure 2.2.

As the payment of wages is a flow whose result is a purchasing power that wage earners own in the form of a claim on bank deposits, these deposits are necessarily recorded in a bank, which balances this financial debt to W with the financial credit corresponding to the loan that the bank grants to firms, F, in order for the latter to finance the payment of current wages. 'Hence workers pay themselves through the intermediary of F, which is just another way of saying that income is *created* by W and not by the firm or by the bank' (Cencini 1988: 86). In other words, financial intermediations occur according to the principle that deposits make loans, by contrast to the reverse principle (loans make deposits) that is at the core of money's emissions (see above). Indeed, both the emission of

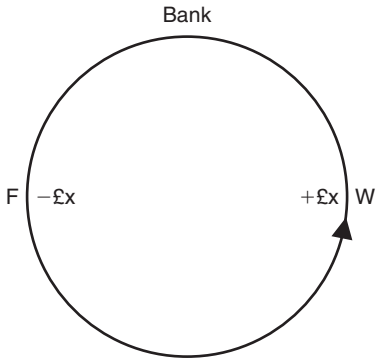

Figure 2.2 A bank's financial intermediation on the labour market.

money and the financial intermediation implicit in the payment of current wages are instantaneous operations that a bank carries out on behalf of non-bank agents, F and W. The circuit of income as represented in Figure 2.2 is instantaneous: income is formed as a bank deposit owned by wage earners, W, lent by the bank to firms, F, which borrow it in order for them to finance the wages they pay out to their workers, W. Unlike money, however, income, which exists in the form of bank deposits, has a positive duration in chronological time, and notably exists as financial capital (or capital-time, as Schmitt (1984) puts it to point out that this capital provides a bridge between the present and the future, when it will be transformed back into income and spent on the market for goods and services). Deposit holders, as the wage earners in Table 2.1, are indeed entitled to a purchasing power as long as they do not dispose of their bank deposits on the financial or product markets. When this occurs on the financial market, this means in fact that deposit holders *transform* their purchasing power, from a liquid claim in the form of (say) a demand deposit into a less liquid claim in the form of financial assets such as bonds or securities. If so, then the seller(s) of these financial assets transform(s) them in a more liquid form, that is, bank deposits, which shows that deposits may move around in the banks' accounts – at a variable speed that, of course, can be measured over time, say over a calendar year, as is the case with the velocity of circulation of M1 (or M3) in any central banks' statistics. In the end, when a deposit holder spends his/her purchasing power on the goods market, the corresponding bank deposit is actually destroyed for the deposit holder as well as for the economy as a whole, as it is transformed into those real goods and services purchased by him/her and therefore consumed in economic, though not necessarily in physical, terms (the real goods purchased may be physically consumed over a more or less long period of time, depending on their durability, which is indeed a physical property, as pointed out by Rossi (2001: 21)).

We can now better understand of the meaning and purchasing power of bank deposits.

The meaning and purchasing power of bank deposits

The meaning and characteristics of bank deposits have been puzzling economists since at least Cannan's (1921) article, in which he put to the fore his now famous 'cloakroom theory of banking'. Bank deposits have purchasing power insofar as they are produced output in financial form, until the latter output is sold on the market for produced goods and services. Consequently, the purchasing power of bank deposits does not originate in some 'central mystery of modern banking' (Chick 2000: 131).

> There is nothing really mysterious about the nature of banking 'deposits.' The term 'deposit' seems very appropriate as the name of the verb which we use to describe the action of placing an article with some person or institution for safe custody.
>
> (Cannan 1921: 28)

Bank deposits are the financial definition of physical output, and come to light as soon as the latter is monetized through the remuneration of wage earners by firms via banks. In fact, physical output is not deposited with banks but lies in the firms' inventories, to be sold sooner or later. Nevertheless, firms owe this output to wage earners, who are, as we know, the original deposit holders in the banks' accounts. Indeed, wage earners are the first owners of the newly produced output, as they own it in its financial definition, to wit, in the form of bank deposits, which are therefore the result of productive as well as banking systems working together for the determination of the same macroeconomic magnitude (there is therefore no dichotomy in the real world between the monetary and the real sectors). At a macroeconomic level, the purchasing power of bank deposits has therefore nothing to do with the agents' trust and confidence in the banking system, as claimed, for instance, by Dow and Smithin (1999: 80) and by Ingham (2000: 29). Money balances are net worth for the economy as a whole, because they really are the financial form in which physical output exists before its final consumption takes place on product markets. As a matter of fact, when output is sold on the market for produced goods, an identical sum of bank deposits is destroyed, as deposit holders transform a liquid store of wealth (bank deposits) into a physical value-in-use (that is, real goods or services), or to put it in the phraseology of Fama (1980: 43), exchange a financial form of wealth for a real form. This exchange, which takes place on the product market, destroys a sum of bank deposits equal to the amount of money wages adding up to the production cost of output sold. In fact, the firm recovers on the market for produced goods and services the income (in the form of bank deposits) that the bank did lend to it for the payment of the relevant wages on the factor market (recall Table 2.1). This destruction actually occurs independently of the firm's behaviour; that is to say, of the firm's decision to reimburse those bank loans that gave rise to the corresponding deposits: when physical output is released from its monetary mould – whose integration occurred on the factor market, as noted above – an identically equivalent sum of bank deposits is transformed into real goods or services and hence ceases to exist as such.

Indeed, as noted by the leader of the chartalist approach, notably quoted by Wray (1998: 24), a bank deposit is the financial definition of the output with which it is identified: as a matter of fact, and in connection with the 'cloakroom theory of banking' *à la* Cannan (1921), Knapp (1924: 31) notes that

> [w]hen we give up our coats in the cloak-room of a theatre, we receive a tin disc of a given size bearing a sign, perhaps a number. There is nothing more on it, but this ticket or mark has legal significance; it is a proof that I am entitled to demand the return of my coat.

Although in this key passage Knapp focuses in fact on the validity of cloakroom tickets (that is to say, adopts a legal viewpoint), he also implicitly recognizes that the ticket (that is, a bank deposit) is in fact the financial definition of the coat (that is, output) deposited with the cloakroom (that is, a bank), as the ticket

holder (that is, the bank depositor) has a drawing right over the object(s) s/he deposited. Provided we realize that bank deposits are fungible assets for their holders, which of course physical objects such as a coat are not, we will easily notice that modern banking confirms the Knapp understanding of the nature of bank deposits – which, as Rossi (1999) points out, has unfortunately been lost today by his self-declared followers under the leadership of Wray (1998): '[m]oney, especially bank money, is the empty, numerical form into which outputs are integrated' (Schmitt 1996: 86), an operation that gives rise to bank deposits. To understand both money and payments, one thus needs a monetary macroeconomic analysis of the economic process which associates a numerical counter, that is to say, money, with production, whose factual result is a series of bank deposits which may be transferred and finally spent. Let us elaborate on this analysis in the following section.

The monetary macroeconomics of payments

If we elaborate on the previous section, we will observe that the remuneration of wage earners on the factor market through banks for the labour they carried out on behalf of firms during a given period of time gives rise to a newly produced output in the form of bank deposits, which in fact result from an expenditure of both money and labour on the factor market. The workers' physical output is thereby defined by a money income that is deposited with banks. This brings us to expand on the monetary macroeconomics of those payments that take place on the labour market, whereby new bank deposits are in fact created (or, more exactly, produced) for the economy as a whole.

Payments on the labour market

When one considers that money is the means of payment (that is to say, the numerical form in which payments are made), one can understand that the object of any payments is not money but output in the form of a bank deposit, which is created on the factor market, transferred on the financial market, and destroyed on the product market. It is therefore possible to clarify Fama's quotation according to which 'bookkeeping entries are used to allow economic units to exchange one form of wealth for another' (Fama 1980: 43). In fact, the transformation of wealth (from a real into a financial form or vice versa) is an absolute exchange, whereby a single object (that is, output) actually changes its form as a result of a payment carried out through the bookkeeping system of a bank. 'Indeed, economic production is a case of absolute exchange because it does not account for an exchange between two distinct objects (one taking the place of the other and vice versa), but is rather synonymous with a transaction through which output is *changed* into a sum of money income' (Cencini 2005: 120–1).

Consider again the payment of the wage bill (see Table 2.1). Wage earners own a claim on a bank deposit in exchange for the physical output they have

produced over the relevant period, independently of the fact that this output may not be fully manufactured within the production period over which wages accrue and are actually paid – in which case, as Schmitt (1984: 94–105) explains, the bank deposits to which wage earners are entitled have a purchasing power corresponding to those financial claims that the firm issues, as in Table 2.1, in order for it to finance production of the corresponding fraction of output as long as output has not been physically completed and sold. Indeed, labour gives rise to a stock of newly produced goods that are deposited temporarily with the firm in order for it to sell them later on the goods market. In this situation, money (that is, the numerical form in which the workers' remuneration takes place) is merely the 'vehicle' of the output produced by wage earners: it allows the newly produced goods to be physically deposited with the firm, while their financial definition is recorded as a deposit in the bank's bookkeeping on behalf of wage earners. In other words, physical output is the real object of the firms' debt to the bank – for the payment of the wage bill – and the corresponding bank deposits of wage earners are a positive net asset for them as well as for the economy as a whole (Figure 2.3).

At the precise instant when workers are paid (say, once per calendar month), output is exchanged against itself through the intermediation of money and the bank issuing it. As the object of the entry on the assets side of a bank's ledger, output loses temporarily its physical form to adopt a financial form: the payment on the labour market changes physical output into income recorded as a bank deposit on the liabilities side of the relevant bank's ledger (see Table 2.1). Figure 2.3 illustrates notably the result of this absolute exchange, whereby the financial debt of the firms (to the bank carrying out the payment of current wages) is compensated for instantaneously with the physical output deposited in their inventories, while the financial credit of wage earners (+£x) is net for them as well as for the whole economy: the newly created income is a macroeconomic magnitude, in the precise sense that it is a positive net asset for the whole set of agents existing in the same currency area, usually a country (Table 2.2).

Table 2.2 summarizes a number of points explained above. If we consider the domestic economy from a macroeconomic point of view, we may single out

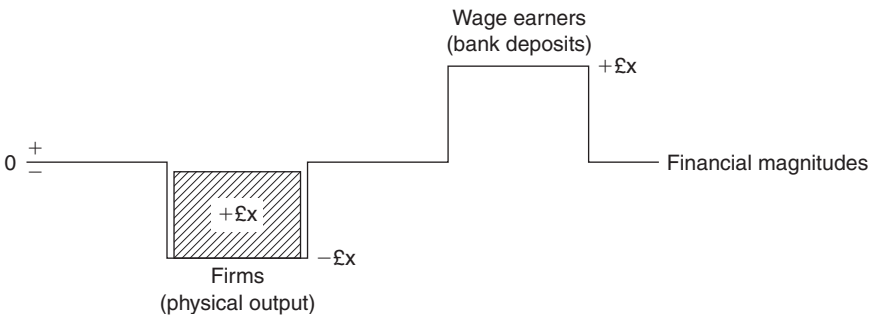

Figure 2.3 The result of an absolute exchange on the labour market.

Table 2.2 The generation of income as a positive magnitude for the whole economy

Domestic economy	*Firms*	*Banks*	*Wage earners*		*Total output*
Financial magnitudes	−£x	+£x −£x	+£x	=	£0
Physical output	+£x	£0	£0	=	+£x
Total income	£0	£0	+£x	=	+£x

three kinds of agents having separate functions: firms organize production activities, banks 'monetize' them, and wage earners produce both (physically) useful and (economically) valuable objects. Indeed, even the activity of a single wage earner gives rise to an income that is new for the economy considered as a whole, insofar as the firm as well as the bank involved in this activity are mere intermediaries between the worker and him/herself as far as his/her remuneration is concerned. The bank through which the wage earner is paid acts as a money and credit purveyor: it issues money as a means of final payment on the labour market, and it lends to the firm the income formed as a bank deposit for the wage earner (see Table 2.1). As Gnos (1998: 46) points out, 'although the creation of money is not actually a source of financing it does provide finance for firms, which comes from the very deposits created in this way'. That banks are financial intermediaries is shown by the relevant column of Table 2.2: banks have a financial credit to firms (which indeed they enter on the assets side of their balance sheet) as well as a simultaneous financial debt to wage earners (whom they enter on the liabilities side of their balance sheet). The fact that firms also act as intermediaries in the domestic economy will be noticed when one considers that their financial debt to banks, and eventually to wage earners as we know, is factually and necessarily balanced by the identically equivalent net volume of goods that are physically deposited in their inventories. All in all, total income and total output produced within a domestic economy are the two identical results of economic activity over any given period of time. Keynes's (1936/1973: 63) identity of income and output is thus vindicated, and formally established on the ground of double-entry bookkeeping, whose accounting logic is respected by the monetary macroeconomic analysis of payments on the labour market carried out in this section. Incidentally, this is in sharp contrast with the stock–flow matrixes put forward by Godley (1999) and Lavoie and Godley (2001–2002: 280), in which '[s]ymbols with plus signs describe sources of funds, and negative signs indicate uses of funds'. Indeed, if one were to adopt the Lavoie and Godley (ibid.: 278) approach, for whom 'everything comes from somewhere and everything goes somewhere', there would be no net creation of income and output in the economy considered as a whole, which is tantamount to saying that neither income nor output would be a macroeconomic magnitude in the precise sense that this magnitude is positive for the whole set of economic agents existing within a country or currency area. By way of contrast, the approach summarized in Table 2.2 shows that income as well as output are in point of fact a truly macroeconomic magnitude, as the economic activity of

wage earners – their number (from 1 to *N*) being irrelevant here – gives rise to exchange value for the whole set of agents in a given domestic economy. Indeed, the whole output is a net product for the domestic economy within which it has been produced. This is in open contrast with the Sraffa (1960) view that only a part of produced output represents a social 'surplus' (see Corti (1997) for a critique of that view).

> The production by every single agent is therefore a macroeconomic event in that it increases not only the income of each such single producer, but also the income of the entire system. At the moment wages are paid to any individual economic agent, a new income is created that defines his economic output as well as a component part of society's total product. Each singular 'monetized' output is therefore a *net* product, since the positive formation of the new income – resulting precisely from the association between money and output – is not counterbalanced by any negative formation of income.
>
> (Cencini 2005: 123)

As Table 2.2 indicates, the result of a payment on the labour market is an entirely new income in the whole economy, whose original holders are wage earners, who therefore possess the necessary and sufficient power to purchase the newly produced output, also defined as a macroeconomic magnitude since it is a net product for the whole economy. As we shall explain below, however, this identity between income and output does not mean that wage earners will obtain the whole stock of produced output if they decide to spend the total sum of bank deposits they earned on the factor market. In fact, there is a distribution of income between workers and firms that occurs on the product market, on which firms mark up retail prices over factor costs in order to earn their gross profit. To understand better this distribution of income between wage earners and stock (or share) holders (that is to say, between real wages and profits), let us consider first the financing of firms' production costs through their sale of securities on the financial market. As a matter of fact, since the 1980s there has been a growing concern for banks in advanced economies that their share in the credit market is decreasing, owing to the fact that many firms finance their economic activities by selling bonds rather than borrowing from the banks, a phenomenon called financial disintermediation. If so, then businesses look for finance in the financial market, seeking to acquire bank deposits through the sale of a variety of financial assets such as bonds, securities, derivatives and so on. Let us thus investigate these operations from a monetary macroeconomics perspective.

Payments on the financial market

When firms want to raise funds in order for them to finance their activities, essentially production, they are confronted with the possibility to do so circumventing bank credit, if the latter is constrained (by monetary policy) or too

expensive with respect to the rate of interest on the financial market; that is, the market where individuals and institutions, private as well as public, may provide finance to firms through the purchase of financial assets that firms issue (on the primary market) or merely sell (on the secondary market).

Consider the primary market first. In this market, firms issue and sell debt certificates or equity shares according to relative interest rates on the credit and financial markets. If a business issues securities and sells them on the financial market to any given interested individuals or non-bank financial institutions, rather than on the credit market and hence to a traditional bank as noted above, this implies that some bank deposits already exist in the economy and are spent by their holders for purchasing securities on the (primary) financial market. As we now know, these bank deposits are the result of a production that has been monetized by banks, independently of the real nature of the corresponding output, a finished product or a still to be physically manufactured output (see above). If so, then the original holders of claims on these bank deposits (that is, wage earners) may decide to save the equivalent purchasing power in a different, and less liquid, form than in the form of bank deposits. These deposit holders may thus decide to spend them for buying securities, or any kinds of financial assets on sale, rather than for consumption purposes. In this case, they act to transform their liquid financial definition of produced output (bank deposits) into a less liquid financial description of same exchange value, in the form of bonds, securities or other kinds of financial assets. Now, if firms sell these assets on the primary financial market, this means that, via this transaction, they obtain the finance they need in order for them to cover their production costs and/or reimburse those bank loans that banks originally granted to them when firms had to pay out wages to their workers. As a result, bank deposits disappear for their original holders, as their exchange value, on which wage earners had a fully liquid claim, is transformed into a less liquid claim in the form of securities sold by firms, which thereby transform a less than fully liquid store of value (in the form of securities) into a (more) liquid form (bank deposits). Loosely speaking, bank deposits are transferred from buyers to sellers of securities on the (primary) financial market. More exactly, they are destroyed on their original holders, W, and simultaneously created on their current holders, F (Table 2.3).

Let us recall that the payment of securities on the (primary) financial market, like any other payment, implies the emission of money as a means of (final) payment between the agents involved. In this respect, both the payer – original deposit holders, W, in this case – and the payee – the firms selling securities –

Table 2.3 The result of a financial transaction on the primary market

Bank		
Assets	*Liabilities*	
	Deposits of wage earners W	−£x
	Deposits of firms F	+£x

are debited as well as credited with the number of (x) money units created and destroyed by the bank acting as a settlement institution, as shown in Figure 2.4.

Again, it is worth distinguishing between the means of payment (money) and the object exchanged, which is exchange value (£x) whose form changes its degree of liquidity. In particular, deposit holders transform their liquid worth (bank deposits) into a less liquid form (securities), and firms do the reverse transformation, in order for them to finance a new production of real goods and services for the same amount, whose output gives rise to an identically equivalent new income that is net for the whole economy, as we know. Indeed, even when firms finance production by selling securities to non-bank agents (as wage earners) rather than to banks, the relevant production costs (the current wage bills) are not paid for with a pre-existent income (in the form of those bank deposits on which past wage earners had a claim that they transformed into those securities that firms sold on the primary financial market), but with the current new income that the payment of the current wage bills generates, exactly as if this payment started from *tabula rasa* as in Table 2.1. In the case discussed here, of course, firms are able to cover instantaneously the new debt to banks (see Table 2.1) with the funds they obtained through the sale of securities on the (primary) financial market (see Table 2.3).

Now, provided we understand that firms may sell securities to any deposit holders, not just wage earners, on the primary financial market, insofar as any individuals and institutions (including banks) may hold a claim on a bank deposit which they may have earned in a previous period, we can move on to analyse the secondary financial market, where any agent may actually sell or purchase securities or other financial assets that are accepted for trade by financial market regulators. Let us assume, to simplify things, that firms sell a given proportion of securities in their portfolio to finance production in this way, rather than applying to banks' financial intermediation services (because there is no bank willing to offer a credit line to these firms on account of their leverage (or debt-to-equity) ratio, or for any other plausible reason that we may ignore here, as these reasons are not germane to the point at stake). In addition, for explanatory purposes, let us

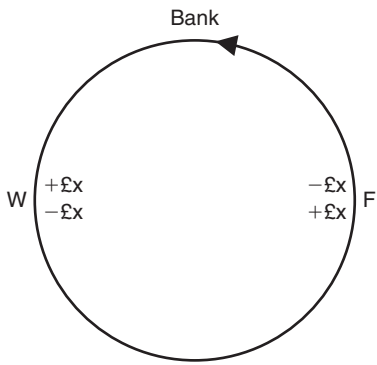

Figure 2.4 The emission of money as a flow on the primary financial market.

assume that firms sell their securities on the secondary market to wage earners, as there is no need to suppose that deposit holders are different agents with respect to wage earners. To keep it simple, therefore, we will consider that wage earners, W, decide to transform a liquid store of value (bank deposits) into a less liquid, but probably more interesting in terms of rate of return, form of financial investment, namely bonds or securities. If so, then a financial market transaction between workers, W, and firms, F, occurs on the secondary market, on which firms may sell all or a part of the financial assets that they had in their portfolios, with the result shown in Table 2.4.

Again, when a financial transaction occurs on the secondary market, those deposits that the buyers of financial assets owned are destroyed, to be transformed into a less liquid form of financial wealth (that is, securities), and the reverse transformation takes place for those agents that dispose of securities in their portfolios to change them into a fully liquid form, that is, a sum of bank deposits (checkable deposits in the United States, or demand deposits in the United Kingdom, to name just two examples). Needless to say at this juncture, this financial market transaction implies the emission of the means of (final) payment between the agents involved, in the same way as Figure 2.3 shows with respect to the primary market. In this regard, money's emission is a general fact, since it occurs within every payment that takes place in a given currency area independently of the (commercial or financial) nature of the object of this very payment, which is indeed a transformation (that is, an absolute exchange, as pointed out above).

In short, financial transactions on either the primary or secondary market do not create additional income (that is, purchasing power) for the economy as a whole, but only shift this income around between agents (except for the income generated by the production of financial intermediation services such as advising clients, writing reports, and other activities involving value added by labour). This is so both when a firm enters the financial market for a transaction in either the primary or secondary market, as in the two stylized cases discussed above, and when these financial market transactions take place between two non-bank agents that are not firms seeking to finance production. There is, in fact, only one case in which a financial market transaction (that is, the sale and purchase of financial assets) increases the total sum of income available within a domestic economy: this occurs when a bank, or the banking system as a whole, advances purchasing power – usually to firms, but nowadays more and more so to households also – that will be the result of future production. Let us expand on this.

Table 2.4 The result of a financial transaction on the secondary market

Bank		
Assets	*Liabilities*	
	Deposits of wage earners W	−£x
	Deposits of firms F	+£x

Consider first the case when a firm is unable to obtain finance on both the primary and secondary markets through the sale of financial assets to individuals (households) or to non-bank financial institutions. This may occur either as a result of these agents' forms of behaviour with respect to their saving and investment decisions or because the firm's rating or financial ratios do not raise these agents' economic interest. Be that as it may, if we assume that this firm cannot obtain on the financial market the income it needs to finance its expenditures, particularly on the labour market, we might admit that a bank is willing to provide finance to this firm, though at a rate of interest higher than the rate of interest on the financial market. If so, then this bank advances to this firm an income that will be produced in a later period, either by this very firm or by another agent in the domestic economy. Indeed, banks may provide a bridge between the present and future, as pointed out by Keynes (1936/1973: 293). As a matter of fact, since the 1970s banks have been increasing their business in this field, giving rise to the so-called investment banks (as distinct from ordinary commercial banks), which agree, quite often with other banks in a syndicate, to purchase any unsold securities on the financial market, and ask to be paid a commission for this service (*The Economist* 1999). If so, then the double entry that a bank records in its ledger when advancing to firms an income that has yet to be produced is epitomized by Table 2.5.

When firms are unable to finance their production costs on the financial market – either primary or secondary – through the sale of securities to households and non-bank firms whose business is financial intermediation, they may sell these securities to one or more banks acting as financial intermediaries, not between current deposit holders and firms, but between future deposit holders and these same firms. In practice, this occurs when a bank underwrites securities and thereby grants a credit to firms, which can therefore and without delay obtain a claim on a sum of bank deposits that a future production is going to generate. Bank advances give rise to bank deposits that are the financial definition of output yet to be physically produced. Through the financial bridge provided by the bank therefore, a bank deposit is available in the present, to which a product will correspond in the future. This operation, which is legal as well as widespread in the real world, is not inflationary as such, insofar as the securities that firms sell to banks, in order for them to be entitled to a sum of bank deposits, are the financial definition of output to be produced, and as such define money's purchasing power. In short, if the money stock in the form of bank deposits (say M1) increases because of these bank advances, so does total output identically, though a part of the latter output is represented by and exists in the

Table 2.5 The result of a bank's advance to finance current production

Bank			
Assets		*Liabilities*	
Securities	+£x	Deposits of firms F	+£x

form of securities and, as such, is not (yet) included in statistics on Gross Domestic Products (GDPs). To be sure, total demand for and total supply of output are identically equivalent in any period of time considered, provided they are measured considering all definitions of output, real (in the form of produced goods and services) and financial (in the form of securities), irrespective of the agents' forms of behaviour (see Cencini 2005: Chs 3 and 4). To put it into a nutshell:

$$\text{Total demand for output} = \text{the total sum of bank deposits in the banking system}$$
$$\text{Total supply of output} = \text{produced output} + \text{financial claims on future production}$$

Of course, banks are extremely cautious when advancing to firms today an income that will be produced tomorrow. This suggests that if bank advances in the real world could put an upward pressure on retail prices on the market for produced goods and services, as currently produced output is lower than the total sum of bank deposits available, this upward pressure is limited by banks' liquidity preference and avoidance of credit risks. Further, bank loans must always be repaid by borrowers, which means that any bank advances have to be refunded to banks. When this occurs, total demand on the product market is reduced, and this compensates for the upward pressure on retail prices that bank advances can generate. Hence inflation (that is to say, a positive gap between total demand and total supply of produced output) does not originate from bank advances, as the upward pressure that these advances put on retail prices on the product market is not cumulative in time and is notably compensated for by the reverse phenomenon owing to the repayment of bank loans (see Rossi (2001: 139–45) for analytical elaboration on this point, which we do not pursue in this section, since it is not relevant for understanding bank advances of future income). In fact, when firms dispose of their bank deposits to finance production and pay out wages to workers, the payment gives rise to the double entry shown in Table 2.6.

If we consider the two double entries in Tables 2.5 and 2.6 together, and recall that the securities recorded on the assets side of the bank's ledger were sold by firms in order to finance the payment of wages through a bank advance, we are able to conclude that the general representation of this payment on the labour market – be it financed through a bank advance or not – is captured by

Table 2.6 The transfer of bank deposits generated by a bank's advance to firms

Bank		
Assets	*Liabilities*	
	Deposits of firms F	−£x
	Deposits of wage earners W	+£x

Table 2.1. Indeed, the accounting balance to which Tables 2.5 and 2.6 arrive if we consider them altogether is essentially identical to Table 2.1 (Table 2.7).

To be sure, any loan that a bank may decide to grant implies that the borrower, here the set of firms, acknowledges its debt to the bank. This can occur by simply underwriting a bank's loan agreement (the borrower's signature is sufficient in this regard) or issuing a series of financial claims (for instance, in the form of securities) kept by the bank as the mark of the borrower's indebtedness. After all, investment banks have been providing considerable help to firms when the latter seek to finance their activities on the financial markets, as discussed above. Banks thereby provide a liquid market in securities, even if non-bank agents may be unwilling to enter into these agreements, and (now less than in the past) invest their own capital in this market, an activity known as proprietary trading (see *The Economist* 1999).

Let us now switch our analysis from the case in which a bank grants a credit to a firm for financing production activities, to the case of a bank credit that consumers ask for and obtain for consumption purposes. Indeed, as Howells and Hussein (1999) observe, the demand for bank credit by households has taken over from business demand as the main component of bank lending in the recent past, and also the total value of economic transactions (including those on assets, intermediate and second-hand goods) has grown much more rapidly than GDP during the past 25 years. In light of this empirical evidence, Howells (1996: 113) wonders whether 'deposits created by essentially speculative activity have any impact on the economy, different from the impact of deposits created in the wake of production?' Indeed, this is a concern that contemporary economists and monetary policy makers (see, for instance, Goodhart 2001) raise rather often nowadays. As Keynes observed, and as Howells (1999: 105) quotes in part:

> [speculative transactions] need not be, and are not, governed by the volume of current output. The pace at which a circle of financiers, speculators and investors hand round one to another particular pieces of wealth, or title to such, which they are neither producing nor consuming but merely exchanging, bears no definite relation to the rate of current production. The volume of such transactions is subject to very wide and incalculable fluctuations, easily double at one time what it is at another, depending on such factors as the state of speculative sentiment; and, whilst it is possibly stimulated by the activity and depressed by the inactivity of production, its fluctuations are quite different in degree from those of production.
>
> (Keynes 1930/1971: 42)

Table 2.7 Loans and deposits resulting from the payment of wages via a bank advance

Bank			
Assets		*Liabilities*	
Securities (loans to firms F)	+£x	Deposits of wage earners W	+£x

Suppose that a bank, B, advances an income to a householder, H, which the latter agent will earn in the future (on the labour market) and that s/he wants to spend in the present, on the product market, for consumption purposes, say to buy real estate (a flat). We can single out two cases in this respect. The first case, which does not represent an issue to our readers thus far, is when the bank acts as a financial intermediary between deposit holders and borrowers existing in the same period. In this case, as pointed out above, an income saved in the form of bank deposits by those agents holding a (liquid) claim on them is lent by the bank to the agent, a householder in the present example, borrowing it to finance a purchase on the (durable) goods market. The bank is merely a 'go-between' and does not advance a single monetary unit (say, pounds) to the set of agents living in the currency area considered. By way of contrast, in the second case, which is the most interesting case here, the bank grants a loan to a household that relies on no pre-existent bank deposits in the economy as a whole: it is an income that the bank advances from the future to the present, acting as a financial intermediary between two distinct periods (today and some day in the next or distant future). If so, how can a bank actually do that, and what macroeconomic consequences result from this financial intermediation? Indeed, this operation, like any bank advances, is a financial intermediation, as noted above. As such, it implicates the bank in its capacity of financial intermediary. In this case, however, the bank intermediates not between two agents existing in the same period of time (say, today), but between one and the same agent, as a householder, existing at two separate points of time (say, today and tomorrow). Clearly, when a householder, H, asks for and obtains a consumption loan from a bank, B, starting from a situation where no pre-existent bank deposits exist (*tabula rasa*) in order to explain how a bank can advance a future income to the economy as a whole, the household issues and sells to the bank a financial claim, perhaps just in the form of the acknowledgement of debt that this agent underwrites to obtain the bank's loan. This acknowledgement of debt, needless to recall, is a financial claim – on which the bank sets an interest rate, according to the credit risk associated with this loan and the financial characteristics of the borrower. As regards this claim, the bank records it on the assets side of its balance sheet, while it enters the householder's overdraft (in fact, a bank deposit) on the liabilities side of the same ledger (Table 2.8).

As pointed out above, this deposit may exert an upward pressure on retail prices on the market for produced goods and services, once household H, or some further holder of a claim on this deposit (if H spends it on the financial market rather than on the product market), disposes of it to transform it into

Table 2.8 Loan and deposit resulting from a bank's advance for consumption purposes

Bank			
Assets		*Liabilities*	
Loan to household H	+£x	Deposit of household H	+£x

some real goods or services, such as a flat or any other physically durable assets. This expenditure, however, is not inflationary, since it does not affect the relationship between total demand for and total supply of output as defined above; that is, including financial claims on future production. (Note, however, that this expenditure is inflationary as it gives rise to an excessive demand on the market for the real goods and services actually produced: there is indeed a demand for currently produced output to which no such output corresponds.) Further, as we noted above, the fact that this bank loan has to be reimbursed by H eventually implies that an equivalent bank deposit (here we ignore interest payments, which we will consider below) is not available for expenditure when the borrower repays the bank loan – a phenomenon that Lavoie (1999: 109) identifies as the reflux mechanism, which 'does not only apply to the bank overdrafts of firms: it applies to the advances made to households, governments and foreigners, and to banks alike'. Let us show the workings of this mechanism through a stylized example that takes stock of the above cases (Table 2.9).

Table 2.9 illustrates the whole 'life cycle' of an income that is advanced by the bank for the household, spent by the latter agent in purchasing a consumption good (a flat, which is a physically durable good), and destroyed both for this agent and for the economy as a whole. Let us explain. Entry 1 is the result of a bank advance as explained above (see Table 2.8). Entry 2 is the result of an expenditure of income by household H in order to purchase the consumption good (a flat) for which this household asked the bank to be the recipient of an advance of future income. As we know by now, the bank issuing the means of final payment between the household and the seller of the flat destroys a bank deposit on H and creates an identically equivalent bank deposit on the seller of the flat, S. Entry 3 records the result of a payment on the labour market, which then enables the household to repay its bank debt (entry 4). Entry 5 results from expenditure by the seller of the flat, S, of his bank deposit in purchasing those (consumption) goods that the firm sells on the product market, on which the latter agent recovers the income necessary to reimburse the bank advance it obtained when paying out wages on the labour market. Entry 6 records this last

Table 2.9 The working of the reflux mechanism in the case of bank advances

Bank			
Assets		*Liabilities*	
1 Loan to household H	+£x	1 Deposit of household H	+£x
		2 Deposit of household H	−£x
		2 Deposit of seller (flat) S	+£x
3 Loan to firm F	+£x	3 Deposit of household H	+£x
4 Loan to household H	−£x	4 Deposit of household H	−£x
		5 Deposit of seller (flat) S	−£x
		5 Deposit of firm F	+£x
6 Loan to firm F	−£x	6 Deposit of firm F	−£x

payment, by means of which the firm reimburses the bank for the advance the latter granted to the former on the factor market (see entry 3). All in all, there is no mismatch between total demand (nourished by the total sum of bank deposits available in the whole economy) and total supply on the market for produced goods and services. Bank advances do not affect this demand–supply relation, as this relation is in fact an identity and, as such, is always necessarily true (although this does not mean, as Lavoie (1987: 87) claims, that this identity is incompatible with economic crises and is therefore not an appropriate framework within which one ought to study inflation and unemployment issues, a critique that Rossi (2001: 193–4) rejects on analytical grounds).

On the whole, any financial market payment, either with a pre-existent bank deposit or with an income advanced through banks, merely shifts around the existing purchasing power in the economy. Indeed, transactions on the financial market do not increase total income unless they appeal to bank advances, in which case, however, they also increase total output, though not in the form of produced goods but in its financial definition (to wit, in the form of bonds or securities), and are therefore not inflationary – apart from the pathological case in which banks do not distinguish structurally between emission of money and financial intermediation, a case we consider in Chapter 5 (see Schmitt 1984, Cencini 1995, 1996, 2001, 2005, Rossi 2001). In a structurally sound banking system, no financial transaction can really affect the relationship between the total sum of bank deposits (global demand) and total output (global supply). In fact, financial transactions are absolute exchanges that concern output in its financial definition: agents exchange a given financial form of wealth for a more or less liquid financial form of the same wealth, namely transform claims on bank deposits into securities, or vice versa. Although the number as well as value of all financial transactions might be a multiple of a country's GDP, in any single working day as well as over a whole calendar year, no single monetary unit (say, pounds) generated on financial markets can actually exist independently of (present or future) production, of which the relevant bank deposits are merely the financial definition, thus respecting the relationship between total demand and total supply in the whole economy or currency area considered. This relation, as pointed out above, is in fact an identity: it comes to light when wages are paid out on the factor market; it may be transformed on the financial market (see above) to include future production; and ceases to exist on the market for produced goods and services when deposit holders transform these deposits into values-in-use and thereby destroy their financial definition in the banks' accounts. If so, the macroeconomics of consumption follows in a straight analytical line, so much so that:

> [h]uman effort and human consumption are the ultimate matters from which alone economic transactions are capable of deriving any significance; and all other forms of expenditure only acquire importance from their having some relationship, sooner or later, to the effort of producers or to the expenditure of consumers.
>
> (Keynes 1930/1971: 120–1)

Let us turn therefore to the macroeconomics of payments on the product market.

Payments on the market for produced goods and services

Being the reciprocal side of production in chronological time, consumption implies the destruction of the income created by production. Thus, independently of the number of consumers implied in economic transactions on the product market, the final purchase of produced goods and services reduces the amount of income existing in the economy as a whole. 'In fact, in its economic sense, consumption is the final appropriation of output' (Cencini 2005: 131). This clearly means that if banks and money did not exist, there would be no bank deposits and, consequently, production and consumption would coincide chronologically. 'In the absence of money, real goods would be consumed at the very instant of their formation, since they would immediately be appropriated by their producers' (ibid.: 131). Thanks to banks and money, this is not the case in actual fact. Real goods are not appropriated by either firms or households when they come to light as a result of an expenditure of both money and labour on the factor market (see above). In their stead, wage earners obtain a sum of income in the form of (a claim on) bank deposits, which are the financial definition of produced output and the result of an absolute exchange as explained above. This output is appropriated only when deposit holders transform their deposits through their expenditure on the market for produced goods and services. This expenditure, needless to say, implies that a bank issues the means of final payment in the form of the number of (x) money units required to carry out the payment between the payer, say, a household, H, and the payee, that is, a firm, F, selling its products (Figure 2.5).

Table 2.10 records the result of this payment (a flow) on the product market. The double entry in Table 2.10 is the mark of payment finality between a firm, F, and a household, H, on the market for produced output.

The payment on the product market destroys a claim on a bank deposit

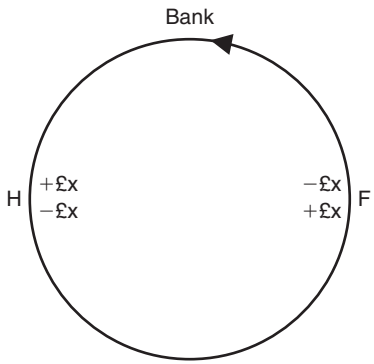

Figure 2.5 The emission of money as a flow on the product market.

Table 2.10 The result of a payment on the product market

Bank		
Assets	*Liabilities*	
	Deposit of household H	−£x
	Deposit of firm F	+£x

owned by a household, H, and creates an identically equivalent claim on a bank deposit owned by a firm, F. This transaction between H and F is again an absolute exchange, as the financial definition of output (that is to say, a bank deposit) is transformed into a physical value-in-use, namely real goods or services. Clearly, when some deposit holders spend their deposits on the market for produced goods and services, firms recover on this market the funds they need to repay their debt to banks, and thereby surrender physical output to their customers; that is, households (Figure 2.6).

At the precise instant when deposit holders spend all or a fraction of their bank deposits on the market for produced goods and services, output is released from the monetary form in which it existed up until that instant, and is definitely appropriated by households (who owned this output in its financial definition of bank deposits before they decided to spend these deposits and actually to transform them). As a result, firms obtain a claim on bank deposits (+£x) that correspond to the financial debt (−£x) they recorded when they asked banks to remunerate their workers (see Figure 2.3). Firms as well as banks are therefore neither in debt nor in credit any more, and households have a value-in-use instead of the bank deposits they formerly owned and that they have transformed into their physical definition of produced goods and services. Indeed, expenditure of income on the product market destroys this income, and the identically equivalent output, up to the amount of production costs (that is, wages) that firms recover thereby. In the same way that production is a macroeconomic event increasing national income, consumption is therefore a macroeconomic event decreasing it (Table 2.11). In fact, referring to the same output, which, economically speaking, is created by production and destroyed by consumption,

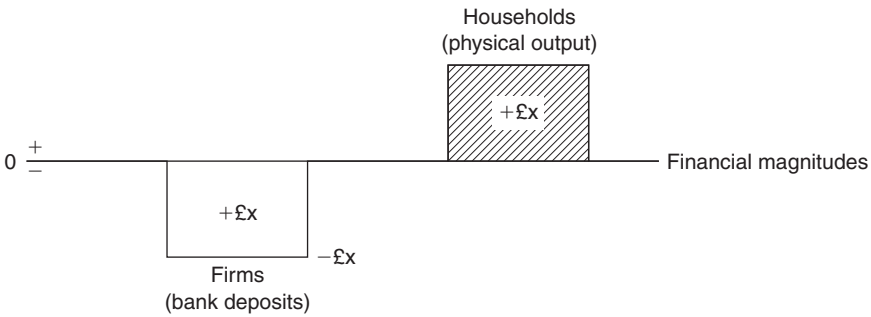

Figure 2.6 The result of an absolute exchange on the product market.

Table 2.11 The destruction of income as a negative magnitude for the whole economy

Domestic economy	*Firms*	*Banks*	*Wage earners*		*Total output*
Financial magnitudes	+£x	−£x +£x	−£x	=	£0
Physical output	−£x	£0	£0	=	−£x
Total income	£0	£0	−£x	=	−£x

the formation and final expenditure of income transform production and consumption into the two sides of the same emission (see Cencini (2005: 128–30) for an analytical explanation of this emission with respect to quantum time).

Table 2.11 illustrates that, through output sale, firms transform their inventories into the financial definition of the latter goods (claims on bank deposits), with which they can in fact repay their debts to banks, which are mere intermediaries between non-bank agents: wage earners, or more generally speaking deposit holders, eventually dispose of income in the form of bank deposits to transform the latter deposits into physical goods and/or services, with which they can satisfy some personal needs and hence increase utility in respect of holding deposits. At the level of the economy as a whole, expenditure on the market for produced goods and services destroys both the income and the output sold on this market: both are transformed into values-in-use that those agents disposing of bank deposits appropriate on the product market.

Household consumption, however, does not account for the sale of total output in the real world. In fact, both non-bank firms and banks themselves purchase real goods and services on the product market, on which sellers mark up retail prices over factor costs. Further, firms often pay out some dividend to their shareholders, and in general have to pay interest to those banks that granted a credit to them. Let us consider these events in turn with the help of very simple, stylized examples.

Let us suppose that the set of firms is divided in two sectors, I and II, producing consumption and investment goods respectively, and that in each sector there is only one firm. Firm I produces consumption goods and pays a wage bill of (say) x monetary units drawing on a bank's credit line, whereas firm II produces investment goods and its wage bill is equal to (say) y monetary units that it pays in the same way. Wage earners as a whole thus obtain a total sum of bank deposits equal to x+y monetary units, say, pounds (Table 2.12). Figure 2.7 illustrates the result of these absolute exchanges on the factor market.

Table 2.12 The result of a payment of wages in the consumption and investment goods sectors

Bank			
Assets		*Liabilities*	
Loan to firm I	+£x	Deposit of wage earners I	+£x
Loan to firm II	+£y	Deposit of wage earners II	+£y

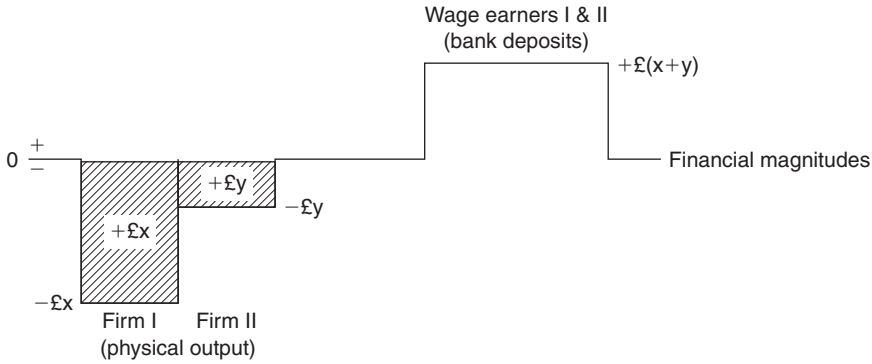

Figure 2.7 The result of a payment of wages in the consumption and investment goods sectors.

Next, suppose that firm I sells all its produced output (worth x monetary units) to wage earners at a price of x+y, its gross profit rate being therefore equal to y/x with respect to its production costs (Table 2.13). Figure 2.8 shows the result of these transactions on the consumption goods market. If we draw the balance in the bank's accounts considering Tables 2.12 and 2.13 together and record the outstanding financial positions, we notice that firm II is still in debt to the bank (for the payment of its wage bill: see Table 2.12) and that firm I owns a claim on a bank deposit for the same amount (which is the financial definition of the gross profit, y monetary units, which firm I earned on the market for consumption goods) (Table 2.14).

In practice, firm I can reimburse the bank loan (x) it obtained for the payment of wages and earns a (gross) profit of y monetary units. At this moment, however, firm II has not sold its output (worth y monetary units) yet, and is still indebted to the banking system (for the same amount).

Table 2.13 The result of payments on the market for consumption goods

Bank			
Assets		*Liabilities*	
		Deposit of wage earners I	−£x
		Deposit of firm I	+£x
		Deposit of wage earners II	−£y
		Deposit of firm I	+£y

Table 2.14 The balance of payments on the factor and consumption goods markets

Bank			
Assets		*Liabilities*	
Loan to firm II	£y	Deposit of firm I	£y

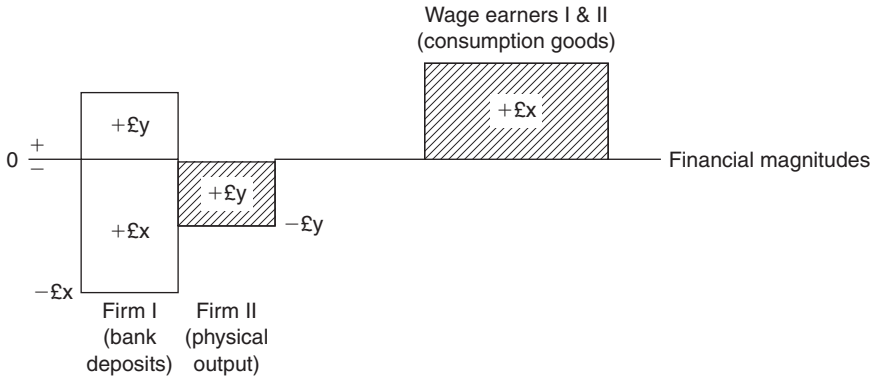

Figure 2.8 The result of payments on the consumption goods market.

Let us first ignore interest on bank loans, and suppose that firm I spends its whole profit for the purchase of firm II's output (investment goods): when this occurs, in fact, firm I transforms the financial definition of its profit (a bank deposit of y monetary units) into a set of real goods and/or services worth the same amount, which are sold to it by firm II (there are no other firms in our analysis, so that we might consider firm II as the set of firms existing in this currency area, apart from firm I). To simplify our analysis further, let us assume that firm II does not make a profit, as it decides to sell its output at factor cost (Table 2.15). Otherwise, we should carry on our analysis and introduce more firms as well as more transactions between them without adding any relevant points in respect of the formation and expenditure of a macroeconomic profit; that is, a profit that is net for the set of firms as a whole in the precise sense that wage earners do not appropriate the whole output produced when firms mark up retail prices on the consumption goods market.

Figure 2.9 shows the result of the absolute exchange between firm I and firm II, and as a memory item includes the consumption goods that wage earners physically appropriated on the product market (see Figure 2.8). Through the sale of its inventories to firm I, firm II is able to reimburse its bank loan (y monetary units), and indeed makes neither a loss nor a profit on the (investment) goods it produced, as a result of the simplifying assumption introduced above (Table 2.16).

Table 2.15 The result of an expenditure of (gross) profit on the investment goods market

Bank		
Assets	*Liabilities*	
	Deposit of firm I	−£y
	Deposit of firm II	+£y

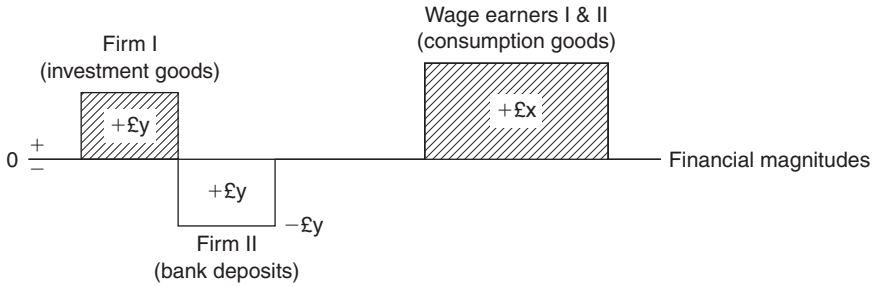

Figure 2.9 The result of a payment on the investment goods market.

Table 2.16 The repayment of firm II's debt to the bank

Bank			
Assets		*Liabilities*	
Loan to firm II	−£y	Deposit of firm II	−£y

Note, however, that firm I has been able to earn a profit (equal to y monetary units) on the market for consumption goods, and has also succeeded in transforming it on the market for investment goods: in the end, firm I obtains a real thing (worth y pounds) in the form of real goods and services produced and sold by firm II. In fact, the firms' profit is formed on the product market, where firms may mark up retail prices, but is spent on the labour market, on which firms invest their profit for the production of investment goods that as a result they appropriate on this market as soon as these goods are produced, hence with no further action or purchase on the product market. On the whole, profit is therefore a macroeconomic magnitude, which is formed on the consumption goods market – in the (financial) form of claims on bank deposits – and spent, retroactively as it were, on the factor market by firms (e.g. I) in order for them to appropriate a real object (investment goods) (Table 2.17).

Note that the formation and expenditure of profit in Table 2.17 concerns that part of gross profit that firms do not distribute either to their stock or shareholders, or to their creditors, such as banks, in the form of interests on both short- and long-term loans. Indeed, that part of gross profit which firms distribute to the above-mentioned categories of agents would simply mean that national income is distributed differently between agents within the domestic economy, so that its purchasing power would no more be in the possession of firms but rather in that of the latter categories of agents. Now, as the payment of bank interests poses a problem for monetary circuit theorists (see Rossi (2004a) for a recent discussion of this problem), let us address this issue here, granted that the income accruing to stock or shareholders can be spent in the same vein as explained above, namely on either the financial or product markets – hence it poses no analytical problem in our framework.

Table 2.17 The circuit of income and its distribution within the domestic economy

Domestic economy	*Firms*		*Banks*	*Wage earners*	*Total output*
	I	*II*			
Time t_1: income generation on the factor market					
Financial magnitudes	−£x	–£y	+£(x+y) −£(x+y)	+£(x+y) =	£0
Physical output	+£x	+£y	£0	£0 =	+£(x+y)
Total income	£0	£0	£0	+£(x+y) =	+£(x+y)
Time t_2: income distribution and profit formation on the consumption goods market					
Financial magnitudes	+£(x+y)	£0	−£(x+y) +£(x+y)	–£(x+y) =	£0
Physical output	−£x	£0	£0	+£x =	£0
Total income	+£y	£0	£0	−£y =	£0
Time t_3: profit expenditure and income destruction on the investment goods market					
Financial magnitudes	−£y	+£y	+£y −£y	£0 =	£0
Physical output	+£y	−£y	£0	£0 =	£0
Total income	£0	£0	£0	£0 =	£0

To explain the payment of interests on bank loans, let us go back one step and suppose that firm I does not spend its entire gross profit for the purchase of investment goods on the inter-firm market, which, from an analytical point of view, corresponds to the labour market at the macroeconomic level, as inter-firm purchases cancel out at this level. In its stead, let us suppose that firm I spends its gross profit (consisting of a claim on bank deposits of y monetary units) partly for purchasing firm II's output (investment goods) and partly for interest payment, say, 'fifty-fifty' (Table 2.18). In this case, a sum of y/2 monetary units goes to the creditor bank as interest payment on the initial loan of x monetary units that this bank granted to firm I in order for the latter firm to pay out the wage bill, the remaining amount (y/2 monetary units) being firm I's net profit, which it may then spend on the inter-firm market for investment goods, as we explain above (Table 2.19).

Table 2.18 The result of an expenditure of a firm's profit for bank interests payment

Bank		
Assets	*Liabilities*	
	Deposit of firm I	−£y/2
	Deposit of creditor bank	+£y/2

Table 2.19 The result of an expenditure of a firm's net profit on the investment goods market

Bank		
Assets	*Liabilities*	
	Deposit of firm I	−£y/2
	Deposit of firm II	+£y/2

Thus far, the result of the absolute exchanges carried out by firm I in settlement of its debt for bank interests and of its own purchase of investment goods may be represented as in Figure 2.10. In this case it is the creditor bank, or more generally speaking the banking system as a whole, that owns the purchasing power necessary and sufficient to buy those investment goods that are still available for sale in firm II's inventories (on the assumption that the latter firm does not mark up its retail prices, an assumption we have already made above for expositional ease). Indeed, the creditor bank records a financial profit (equal to y/2 monetary units), which it may then transform into real objects, namely firm II's goods whose sale would allow the latter firm to reimburse its debt to the banking system as a whole (for expositional ease we ignore bank interest in this latter case, as considering this would add nothing to the above analysis). The result of this transformation of the bank's profit – from a financial (bank deposit) into a real (investment goods) form – is shown in Figure 2.11. (Note that we assume here, for expositional ease, that banks pay no interest on their clients' deposits, an assumption that could be released without any modification of our analytical framework, since releasing it would merely change income distribution between the various categories of agents involved.)

In bookkeeping terms, the loan that firm II received in order for it to pay out wages on the labour market (y monetary units: see Table 2.12) has been reimbursed to the bank via the sale of its own output (investment goods) to other firms (firm I in our example) and to the bank that earned a profit in the form of

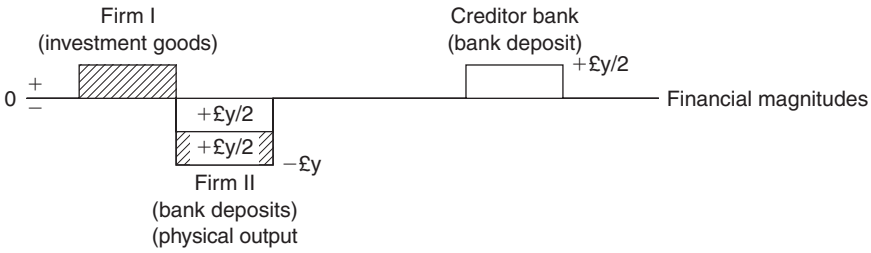

Figure 2.10 The result of payments of a firm's bank interests and of investment goods.

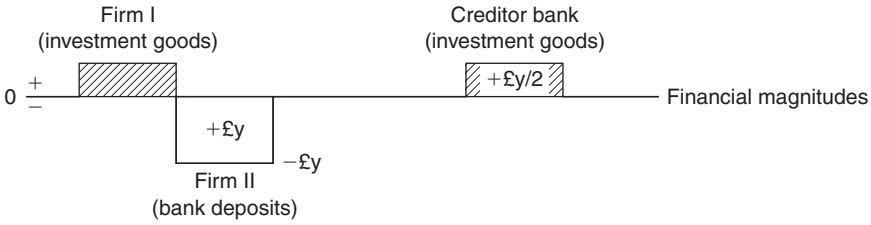

Figure 2.11 The result of a payment of a bank's purchase on the product market.

interests (paid by firm I) (Table 2.20). Table 2.20 summarizes the results of the payments investigated above. Entry 1 refers to the payment that firm I carries out for the bank interests it owes to the bank that granted a loan to it for the payment of wages to its workers (see Table 2.12). The gross profit of firm I is thereby reduced by half, from y to y/2 monetary units. Entry 2 results from the expenditure of firm I's net profit on the investment goods market, by means of which this firm transforms a claim on bank deposits (financial profit) into goods and services (real profit). Entry 3 means that the bank to which firm I paid interest spends this claim on a bank deposit for purchasing investment goods (sold by firm II, which can therefore reduce its inventories to zero). Entry 4 illustrates repayment by firm II of its bank debt – on the simplifying assumption, for expositional ease, that this firm's debt is free of bank interest, because in the contrary case our numerical example would be more complex but in fact would add nothing to our investigation on analytical grounds.

On the whole, these simple, stylized cases show that profit can be fully explained at the macroeconomic level, with no need to 'open' the initial circuit of income to include either overlapping circuits (as argued by Zazzaro 2003: 234) or central bank money and public sector spending (as claimed by Graziani 2003: 31). Further, once the distribution of income between wages and (gross) profits is explained in macroeconomic terms, and consistently with the measure of output at factor costs (wage units), it is purely a matter of induction to explain the payment of interest on bank loans as an expenditure of firms' (gross) profit. Indeed, recall that banks have a twofold nature: as money providers they are a 'go-between' that allows buyers (payers) and sellers (payees) to finally settle their bilateral debt–credit relationships; as credit purveyors, however, banks want to earn a profit for the financial services they provide, to wit, a positive difference between the interest they charge on their clients' borrowings and the interest they may pay on their clients' deposits. As a matter of fact, in their role as financial intermediaries, banks are moved by a profit-seeking rationale, as are indeed all non-bank businesses: they both want and need to earn a profit to carry on their business. Consequently, it is reasonable as well as correct that a part of the non-bank firms' gross profit goes to

Table 2.20 The result of an expenditure of a bank's profit on the goods market

Bank			
Assets		*Liabilities*	
		1 Deposit of firm I	−£y/2
		1 Deposit of creditor bank	+£y/2
		2 Deposit of firm I	−£y/2
		2 Deposit of firm II	+£y/2
		3 Deposit of creditor bank	−£y/2
		3 Deposit of firm II	+£y/2
4 Loan to firm II	−£y	4 Deposit of firm II	−£y

banks, which, as the providers of Keynes's famous bridge between the present and the future in the form of capital-time, ought to be considered as part of those financial businesses that offer their intermediation services to any other economic agents – be they firms, households or the state, as we shall explore in the next chapter.

3 The central bank and the state

The central bank has traditionally been the bank that provides a variety of payment and settlement services to other banks and to the state; that is, the general government sector considered often as a whole, but primarily at the central or federal government level. As explained and elaborated upon in the previous chapters, '[a] payment is the process by which monetary instruments, typically cash and deposit claims, are transferred between two parties to finalise a transaction' (Committee on Payment and Settlement Systems 2006a: 7). By contrast, and as we shall explore in this chapter, a settlement is an act that discharges obligations with respect to funds or securities transfers between two parties (Committee on Payment and Settlement Systems 2003a: 45). As a matter of fact, most if not all economic transactions involve some form of payment, which very often 'must be processed by a clearing and settlement system before the transaction between the buyer and the seller is finally completed' (Goodlet 1997: 50). Indeed, while many small-value payments are made with bank notes (coins are irrelevant), larger value payments usually involve the transfer of claims on bank deposits (Committee on Payment and Settlement Systems 2005a: 8). In fact, it is through domestic payment and settlement systems that the great majority of economic transactions are finalized, in all kinds of (factor, product or financial) markets existing in any national economy where bank deposits are used to discharge any form of debt obligations between any types of non-bank agents (namely firms, households and the state, on which we will come back later). To be sure, a bank note is nothing other than the material representation of a deposit in the central bank. As pointed out in Chapter 1, the note testifies that the bearer owns an anonymous deposit at the central bank (Innes 1913: 407). Hence, any monetary aggregate (M0, M1, M2, M3 and so on) consists of bank deposits only – in the form of either central bank money or commercial bank money, which, in the payment and settlement system of a country or currency area, are homogeneous and absolutely substitutable forms, as we shall explain below.

According to the Committee on Payment and Settlement Systems (2003a) glossary, a payment system is a set of instruments, banking procedures, as well as interbank funds transfer systems that ensure the circulation of bank deposits, while a settlement system is a system used to facilitate the settlement of transfers

of funds or financial instruments such as bonds, equities and derivatives. In fact, a developed market economy typically has a series of payment and settlement systems, including wholesale (large-value) and retail (small-value) payment systems as well as securities settlement systems. Payment and settlement systems are thus notably one of the principal components of a country's monetary and financial system, and are thereby crucial to a country's economic growth and development. 'Payment and settlement systems are a crucial part of the financial infrastructure of a country and it is essential that they function safely and efficiently' (Committee on Payment and Settlement Systems 2005a: 2).

Now, in order for domestic payment systems to settle any debt obligations finally, all participating banks as well as non-bank financial institutions need to have a settlement account at the settlement institution, which is the institution, usually the national central bank, across whose books transfers between participants take place in order to achieve settlement within a settlement system (Committee on Payment and Settlement Systems 2003a: 45). Indeed, none can finally pay by surrendering one's own acknowledgement of debt, which is merely a promise to pay and, as such, cannot elicit a final payment, as we observed in the previous chapters. Note, however, that the settlement institution in domestic payment systems, which provides participants in any of these systems with the means of final payment, may differ from the settlement agent, which is the agent that manages the settlement process (for instance, through monitoring the exchange of payment orders as well as determining all settlement positions) for transfer systems or other arrangements that require settlement at any point in time, at least once per settlement day (Committee on Payment and Settlement Systems 2003a: 45).

> The settlement institution is in the unique position of being able to create a centralised source of settlement funds to the participants of the system. This source is called centralised because the settlement institution is the only counterparty that can influence the total amount of settlement assets that participants hold (apart from transfers of funds between systems . . .). If the settlement institution is a central bank, the funds are deposits in central bank money.
>
> (Committee on Payment and Settlement Systems 2005b: 15)

As a matter of fact, as the Committee on Payment and Settlement Systems (2005b: 1) observes, '[t]he transfer of central bank money is what determines finality in the vast majority of LVPS [large-value payment systems]', which are systematically important payment systems, as disruption within them could trigger or transmit further disruption among participants or systemic disruption in the financial area more widely. Notably, as bank practitioners and international best practices indicate, 'banks do not accept bank money in interbank transactions, but ultimately require their claims to be settled in central bank money' (Deutsche Bundesbank 1994: 46). Payment systems literature explains the requirement of central bank money for the final settlement of interbank debt–credit relationships by focusing on the need to control settlement as well as

systemic risks that would exist and spread if the relevant obligations were not finally paid through central bank money (see e.g. Committee on Payment and Settlement Systems 2005a). In short, using central bank money to settle interbank debt maintains stability in and promotes efficiency of the financial system, which in turn enhances the allocation of resources, supports economic growth and improves social welfare (Committee on Payment and Settlement Systems 2003b: 8). As Graziani (2003: 63) points out in this connection, a monetary economy needs a central bank to prevent an unlimited expansion of credit by private banks, which could give rise to an inflationary increase in total demand for produced output if banks moved forward 'in step' and until bank credit were actually reimbursed, as has been explained and elaborated upon in the previous chapter. 'Payment and settlement systems thus play a crucial role in a market economy and central banks have always had a close interest in them as part of their responsibilities for monetary and financial stability' (Committee on Payment and Settlement Systems 2005a: 1).

As the European Central Bank (2005: 117) points out in this respect, 'financial stability is an important social objective – a public good – even if it is not widely seen as being on a par with monetary or price stability'. It is most notably in crisis situations that the finality of payments through a central bank is thought to have special benefits for the national payment system and thereby for the economy as a whole (Pagès and Humphrey 2005: 7). Payment finality is indeed the assurance that even in times of financial system uncertainty, turmoil or crisis, the transaction being undertaken will, at some point in time, be complete and not subject to reversal even if the parties to the transaction fail or go bankrupt (ibid.: 6). Indeed, '[w]ell designed and managed [payment and settlement] systems help to maintain financial stability by preventing or containing financial crises and help to reduce the cost and uncertainty of settlement, which could otherwise act as an impediment to economic activity' (Committee on Payment and Settlement Systems 2005a: 1). This means that, for monetary authorities, 'the payments system, rather than reserve requirements, is the proper starting point for analysis' (Fullwiler 2003: 852–3). Indeed, although payment system structures and the functions that central banks play in them may differ across countries (see Committee on Payment and Settlement Systems 2005b), many recent reports from the Committee on Payment and Settlement Systems, the International Monetary Fund, as well as the World Bank observe that 'the primary objective of all central banks is to ensure the smooth functioning of their countries payment systems' (Fullwiler 2003: 867). In particular, from a monetary policy point of view,

> [i]t is important that safe and efficient payment and settlement systems are available to allow a reliable transfer of funds and securities between the central bank, its counterparties and the other participants in the financial system so that the effect of these transactions and thus the impact of monetary policy is spread throughout the economy.
>
> (Committee on Payment and Settlement Systems 2005a: 9)

Now, payment systems analysis can be strengthened on an analytical ground in light of Chapter 2, on account of the fact that each participating bank issues its own means of payment in the form of an asset–liability (recall the stylized examples in the previous chapter). The 'singleness' of money in any national economy, in fact, is provided by the central bank, which homogenizes the various means of payment issued by private banks by issuing its own means of payment (that is to say, central bank money in the form of an asset–liability that is recorded in the central bank's ledger), which is notably used as a vehicle to finally settle debts at interbank level. Let us expand on this.

The monetary macroeconomics of interbank payments

The characteristics and workings of the national payment system

Let us follow the Committee on Payment and Settlement Systems (2006a) definition of a national payment system, which is broader in conception than the infrastructure for a particular payment system. Hence, in this book, a national payment system 'includes a country's entire matrix of institutional and infrastructure arrangements and processes for initiating and transferring monetary claims in the form of commercial bank and central bank liabilities' (Committee on Payment and Settlement Systems 2006a: 2). Even though cash remains an important form of payment in all systems, we shall focus on non-cash payments, involving commercial bank and central bank deposits, as is usual practice in the most recent payment systems literature. Such payments typically involve a complex process of funds transfers from the deposit (or credit) account of the payer at one bank or non-bank financial institution to the account of the payee at another bank or non-bank financial institution. This process requires a series of payment instruments, institutional and processing procedures, and funds transfer mechanisms to complete payments (ibid.: 7). Figure 3.1 represents the national payment system in a stylized form.

Commercial bank money is used by non-bank agents for the settlement of their debt on the factor, product and financial markets, on which these agents transfer claims on bank deposits to finalize their payments. Note, however, that, at the level of non-bank agents, funds 'transfers generally take place within organized "payment systems" where commercial and central bank money often complement each other in more complex chains of payments' (Committee on Payment and Settlement Systems 2003b: 9). As a matter of fact, central bank money in the form of notes and coins may also be used by any non-bank agents: the payer may pay for his or her purchases on any kind of markets by surrendering to the payee a number of bank notes and/or coins worth the amount of the transaction. Both commercial and central bank money are means of final payment for the non-bank sector, which includes firms, households and the general government sector of a given national economy or currency area.

Owing to the overall responsibility of a central bank for the national

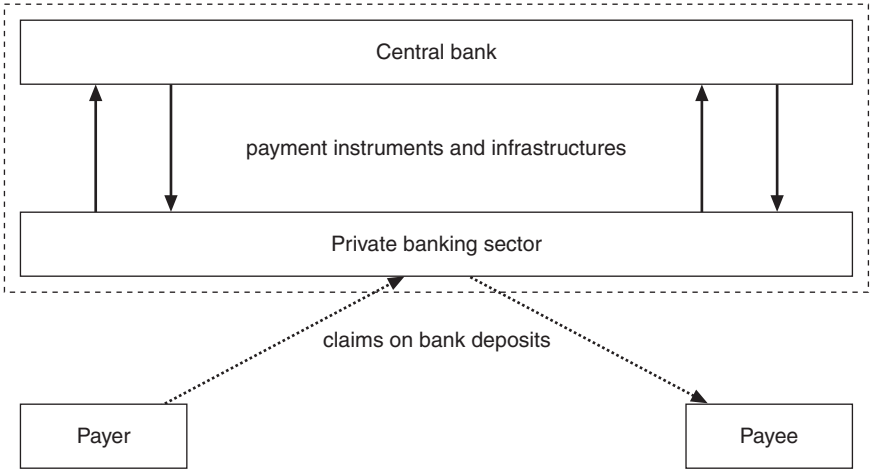

Figure 3.1 The national payment system.

currency, this bank plays a crucial role in the use of money as an effective means of payment in the whole national economy. This point is most notably the first and most important guideline that the Committee on Payment and Settlement Systems recently established in its *General Guidance for National Payment System Development*:

> The specific tasks directly carried out by the central bank in the payment system area vary from country to country. However, the functioning of the national payment system is an essential element of the quality of a currency and is therefore to be regarded as an essential concern by the central bank. This naturally places the central bank at the centre of system development, with a number of possible roles: operator, catalyst, overseer and user.
>
> (Committee on Payment and Settlement Systems 2006a: 3)

Indeed, as operator, that is, as money and credit provider,

> the central bank may provide and develop payment and credit services by: issuing cash as a direct payment instrument and deposit claims as the settlement asset for interbank payments; . . . and managing settlement accounts and providing settlement credit, both intraday and end-of-day, for participants in the payment [and] settlement system.
>
> (ibid.: 13)

Let us expand on the various roles of the central bank in the national payment system in connection with the functions of commercial banks as explored in the previous chapter.

The dual function of a central bank in domestic payment systems

By analogy with the analysis of (commercial) banks and payments in Chapter 2, in this section we consider the dual function (monetary and financial) carried out by the central bank in the national payment system as defined above. Banks, in fact, are at the core of a monetary economy of production and exchange, in the sense that they 'provide payment instruments and services to retail customers [that is to say, non-bank agents] but demand clearing and settlement services from infrastructure service providers [that is to say, the central bank]' (Committee on Payment and Settlement Systems 2006a: 22). Figure 3.2 represents the two-tiered national banking system in stylized form and within a dashed line, indicating that, in order to be a true system (that is, an orderly working set of banks) these banks have to be overseen by the bank of banks, to wit, the central bank, which rests at the top of them and is, in fact, the catalyst of the national banking system, transforming heterogeneous commercial bank monies into undifferentiated elements of a set called national money, as we explain below.

As a matter of presentation, Figure 3.2 shows the different steps of a payment process in sequential order, namely:

- the submission of a payment order by a participant to the national payment system;
- the various, alternative algorithms for testing the irrevocability of the payment order;
- the conditions under which the payment becomes irrevocable and unconditional (that is to say, final);
- the way in which the settlement asset (a claim on central bank deposits) is transferred from the sending to the receiving participant.

As the Committee on Payment and Settlement Systems (2005b: 5) points out, however, 'some elements of the payment process can occur simultaneously. For instance, in most systems finality occurs at the same time as the transfer of the settlement asset.' Indeed, as noted in Chapter 2, finality of payment occurs at the instant when the payee (a bank or a non-bank agent) is credited with a claim on

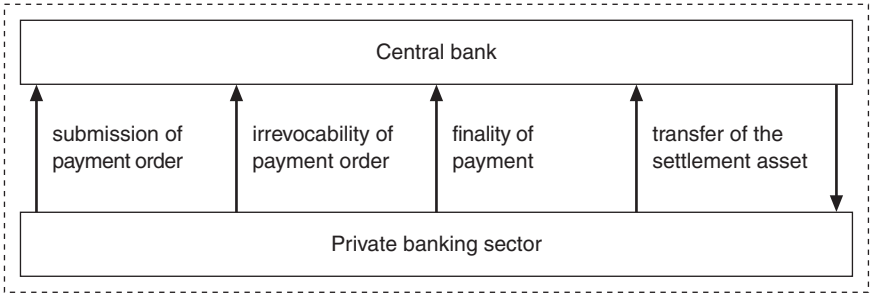

Figure 3.2 The two-tiered banking system of a country or currency area.

a bank deposit, which the payee keeps (although, perhaps, for few seconds only) as a mark of payment finality and that is the financial definition of a purchasing power that the deposit holder may exert at any point in time, on any markets, after the instant when the payee received it (see Chapter 2).

Now, in any modern economy, payment and settlement systems involve a great number of banks dealing with the payment orders of non-bank agents. Indeed, a transaction on any markets involves two agents and probably also two banks, each of the latter issuing its own means of payment in the form of commercial bank money as noted in the previous chapter. As a matter of fact, if both the payer (agent I) and the payee (agent II) hold their accounts with the same bank (say, bank B_1), the accounts concerned can simply be debited and credited by the latter bank, which issues its own means of payment in order for the final settlement between clients I and II to take place (this is called an in-house settlement, on which the previous chapter expanded through several stylized cases). On the contrary, if both parties to the economic transaction are not clients of the same bank, which is a very likely case, then the payment involves two distinct banks (say, B_1 and B_2), each of them issuing its own means of payment and recording the result in the relevant balance sheet as shown in Table 3.1. For expositional ease, we assume here that client I, the payer, owns a claim on a bank deposit (which he received as some past income or which he borrowed, as Chapter 2 explains) for an amount which corresponds to the payment that this client has to make in favour of client II (the payee).

As Table 3.1 shows, the final payment between two non-bank agents, namely I and II, who have their bank accounts at different institutions, gives rise to a debt–credit relation between the paying and the receiving bank; that is, B_1 and B_2 respectively: B_2 obtains a commercial bank deposit at bank B_1 and that represents an acknowledgement of debt for the latter bank. B_1 is therefore indebted to B_2 for an amount of £x as a result of the final payment having occurred between B_1's client I (that is, the payer) and B_2's client II (the payee), who is finally paid by the latter bank.

In an environment of multiple banks, therefore, at any point in time any bank might be indebted to another bank within the banking system, as a result of the great number of incoming and outgoing payments initiated by and addressed to

Table 3.1 The result of a payment between two clients of distinct banks

Bank B_1			
Assets		*Liabilities*	
		Deposit of client I (payer)	−£x
		Deposit of bank B_2	+£x
Bank B_2			
Assets		*Liabilities*	
Deposit with bank B_1	+£x	Deposit of client II (payee)	+£x

non-bank agents, such as households, firms and the state. The banks' inflows and outflows elicited by economic transactions between their clients require therefore that the national payment system be complemented by a settlement institution providing settlement facilities in order for the bilateral debt–credit relations at interbank level to be finally settled without systemic disruption or failure. This is when and where the central bank intervenes as a catalyst for as well as an operator of the interbank payment system, providing both money and credit when so requested. As the Committee on Payment and Settlement Systems puts it:

> While the role of the central bank as settlement institution is a long-standing one, in many cases this role only required the central bank to settle the relatively small net positions of commercial banks resulting from a netting procedure. Moreover, this occurred only once each day, at the end of the day. But with the introduction of newer, safer systems to handle the substantially increased payment system values, and in particular with the widespread adoption of real-time gross settlements (RTGS), where each payment is settled in real time throughout the day, central banks and central bank money have come to take on a much wider and more active role.
>
> (Committee on Payment and Settlement Systems 2003b: 4)

To expand on this point, let us keep it simple and consider thereby a central bank facing two commercial banks that are involved for the settlement of a transaction between their non-bank clients I and II respectively. Suppose, for example, that a payment order of £x has to be settled in a RTGS system, which is the technical form of most, if not all, large-value payment systems existing today (see e.g. Committee on Payment and Settlement Systems 2005b).

While the settlement of debt between a non-bank payer and a non-bank payee is usually done in commercial bank money (particularly for large-value payments), the settlement of debt between banks must be carried out in central bank money, as pointed out above. In fact, as far as interbank settlements are concerned, the central bank (that is to say, the settlement institution) acts as a catalyst, in the sense that it has to create the number (x) of money units needed to ensure that, in our stylized example, B_2 has no further claims against B_1 (Table 3.2).

At a technical level, the simplest case of interbank payment finality obtains when '[t]he paying and receiving banks are both direct participants in the interbank payment system and hold accounts at the settlement institution, and the settlement is effected by a debit from the account of the paying bank and a credit to the account of the receiving bank' (Committee on Payment and Settlement Systems 2003b: 9). This is the case which Table 3.2 represents and that Figure 3.3 illustrates, replicating the stylized examples that we explained in Chapter 2 with respect to a commercial bank's emission of money as the means of final payment between any two non-bank agents trading on either the factor, product or financial markets.

As pointed out in the previous chapter with regard to commercial bank money

Table 3.2 Central bank money as the means of final payment at interbank level

		Bank B_1	
Assets		*Liabilities*	
Deposit with central bank	−£x	Deposit of bank B_2	−£x
		Central bank	
Assets		*Liabilities*	
		Deposit of bank B_1	−£x
		Deposit of bank B_2	+£x
		Bank B_2	
Assets		*Liabilities*	
Deposit with bank B_1	−£x		
Deposit with central bank	+£x		

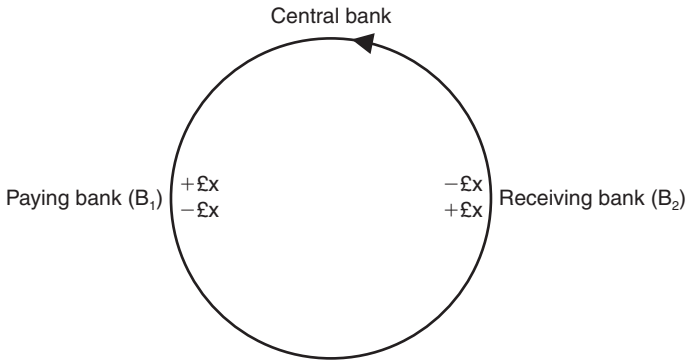

Figure 3.3 The emission of central bank money on the interbank market.

and bank deposits, here we observe the distinction between central bank money and central bank deposits, which amounts to distinguishing a flow (see Figure 3.3) from the result of this flow (that is, a stock variation), which in the present case is statistically captured by the monetary aggregate M0 (see Table 3.2).

In fact, more complex payment arrangements involve different tiers within and between which payments are made (see Committee on Payment and Settlement Systems 2003b: 10–11). Increasing technical complexity, however, would change neither our analytical framework nor our theoretical conclusions, and we will thus keep it simple here. In this case, we observe in Figure 3.3 that a number of units of central bank money are created on bank B_1's demand – note in passing the endogenous nature of central bank money – which uses them to settle its debt to bank B_2. As a mark of payment finality, bank B_2 acquires a central bank deposit at the settlement institution, which the latter institution enters on the liabilities side of its balance sheet (see Table 3.2, which depicts the

result of the flows illustrated in Figure 3.3 with regard to central bank money). As a result of the payment in central bank money, B_1 is debited by the central bank – for an amount of central bank money equal to £x – and B_2 is credited with an equivalent deposit at the central bank. So far, the payment between B_1 and B_2 has been finalized by an emission of central bank money. Indeed, the creditor bank, B_2, has no further claims on the debtor bank, B_1. The debt–credit relationship is now defined with respect to the central bank, as Table 3.2 shows.

This analysis can now be developed further if we distinguish the money-purveying and the credit-purveying functions carried out by the settlement institution on the interbank market in light of the previous two chapters. Money and credit are indeed two separate things, at both commercial bank and central bank level. With respect to Figure 3.3, as a matter of fact, '[t]he payment [from the paying to the receiving bank] may either be financed with funds already on the account of the paying bank, or with credit provided by the settlement institution' (Committee on Payment and Settlement Systems 2003b: 9–10). In the first case, an emission of central bank money as depicted in Figure 3.3 may be observed, with the result depicted in Table 3.2, and the above analysis holds. In the second case, by contrast, analysis is more complex since both central bank money and credit are involved.

In the latter case, which very often occurs through either intra-day or end-of-day credit, settlement of interbank debt elicits in fact two distinct emissions of central bank money. The first emission concerns the payment on the interbank market, where the debt–credit relationship between banks B_1 and B_2 is settled using central bank money. The second emission of central bank money concerns, by contrast, payment in central bank money of a financial transaction on the credit market that is induced by the first emission. In order to explain this induction with respect to the national payment system, let us point out that a final settlement is 'the discharge of an obligation by a transfer of funds and a transfer of securities that have become irrevocable and unconditional' (Committee on Payment and Settlement Systems 2003a: 24). With respect to interbank settlements, this means that securities have to be transferred from the paying bank, B_1, to the receiving bank, B_2, at the same time as the funds in central bank money are transferred from the paying to the receiving bank. In modern banking practices, this principle is known as 'delivery versus payment', which is 'a link between a securities transfer system and a funds transfer system that ensures that delivery occurs if, and only if, payment occurs' (Committee on Payment and Settlement Systems 2003a: 20).

Now, since the emission of central bank money on the credit market is induced by the emission on the interbank market, let us illustrate and analyse them together (Figure 3.4). The first emission of central bank money, represented anticlockwise in Figure 3.4, occurs on the interbank market as a result of the money-purveying role of the central bank within the national payment system: banks need to ask the central bank in order for their own debt obligations to be settled finally. The central bank is their settlement institution, as noted above. The second emission of central bank money, represented clockwise in Figure

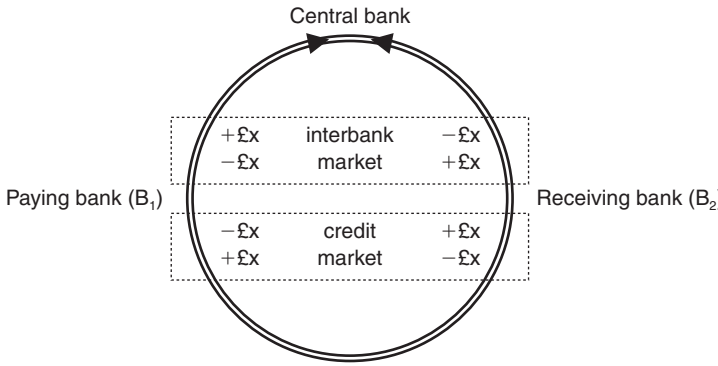

Figure 3.4 The two emissions of central bank money in a delivery versus payment.

3.4, occurs on the credit market when the paying bank, B_1, needs to ask for, and obtains, a credit in order for it to settle its debt to the receiving bank, B_2.

As regards this second emission of central bank money, we can single out two stylized cases. Let us consider them in turn.

The first case occurs when the debtor bank (say B_1) asks for, and obtains, a credit from other banks, which in our stylized example include the creditor bank only, B_2, but that we may also consider as the banking sector as a whole (excluding bank B_1). As a matter of fact, B_2 may grant either an intra-day or an end-of-day (overnight) credit of £x to bank B_1 in order for the latter bank to settle the interbank transaction elicited by the payment occurring between non-bank agents I and II (see Table 3.1). In fact,

> in a credit transfer system with end-of-day final settlement, daylight credit is tacitly extended by a receiving institution if it accepts and acts on a payment order even though it will not receive final funds until the end of the business day.
>
> (Committee on Payment and Settlement Systems 2003a: 19)

As end-of-day final settlement systems are disappearing and being replaced by real-time (gross) settlement systems, in which payments become final in the course of the day, so that intra-day exposures do not build up, daylight credit is explicit rather than tacit in the case of a bank not having enough settlement balances when the latter are needed. In the case of an explicit interbank credit, the actual credit operation between two banks may be epitomized by a repurchase agreement, which, as a rule, is thoroughly collateralized and therefore implies a transfer of securities from the borrowing to the lending bank, to guarantee credit reimbursement in due time. Now, since any transaction on securities requires payment, and since this transaction occurs between banks, the central bank has to provide the means of final payment in the form of a number of units of central

bank money, which it creates on B_2's demand (which needs it as a vehicle to pay finally those securities that B_1 sells on the credit market). As a result of this payment (shown by the clockwise emission of central bank money in Figure 3.4), bank B_1 obtains a central bank deposit and can thus balance its account at the settlement institution (Table 3.3).

If we draw the balance of payments considering Tables 3.1, 3.2 and 3.3 altogether, we have the situation shown in Table 3.4, and we notice that the central bank has neither a debt nor a credit with any of the participants in the national payment system – as is the case with a catalyst, which is left unaffected by any catalysis it carries out properly. We note in Table 3.4 that, as a result of the intervention of the settlement institution and its emission of central bank money, a purchasing power – in the financial definition of securities – is transferred from the sending to the receiving bank (meaning delivery of financial assets) with the simultaneous debit of the payer (client I of bank B_1) and credit of the payee (client II of bank B_2). Consequently, the interbank payment resulting from the payment order that agent I sent to bank B_1 for the final payment of

Table 3.3 The result of an interbank payment for a transaction on securities

Bank B_1			
Assets		*Liabilities*	
Securities (sold to bank B_2)	−£x		
Deposit with central bank	+£x		
Central bank			
Assets		*Liabilities*	
		Deposit of bank B_2	−£x
		Deposit of bank B_1	+£x
Bank B_2			
Assets		*Liabilities*	
Deposit with central bank	−£x		
Securities (sold by bank B_1)	+£x		

Table 3.4 The result of a bilateral delivery-versus-payment transaction on securities

Bank B_1			
Assets		*Liabilities*	
Securities (sold to bank B_2)	−£x	Deposit of client I (payer)	−£x
Bank B_2			
Assets		*Liabilities*	
Securities (sold by bank B_1)	+£x	Deposit of client II (payee)	+£x

agent II, credited by bank B_2, means that the deposit in bank B_2 owned by client II really has a purchasing power that corresponds to the securities entered on the assets side of the same bank B_2's balance sheet, which are a claim on (present or future) production, as we explained in the previous chapter.

In Table 3.4 we also note that after the emission of central bank money, a bank deposit in B_1 is destroyed for an amount of £x and an identically equivalent bank deposit in B_2 is created, which defines, in fact, an absolute exchange, as the purchasing power of £x ceases to exist in the form of commercial bank money issued by B_1, to take the form of commercial bank money issued by B_2. This kind of absolute exchange makes sure that all money emissions from commercial banks pertaining to the same currency area are in fact homogeneous through their being included into the same monetary set, named after the national currency. By establishing a relationship of absolute exchange between each of the two commercial bank deposits, at B_1 and B_2, and central bank money, the central bank makes these deposits perfectly homogeneous, allowing the banks in which they are recorded to be elements of a unique monetary system: the national monetary system, in which, as the first case considered above shows, banks can transfer funds and securities through the delivery-versus-payment protocol existing within modern national payment systems. Figure 3.5 illustrates this bilateral credit operation between B_1 and B_2, with the intervention of the central bank as a money provider, as banks definitely need a means of final payment – which they cannot issue themselves, as already noted – in order for them to carry out a delivery-versus-payment of securities (settlement assets).

The second, more complex, case obtains when the debtor bank, B_1, does not find on the interbank market the funds necessary to pay the creditor bank, B_2, finally. This might be ascribed to an already too high leverage ratio of this bank, or to any other reasons linked to its creditworthiness that we do not pursue further, as these reasons are not germane to the point at stake. In fact, this is where and when lender-of-last-resort facilities available at the central bank may be put to practical use. In short, the central bank may grant an intra-day credit, also called daylight overdraft, to a debtor bank that neither has enough funds (that is to say, settlement balances) nor finds them on the interbank market. In this case, the central bank may act as a lender of last resort, and – as the phrase goes –

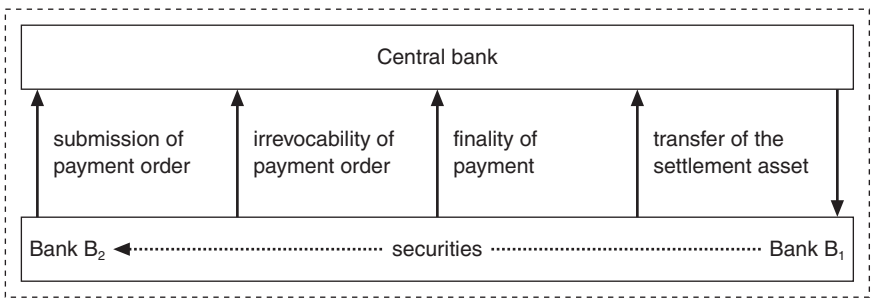

Figure 3.5 A bilateral credit operation between two commercial banks.

may create the necessary credit for the bank that needs it in order to settle its interbank debts. Let us analyse this case more closely to show that, in fact, the credit granted (as a last resort) by the central bank is not at all created by the central bank, but actually results from its financial intermediation services through which it merely advances the result of an incoming payment that today's illiquid bank (say B_1) will obtain (in the next working day or very shortly thereafter) from any other bank participating in the national payment system.

The central bank's financial intermediation between banks B_1 and B_2 may be explained as a multilateral transaction on securities, although, from a legal perspective, it amounts to two bilateral transactions, in both of which the central bank acts as a counterparty of a commercial bank, either B_1 or B_2 (Figure 3.6).

If bank B_2 decides to spend its central bank deposit, which usually bears no interest, for purchasing interest-bearing financial assets different from those sold by B_1, the resulting financial transaction may be stylized as in Figure 3.6 (where B_1 may also be considered as the banking system as a whole, which faces B_2). Indeed, if, as in Figure 3.5, bank B_2 buys those securities sold by B_1 directly, the financial transaction is bilateral, because it implies a seller (B_1) and a purchaser (B_2) of the same securities. If, on the contrary, the securities sold by bank B_1 are purchased by the central bank – for instance, through a repurchase agreement – as shown in Figure 3.6, the financial transaction is multilateral, insofar as (say) a reverse repo between the central bank and bank B_2 brings to the latter bank other assets than those sold by bank B_1 to the central bank (Table 3.5).

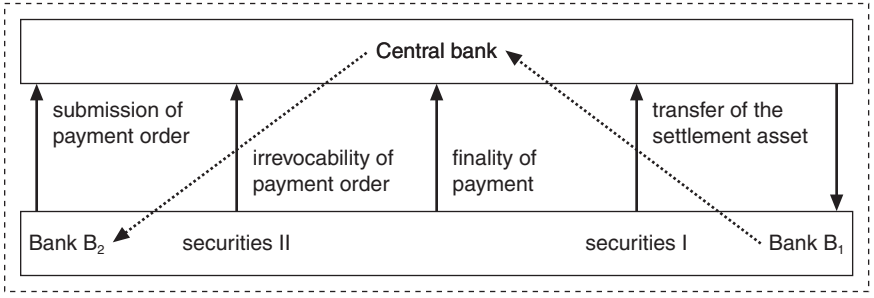

Figure 3.6 A multilateral credit operation between two commercial banks.

Table 3.5 The result of a multilateral delivery-versus-payment transaction on securities

		Bank B_1	
Assets		*Liabilities*	
Securities (sold to central bank)	−£x	Deposit of client I (payer)	−£x
		Bank B_2	
Assets		*Liabilities*	
Securities (sold by central bank)	+£x	Deposit of client II (payee)	+£x

As in the first case, shown in Table 3.4, the central bank acts as a catalyst even in this second, multilateral case, and notably transforms a commercial bank deposit at bank B_1 into a commercial bank deposit at bank B_2. Indeed, after the final payment carried out by the settlement institution, no central bank deposit exists within the national payment system. With respect to the bilateral case, the multilateral case, represented in Table 3.5, shows notably that the explicit intervention of the central bank on the securities market provides, in fact, an institutional guarantee that all participating banks use eligible assets for the smooth functioning of the national payment and settlement system. (Note that in Figures 3.5 and 3.6 the emission of central bank money is implicit in both cases – and as a matter of fact exists in the form illustrated in Figure 3.3 – but it is not drawn explicitly in these figures, because it is not germane to the point discussed at this juncture.)

Independently of the bilateral or multilateral character of the financial transactions on the credit market, the end result of these financial transactions on eligible assets shows that the money-purveying and the credit-purveying functions of the central bank have to be kept separate analytically. In particular, when the settlement institution issues a sum of central bank money in order for the final payment between two banks to be carried out, it does not necessarily enter into a credit operation with any of these banks. Indeed, it is only when one of the latter banks does not find on the interbank market the funds it needs to clear its position towards the banking system as a whole, that the central bank may intervene by granting a credit (say, in the form of a repurchase agreement) to it, in order to reduce settlement and systemic risks and hence not to jeopardize the working of the national payment system, the *conditio sine qua non* for production and exchange. In fact, even in this lender-of-last-resort case, the securities that B_1 sells to the central bank are paid for with a central bank deposit owned by B_2, which lends this amount to bank B_1 through the central bank acting as a financial intermediary (see Figure 3.6). Thus, in any national economy the emission of central bank money gives rise to financial (that is to say, real rather than nominal) flows as shown in Figure 3.7, where the monetary (that is, numerical) flows are notably implicit and look like those represented in Figure 3.4.

This analysis then leads us to conclude that the so-called lender-of-last-resort

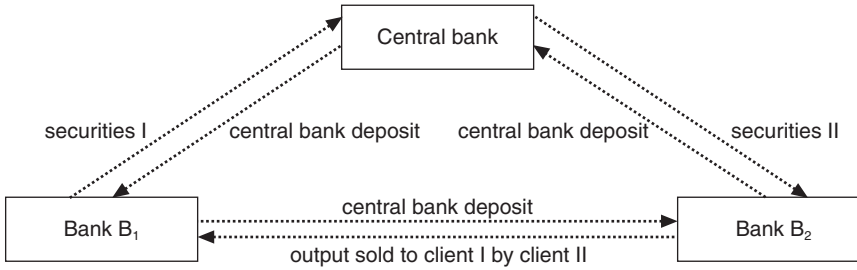

Figure 3.7 The items exchanged through a central bank's money emissions.

facilities provided by a central bank are, in fact, a twofold endogenous phenomenon involving a money creation as well as a credit operation between the central bank and the banks that participate in the national payment system. Still more precisely, these facilities involve an emission of central bank money to ensure payment finality at the interbank level, and also imply collateralized credit operations to ensure the smooth working of the domestic payment system, in which, as we will see below, the state is an important non-bank agent.

The monetary macroeconomics of state payments

Some conceptual shortcomings in the state theory of money

As discussed in Chapter 1, when investigating the essence of money, there is today a revival of chartalism, to wit, a monetary theory that explains the nature as well as the purchasing power of money by relating them to the power of the state to impose various forms of tax liabilities on the public. This is the taxes-drive-money view, which Wray (2003: 89) labels the sovereignty approach to money, 'because it links the state's ability to issue a currency denominated in the unit of account it has chosen . . . to a fundamental power that is directly associated with sovereign nations'. Indeed, as we noted in the first chapter, (neo)chartalists explain that money is a creature of the state, as the latter is entitled by law 'to declare what thing should answer as money to the current money of account' (Keynes 1930/1971: 4). In light of this principle, its advocates argue that government fiat money is a liability of the state, which the latter agrees to accept at state pay offices and that therefore circulates widely in the country (see Wray 2003: 89–90). This approach is therefore the modern equivalent of the state theory of money that had been put forward by several chartalists in the history of monetary thought (starting with Knapp 1924, but see also Smith 1776/1976). In fact, proponents of the state theory of money assimilate state money with central bank money. In their view, a 'government keeps two sets of books, the Treasury's book and the central bank's book' (Wray 1998: 79; see also Bell 2000), which Wray (2003: 92) regards as 'husband and wife within the household' – thereby indicating that one should consider them as a whole for monetary analysis. These authors consider the central bank as the treasury's bank, so much so that in their view central bank money is state money, in the sense that the central bank issues it on behalf of the treasury. According notably to a leading advocate of the state theory of money, who refers to the case of the United States to illustrate the principle on which this theory builds:

> it is not important to distinguish between the Fed's and the Treasury's balance sheet. The bank reserves carried on books as the bank's asset and as the Fed's liability are nothing less than a claim on government fiat money – at any time, the bank can convert these to coins or paper notes, or use them in payments to the state.
>
> (Wray 1998: 78–9)

In fact, as Gnos and Rochon (2002) argue, it is necessary to distinguish the function of the central bank from the role of the treasury. If the central bank acts as the treasury's bank, this is only because the central bank can transform fiat money (state debt issued by the treasury, according to the state theory of money) into bank money and vice versa, every time a transaction occurs between the state and some member agent of the private sector economy. Indeed, central bank money is not a state's debt, but the means of final payment for both interbank and government transactions. It is therefore wrong to follow the proponents of the state theory of money, who 'consolidate the central bank and the treasury, calling the conglomerate "the state", and combine treasury and central bank liabilities into a "high-powered money" or "fiat money"' (Wray 2003: 91). As Gnos and Rochon (2002: 48) point out in this regard, '[t]he fact that state expenses and revenues each affect the amount of central bank money in the hands of commercial banks is not a sufficient reason to identify them [that is to say, state money and central bank money] with each other'. Let us elaborate on this point with a stylized example along the lines that we have been developing so far and that we will develop further in the following section.

Let us suppose that a country's central government decides to increase public spending by an amount equal to £x. When the relevant payment of £x is made, the government uses its account at the central bank to pay for the real goods, assets and/or (labour) services it decided to buy for an amount of £x. In this situation, the government may either send a payment order for £x to the central bank, asking this bank to credit the payee's account – which is probably at a private bank, say B_1 – or, alternatively, it may write a cheque on its central bank account for an amount of £x, which the recipient will indeed deposit in a commercial bank's account eventually. In both cases, there is a funds transfer between the government's account at the central bank and the payee's account (say, in the name of client I) at bank B_1 (Table 3.6).

At the central bank, there is simply a transfer of a deposit claim from the government's account to that of bank B_1; that is, the central bank debits the government's account and credits the account of bank B_1. There is no need to repeat at this juncture that the bookkeeping result entered in Table 3.6 is the mark of payment finality for the transaction between the state (namely the

Table 3.6 The result of a central bank payment on behalf of the government

Central bank			
Assets		*Liabilities*	
		Deposit of government (payer)	−£x
		Deposit of bank B_1	+£x
Bank B_1			
Assets		*Liabilities*	
Deposit with central bank	+£x	Deposit of client I (payee)	+£x

central government) and the private sector agent, I. In addition, the reader is already aware of the fact that, in order for this payment to occur, the central bank issues the number (x) of money units requested by the payer (the government), in a circular flow depicted in Figure 3.8.

Note that, in most cases, the final receiver of a government's payment is not a client of the central bank but has an account at a private, commercial bank, which is the reason why the payment shown in Figure 3.8 implies B_1 as receiving bank, which indeed acts as a go-between for the final payment of its client I (see Table 3.6). In all countries, the central government banks at the central bank as a matter of privilege as well as routine, but not exclusively, as it may also open accounts at any of the commercial banks within the national payment system. (Note in passing that in some countries a few big private sector businesses are also allowed to bank at the central bank.) Now, as the bank of the state (as well as of some big private sector firms), the central bank performs exactly the same functions as do commercial banks for any non-bank agents (see Chapter 2). In particular, as bank of the state, the central bank acts as money and credit purveyor for the general government sector, particularly at the central government level. Let us show in the next section the money and credit purveying role of the central bank with respect to the state, also to indicate a way out of the shortcomings of the state theory of money discussed above.

The dual function of a central bank in state payments

In keeping with the analysis of the role of the central bank in the final settlement of any interbank payments carried out in the first section of this chapter, in this section we may consider the dual function (monetary and financial) carried out by the central bank with respect to the payment inflows and outflows concerning the general government sector of a country or currency area. Let us investigate two stylized examples in this respect.

Consider, first, the payment of wages to civil servants, who are public sector

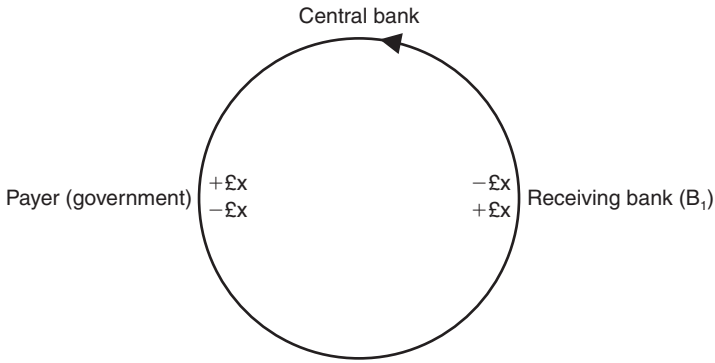

Figure 3.8 The emission of central bank money for a government's payment.

employees and are remunerated for their labour services with an amount of £x periodically (Table 3.7).

By analogy with the payment of wages within the private sector, which we explored in Chapter 2, the remuneration of civil servants occurs through the emission of money as the means of final payment – in the form of both central and commercial bank money – and gives rise to a deposit destruction for the payer (government) and a deposit creation for the payee (wage earners). With respect to the stylized cases investigated in Chapter 2, the payment of wages in the present case occurs through two banks. With respect to the stylized cases of interbank payments on which the previous section expands, in fact, the current example implies two banks that do not have the same institutional standing, namely the central bank and a private bank. As regards both the emission of money and the result of the payment of wage earners, however, all the cases considered thus far are identical in terms of the monetary macroeconomic analysis that we have been carrying out in this book.

The case of a payment to the benefit of the government confirms these findings. In this respect, let us consider the payment of taxes that (even) civil servants have to make in favour of the general government sector, say, the central government. When taxpayers give the relevant payment order to the bank(s) in which their deposits are recorded, the banking system enters the result of this payment – say, for an amount of £y – as shown in Table 3.8 with regard to civil servants.

If $y > x$, the government records, so far, a fiscal surplus in the form of a deposit of £$(y - x)$ at the central bank. This would mean that the government owns a claim on produced output for an amount of £$(y - x)$, which it may decide to exert on the product market, to transform (in financial assets) on the financial market, and/or to redistribute in favour of those agents within the private sector economy who need, say, a social security support. If, by contrast, the opposite occurs ($y < x$), then public finances record a fiscal deficit thus far, which the government may finance by issuing treasury bills that either the private sector economy or the central bank purchases. As the first kind of purchase is identical to the case of a financial market transaction between two private sector agents (that we considered in Chapter 2) insofar as the monetary macroeconomics of

Table 3.7 The result of the payment of wages to civil servants through the central bank

Central bank			
Assets		*Liabilities*	
		Deposit of government (payer)	−£x
		Deposit of bank B_1	+£x
Bank B_1			
Assets		*Liabilities*	
Deposit with central bank	+£x	Deposit of civil servants	+£x

Table 3.8 The result of a tax payment to the benefit of government

Bank B_1			
Assets		*Liabilities*	
Deposit with central bank	−£y	Deposit of civil servants	−£y
Central bank			
Assets		*Liabilities*	
		Deposit of bank B_1	−£y
		Deposit of government (payee)	+£y

the payment is concerned, let us investigate here the second case only. As the central bank acquires the treasury bills, it increases its assets while also increasing the deposit of the government with it (Table 3.9).

If we draw the balance of payments considering Tables 3.7, 3.8 and 3.9 altogether, we notice in Table 3.10 that the central bank bought the treasury bills – actually, granted a credit to the central government – thanks to the funds (a purchasing power) deposited in it by a commercial bank, B_1, which owes the corresponding amount to the civil servants that still have some claims on bank deposits after they have paid their taxes (see Table 3.8).

The book-entry situation shown in Table 3.10 amounts to a financial intermediation that the central bank carries out between government and households, in this particular case civil servants. The income saved by civil servants, once they have been remunerated for their labour services and have paid their taxes, is lent to the government, via the national banking system, in order for it to finance the public deficit that results from government outlays and receipts. In this case, in fact, the central bank acts as any commercial bank does with respect to private

Table 3.9 The result of a central bank's purchase of treasury bills

Central bank			
Assets		*Liabilities*	
Treasury bills	+£(x−y)	Deposit of government	+£(x−y)

Table 3.10 The result of state expenditures and receipts through the central bank

Central bank			
Assets		*Liabilities*	
Treasury bills	£(x−y)	Deposit of bank B_1	£(x−y)
Bank B_1			
Assets		*Liabilities*	
Deposit with central bank	£(x−y)	Deposit of civil servants	£(x−y)

sector agents, as we explained in the previous chapter. In a similar vein, the central bank might also grant a credit to the state that is financed by a future, rather than by a present, income, as this is actually the case when a commercial bank advances to some private sector agents an income that will be produced later (see Chapter 2). In this case, the state obtains an income today, through the central bank's financial intermediation, that it will earn (say, through taxes) in a future period, when it will have to reimburse the central bank and dispose of these fiscal revenues in this way rather than spending them otherwise. As we noted in the previous chapter with a private bank's advance of a future income to some non-bank agent within the private sector, in the case of a central bank's advance to the government, this credit operation may create an inflationary pressure on the prices of produced goods and services on sale, which is in fact compensated for when the government repays its debt to the central bank, so that, on the whole, no central bank advance can be blamed as being inflationary definitively. Note in passing that one may not exclude that the central bank also opens a credit line to some (big) private sector firms, as well as that a private bank grants a credit to a (local) government: these two cases are possible, although it is more likely, as a general rule, that the (central) government banks at the central bank while private sector firms bank at commercial banks – a stylized distinction that we have been proposing so far, notably for expositional ease, but which is not exclusive in theory as well as in practice. Be that as it may, the monetary macroeconomics of payments put to the fore in this chapter is as general and universal as is the nature of money and credit investigated in the previous chapters.

Hence, since the central bank acts as the settlement institution in the national payment system – for both the private and public sectors – state debt needs to be converted into central bank money in order for a final payment to take place between the state and the private sector. This is so even in the case when the treasury sells government bonds to the central bank, as is shown in Table 3.10 (see also Lavoie 2003: 527, Table 21.15).

A final point deserves to be underlined in this section. This refers to the emission of bank notes and coins, which many consider as a state's debt in the tradition of the state theory of money discussed above. According to this theory, the emission of bank notes as well as coins occurs through a purchase of real goods, (labour) services and financial assets by the state. Certainly, this would be a very profitable way of creating currency – as the seigniorage view argues, opposed by Wray (2003) most notably – since the state would obtain any items it wants without really (that is, finally) paying for them. In the view of Dalziel (2001: 29), 'this is one reason why governments reserve the power of currency creation to themselves'.

In fact, bank notes are not a prerogative of the state. As monetary history shows, there were a number of instances where private banks also issued notes (fiat money), which circulated in a more or less wide geographical area for the settlement purposes of the local community. For example, in the Middle Ages, particularly at the beginning of the fourteenth century, many periodical fairs

were being held in Europe, the most famous and largest of them in Champagne (France), to which came traders and bankers from all over Europe. At these fairs, '[e]xchange booths were established and debts and credits were cleared to enormous amounts without the use of a single coin' (Innes 1913: 396). Indeed, all private debt obligations were settled using private bank notes, before the advent and diffusion of clearing-houses, which made the entire settlement process a mere bookkeeping matter. In the case of the United Kingdom, 'it took several banking acts – the 1826, 1833, and 1844 acts being the crucial ones – to limit the ability of banks to issue their own notes' (Rochon and Vernengo 2003: 61–2). In addition, up until 1946 the Bank of England was, in fact, a private institution, although it had important ties with the treasury. Even if today the central bank is part of the general government sector in all countries around the world, this does not mean per se that the latter agent can finance its own expenditures by merely relying on the so-called printing press; that is to say, by merely issuing an acknowledgement of debt and asking the population to accept it as a matter of trust or law. As a matter of fact, central banks have been made more and more independent of governments, which also gave rise to the adoption of no-bail-out clauses (e.g. in the Treaty on the European Union). If the state needs to finance public spending beyond fiscal revenues, which it cannot raise by a higher taxation level or increased tax rates (perhaps owing to electoral reasons), then it may sell government bonds to either the general public or the central bank, two cases that we have already discussed above, showing that neither of them is, in fact, inflationary with respect to total output on sale (which, let us recall, is composed of produced goods and services as well as financial assets, being thus wider in definition than GDP statistics used in national accounts).

Even if today the state has responsibility for currency – bank notes, but especially coins, which, in a number of countries, such as the United Kingdom, are issued by the Treasury – this does not mean that the notes and coins issued add to the total sum of bank deposits existing in the national banking system. In fact, the original form in which a purchasing power exists is that of a book-entry liability in either a central bank or commercial bank ledger. The emissions of bank notes and coins serve merely to allow for the substitution of one (immaterial) form of financial claims for another (material). Let us explore these absolute exchanges in the remainder of this chapter.

Consider first the emission of bank notes, which is the fact of the central bank acting, as adherents to the state theory of money argue, on behalf of the central government of the country or currency area considered. Let us suppose that the holders of £x units of income in a (central or, more probably, commercial) bank want to dispose of their income in small-value transactions for which cash is the preferred form of payment. If so, these agents have either to ask the bank in which their deposit of £x is recorded or to withdraw from its automated teller machines a number of bank notes worth this amount. In both cases, the bank will need to have sufficient cash in its vaults in due time to meet the demand for it as it arises from its customers. Being the central bank's acknowledgement of debt,

bank notes are issued by the central bank in exchange for equivalent claims on deposit banks; that is, banks in which deposits in the name of non-bank agents exist. The result of this exchange is recorded as in Table 3.11.

The notes being now physically in the commercial bank's vaults are neither sold by the central bank nor bought by B_1. In fact, the bank notes are taken in absolute exchange, whereby the central bank transforms the (purely scriptural) acknowledgement of debt of the commercial bank into its own acknowledgement of debt – represented by the bank notes. Bank B_1 owes these notes to the central bank, for an amount of £x, which shows that the emission of bank notes is a blank operation, as it does not affect the total sum of available income in the country or currency area. There is therefore no need to stress that the emission of (central) bank notes is neither a sale nor a purchase by the issuer, as both advocates of the seigniorage view and partisans of the sovereignty (state-theory-of-money) view consider it to be. 'What changes then is not income (which, let us repeat, is never created by banks straightaway), but what is used to represent it or, if one prefers, the type of claim chosen by the income owners to hold their right to make use of it' (Cencini 1995: 37). This fact may be demonstrated easily, considering the withdrawal of cash by a bank deposit holder, say, client I, who asks personally for it either from the bank (B_1)'s cashier or in front of one of the same bank's automated teller machines (Table 3.12).

If we consider the entries in B_1's ledger recorded in Tables 3.11 and 3.12 altogether, we notice that the ownership of a deposit worth £x in this bank is transferred from client I, who withdraws bank notes, to the central bank. Indeed, the central bank is entitled to obtain a claim on this deposit as it delivered the notes to the bank that asked for them in order for the latter bank to be able to meet the demand for cash from its client I, and, in general, from all its clients (firms, households, and even the state when the latter banks at a commercial

Table 3.11 The result of an emission of central bank notes

Central bank			
Assets		*Liabilities*	
Deposit with bank B_1	+£x	Currency on issue (bank notes)	+£x
Bank B_1			
Assets		*Liabilities*	
Cash (bank notes)	+£x	Deposit of central bank	+£x

Table 3.12 The result of a withdrawal of bank notes from a bank deposit account

Bank B_1			
Assets		*Liabilities*	
Cash (bank notes)	−£x	Deposit of client I	−£x

bank). Now, as far as the bank's client is concerned, the withdrawal of cash is an absolute exchange, this non-bank agent transforming an immaterial claim on income (£x) into a paper-based representation of it (bank notes). Further, with respect to the reciprocal indebtedness of bank B_1 and the central bank, depicted in Table 3.11, this shows, once again, the absolute substitutability of commercial and central bank deposits within the national payment system, an absolute exchange we explained and elaborated upon in the previous section.

To conclude this section, let us turn to the emission of coins, which, as noted, in several countries is an activity carried out by the treasury, either directly (when the state has its own coinage) or indirectly (when the state out-sources coinage to a private sector firm, mainly for cost-efficiency reasons that we may ignore here, as these reasons are not an important element to consider when dealing with monetary economics analytically). In issuing coins, the treasury exchanges its own acknowledgement of debt with that of the banking system – which we may consider here as a whole; that is, including the central bank as well as all the private banks pertaining to the same national payment system. As a result, the treasury's and the banking system's ledgers record the double entries shown in Table 3.13, assuming an emission of coins for an amount of £z.

As in the case of the emission of bank notes (by the central bank), we notice here that the emission of coins (by the treasury) amounts to an absolute exchange, both the treasury and the banking system giving and receiving the same thing, which merely changes its form: from material to immaterial for the treasury, and from immaterial to material for the banking system. That this is actually an absolute exchange is confirmed by the withdrawal of coins that non-bank agents, clients of some banks within the national banking system, may carry out either at the central bank (say, when the state needs change for visitors to a state-owned museum) or at a commercial bank (for instance, when shop owners need change for their clients). Table 3.14 records the result of this withdrawal in stylized form.

Table 3.13 The result of an emission of coins by the treasury

Treasury			
Assets		*Liabilities*	
Deposit with banking system	+£z	Currency on issue (coins)	+£z
Banking system			
Assets		*Liabilities*	
Cash (coins)	+£z	Deposit of treasury	+£z

Table 3.14 The result of the withdrawal of coins from the banking system

Banking system			
Assets		*Liabilities*	
Cash (coins)	−£z	Deposits of non-bank agents	−£z

Again, if we consider the balance of payments resulting from Tables 3.13 and 3.14, we notice that the treasury takes the place of non-bank agents as holder of a claim on bank deposits for an amount equal to the coins in circulation within the national economy as a whole (£z). Neither the treasury nor the central bank (or the banking system as a whole) is a net purchaser or a net seller when it issues coins. To put it in a nutshell, emission of coins on the one hand, and purchase of real goods, (labour) services, and/or financial assets on the other hand, are two fundamentally separate actions, which one has to keep distinguished both in theory and in practice.

In this regard, one ought also to note that the treasury does not actually issue currency when it pays an agent for the items that the latter sells to it. In the United States, for instance, the treasury 'pays its creditors from its account with the central bank, and thus uses central bank money' (Gnos and Rochon 2002: 48). It is therefore erroneous to assimilate central bank liabilities to treasury liabilities, as advocates of the state theory of money do, and hence to 'treat both as essentially "high-powered money" or liabilities of the state' (Wray 2003: 87). This induces another critical note: if central bank money is different from the state's liability essentially, then, contrary to the taxes-drive-money view, no private sector agent needs to obtain 'state money' to pay taxes. As a matter of fact, and as Wray (2003: 91) recognizes, 'taxes are almost exclusively paid using bank money', which shows that, in fact, bank money is all-important and has to be carefully considered in any monetary analysis of our production economies, with a state that may impose a series of tax liabilities on the administered population in order for it to finance government expenditure – and not the other way around, as the taxes-drive-money view has it.

4 International settlement systems

Over the past three decades, that is, since the collapse of the Bretton Woods regime in 1973, banks and non-bank financial institutions have been expanding their operations outside their countries of incorporation. As a result, financial markets around the globe have become increasingly entangled, and banking activity has been increasing across country borders, a phenomenon that many, in the economics as well as in the banking profession, have dubbed 'financial globalization'. This process has left banks with the challenge of managing liquidity in multiple currencies and jurisdictions (Committee on Payment and Settlement Systems 2006b: 6). Indeed, over the past thirty-five years or so, banks' foreign businesses have grown and become more complex: 'some banks have established subsidiaries or branches in local markets, whereas others rely primarily on correspondent relationships with local banks' (ibid.: 10). Looking ahead, as the banking sector continues to expand as well as to consolidate across borders, direct participation of foreign banks in a country's payment and settlement systems could become more important, particularly in those groups of countries – such as Latin America and East Asia – where financial liberalization has been carried out very rapidly and without any structurally integrated approach (as well as control) by the general government sector.

> While the foreign share of domestic payment system activity may seem low at this time, it was close to zero just three decades ago, and can reasonably be expected to increase further as the driving forces of globalisation and consolidation continue.
>
> (ibid.: 12)

As the Committee on Payment and Settlement Systems (2006b: 15) points out, 'in the absence of cross-border use of collateral, banks operating in multiple payment systems may face mismatches between the location in which liquidity needs arise and those in which their collateral is held.' This is the reason why a number of generic arrangements exist today across developed economies which involve their central banks in some way or another, namely:

1. the correspondent central banking model (CCBM), in which foreign central banks act as custodians (that is, correspondents) for the national central bank with regard to the assets located in their central securities depositories (CSDs) or their securities settlement systems (SSSs);
2. the guarantee model, in which the correspondent central bank (CCB) guarantees the home central bank on the value of the collateral the CCB received from a local CSD or SSS as a result of a transfer instruction coming from the payer;
3. links between securities settlement systems, whereby the home central bank and its local counterparts use an SSS 'linked' to one or more foreign-located SSSs, so that a participant in one SSS may hold securities in another SSS without participating in the latter system;
4. remote access to a securities settlement system, whereby both the home central bank and its local counterparties directly access a foreign-located SSS in which collateral is available;
5. the collateral management system (CMS), under which the home central bank and its local counterparties rely on a collateral pooling system operated by some foreign central bank or on a collateral service operated by an SSS or a CSD.

Each of these generic arrangements could be applied routinely or in an emergency case only, the latter case being defined as a situation resulting in a large, extraordinary and unexpected liquidity shortage arising on a local, regional or global basis (Committee on Payment and Settlement Systems 2006b).

Today, as a matter of fact, some central banks already accept collateral held beyond the country's borders in the settlement of interbank obligations within the national payment system, as defined in the previous chapter. In Switzerland and in the United Kingdom, for example, foreign collateral represents a significant proportion of total collateral that banks surrender to their national central bank to support those loans that the latter bank grants to them in order finally to settle their debt on the interbank market (see Chapter 3). In the European Monetary Union (EMU), too, banks have been making an extensive use of collateral held across borders, although this is limited, for the time being, to euro-denominated collateral assets issued in the European Union (EU) member countries and held in the euro area. Indeed, by expanding the collateral set,

> cross-border use of collateral can positively influence the availability of liquidity in the payment system, resulting in reduced risk of gridlock and shorter delays in settlement. This in turn can increase payment system safety and efficiency by facilitating the timely settlement of, in particular, time-critical payments.
>
> (Committee on Payment and Settlement Systems 2006b: 15)

Now, payment finality is a particularly relevant issue, both in legal and economic terms, in a cross-border framework where securities are held in book-

entry form across many different jurisdictions. 'The clarity and the certainty of when finality is reached must be ensured' (ibid.: 18). Payment finality, as explained in the previous chapters of this book, is a crucial issue nationally as well as internationally. With respect to cross-border flows the problem in this regard concerns not only economic agents (both banks and non-bank agents, such as financial institutions, non-financial businesses, households and states), but also each country defined as a whole; that is, as the set of its residents (comprising private and public sector agents as well). To be sure, no national currency (even the US dollar) can be a means of final payment internationally; that is to say, between countries pertaining to different currency areas, because – owing to the banking nature of money, as explained in Chapter 1 – it represents an acknowledgement of debt of the country (or currency area) issuing it, and as such it is only a promise to pay for a current or a capital account transaction (that is, foreign trade in terms of real goods, services or securities); it is notably not a means of discharging debt finally.

Clearly, when a key-currency country (say, *A*) pays today an amount of money A to the rest of the world, *R*, for its net imports of real goods, services and/or financial assets, it transfers to *R* a claim on *A*'s deposits into the banking system of the latter country. The international payment being stopped here today, country *A* does not really pay for its net imports, because it surrenders a mere promise to pay in the form of a claim to deposits in country *A*'s banking system, which indeed cannot leave this system. As a matter of fact, the bank deposits labelled in money *A* are the acknowledgement of debt of country *A*'s banking system. As such, they represent a promise to pay that country *A*, considered here as a whole, delivers to *R* in exchange for real goods, services and/or securities that residents in country *A* import from *R*. This promise does not settle the country's debt really, and indeed it is not a final payment for the countries or currency areas concerned as a whole, even though this international problem is not perceived by (nor is it due to) the residents of the countries involved by foreign trade. To be sure, residents finally pay their counterparties – be they located in the same country or abroad – when they use any local or foreign currency that the relevant national legislation allows them to use in final settlement of their transactions. As a matter of fact, being the acknowledgement of debt of a 'non-agent' (as money purveyor, the bank or banking system is neither selling nor purchasing anything, as shown in the previous chapters), any local or foreign currency is a means of final payment for any economic agent; that is, buyers and sellers of real goods, services and/or financial assets. Hence, in our stylized example, the importer of real goods, services and/or financial assets in country *A* finally pays for the imported items when s/he transfers to her/his foreign counterparty an equivalent claim on bank deposits labelled in any currency of choice, provided, of course, that the counterparty agrees on that choice. Country *R* as a whole, however, is not finally paid yet, since any national currency is a promise to pay by the country issuing it, and as such has no final settlement power between nations, which are the agents in the international economy. In fact, this national currency (say, the US dollar) may be used in payment for transactions

between any two countries, but this does not transform it into a means of final payment: the international circulation of claims to a bank deposit in any (key-currency) country is the circulation of a mere promise of payment and, as such, cannot transform the promise of payment into a final payment. A means of final payment is required for that purpose. Indeed, no country in the world would ever accept to be paid eventually with a promise to pay in exchange for produced output (in the form of exported real goods or services) or in exchange for some claims to future production (in the form of financial assets), if this 'non-payment' were spelled out clearly as well as extensively. Let us expand on this problem in the first section of this chapter.

The current architecture for international payments

Today, the *financial* architecture for the settlement of cross-border transactions is quite well developed and refined with respect to the Bretton Woods period (1946–1973), and in particular as regards financial market operations. As a matter of fact, there have been a number of commercial banks' initiatives and undertakings that have led to alliances and mergers among banks and non-bank financial institutions involved in the post-trade processing of securities transactions. As part of these still ongoing developments in the cross-border payment industry, securities clearing and settlement systems, that is to say, central securities depositories (CSDs) and central counterparty clearing-houses (CCCs), are increasingly incorporated into business groups. More precisely:

- CSDs are institutions that hold securities, thus enabling securities transactions to be processed by means of book entries. 'Paper-form securities have become rarities, having been largely replaced by book-entries, that is to say, entries in a special securities account system' (Kauko 2005: 7).
- CCCs are entities that interpose themselves between the counterparties to contracts traded in one or more financial markets, becoming the buyer for every seller of financial assets and the seller for every buyer of securities (Russo *et al.* 2004: 4).

However, even if these recent trends in financial market integration have facilitated increase in cross-border securities trading and have also fuelled growth in cross-border transactions, the market for securities is still fragmented. As Kauko (2005: 7) observes, '[t]here are more than 20 securities settlement systems in the EU area. Most of the centres are national rather than international institutions.' The main problem that has yet to be solved in this respect is not that cross-border settlement is more costly and cumbersome than domestic settlement, as the two reports by the Giovannini Group (2002, 2003) pointed out in the EU. In fact, this is a problem that pertains to the banking industry in each country, and that, in the euro area, is going to be solved by the creation of the Single Euro Payments Area (SEPA) that a number of European private banks proposed in 2002, to make sure that, by 2010, any cross-border payment orders labelled in

euros may be settled as easily, inexpensively and surely as domestic payments within the same countries.

> The target area of the SEPA is to include all EU-25 countries as well as the euro payments of the other European Economic Area countries and Switzerland. There is a consensus, however, that the implementation of the SEPA must be focused primarily on the euro area.
>
> (Deutsche Bundesbank 2005: 33)

The so-called roadmap for the SEPA stipulates that, for 2008, euro-area banks will offer new pan-European payment instruments that will be available alongside current national instruments and which may be used for both cross-border and domestic settlements with respect to retail (that is, small-value) transactions. Now, while the SEPA will complete the implementation of the single market concept in the euro area, the problem remains that across currency areas delivery versus payment with central bank money cannot be arranged through the links that CSDs have established on a multilateral basis in Europe as well as elsewhere (Kauko 2005: 8). The problem is not national, but international: it concerns each country involved as a whole, rather than one or many of its residents (e.g. banks, non-bank financial institutions, or even the general government sector). As such, it has to do with international payment and settlement systems, and the international *monetary* architecture that is needed in order for the delivery-versus-payment protocol to operate across currency areas effectively.

Recall, from the previous chapter, that, '[t]o achieve delivery versus payment (DVP), settlement of the securities leg in the securities settlement system is conditional on settlement of the cash leg, normally in a large-value payment system' (Committee on Payment and Settlement Systems 2006a: 48). Indeed, securities settlement systems and (large-value) payment systems are mutually dependent. Credit extensions in a payment system often depend on the provision of collateral through a securities system, perhaps working with a central counterparty (CCP).

> The CCP typically holds a cash settlement account at the settlement agent – the system's settlement bank, often the central bank. It receives funds from settlement members delivering cash and pays out funds to those delivering securities on settlement day.
>
> (ibid.: 49)

In spite of the links and arrangements existing today between commercial and central banks across borders, the main problem remains in fact that, internationally (that is to say, between two countries pertaining to different currency areas), payment finality has yet to be provided for any country considered as a whole; that is, to repeat, as the set of its residents. This is due to the lack of a truly international settlement institution; hence the lack of a means of final payment between nations belonging to different (that is, heterogeneous) monetary spaces.

Indeed, the Bank for International Settlements (BIS) – which is the oldest international financial institution that exists in the world, as it was created as early as 1930, notably already under the international gold standard regime – has never been an international settlement institution. As a matter of fact, the BIS has never secured payment finality between its member countries defined as the set of their residents: it has been keeping a large ledger in which it records all debts and credits that the member countries' central banks have one with respect to another. These positions are denominated in an abstract unit of account (as from April 2003 the Special Drawing Right designed by the International Monetary Fund, see below), but settled using either gold or, for the largest part, national currencies (see Toniolo (2005) for an account of the institutional working of the BIS during its 75 years of existence so far).

The lack of an international settlement institution

As the analysis of domestic payment and settlement systems shows (see Chapter 3), any economic transaction within a country's border is finally paid through the local banking system acting as a catalyst. Each domestic payment implies an emission of a number of money units through the double-entry bookkeeping of one or many banks. There is no instance in the whole world in which even a single bank discards or disregards this way of carrying out payments in the name of its clients (residents in some country), a rule which Keynes (1980: 44) referred to as 'the essential principle of banking' in his work on international monetary reform back in the 1940s. Indeed, it is well known nowadays that Keynes advocated the generalization of 'the essential principle of banking' to the payments carried out between countries, each of them defined as the set of its residents. On this crucial point, both the Bretton Woods monetary regime and the post-Bretton Woods 'non-system' for international payments dismally failed to deliver. In the current monetary architecture for international payments elicited by this 'non-system', countries fail to be credited by an international settlement institution – as this institution is still non-existent today – whenever they export real goods, services and/or financial assets to a different monetary space. This creates a discrepancy in foreign trade between the income earned in exports and the income spent on imports for each country defined as the set of its residents. In fact, to the extent that a country's imports are paid for by this country's exports, the problem of international payments does not appear, because any imported item is finally paid through an equivalent export of real goods, services and/or financial assets. Hence even in the absence of an international settlement institution, if foreign trade is balanced in the above sense (any trading transaction finding its final counterpart in another trading transaction) there is indeed no visible difference with an international settlement system grounded on 'the essential principle of banking' and that therefore secures payment finality for every economic transaction. Things change when, as is today the case, generally speaking, bilateral foreign transactions give rise to trade imbalances in current and capital accounts. In the stylized example above, country *A* does not pay for

its trade deficit finally. Its trading partner (the rest of the world) is not paid for its current trade surplus eventually, unless it records a trade deficit in some later period for the amount corresponding to its previously recorded trade surplus vis-à-vis the same partner country. Even in this notional case, however, an intertemporal bilateral clearing of country's *A* trade deficit with the same country's trade surplus in fact cannot be assimilated to a final payment. It boils down to barter trade, which, if ever it existed historically, can neither be viable (today even more so than in the past, owing to the value as well as the volume of cross-border trade in the present multilateral framework) nor constitute truly a payment system – that is, an orderly working monetary architecture through which every international transaction on real goods, services or financial assets is finally paid and recorded in a double-entry bookkeeping system of bank accounts – as this occurs domestically everywhere according to 'the essential principle of banking' referred to earlier (see Chapter 3).

This international payment system is urgently needed in today's world characterized by financial liberalization and multi-currency banking across borders. To be sure, these are essential characteristics of modern open economies, be they advanced, emerging or in transition, and their importance has been growing over the past decades in line with the emergence of highly integrated financial markets. Indeed, in spite of this integration, the international infrastructure for the settlement of cross-border transactions on both goods and financial markets is still fragmented, and one may even say cacophonic today. This represents a severe limitation of cross-border transactions, because they lack eventually a structurally sound monetary and institutional framework within which international payments can occur without generating destabilizing effects on exchange rates, interest rates, current and capital accounts, which then affect economic performance negatively. The string of financial crises that occurred in the 1990s illustrates these effects very well around the world (see Rochon and Rossi (2006b) for a recent global analysis).

Indeed, as explained by Rueff (1963: 323–4), any country subjects its bank deposits to a process of duplication insofar as it pays its (net) imports of real goods, services and/or securities from the rest of the world using its local currency. In the current, post-Bretton Woods regime for international payments, as noted above, country *A* transfers to *R* a mere claim on *A*'s deposits into its banking system when it pays for its (net) commercial or financial imports from *R*. The deposits themselves remain recorded with *A*'s banking system, into which they were formed as a result of the working of the national monetary economy of production. The same bank deposits, however, are recorded, as a duplicate, in the banking system of the rest of the world, *R*, which in the above stylized example is a net exporter and, as such, is paid with an amount of money A that it enters, as official foreign exchange reserves, on the assets side of its banking system's balance sheet. As such, these claims (notably, a financial capital) circulate erratically on foreign exchange markets around the world, subjecting exchange rates to erratic fluctuations that hamper the development of our production economies, be they advanced, emerging, developing or in transition.

In other words, the working of the current 'non-system' of international payments transforms national currencies from means of payment into objects of trade. Their exchange rates vary notably daily, according to their sales and purchases on the foreign exchange market, and in this market speculation arises with a view to making capital gains from these variations. As a matter of fact, this kind of speculation is today the main cause of exchange rate fluctuations, which, in turn, are the main incentive to speculate on foreign exchange transactions. In the current framework, therefore, interest rates policy is a cause as well as a consequence of the observed volatility on the foreign exchange market, which in turn affects both the current and the capital account – whose instability impinges on economic performance detrimentally and is against the country's own interests, as a perusal of Rochon and Rossi (2006b) shows clearly.

To be sure, the Continuous Linked Settlement (CLS) system operated by the New York-based CLS Bank as from September 2002 represents a tentative answer that the private banking sector has been elaborating with regard to integrated financial markets and the changed structure of a country's balance of payments, in which capital account entries are now prominent with respect to current account transactions. The CLS system allows today the settlement of foreign exchange transactions in a number of national currencies between participating commercial banks located all over the world. In this privately run system, various central banks provide accounts, and some also offer settlement services, for participating private banks. What is still lacking, however, is a settlement institution for central banks themselves, which would notably homogenize all national currencies involved by the emission of an international (central bank) money that would guarantee payment finality for the countries defined as the set of their residents, as we shall see in the second section of this chapter.

In fact, '[t]he function of CLS [Bank] in the settlement process is strictly limited to that of a settlement agent' (European Central Bank 2003: 55). As pointed out in the previous chapter with respect to domestic payment and settlement systems, this is tantamount to saying that the CLS Bank does not issue the means of final payment (across borders) – as does a settlement institution – but merely manages the CLS-based settlement process; that is to say, it monitors the exchange of payment orders and determines all settlement positions. As a matter of fact, these positions are settled on a payment-versus-payment (PVP) basis in the books of the CLS Bank, which runs a multi-currency system linked to the national central banks of the currencies concerned. Each bank participating in the CLS system has an account in each eligible currency in the books of CLS Bank, which it uses in order for it to settle all foreign exchange transactions through a PVP protocol, but calculating only one net position per currency to reduce the volume of settlement transactions. (For example, if a CLS participant sells 100 US dollars against euros and buys 100 US dollars against pounds sterling during the same settlement day, its position in US dollars is squared and it does not have to make any US dollar payments at the end of the day.)

> Participants in the CLS system make their funding payments to CLS [Bank] through the RTGS systems in their respective currency areas to ensure that such funds are transferred with immediate finality. For this purpose CLS Bank has opened accounts with the respective central banks.
>
> (European Central Bank 2003: 55–6)

In the end, the settlement asset that is transferred through the CLS system is a claim to a central bank deposit in one of the central banks involved. As a matter of fact, the CLS Bank so far 'is not allowed to extend credit to its settlement members' (ibid.: 58). It is indeed not a central bank, but a private bank overseen by the Federal Reserve System, as the CLS Bank is located in the United States. All settlement members of this system 'fund their CLS [Bank] accounts and receive amounts owed to them from CLS [Bank] via RTGS accounts with the respective central banks' (ibid.: 56). This shows that the CLS system is, in fact, a cross-border, and not an international, system, in the precise sense that the settlement services it offers today concern residents (such as banks and non-bank financial institutions) and not the countries themselves. In other words, the missing element in order to transform the CLS system from a resident-oriented into a country-oriented multi-currency settlement system is the current lack of any money emissions from this system's settlement agent. These emissions could transform the CLS Bank from a settlement agent (for the countries' residents) into a fully fledged settlement institution for any country considered as a whole. In order for this to occur, the settlement agent for cross-border transactions has to make sure that it issues its own means of final payment in every transaction it settles internationally – that is to say, between currency areas – which, let us stress, has not been the case to date.

The lack of international money emissions

As early as 1963, that is, under the dollar standard regime decided at Bretton Woods in 1944, a handful of economists were already pointing to the main problem of that regime for international payments, which was to remain the same under the multiple-currency standard that replaced the dollar standard in 1973: 'The supply of reserve currencies to other nations depends on *payment* deficits incurred by the reserve countries' (Machlup 1963: 256; emphasis added). Indeed, a reserve-currency country, such as country *A* in the above stylized example, does not finally pay the rest of the world, *R*, for the goods, services or assets that it imports from *R* more than it exports to it. To put it differently, in the words of Rueff (1963) and Triffin (1963), the lack of an international means of final payment implies that countries use national currencies as objects of trade; that is, as international reserves, whose image a net importing country transfers as a duplicate to its financial or commercial partner country in exchange for an equivalent amount of imported real goods, services or assets (for a recent analytical elaboration on Rueff's and Triffin's views, see Endres 2005: Chs 6 and 8).

Now, in a period of growing cross-border transactions as well as exchange rate pressure before the breakup of the Bretton Woods regime in 1973, many member countries of the International Monetary Fund (IMF) feared that the amount of international reserves was not growing enough to meet their increasing liquidity needs. They considered this a threat to both domestic growth and international financial stability, and decided to create Special Drawing Rights (SDRs) at their Rio de Janeiro annual meeting (1967), a decision put into force in 1969. According to the official definition, SDRs are 'entries in the IMF ledgers that allow deficit countries to settle part of their payments imbalances with allotments of SDRs' (Meier 1982: 90). In practice, an IMF member country may use SDRs in order for it to withdraw from its Special Drawing Account at the IMF an equivalent amount of some specified convertible currency at a given exchange rate, the currency provider receiving SDRs in exchange. This shows that, in fact, SDRs are just a conduit to obtaining a number of national currencies like the US dollar and the pound sterling, with which any given country pays its foreign trade deficit eventually – but not finally, as we know. As such, SDRs are special credit lines rather than money, provided multilaterally under the aegis of the IMF. More precisely, SDRs were a new form of financial assistance to deficit countries, which obtain a special right to withdraw a specified amount of some national currencies, which they surrender in payment of the commercial or financial deficit they have with the rest of the world. 'The SDR was an international reserve asset rather than money' (Endres 2005: 181–2). Indeed, to date, the IMF has not been *issuing* SDRs – an emission which in fact would amount to providing a means of final payment for international trade on commercial and financial markets as well – but just *allocating* them as a given percentage of an IMF member country's quota (see Cumby (1983) for an account of the SDRs allocation process). In short, the IMF is today merely an international *financial* intermediary, and not an international *monetary* institution that issues its own means of payment for the final settlement of international trade on both commercial and financial markets. As a matter of fact, the IMF does not 'monetize' any of the operations it carries out on its member countries' demand, be they denominated in either national currencies or SDRs. Generally speaking, therefore, all international payments involve national currencies as objects of trade in the current regime, which subjects their exchange rates to a structural disorder as they are taken into a set of relative, not absolute, exchanges, contrary to the absolute exchanges that occur all over the world domestically. This then gives rise to erratic fluctuations on the foreign exchange market, as any traded currency can be – contrary to its true nature of numerical instrument of payment – the object of either a net supply or a net demand on this market, which provokes exchange rates volatility as we may easily know by direct, personal observation.

The solution to the problem of exchange rates volatility is naturally not to replace national currencies with a world currency, as this amounts to curing a patient's disease by killing the patient in order to get rid of the disease. This is the alleged 'solution' that has been implemented in the euro area after long discussions and several plans, which have taken decades to reach the stage of abol-

ishing a number of national currencies in the EU and substituting them with a single European currency, the euro. As a matter of fact, this is a 'solution' that gets rid of exchange rates volatility by abolishing the object of trade on foreign exchange markets. Indeed, the natural solution (to wit, the solution in line with money's nature) is to abolish the international regime that 'denaturalizes' national currencies by considering them as objects of trade between countries, replacing this regime with a fully fledged system for international payment finality secured by an international settlement institution that respects 'the essential principle of banking' as is pointed out above, without abolishing national currencies and the monetary sovereignty of those countries that issue them.

The replacement of national currencies with a single currency such as the euro leads to the creation of a new monetary space, the euro area, which, from a monetary point of view, may be considered as a single country, as it is a single currency area and has therefore a unified payment and settlement system. This amounts to saying that all payments within the euro area, even if across geopolitical borders, are indeed domestic, not international payments. Certainly, the euro is a national and not really an international currency, as it is used by residents in any euro-area countries to pay for their transactions finally: both private and public sector agents (firms, households, states) indeed use the euro on factor, product as well as financial markets existing within the whole single currency area, and sometimes even beyond this area, hence competing with the US dollar as an international reserve asset (see above). As a famous slogan of the advocates of a single European currency has it, 'the euro is the currency for all residents in Europe' and not the currency for the countries of Europe.

Adhesion to a single currency area such as the EMU means also that countries adhere to a monetary space within which capital can move freely, as it can indeed within any local monetary system where a local currency is in place. To be sure, free capital mobility is a feature that naturally exists within each currency area – owing to the book-entry nature of money – but that lacks between any two such areas: no capital can indeed flee from a currency area (usually defined by the geopolitical borders of the nation-state, but not in the case of the euro area), as capital exists in the form of bank deposits. As pointed out above, bank deposits are by their nature recorded in the banking system of the country (or currency area) issuing the money unit in which these deposits are labelled. As such, they cannot leave the banking system in which they are recorded – although, of course, their owner can and may often be a non-resident (that is, a resident in another currency area, be it an individual or an institution such as a bank). Clearly, even if some residents of country *A* manage to hide a fraction of their capital by transferring it to a non-resident bank (say, a private bank in country *R*), which does not pertain to the same currency area of country *A*, this does not affect the total sum of bank deposits available in the currency area of country *A* (although of course this can provoke some fiscal losses to the general government sector of country *A*, which may not be able to tax this capital in the country (*A*) where it has been formed). Table 4.1 illustrates this case, assuming an exchange rate of x units of money A (MA) for y units of money R (MR).

Table 4.1 The result of a payment across two different currency areas

Bank A (resident in country A)			
Assets		*Liabilities*	
		Deposit of client I	−x MA
		Deposit of bank R	+x MA
Bank R (resident in country R)			
Assets		*Liabilities*	
Deposit with bank A	+x MA	Deposit of client I	+y MR

As Table 4.1 shows, the total sum of bank deposits in country *A* is not affected at all by the tax-optimizing behaviour of one or many residents in this country (as client I in the stylized example considered here). The fact remains that the general government sector of country *A* may lose some fiscal revenues from this behaviour, if the tax rates on non-residents' income and wealth are lower than the tax rates that residents (would) have to pay. More important for the analysis carried out in this chapter, Table 4.1 shows that the rest of the world, *R*, records merely the image, as a duplicate, of the bank deposits in the banking system of country *A*. In fact, nothing prevents this duplicate from circulating widely and rapidly on foreign exchange markets, thereby adding to exchange rate volatility and instability, which are two hallmarks of the present international monetary 'non-system'.

Things are radically different when the payment order concerns two banks within the same currency area – as is the case within the national payment system (see Chapter 3). In this case, as the previous chapter has shown in detail, the result of a payment between two banks pertaining to the same monetary space (such as banks B_1 and B_2 in Table 3.1) implies, eventually, that the payer bank transfers to the payee bank, through the central bank acting as their settlement institution, the deposit which is the object of the payment order (see Tables 3.2, 3.3 and 3.4), and not merely the image of this deposit in the form of a duplicate (see Table 4.1). The same pattern exists of course for any payment orders that banks carry out within a multinational currency area such as the EMU, within which the European System of Central Banks (ESCB) makes sure today that, using the Trans-European Automated Real-time Gross-settlement Express Transfer (TARGET) system, overseen by the European Central Bank (ECB), all payment orders – whether intra- or inter-member countries – are finalized effectively. For instance, when a client (I) of an Italian bank transfers an amount of euros from this bank in Italy to a bank in Germany – even if merely a German branch of the same Italian bank – then the bank in Italy (and therefore Italy as a whole) loses the corresponding deposit, which is to be found in the German banking system. This represents, in fact, a widely neglected aspect of monetary union, so much so that its macroeconomic consequences can indeed be relevant for the countries involved, owing particularly to both the value and the volume

of capital flows across the member countries of a wealthy currency area such as the EMU.

Indeed, free capital mobility in a single currency area means that capital moves from the less interesting member countries (with respect to the return on investment) to the more interesting countries in that area. Obviously, both short-term (speculative) investment and long-term (foreign direct) investment are directed into those economies where the yield is highest among the countries of the currency area, a return on investment that is positively correlated with the rate of real growth. If so, then economic divergence may increase among member countries, giving rise to higher rates of unemployment in those member countries – such as the core countries of Euroland at the time of writing – that offer no interesting rate of return on investment compared to some other countries of the same currency area (such as some of the countries at the periphery of Euroland). As these socioeconomic divergences are definitely not the goal of monetary union, abandoning national currencies in order to replace them with a single currency cannot be considered a viable solution to the exchange rates problem pointed out above. In fact, even if monetary union disposes of the issue of international payment finality between all those countries that replace their national currency with a single currency – as these countries pertain to the same currency area and are therefore within the same monetary space, like different regions of the same country – the problem remains the same for all those payments between the single currency area and the rest of the world (recall in this respect the above stylized example concerning countries *A* and *R*, two countries that do not pertain to the same monetary space).

In fact, the origin of the problem of the lack of payment finality at international level is the conception and use of national currencies as means of international payment, as we pointed out, each of them becoming an object of trade and speculation on the foreign exchange market, whose instability is just a sign of the international monetary disorder that exists today as a result of the available exchange rates regimes (from free-float to fixed exchange rates in the form of hard pegs, currency boards or dollarization). In all these regimes, exchange rates are defined as the relative price of a currency with respect to another currency, both of which are exchanged on the foreign exchange market as if they were objects of barter. Clearly, there can be no objective standard of value in such an exchange, as any terms of trade on the foreign exchange market may be considered as the measurement unit of the objects thus exchanged. If so, then exchange rates remain indeterminate as they are defined as relative prices. To give an illustrative example of the indetermination of prices on the foreign exchange market, let us note that the US dollar/euro exchange rate is today the price of one US dollar in terms of euros, but also the opposite, that is to say, the price of one euro in terms of US dollars. Hence when this rate varies, it is impossible to determine whether this is so owing to a depreciation of the US dollar, a depreciation of the euro, or both (to different extents). This problem stems from the lack of a unit of measurement, which, as such, has not to be measured itself, in order to avoid the famous Ricardo problem pointed out in

Chapter 1 – which indeed has no solution in a framework of relative exchanges. As a matter of fact, in the current regime of international 'non-payments', all transactions are relative exchanges between two distinct national currencies, each taking the place of the other in an agent's account. In this context, exchange rates are symptomatic of the disorder caused by the current divergence between conceptual consistency and structure of payments, which leads to and indeed explains their instability (Cencini 2005: 297).

> To avoid the instability inherent in every conception of equilibrium it is necessary to move from a regime in which exchange rates are identified with relative prices to a new regime in which currencies are no longer objects of trade *per se*, and the exchange rate does not define the price of one currency in terms of another.
>
> (ibid.: 323)

Let us explore in the next section this alternative avenue to reforming the international monetary architecture, the purpose of this reform being to guarantee payment finality at international level, for any country or currency area involved as the set of their residents (see above).

Reforming the international monetary architecture

To make sure that every international transaction is finally paid, an international system of payments working under the real-time gross-settlement protocol needs to be created, imitating the RTGS systems that exist today within any advanced economies around the world. Any foreign trade transaction has to be finally settled in national currency within each of the countries concerned and in an international money unit (imu) between them. The payment system to put into practice between currency areas has to make sure that international money will never spill out of the settlement system required for enabling international payment finality. In this respect, analogously to the multilateral settlement system designed by Schumacher in the 1940s, which was in fact an elaborate version of the Keynes plan for international monetary reform (see Keynes 1980), the international monetary architecture to (be) set up must avoid that a bank deposit labelled in any given local currency can give rise to a duplicate in some foreign banking system, whenever an importer disposes of it in payment for commercial or financial imports. In a nutshell, the new monetary system for international payments has to consider that national currencies are means of payment in the relevant monetary space – in conformity with their nature – and not real goods or financial assets that can move across these spaces and thus beyond a country's borders. In practice, the reform of international payments has to lead to the introduction of a monetary structure between countries pertaining to different currency areas, say, between country *A* and country *B*, through which any commercial or financial imports are finally paid in local money by the importer and, symmetrically, any exports are finally paid in local money in the

bank account of the exporter. This requires setting up in every country an institution that acts as a catalyst in any international payments resulting from cross-border transactions on either product or financial markets. This institution may be an external department of the national central bank, or a national clearing authority in the phraseology of Schumacher (1943), the important point being that it averts duplication of those bank deposits that residents transform, through absolute exchanges, into imported real goods, services or financial assets. If this new system is well designed, as we shall see later on, then:

> The importer in country *A* pays for the goods he buys from country *B* by handing over to the Clearing Authority in his own country a sum of *A*-money which is deemed to discharge his debt. The exporter in country *B* receives from the Clearing Authority in his country an equivalent sum of *B*-money which is deemed to satisfy his claim.
>
> (Schumacher 1943: 150)

The international payment machinery required to this end has therefore to work in such a way that within countries all payments are finalized in local currencies, while between currency areas all payments are finalized through the emission of international money as a vehicle of those real goods, services or financial assets that move beyond a monetary space's borders. Let us expand on these requirements to reform the current international monetary (and financial) architecture, transforming it into a fully fledged international settlement system that guarantees monetary homogeneity and exchange rates stability – though not fixity – between currency areas.

The working of an international settlement institution

Among the great architects of international monetary and financial reform, Schumacher was, together with but rather independently of Keynes, one of the first proponents of an international settlement system using bank money instead of a commodity, such as gold, to settle foreign trade, which in his time concerned mainly commercial items, hence the current account balance.

> [In the 1940s, Schumacher] was very much absorbed in ways to prevent future wars and finally concluded that in international economics, it was the countries with surpluses in their balance of trade which were the greatest threat to peace. . . . As a possible solution to this problem he devised a new system whereby surplus countries had to spend what they earned in the long term while financing the debts of the economically weaker countries with their surpluses in the short term.
>
> (Hession 1986: 4)

The aim of this proposal was to create an international monetary system, in order (1) to make sure that all international transactions are finally settled, and

(2) to provide deficit countries with the means to finance their imbalance with respect to surplus countries, as defined by their current account position. Keynes made an important, but at that time discarded and since then largely ignored, contribution to this goal. He notably suggested as the key point of the reform that '[i]nternationally all transactions [have] to be cleared between central banks, operating on their accounts with an International Clearing Bank' (Keynes 1980: 34). This clearly points to two crucial characteristics of the international monetary reform. First, the bank to set up must act as a settlement institution; that is to say, it must imitate the central banks in their capacity of finally paying all interbank debts within the national payment system. Second, it must be an international bank, that is to say, the settlement institution for national central banks themselves. These are two essential requirements that neither the BIS nor the IMF fulfils (the same holds for the CLS Bank, as pointed out in the previous section).

> Keynes observed that the logic of bank money implied the hierarchical structure of banking systems. Within countries inter-bank settlements are daily proceeded in central bank money. . . . Keynes thought that the same logic could be forwarded to international settlements, if a third stage was built in linking national banking systems together.
>
> (Aglietta 2004: 52)

Now, the linking of national banking systems together can actually occur in two very different ways. The first is the avenue chosen by would-be EMU member countries with the creation of a single European currency issued throughout the euro area by TARGET, the ESCB and the ECB. The second, alternative avenue that countries might choose to link national banking systems together has never been tried so far, although this is not a criterion for considering it as impractical, as Machlup (1963: 259) pointed out cogently when he noted that 'bank managers and others with practical experience ought to stop regarding anything that has never been tried as impractical, and the theorists ought not to give up attempts to advance their favorite schemes just because the bankers refuse to listen'. As Rowley and Hamouda observe in this respect with regard to the future of the current international monetary 'non-system':

> The attendant complacency restrains our willingness to accept both novel proposals and the revival of older views, previously rejected for adoption in different situations of the world economy, even though such deviations from fashion might provide important ingredients for solutions to our present difficulties.
>
> (Rowley and Hamouda 1989: 2)

This alternative avenue is the emission of a common, instead of a single, currency for a number of countries in the world (if not for all of them at once). This is the avenue that both Keynes and Schumacher proposed back in the 1940s, and

that, when it has forged ahead, may lead to better results with respect to both the present 'non-system' for international payments and the single currency solution *à la* EMU. It implies that every international transaction on either the goods or the financial markets has to be paid finally, in national currency within the country concerned by it and in international money between trading countries. In this international payment system, to be headed as well as overseen by an international settlement institution, each national currency is changed into itself – in an absolute exchange – through the purely vehicular emission of an international means of final payment, whose nature is that of a numerical unit that is needed to homogenize all national currencies participating in this system. If so, then the system for international payments becomes a system of absolute exchange rates, thus replacing the present 'non-system', which elicits an array of relative exchange rate regimes as noted above. In the new system, all transactions on foreign exchange markets are absolute exchanges, insofar as country *A* recovers its currency, MA, as soon as it surrenders this currency in the payment of a commercial or financial import from the rest of the world, *R*. In this case, as Guttmann (1994: 433) points out, '[b]eing linked to equivalent payments by and to individuals in their respective currencies, [every emission of international money] only transfers existing purchasing power from one country to another.' Let us expand on this crucial point through a stylized example.

Consider two countries, *A* and *R* (which may also represent the rest of the world, facing country *A*), and the fact that country *A* has to pay *R* for those commercial and financial items that its residents imported from *R*. If the international payment between *A* and *R* has to become an absolute exchange – to replace the current relative exchange that does not guarantee international payment finality – then country *A* must recover its currency, MA, as soon as it surrenders it in payment of commercial and financial imports from *R*. This means that country *R* (that is to say, the rest of the world) has to be led to spend the deposit in MA as soon as country *A* transfers to it the corresponding property right (as we know, in fact, a deposit cannot leave the banking system where it has been formed). This requirement means that country *R* has to spend an amount of money R when it is informed by country *A* that it is entitled to a deposit in MA in the banking system of the latter country. It also means that country *A* has to obtain the property of a deposit in MR as soon as it surrenders the ownership of a deposit in MA. Both of these operations need a common numerical standard in order for both MA and MR to be made homogeneous: in these operations, as a matter of definition, international money is the numerical unit of measurement of national currencies, making them homogeneous as they are taken into absolute exchanges. In this case, international payments guarantee monetary order and exchange rate stability: monetary order obtains because every purchase of real goods, services or financial assets is finally paid through a sale of securities, while exchange rates remain stable as every demand for a given currency is, simultaneously, a supply for the same currency and for the same amount.

Indeed, in our stylized example, x units of MA are supplied (against, say, z imu) in the payment of country *A*'s trade deficit, at the same time as x units of

MA are demanded (against z imu) in the payment of those securities that country *A* has to sell in order to finance its trade deficit. Similarly, y units of MR are demanded (against z imu) in the payment of country *R*'s trade surplus, at the same time as y units of MR are supplied (against z imu) in the payment of those securities that country *R* buys in an absolute exchange through which this country obtains the financial definition (in the form of securities) of the purchasing power that it earned through its net exports. As every national currency is simultaneously supplied and demanded against an identical amount of international money (z imu), their exchange rates can never be affected by exchanges on product and financial markets across borders.

In the international monetary space, as a result, all national currencies (MA and MR) are the object of an absolute exchange, whereby a sum of MA is transformed into itself via the monetary intermediation of the international settlement institution, insofar as a sum of MR is also transformed into itself simultaneously and through the same institution. In so doing, the international settlement institution makes sure that no excessive demand for a currency (be it positive or negative) can exist, as every sum of national money is both demanded and supplied instantaneously. As a matter of fact, it takes an instant – that is to say, a zero duration in time – to enter a payment in a bank's ledger. If this payment is international – that is to say, between countries pertaining to different currency areas, and expressed in a common numerical standard, namely, international money *sensu stricto* – then international transactions are absolute exchanges that leave a currency's exchange rates unaffected by cross-border (commercial or financial) trade. Let us illustrate this in a stylized form, representing the two-country example considered above (Figure 4.1).

The international settlement system represented in Figure 4.1 being a system in which every economic transaction on either the product or financial market is

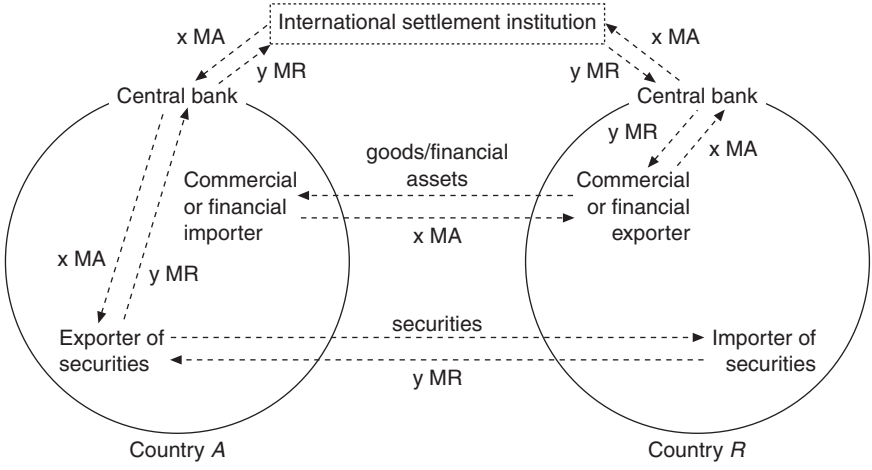

Figure 4.1 Absolute exchanges in the international monetary system.

finally paid both within and between countries, any commercial or financial item imported by a country, *A*, must be paid for with an equivalent export of securities, which as a matter of fact are goods in their financial representation, so that any transaction finds its final counterpart in another simultaneous transaction on either the product or financial market. In country *A*, a claim on bank deposits labelled in MA is disposed of by the national importer, who obtains from the rest of the world real goods, services and/or financial assets through an absolute exchange. In country *R*, the exporter of real goods, services and/or financial assets is finally paid insofar as s/he obtains a claim on bank deposits labelled in MR (through the domestic banking system, headed by the local central bank), which brings to her/him a purchasing power identically equivalent to the value s/he exported (in a commercial or financial form) to country *A* (see Figure 4.1, where all transfers of claims on bank deposits are represented by indicating merely the amount and the money unit in which these deposits are labelled; in fact, no bank deposit leaves the banking system in which it originates, as noted above).

The transaction on securities being induced by the commercial or financial transaction carried out by residents, it might involve the state of either country (*A* and/or *R*), since there might be no private sector resident willing to sell (or to buy) those securities that are purchased (or sold) by a non-resident (that is, a resident in a different currency area). Before addressing this issue, we must however focus on the protocol for the emission of international money in the payment of any foreign trade transaction.

The working of international money emissions

Let us suppose that countries *A* and *R* participate in the system for international payments that we propose in this section. Suppose also that country *A* has a trade deficit worth x MA or, equivalently, z imu. For expositional ease, assume that country *A*'s deficit is country *R*'s surplus, as if the system were composed of two countries only. To refine Keynes's plan and to make sure that the money-purveying and the credit-purveying functions of the international settlement institution are absolutely separated, let us introduce a two-department bookkeeping in each national central bank involved (see Schmitt (1973) for an analogous proposal at the international level). In other words, let a country's central bank record every international transaction in two separate monies, in the sense that its domestic department enters the payment in local currency while its external department enters it in international money, imu. The result of the payment of the trade imbalance between countries *A* and *R* is shown in Table 4.2, where we assume that x MA = z imu = y MR.

While domestic payment finality occurs in national money, the final payment of every international transaction must be carried out in international money, as noted above. So far as the international payment is concerned, the international settlement institution acts as a catalyst in the sense that it has to create the number (z) of international money units needed to ensure that, in our stylized

Table 4.2 International money as the means of final payment between countries, step 1

Central bank of country A			
Domestic department (DD)			
Assets		*Liabilities*	
		Deposit of bank A	−x MA
		Deposit of ED	+x MA
Central bank of country A			
External department (ED)			
Assets		*Liabilities*	
Deposit with ISI	−z imu		
Deposit with DD	+z imu		
International settlement institution (ISI)			
Assets		*Liabilities*	
		Deposit of country *A* (ED)	−z imu
		Deposit of country *R* (ED)	+z imu
Central bank of country R			
External department (ED)			
Assets		*Liabilities*	
Deposit with DD	−z imu		
Deposit with ISI	+z imu		
Central bank of country R			
Domestic department (DD)			
Assets		*Liabilities*	
		Deposit of ED	−y MR
		Deposit of bank R	+y MR

example, country *R* has no further claims against *A* (see Table 4.2). As pointed out in the previous chapters with regard to money and bank deposits within the national payment system, here we observe the distinction between international money and deposits with the international settlement institution, which amounts to distinguishing a flow (Figure 4.2) from the result of this flow; that is, a stock variation recorded in a bank's bookkeeping (see notably the ledger of the international settlement institution in Table 4.2).

In fact, if the settlement of the international transaction were stopped at this stage (that is to say, step 1), then country *A* would be allowed finally to pay its net commercial or financial imports from country *R* without relinquishing an equivalent amount of securities (see the domestic department account of country

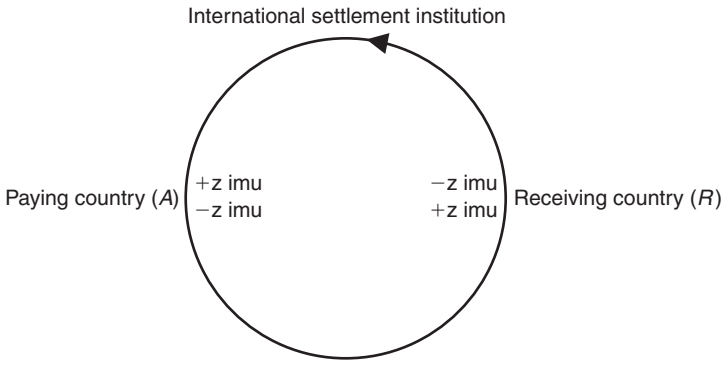

Figure 4.2 The emission of international money between trading countries.

A's central bank in Table 4.2). Country *A* would live beyond its income, as it might pay for its net commercial or financial imports without exporting real goods, services and/or securities for an equivalent amount. This parallels the situation of the key-currency country today, namely the United States, and is similar to the results that the original Keynes plan would have led to if it had been put into practice as was proposed by Keynes at the Bretton Woods conference (see Rossi 2006b).

If the intervention of the international settlement institution were to stop at this stage, in fact, a deposit of z imu would coexist alongside a sum of bank deposits in money R worth the same amount (see Table 4.2): the number of money units existing as a result of a single payment would be twice (2 x) the value of the exchanged items (x MA), as in our example x MA = z imu = y MR. To make sure that the total sum of bank deposits in the whole world corresponds to the value of the underlying transaction, the international payment system has to guarantee that either one of the two sums of money worth y MR each (that is, the deposit in the domestic department of country *R*'s central bank and the deposit at the international settlement institution, ISI) disappears as soon as it is formed. Only in this case will the ISI intervention, which is needed to finalize any international payments, leave the money–output relation unaltered worldwide. In the contrary case, as in the Keynes plan (see Rossi 2006b), country *A* would be allowed to pay for its net commercial or financial imports by becoming indebted to the international settlement institution; that is to say, without disposing of an equivalent amount of financial assets. In other words, total demand for world output (which, for expositional ease, we limit to the output of countries *A* and *R* here) would be greater than total supply, owing to the purchasing power that Keynes's plan attributes to the deposits in the accounts at the International Clearing Bank and that adds to the purchasing power which exists in the form of bank deposits denominated in national currencies (money A and money R in our stylized example).

So, if the reform of the international payment system were to stop at this stage, it would not solve the problem of how countries have to finance their current or capital account deficit eventually. To be sure, each country must provide the real or financial backing of its net imports of real goods, services and/or financial assets. 'In simple terms, this means that a country must finance its net commercial imports by an equivalent amount of exports of goods, services or securities' (Cencini 2001: 13). To this effect, if international money is not used for the final payment of each international transaction on either the commercial or financial markets, but only for the settlement of foreign trade imbalances, as in Keynes's netting scheme headed by the International Clearing Union, then it remains a unit of account. No current or capital account deficit, however, can be financed with a mere unit of account: an international means of final payment is needed for that purpose (see Schmitt 1985: 204–6). Clearly, any such deficit has to be financed, and this can only occur through a sale of securities – provided of course that there is a purchaser for them, otherwise the country must cut back on its net imports of commercial and/or financial items.

Now, as the current working of domestic payment and settlement systems shows (see Chapter 3), it is possible to link together funds transfers and securities transfers at the international level to make sure that delivery of a financial asset occurs if, and only if, the corresponding final payment occurs also (this is the DVP mechanism, by means of which both actions take place at the same time, as noted in the previous chapter). Let us illustrate this mechanism by referring to our stylized example. When the central bank of country *R* is informed that it is entitled to a bank deposit in international money at the international settlement institution, the state of country *R* should decide whether to lend this amount directly to a (private or sovereign) resident in a deficit country (e.g. *A*) or to spend it on purchasing securities on the international financial market (see below). If the state of country *R* lends its imu deposit to country *A* voluntarily, this means that a resident in country *A* sells an equivalent amount of securities to a resident in country *R*, a case illustrated in Figure 4.1. If so, then the book-entry situation after this financial transaction has taken place, and has been finally settled in imu through the international settlement institution, is depicted in Table 4.3.

If we draw the balance of payments considering Tables 4.2 and 4.3 altogether, we have the situation shown in Table 4.4, and we easily notice that as a result of the international payment in international money issued by the international settlement institution no one country has a *payments* deficit, as all foreign trade imbalances on either their current or capital account are finally paid by a transfer of securities in a multilateral framework, in which the paying country (*A*) disposes of a bank deposit – and not merely a duplicate of it – as its purchasing power is transferred to the receiving country (*R*), as represented in Table 4.4.

In this international settlement system, both national and international monies are used in a purely vehicular way; that is, as a means – and not as an object – of payment. To be sure, country *A* records a net *financial* outflow, as it

Table 4.3 International money as the means of final payment between countries, step 2

Central bank of country A			
Domestic department (DD)			
Assets		*Liabilities*	
Financial assets	−x MA	Deposit of ED	−x MA
Central bank of country A			
External department (ED)			
Assets		*Liabilities*	
Deposit with DD	−z imu		
Deposit with ISI	+z imu		
International settlement institution (ISI)			
Assets		*Liabilities*	
		Deposit of country *R* (ED)	−z imu
		Deposit of country *A* (ED)	+z imu
Central bank of country R			
External department (ED)			
Assets		*Liabilities*	
Deposit with ISI	−z imu		
Deposit with DD	+z imu		
Central bank of country R			
Domestic department (DD)			
Assets		*Liabilities*	
Financial assets	+y MR	Deposit of ED	+y MR

Table 4.4 The result of an international delivery-versus-payment transaction on securities

Central bank of country A			
Domestic department (DD)			
Assets		*Liabilities*	
Financial assets	−x MA	Deposit of bank A	−x MA
Central bank of country R			
Domestic department (DD)			
Assets		*Liabilities*	
Financial assets	+y MR	Deposit of bank R	+y MR

sells financial assets in order for it to finance its final payment to country *R* (via the international settlement institution). Of course, these securities, while they provide the means to finance the selling country's net imports of real goods, services or financial assets, are in no way the ultimate export of a net importing country: any foreign trade deficit can indeed only be paid eventually by a net export of real goods or services, compensating over time a country's current account deficit with the same country's current account surplus. The sale of securities, however, provides a bridge between the present and the future; that is to say, between a current account deficit and a current account surplus recorded by the country considered (*A*), on condition that, of course, there is a demand for those securities that this country aims to sell.

Indeed, if country *R* spends the imu deposit it received as a result of its trade surplus (worth z imu) for purchasing the securities sold by country *A*, then this allows the latter country to find in the international financial market the funds it needs to pay for its trade deficit finally. All in all, international money disappears as the reflux principle indicates, and no inflationary pressure can therefore arise on the market for produced goods: a bank deposit of y MR exists (in country *R*) as a result of the international settlement of *A*'s trade deficit (*R*'s trade surplus). As Table 4.4 shows, this bank deposit is backed by an amount of financial assets, as collateral, which are transferred from country *A* to country *R* with the *monetary* intermediation of the international settlement institution to be set up.

Now, although the most needed purpose of the international settlement institution is that of providing participating countries with a means of final payment for the international monetary system, it would be wise to let the international settlement institution act also as a *financial* intermediary, lending on a long-term basis the amounts saved by surplus countries. The international settlement institution could notably lend to deficit countries, such as country *A*, the whole amount of imu deposited by those surplus countries that spend it neither on the product nor on the financial markets around the world.

Consider in this respect the ISI ledger in Tables 4.2 and 4.3. The two double entries in this ledger are the result of two distinct emissions of international money that occur in one and the same point of time. The first emission concerns the payment in international money of the trade imbalance between country *A* and country *R*. By contrast, the second emission concerns the payment in international money of a transaction on the financial market that is induced by the former emission (see above). The second emission being induced by the first, we may analyse them together (Figure 4.3).

The emission of international money represented anticlockwise in Figure 4.3 is elicited by the money-purveying function of the international settlement institution with respect to foreign trade. Countries need to ask the ISI in order for their autonomous commercial and financial transactions to be settled. By contrast, the emission of international money represented clockwise in Figure 4.3 results from the fact that the first (anticlockwise) emission alone would not be enough for the surplus country (*R*) to be finally paid: the monetary intervention

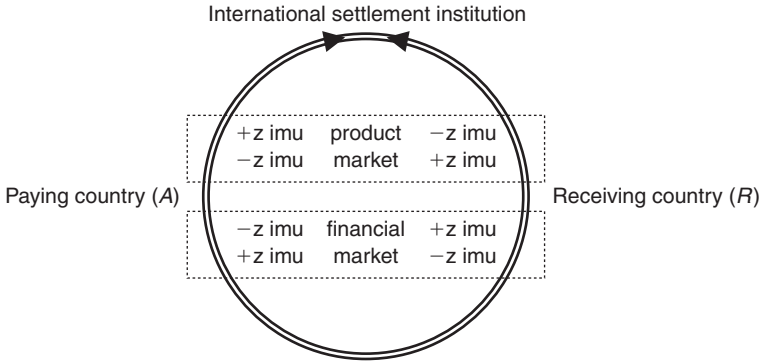

Figure 4.3 The two emissions of international money in a delivery versus payment.

of the international settlement institution would give rise to a mere promise to pay, if it were not complemented by a reverse operation whereby the newly formed deposit in international money (z imu: see Table 4.2) is destroyed. This reverse operation amounts to a purchase of securities by country *R*, which in so doing spends the imu deposit it is entitled to at the ISI as a result of the goods-market emission of international money. On the whole, if country *R* is led to spend on the international financial market the deposit in imu it obtains from foreign trade on real goods and services, it contributes to ensure thereby the orderly working of the international settlement system.

What happens, however, if country *R* does not spend its deposit at the ISI to buy those securities sold by country *A*, which seeks to finance its trade imbalance? It is at this juncture that the credit-purveying function of the ISI acquires its full sense. As a matter of fact, instead of selling its securities to country *R*, country *A* may sell them to the ISI, which, in so doing, advances a payment that country *A* will benefit from when exporting real goods or services. If so, there may then be two kinds of financial assets behind the entries in Table 4.3: country *A*'s securities sold to the ISI, and the ISI's securities sold to country *R*. These securities may indeed be denominated in either local currencies (MA, MR or any third country's currency) or international money, the important point being that the final payment of these financial transactions between countries occurs using international money as a vehicle; that is to say, as a means of payment, whose load is given by those securities that are transferred from the seller to the buyer.

By selling its own securities (or certificates) on the international financial market, the international settlement institution would collect private as well as public capital and invest it in those countries most in need of a recovery, and in which otherwise capital would not flow (see Kalecki and Schumacher 1943: 30–3; Arestis and Sawyer 1997: 362–3). As Stamp (1963: 81) noted, '[t]he certificates would end up with the countries which are in over-all surplus – which,

therefore, would have automatically lent . . . that surplus to the rest of the world'. Of course, both the open market and lending operations carried out by the international settlement institution would have to be supervised by the participating countries' governments and respect the principles of sound banking as well as international best practices. The ISI lending facilities are not to be granted *ad libitum*, but some limit ought to be provided, and an interest rate must be paid by those countries obtaining the (likely unconditional) financial assistance of the international settlement institution. The interest rates paid by deficit countries on their borrowings, from either surplus countries or the ISI, would depend on the extent of their current account deficit, stock of international debt, and capital account balance. A country recording a capital account surplus, especially one elicited by capital inflows, will hardly be in a position to issue new debt instruments at favourable terms. It must then accept either the onus of paying higher interest rates on new debt, or that of slowing down the national economy by a hike in domestic interest rates in the hope of attracting foreign investment (both short and long term). Alternatively, or additionally, the country might devaluate, hoping thereby to boost exports and improve its trade balance in a not too distant future.

In fact, the main objection against this reform is that it might invite abuse, and that the quality of the securities sold by deficit countries to the ISI (in its acting as long-term purveyor of funds) might not match the quality of the ISI's securities sold to surplus countries, so that the quality of the latter financial assets is likely to deteriorate over time, too. In this respect, the ISI statutes need to provide some limit, say, in terms of a percentage of either total foreign trade or GDP (for instance, calculated on a ten-year moving average), beyond which no country is allowed to finance its trade deficit by the sale of financial assets – namely when the country's risk and stock of debt are already too high for this country to provide sound collateral – and it must thus cut back on its commercial imports and/or increase its exports of real goods and services (not least to pay for debt service; that is, interest on securities sold either to surplus countries or to the ISI to finance the country's trade deficit). To be sure, no creditor country suffers from any credit or settlement risks under the proposed international settlement system: any balances at the ISI are always fully, and immediately, convertible into real goods and services sold by any members of the system, or into securities sold either by any (deficit) country or by the ISI acting as a financial intermediary between its member countries.

In such a system, monetary and exchange rate policy decisions may be taken according to the real needs of increasingly open market economies – be they advanced, emerging, developing or in transition – rather than to counteract the erratic volatility of exchange rates and their unpredictable effects on current and capital accounts. In the international monetary system we propose, any participating currency will have an exchange rate that is stable (although not fixed) in terms of international money, hence also in terms of any other participating currency, in a framework of free capital movements through absolute exchanges, without this being incompatible with a high degree of flexibility in monetary and

exchange rate policies. Beyond exchange rates stability, the reform of international payments along the lines we propose in this section grants therefore another important benefit to participating countries, because it increases their room for manoeuvre when gearing their economic policies (particularly an autonomous and independent monetary policy) to the needs of their domestic economies of production. The age-long conflict between domestic and external goals of a country's monetary policy will therefore be solved definitively, to the benefit of growth, employment and effective demand. This opens up a whole new field for the design and conduct of monetary policy, to which we now turn.

5 Monetary policy strategies

Monetary policy strategies around the world are increasingly centred on attaining some targeted rate of inflation, which several academics and policy makers assimilate to price level stability when the measured inflation rate is around but below 2 per cent (owing to a number of measurement biases, as reviewed by Rossi (2001: 31–41)). As a matter of fact, targeting inflation has become a fashion. Since the Reserve Bank of New Zealand first adopted this monetary policy strategy in 1990, an increasing number of monetary authorities around the world – first in advanced economies only, later also in developing and emerging market economies – have been abandoning their monetary or exchange rate targeting strategy to follow this new fashion. As with several fashions nevertheless, targeting an inflation rate rather than an exchange rate or a growth rate of a monetary aggregate has been adopted without any fully thought-out analytical investigation of a phenomenon as complex and controversial as inflation. The same may be argued with respect to previous monetary policy strategies, as they all stem from a symptom-based perception of inflation.

It is indeed both undisputed and undisputable today that '[e]conomists' perceptions of inflation rest on measurements of the "general price level" and on rates of change of price indexes' (Gale 1981: 2). In fact, as surveys of inflation theories show, neither a satisfactory nor an exact analytical definition of inflation exists as yet in the literature (see Bronfenbrenner and Holzman 1963, Laidler and Parkin 1975, Frisch 1983, Parkin 1987, McCallum 1990). This is so much so that, to date, the phenomenon of inflation has been grasped merely by considering its most evident symptom, namely the increase of the relevant consumer price index (or some core inflation index), with no analytical thought whatsoever as to its underlying cause.

Recent inflation-targeting literature epitomizes this analytically poor state of the art very well. Indeed, inflation-targeting analyses as well as strategies start today merely from a symptom-based definition of inflation, and claim axiomatically that, '[s]trictly speaking, inflation is a general rise in all prices, wages, and incomes' (Bernanke *et al.* 1999: 17). To be sure, there are some – although very few – economists who look beyond surface phenomena, and notably point out that '[i]nflation is a process of continuously rising prices, or *equivalently*, of a continuously falling value of money' (Laidler and Parkin

1975: 741; emphasis added). As this quote shows, however, the direction of causality in the relationship between the value of money and the general price level is not addressed by these authors. In fact, there is a general consensus among economists that the decline in the domestic value of money is the result of an increase in the general price level, not its cause.

Indeed, according to the quantity-theoretic analysis of inflation – which also provides the intellectual basis for inflation targeting strategies (Hetzel 2005: 46–7) – the direction of causation goes from an excessive money supply growth with respect to output growth ($\Delta M > \Delta Q$) to an increase in the price level ($\Delta P > 0$), which, as a result according to this view, elicits a decline in the purchasing power of money on the product market. In this view, as Friedman (1987: 17) so famously put it, '*inflation 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'.

In light of the previous chapters, this chapter intends to show that a deeper analysis of inflation is required than what has been done so far in this respect, in order also for an inflation-targeting strategy to deliver the result it aims to – without damaging the real economic performance of the countries adopting it, as seems to be the case to date (see the empirical evidence that Rochon and Rossi (2006c, 2006d) provide on the outcomes of inflation-targeting regimes in both advanced and emerging economies). Indeed, to be able to dispose of inflationary pressures eventually, a critical appraisal of the theory of inflation targeting is in order. This theory and the resulting monetary policy strategy have to be replaced eventually by a macroeconomic analysis of inflation considering the endogenous nature of money, which leads to a fully new role for monetary policy in our capitalist economies of production. Let us proceed step by step along such a complex path.

Inflation theory and inflation targeting: a critical appraisal

Some conceptual and analytical shortcomings

The theory of inflation targeting is a result of the long-lasting 'rules versus discretion' debate in monetary policy, which more recently gave rise also to the calls for central bank independence. This debate is at least 200 years old and could be traced back to the controversy between the banking and currency schools that broke out at the beginning of the nineteenth century over the constitution of the Bank of England (see e.g. Fetter 1965). It has also been an issue during the twentieth century, as Keynes's (1932) and Simons's (1936) argument testifies well before the Kydland and Prescott (1977) seminal contribution led to today's central bank independence as an improved version of the rule-based approach to monetary policy argued, for instance, by Friedman (1968).

In fact, inflation targeting is not a rule, as it does not provide a simple and mechanical framework for the conduct of monetary policy. Quite to the contrary, it requires monetary policy makers to use structural models of the

economy as well as their own judgement, and to consider all available information to design the policy that is more likely to hit the target rate of inflation and be conducive to good economic performance. This allows indeed some discretion to monetary policy makers. Inflation targeting may be defined therefore as 'a framework for policy within which "constrained discretion" can be exercised' (Bernanke *et al.* 1999: 22). This makes it a good compromise for both advocates of policy rules and partisans of policy discretion. As Bernanke *et al.* (1999: 6) point out, '[b]y imposing a conceptual structure and its inherent discipline on the central bank, but without eliminating all flexibility, inflation targeting combines some of the advantages traditionally ascribed to rules with those ascribed to discretion.'

Now, critics of inflation targeting often argue that both the ineffectiveness and the rather weak economic performance of this regime is the direct result of a hierarchical mandate attributed to inflation-targeting central banks (see, notably, Meyer 2002, Bernanke 2003). According to these authors, a dual mandate allows monetary policy to contribute to lowering output variability without thereby putting the price stability goal at stake. In fact, the problem of inflation-targeting regimes is not merely institutional, but analytical essentially. To be sure, even with a dual mandate attributing equal footing to output and price level stability, the problem remains that a symptom-based definition of inflation cannot help going to the root of this phenomenon to get rid of it eventually. Clearly, the problem is not merely that a central bank's policy success is currently established on its ability to meet inflation targets rather than output growth targets, as Arestis and Sawyer (2003: 5) maintain. Even if one were to succeed in changing the political criteria by means of which monetary policy is both designed and assessed today, one could still not make sure that central banks contribute to economic performance according to the social preferences as regards inflation and output outcomes.

Indeed, before any debate on social preferences about policy outcomes can occur in a country, there is the need to define the inflation phenomenon analytically, which means going beyond its symptoms as established by price index analysis. Clearly, the analysis of inflation has to go beyond surface phenomena if it really aims at providing a policy-oriented approach to solving the underlying problem and not just palliating its surface symptoms. In macroeconomics, in fact, phenomena rarely coincide with their factual appearance. Phenomena must always be interpreted and their actual results evaluated, which can be done only through a conceptual detour. A number of principles are thus always required in order to understand the empirical givens. Indeed, there is no doubt that monetary as well as relative prices are surface phenomena. As such, they do not contain enough relevant information to assess whether the underlying relationship between the number of money units and the associated output is actually suffering from inflation.

> When members of the public talk about inflation . . . they often stress the effects of changes in relative prices (of food or energy, for example) on

> their standard of living. These are legitimate concerns, of course, but they are largely independent of the rate of inflation per se. Moreover, they are beyond the power of monetary policy to correct.
>
> (Bernanke *et al.* 1999: 17)

Indeed, there may be a number of cases where the price level varies without there being inflation, and a number of cases where there can be inflation even if the price level does not vary over time. As the current Governor of the Bank of England noted, 'changes in indirect taxes or commodity prices often affect the domestic price level, but do not in themselves change the underlying rate of inflation' (King 1997: 438).

As a matter of fact, an increase in indirect taxes is likely to lead to an increase in the general price level, as the real goods and services subject to higher taxation become more expensive on the marketplace. This increase in retail prices, and probably also in the consumer price index, has definitely a redistributive effect across the economy. It does not affect, however, the purchasing power existing in the whole economy: if the purchasing power of a more or less broad group of consumers buying the taxed goods (e.g. fuel, tobacco and alcohol) is affected negatively by the decision of the state to raise indirect taxes, the general government sector obtains exactly that part of national income surrendered by the private sector in payment of taxes, in a zero-sum process that does not affect the purchasing power of money. Indeed, one has always to distinguish a decline in the purchasing power of money from a loss in the purchasing power of those agents who buy the real goods and services whose prices have increased over time. The former decline is the essential definition of inflation, while the latter loss should not be confused with it, because in fact it is merely the result of a redistribution of income between different categories of agents, such as the state and the private sector. Indeed, any income redistribution amounts to a zero-sum process for the economy as a whole; that is to say, at the macroeconomic level – where inflation, by way of contrast, hurts all income holders, independently of their socioeconomic status and income level, because every unit of money loses the same percentage of value as any other existing at the same time in the national economy.

An analogous zero-sum process may also be observed within the private sector as such, when firms raise their mark-up in order to increase their share of national income (that is to say, profits). The resulting increase in consumer prices enables firms to raise their profits, *ceteris paribus*, but this has certainly no inflationary impact on the purchasing power existing in the economy as a whole, as firms obtain a fraction of income that was previously held by some other agents (that is, households). Indeed, what is lost by one group of agents (households) is gained by another group of agents (firms), so that, at the macroeconomic level, each unit of money keeps its original purchasing power – which, nevertheless, is distributed differently among agents within the same national economy.

In fact, inflation is a decline in the purchasing power of money on the goods

and assets markets. This decline in money's purchasing power concerns the economy as a whole. It puts an upward pressure on all prices, owing to the lower value of each money unit. As a result, the general price level rises, or does not go down as it should when the purchasing power of a unit of money rises on account of a technical progress leading to an increase in total factor productivity and thereby to a decrease in production costs per unit of output. In the latter case, stability of the price index would hide the fact that an inflationary pressure impeded the general price level to decrease as a result of technical progress. Hence, the direction of causation goes indeed from the decline in money's purchasing power to an increase in the number of money units needed to purchase any given product, which is the precise reason why consumer prices and the general price level rise *as a result* of inflation.

Now, the problem of inflation does not end once this phenomenon has been correctly defined. In fact, the problem starts there. As for any problem in the real world, however, the problem of inflation can be solved only once it has been identified correctly. Indeed, if we define inflation as an increase in the general price level, as has been the case up until now with no analytical misgivings, we mix up one of the most evident consequences of inflation with its cause, and are thus led to infer wrong conclusions both in theory and practice. Now, if wrong theoretical conclusions may be sterile, things are different when wrong policy-oriented conclusions are drawn from a merely symptom-based analysis of inflation. Suffice it to recall here the vast empirical literature on the so-called sacrifice ratio, computed after disinflation periods occurred in countries that adopted an inflation-targeting strategy (see e.g. Bernanke *et al.* 1999: 257–65; Rossi 2004b: 73–5). Indeed, if monetary policy makers mistakenly assume that any measured increase in the general price level is inflationary, they may then be inclined to intervene and tighten monetary policy (that is, to raise the nominal rate of interest) although, analytically, there is actually no inflation in the national economy. No wonder then that any measure of the country's economic performance is likely to show that the central bank's control of the general price level occurred at quite a high cost in terms of both output and employment losses – something that the symptom-based Phillips curve trade-off depicts graphically.

In sum, provided that inflation is correctly defined, the analysis of this phenomenon has to consider its principal origin carefully if one wants to avoid unnecessary costs to curb inflation. As the theory of money emissions shows, in fact, the origin of inflation lies in a structural anomaly of the working of banking systems, which still do not comply fully with the endogenous nature of money (Schmitt 1984, Cencini 1996, Rossi 2001, 2006a). As such, the origin of inflation is structural and not behavioural, as demand-pull as well as cost-push views of inflation put it. Indeed, neither the demand-pull nor the cost-push view is equipped absolutely to understand the inflationary causes of a rising price level: they both reduce the analysis of inflation to studying the rate of change of an aggregate price level, neglecting or even ignoring the fact that an increase in the price level, or in the targeted price index that is a proxy of it, may have several

causes, not all of which are inflationary (in the precise sense of being the result of a decline in the purchasing power of money).

Inflation in an endogenous money system

As regards the analysis and control of inflation, the endogeneity of money as explained in this book necessarily implies that the decline in money's purchasing power has to be investigated according to the fact that neither the central bank nor the individual banks – nor the banking system as a whole – can create money independently of the settlement needs of the economy. As noted in Chapters 2 and 3, the emission of money is the result of a demand for a means of final payment from either non-bank agents (in the form of commercial bank money) or the banking system (in the form of central bank money). If so, then there can be no excess supply of money – leading to an inflationary pressure on the general price level – as a result of (either central or commercial) banks' behaviour.

To repeat, the origin of inflation has not to be looked for in the agents' behaviour, but in the current structure of our banking systems. To put it differently, and to elaborate on it, inflation does not originate in the distribution of income (on the product market), but in the process that actually generates national income (on the factor market). Inflation is a phenomenon affecting our monetary economies of production. It requires therefore a monetary theory of production in order to be properly understood and solved for good – even though this will not provide for a constant price level, because the latter may vary for other reasons than inflation, as pointed out above.

Now, the core of the monetary theory of production is that money and production are the two faces of the same reality, which is therefore monetary as well as real. As noted in Chapters 1 and 2, money is the numerical form in which output is deposited from the moment it is produced as an economic object until the moment it is sold and thus ceases to exist as such. Clearly the outcome of banking and production activities, money income exists as a result of the payment of production costs, and is destroyed when it is finally spent on the goods market (see Rossi (2001: 109–13) for elaboration on this). As noted in Chapter 2, wage earners are the first owners of the newly produced output, as the newly formed bank deposits – resulting from the payment of the current wage bill by firms via banks – give to wage earners the necessary and sufficient power to purchase the whole output at factor costs. Of course, owing to the firms' mark-up of retail prices over the relevant production costs, the initial deposit holders cannot purchase, as a general rule, the whole set of newly produced goods were they to dispose of all their deposits on the product market: that part of current output which is not bought by households, in fact, is purchasable by firms through expenditure of their income share, namely profits, which are indeed obtained owing to the mark-up. Profits are thereby formed on the market for produced goods and services, a market in which, of course, firms can act as both sellers and buyers of any produced items (see Chapter 2).

In fact, the firms' profit may be spent in two ways, which amounts to saying that it may be spent on two markets. If firms spend their profits on the goods market, they indeed consume that part of current output that original income holders, to wit, wage earners, could not obtain owing to the mark-up. If firms do not spend their profits on the goods market, however, they may use them to finance some investment. Let us abstract from financial investment here, as this kind of expenditure cannot and does not really modify the relation between money and production established by the payment of factor costs. (We therefore leave financial speculation aside, as at the end of any purely speculative chain of transactions there is always consumption.) Consider therefore the investment of profits in the production process. After all, profits are sought by businesses in order for them to finance their production activities without the need to revert to bank credit and thus paying interest charges. To put it very simply, a firm uses its profits to pay for (a part of) its production costs. Now, this payment is much more complex than would appear at first sight. Again, there is the analytical need to go beyond surface phenomena here.

Indeed, at the banking system level, a firm's payment of production costs out of profits may take place in two different ways: it may occur through an emission of money as a numerical vehicle of the newly produced output – which gives rise to a newly formed money income in the economy as a whole – or it may occur through expenditure of an already existing money income (to wit, a profit), which is indeed destroyed by this expenditure although the underlying bank deposit continues to exist and is now owned by the wage earners who are thus remunerated. Let us explore these two avenues in turn (for a more detailed analysis see Cencini 1996: 51–60).

In an orderly structured banking system, any expenditure of a firm's profit on the factor market elicits an emission of money to vehiculate, to wage earners, a claim on a bank deposit that results from the firm's investment of profit in the production process, and to vehiculate, to the firm, the newly produced output that this firm physically obtains on the factor market (Figure 5.1). Translated in

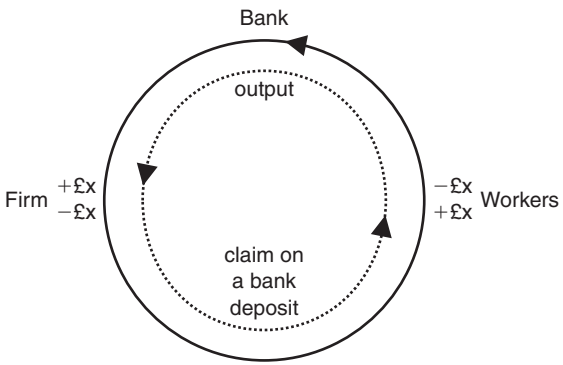

Figure 5.1 The investment of a firm's profit on the factor market: orderly case.

bookkeeping terms, the payment of the wage bill that results from the expenditure of a firm's profit on the factor market gives rise to the entry recorded in Table 5.1.

As Table 5.1 shows, the firm obtains a loan from the bank for x units of money, and the investment of profit on the factor market gives rise to a new bank deposit in the name of wage earners. A relation of equivalence (in fact, an identity) exists between the claim on a bank deposit (£x) that wage earners own and the newly produced output, physically owned by the firm that invested its profit, which thus balances its debt to the bank with an identically equivalent stock of newly produced goods (£x). This identity leaves no room for an inflationary gap between bank deposits and saleable output to exist: those goods that wage earners could not buy owing to the mark-up, which led to the formation of profit, may be purchased by expenditure of the new bank deposit formed on the factor market when profit is invested for the production of instrumental goods (let us assume, for expositional ease, that the mark-up is zero in this purchase, as otherwise we would need more market rounds to arrive at the same conclusion). If so, then the monetary economy of production under scrutiny functions in an orderly way, as no alteration in the money–output relationship occurs through the investment of profit on the factor market.

Things change when the payment of production costs out of a pre-existent profit, in the form of a bank deposit, occurs in a banking system whose structure does not as yet absolutely conform to the endogenous nature of money. Precisely, if the bank(s) – through which the payment of the wage bill resulting from the investment of a firm's profit occurs – do(es) not issue money in the operation by means of which the firm surrenders a claim on a bank deposit to transform it into newly produced capital goods, then the structural order illustrated in Figure 5.1 does not really exist, and disorder sets in (see Figure 5.2). In bookkeeping terms, the result of the payment of wages in this (disorderly) case is shown in Table 5.2.

What distinguishes order from disorder in the banking structure, as Figures 5.1 and 5.2 show, is the existence or non-existence of a bank's emission of the number of money units that measure the object of the transaction between the

Table 5.1 The result of the investment of profit on the factor market: orderly case

Bank			
Assets		*Liabilities*	
Loan to the firm	+£x	Deposit of workers	+£x

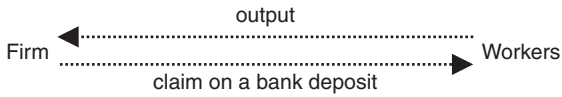

Figure 5.2 The investment of a firm's profit on the factor market: disorderly case.

Table 5.2 The result of the investment of profit on the factor market: disorderly case

Bank		
Assets	*Liabilities*	
	Deposit of firm	−£x
	Deposit of workers	+£x

firm and its workers; that is, the newly produced output as a result of a firm's investment of (a part of) its profit. In the case illustrated in Figure 5.2, which represents a structural disorder, the banking system does not issue the number of money units needed to measure output in economic terms: it merely acts as a 'record keeper', transferring to workers the claim on a bank deposit that the firm surrenders on the factor market in order for it to transform this claim into newly produced capital goods fixed in it (see Table 5.2).

If so, then what? Indeed, the reader may conclude that no problems exist insofar as the firm has actually paid for the labour services it obtained through the investment of profit, and the workers have been remunerated for their services as contractually agreed. In fact, the problem in this case is that the expenditure of the firm's profit destroys this profit but not the corresponding bank deposit, which may therefore be spent by its holder on the market for produced goods and services, even though the corresponding output was already purchased by the firm at the very instant when it invested its profit on the factor market for the production of fixed capital goods. Clearly, when an income spent on the factor market (where the firm's profit is invested) is spent again on the market for produced goods and services, this gives rise to an inflationary pressure on the general price level, since the second expenditure of the same income increases global demand without an equivalent increase in global supply on the product market. In short, there is excess demand for real goods and services, which elicits, *ceteris paribus*, an increase in the price level and translates into a rise of the (targeted) consumer price index.

In fact, it is not the investment of firms' profits in new production activities that gives rise to inflation; that is, a decrease in the purchasing power of each money unit. It is the current structure of banks' accounting that has to be improved, to take fully into account the endogenous nature of money and hence to avoid money losing purchasing power. In particular, as the bank deposits that correspond to the firms' invested profits have already been spent by these firms in the payment of wages – through which firms obtain the newly produced investment goods on the factor market – these deposits ought not to be available to be spent once again on the product market. Today, in fact, these deposits are recorded as savings in the banking system, which can thus lend the corresponding amount for consumption purposes. If this occurs, however, this operation elicits excess demand on the market for produced goods, since it leads to the formation of an income void of any substance, as this substance has already been purchased through the firms' investment of profits on the factor market.

Clearly, the income thus formed on behalf of wage earners is nominal rather than real (see Table 5.2). This nominal income, however, absorbs – 'per osmosis', so to speak – purchasing power from the existing units of real income, defined by the stock of bank deposits that exist beyond those deposits resulting from the investment of profits and as a result of the working of a monetary economy of production. This dilutes value among an increased number of money units, which is the definition of inflation. 'As a consequence of inflation, the content of money, unchanged in real terms, acquires a new numerical expression. A greater quantity of money is needed, therefore, to purchase the same product' (Cencini 1995: 59).

Now, since the appearance of nominal income through the investment of firms' profits on the factor market is due to the imputation of the wage bill on firms' deposits by the banks' bookkeeping (see Table 5.2), the solution of inflation depends on separating the remuneration of wage earners from the investment of firms' profits as recorded by the banking system. In other words, the solution consists in improving the structure of the latter system in order to make sure that the capital invested by firms in their production processes is definitively withdrawn from the financial market, where today it can be lent and finally spent on the product market, giving rise to inflationary pressures. In simple terms, to be effective, inflation-targeting strategies should aim at guaranteeing that the whole amount of invested profits within the monetary production economy does not add to the financial circulation of as yet unspent incomes. Indeed, only in this situation would the production of investment goods elicit a sum of money income whose purchasing power is real and not merely nominal.

If this analysis is correct, the problem of inflation is therefore related to the process of capital accumulation in a capitalist economy, which in reality may occur in an orderly or disorderly way. To avoid any possible misunderstandings, let us stress that order and disorder refer here to the manner in which the accumulation of capital (that is to say, the investment of profit) is recorded in the banks' bookkeeping. The agents' behaviour is not at stake here: firms cannot be blamed for their accumulation of capital. Indeed, it is not the behaviour of economic agents that can account, eventually, for the alteration of the relationship between money and output (see Rossi (2001: 132–45) for an analytical elaboration on the neutrality of agents' behaviour in the money–output relationship). In fact, the investment of firms' profits may take place in a bookkeeping structure of the banking system that mechanically respects the endogenous nature of money (order), or in an accounting structure that does not yet respect money's true nature (disorder). As Cencini (1995: 70) explains in this connection, 'the relationship between money and output can be pathologically modified by a simple accounting mechanism that does not pay sufficient attention to the banking nature of money and to its functional link with production and circulation.' Let us explore in the next section how the book-entry system of bank accounts may be refined in order to avoid the structural origin of inflation pointed out in this section.

A structural target for monetary policy: payment systems' reform

The required structural change in domestic payment systems

Despite the very high banking standards and best practices existing in today's payment systems, which aim to ensure both the efficiency and stability of the whole financial sector as explained in Chapter 3, there exists a yet unnoticed discrepancy between the current workings of the monetary structure of payments and the endogeneity of money. More precisely, as the wage earners' remuneration and the capitalization of profits are recorded today in the same 'department' of the banks' bookkeeping, the pathological generation of nominal income cannot be avoided. Improvement in the book-entry structure of banks' accounting could eradicate the generation of nominal income, leaving agents' forms of behaviour totally unaffected and completely free. Let us expand on this policy-oriented proposal in the remainder of this book, in light of the theoretical architecture designed by Schmitt (1984) and Cencini (1996), who insist on the necessity to spread payment operations over three bank 'departments', functionally distinct in bookkeeping terms, in order to have an inflation-proof economic system (see also Cencini 2005: Ch. 14).

Indeed, a structural change in the bookkeeping framework within which banks operate daily is the *sine qua non* condition to make sure that any payment complies with money endogeneity as explained in previous chapters. In other words, to avoid the generation of nominal income, the actual working of payment systems should conform to the essential distinction existing between money, income and capital. Translated in bookkeeping terms, this distinction implies splitting the payment machinery over three distinct accounting departments within banks, namely the monetary, financial and fixed capital departments.

1. The monetary department (or department I) records all money emissions, which are instantaneous circular flows that occur every time a payment is carried out.
2. The financial department (or department II) records all newly formed bank deposits, which are stocks of purchasing power in the form of liquid financial claims that may be transferred on the financial market and finally spent on the product market.
3. The fixed capital department (or department III) records all capitalizations of profits, which define a macroeconomic saving fixed in some capital goods within firms.

This tripartite structure of banks' double-entry bookkeeping will be enough to make sure that modern banking systems do not mix up money (recorded in department I) with income (recorded in department II), and disposable income (recorded in department II) with fixed capital (recorded in department III),

which has not to be lent, as it has been fixed forever in the capital goods that the set of firms have obtained from the investment of their profits in the production process. Let us illustrate the working of the structurally improved banks' bookkeeping through a stylized example that indeed subsumes those examples considered thus far for the payment of wages, the expenditure on the product market giving rise to a firm's profit, and the investment of profit on the factor market.

The operationalization of payment systems' reform

Consider first the payment of wages (Table 5.3). As noted in Chapter 2, the emission of money for the payment of wages is a flow on the factor market. As shown in Figure 2.1, this implies that both the payer and the payee (to wit, the firm and its workers) are credited and debited with the number of money units (say, £x) that are issued by the bank in the payment of the current wage bill. If so, then the bank through which this payment occurs ought to record within the correct structural framework the relevant monetary flows: its monetary department – which does not exist as yet in the banks' bookkeeping – records the creation and simultaneous destruction of x units of money on both the firm (entries 1 and 2 in Table 5.3) and the wage earners (entries 2 and 3 in Table 5.3). Needless to say, the payment of wages, as any payment, implies the financial debit of the payer and the financial credit of the payee, as shown by any bank's ledger today. This is the reason why the monetary and financial departments of banks' bookkeeping are interrelated, as Table 5.3 shows: the firm has a financial debt to the bank through and to which wage earners have a financial credit; that is, a claim on a bank deposit (which is a stock of purchasing power, namely an

Table 5.3 A structural change of banks' bookkeeping: the payment of wages

Bank			
Monetary department (I)			
Assets		*Liabilities*	
1 Financial department (II)	+£x	1 Claim of firm	+£x
		2 Claim of firm	−£x
		2 Claim of workers	+£x
		3 Claim of workers	−£x
		3 Financial department (II)	+£x
Bank			
Financial department (II)			
Assets		*Liabilities*	
1 Loan to firm	+£x	1 Monetary department (I)	+£x
3 Monetary department (I)	+£x	3 Deposit of workers	+£x

income generated through production). Entry 1 and entry 3 are therefore recorded across the first and second department in the banks' double-entry system of accounts whose structure thus allows a distinction between money and bank deposits, that is, money and income, explicitly and in actual fact. If we consider the balance of both departments (I and II), we notice that the monetary department does not have any balance (which retraces the fact that money does not exist beyond the very instant of its emission), while the balance of the financial department retraces the fact that the firm has obtained a loan in order to pay out wages to its workers (recall Table 2.1). The fact that, to date, only the financial department exists in banks' bookkeeping may be at the basis of the lack of distinction between money and bank deposits both in theory (monetary analysis) and in central banks' statistics (monetary aggregates). That money and bank deposits need to be separated in both theory and practice should now be plain to the reader, so much so that the two departments in banks' accounting make this distinction evident and operational. Indeed, even if the final result of the payment of wages boils down to the firm's debt and the wage-earners' credit to the bank (see Table 2.1 for today's record, and Table 5.3 (financial department) for the structurally refined record), there is still the necessity of distinguishing the monetary department from the financial department in banks' bookkeeping: an accounting system based on a single department in banks' double-entry bookkeeping entails the risk of excessive lending by banks with respect to the amount of income generated by production activities. This is credit-led inflation (that is, an excess of bank credit), which would thus contribute to the inflationary rise in goods and assets prices in actual markets (see Rossi (2001: 139–45) for an analysis of credit-led inflation and of its benign nature over time).

> In the absence of a clear and operational distinction between monetary and financial departments, bankers have no precise information as to the amount of credit they can grant during the day. Logically, they should lend only up to the amount of the income deposited with their banks. In practice, they simply respect the principle requiring loans to be backed by equivalent deposits without being aware of the fact that some of these deposits might be made up of money instead of income, that is, they might result from money creation instead of production.
>
> (Cencini 2005: 311)

As a matter of fact, with today's simple accounting framework which records all sorts of transactions within the financial department of banks, bank managers have no means of knowing the amount of income they can actually lend. For the banking system as a whole, the principle that 'loans make deposits' is enough for banks to open new credit lines and indeed lend any amount their managers deem profitable once they have assessed the creditworthiness of the banks' borrowers (both firms and households), together with the asset and liability management strategies that each bank implements to minimize:

1 the risk of granting new loans at a faster rate than the rest of the banking system, which would give rise to net obligations to other financial institutions if the bank does not simultaneously increase its market share of bank deposits;
2 the risk of granting new loans to bad debtors, that is, a bank's debtors whose collateral is not sufficient to cover their debt, in which case the bank's shareholders would be affected negatively (Dalziel 2001: 30–3).

To date, monetary policy strategies consider that these risks to financial stability are to some (great) extent reduced owing to minimum reserve requirements and/or refinancing conditions at the administered (by the central bank) interest rate (discount rate, repo rate and other central bank-affected market interest rates). In fact, through these instruments financial stability can be achieved only by pure chance and not on a permanent basis. If monetary policy is really to succeed in avoiding these financial risks, and thereby excess credit facilities granted by banks, its policy instruments have to impact on the structural rather than on the behavioural level. Indeed, despite the level and variation of minimum reserve ratios and of bank rates, a bank can always decide to grant a credit line to some borrower with no misgivings as to the amount of available income: the bank's decision is a matter of speculation (that is, risk judgement and perception) about the pros and cons of increasing lending and thus the total sum of bank deposits in the economy. 'If the risk of credit inflation is to be avoided, loan officers have to be provided with a rigorous and simple instrument telling them in real time the exact amount they can lend without financing their loans through a money creation' (Cencini 2005: 311). This is indeed the purpose and the merit of the separation between the monetary and financial departments in the banks' bookkeeping system of accounts, which thus contributes to guaranteeing financial stability once and for all in the whole domestic economy. To this effect, loan officers will have to check the balance of the financial department in their bank's bookkeeping to know the total sum of bank deposits that are available in this department and which defines the limit to their loans at any point in time. In our stylized example, the payment of the current wage bill generates a deposit of £x in the financial department of the bank (see Table 5.3), which defines the maximum amount of loans that this bank can grant to its clients, unless other payments give rise to deposits with the same bank.

Let us now expand on our stylized example, considering the payment on the market for produced goods carried out by a bank on behalf of wage earners, through which the firm is able to earn a profit by the mark-up mechanism as explained in Chapter 2 (Table 5.4).

As noted in Chapter 2, the emission of money for the payment of goods is a flow on the product market. As shown in Figure 2.5, this expenditure implies that a bank issues the means of final payment in the form of the number of (x) money units required to carry out the payment between the payer (say, a worker's household) and the payee; that is, a firm selling its products. Again, as in Table 5.3, Table 5.4 shows that both the payer and the payee are credited as

Table 5.4 A structural change of banks' bookkeeping: the formation of profits

Bank			
Monetary department (I)			
Assets		*Liabilities*	
1 Financial department (II)	+£x	1 Claim of workers	+£x
		2 Claim of workers	−£x
		2 Claim of firm	+£x
		3 Claim of firm	−£x
		3 Financial department (II)	+£x
Bank			
Financial department (II)			
Assets		*Liabilities*	
		1 Deposit of workers	−£x
		1 Monetary department (I)	+£x
3 Monetary department (I)	+£x	3 Deposit of firm	+£x

well as debited (by the monetary department) with the number of money units that the bank issues in order for the payment to be carried out finally. As a result of this payment on the product market, the payer transforms a bank deposit into a value-in-use (real goods and/or services), and the payee does the reverse transformation thus being credited in the bank's financial department. Once again, the two departments in the bank's bookkeeping show that money and bank deposits (money and income) have to be distinguished, in theory as well as in practice. To repeat, money carries out payments while bank deposits finance them (see Chapters 1 and 2).

Now, if we suppose that the firm marks up its retail prices, we may consider that by the expenditure of a bank deposit of £x, a household obtains real goods and services whose production costs are lower than £x (say £x − y, with $0 < y < x$). As explained in Chapter 2, the firm earns a profit (equal to £y) on the product market thanks to the mark-up price mechanism, which is a redistribution mechanism within the private sector economy. Let us then show how the investment of this profit on the factor market is recorded by banks within their structurally reformed bookkeeping system based on the three departments as spelled out above (Table 5.5).

Suppose that the firm invests a profit of £y on the factor market for the production of new investment goods as explained above. In a structurally refined accounting system of banks' bookkeeping, every time a firm invests its profits on the factor market there is an internal transfer – in the bank within which the firm's profits are deposited – from the financial to the fixed capital department of the deposit invested (entry 1). To repeat, the capitalization of profits meaning that the corresponding bank deposits (savings) are fixed forever into newly produced capital goods, the bank into which these deposits are recorded ought to

Table 5.5 A structural change of banks' bookkeeping: the investment of profits

Bank			
Monetary department (I)			
Assets		*Liabilities*	
2 Financial department (II)	+£y	2 Claim of firm	+£y
		3 Claim of firm	–£y
		3 Claim of workers	+£y
		4 Claim of workers	−£y
		4 Financial department (II)	+£y
Bank			
Financial department (II)			
Assets		*Liabilities*	
		1 Deposit of firm	−£y
		1 Fixed capital department (III)	+£y
2 Loan to firm	+£y	2 Monetary department (I)	+£y
4 Monetary department (I)	+£y	4 Deposit of workers	+£y
Bank			
Fixed capital department (III)			
Assets		*Liabilities*	
1 Financial department (II)	+£y	1 Deposit of firm	+£y

withdraw the latter deposits from its financial department (the sole department existing to date in banks' bookkeeping), to avoid that these same deposits, in the name of wage earners in the investment goods sector, are spent once again on the product market – an expenditure that gives rise to excess demand on this market and is thus the cause of an inflationary increase in prices and in the (targeted) price level. If so, then the payment of the wage bill in the investment goods sector, in which the firm has decided to invest its profits, has to occur as if it started from *tabula rasa* (see Table 2.1). With respect to Table 2.1, which epitomizes the record in the bank's ledger which a bank enters to date when paying out wages drawing on the firm's credit line, Table 5.5 shows how the bank will record the same payment in the structurally refined system of banks' double-entry bookkeeping (entries 2 to 4). Indeed, the three departments in the banks' accounting system serve, principally, to avoid the birth of a nominal income when wage earners in the investment goods sector are remunerated through the firm's expenditure of profits. Indeed, the rationale for the existence of a fixed capital department in banks' bookkeeping lies in the need to avoid profits being finally spent on the factor market, as this would mean that the income wage earners receive in the investment goods sector is nominal rather than real, the real goods having been already purchased by the firm when these same wage

earners received their money wages. What has to be avoided, therefore, is that those profits that firms invest remain available as bank deposits in the financial department of banks, whose business is to grant loans and receive interest payments to pay out interest on the clients' deposits. In short, once the structural change in banks' accounting is carried out within the domestic payment systems of capitalist economies of production, '[w]hat remains deposited in the third department represents the profits invested by firms in the production of instrumental goods and defines the amount of fixed capital formed in the economy' (Cencini 2005: 313).

This tripartite separation of the banks' double-entry system of accounts is enough, but instrumental, to make sure that invested profits do not give rise to a nominal income on the factor market, which is the hallmark of an inflationary pressure that is going to be revealed by an increase in the consumer price index once capital goods are amortized (see Cencini 2005: 163–8). To this effect, let us emphasize that the payment of wages in the capital goods sector has to be recorded in the monetary and financial departments of the bank carrying out this payment as if it started from *tabula rasa*; that is, from a credit line that the bank grants to the firm which capitalizes (a part of) its profit. The formation of nominal income being averted by the automatic transfer of capitalized profits to the fixed capital department of the banks' bookkeeping, the decline in money's purchasing power will be prevented from occurring, so that any monetary capitalist economies of production will dispose of any inflationary pressures definitively: all observed increases in prices and the general price level (or the price index that is a proxy for it) will be the result of either a redistribution mechanism – originating either in the private or in the public sector – or a cost-induced pressure, as demand-pull and cost-push views of price increases explain respectively, in fact confusing the result of these events with inflation, which is notably the precise reason why monetary policy strategies have been unable, to date, to address inflation problems in the proper way and with the appropriate tools. To be sure, inflation results from a structural mismatch between the current working of our payment systems and the book-entry nature of money. This problem cannot be seen by symptom-based, price index analyses. Indeed, the fact that measured inflation rates are very low in a number of advanced economies at the time of writing does not mean that inflation has been solved: it merely means that these countries are experiencing a price level stability which, however, and as pointed out, says nothing about the underlying losses in the purchasing power of money. In fact, the solution to inflation requires a fresh look at money and payments in both theory and practice. This book is an attempt to provide such an approach to monetary economies of production and exchange, national as well as international. Let us hope that both academics and policy makers are willing to go back to monetary analysis and ground it on a theoretical conception of money that suits the purely numerical nature of the means of payment used in the real world. All the rest is ancillary to that and will follow suit, hopefully in a not too distant future, to make the world a better place in which to live.

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