

# THE MECHANICS OF MONEY

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Translated by Stephen Harrison  
Foreword by Fritz Machlup

Money can be explained in terms of a system of mechanics, just like the phenomena of the physical world. Those in the universities or in banking who wish to understand how money is created, how it is put into circulation and eventually destroyed, will find an attempt to answer these questions here.

In the first part the author suggests three keys to monetary analysis: payment, clearing and 'reduction'. He goes on to show that these keys can be used to analyse the way different monetary institutions, such as commercial banks, Eurodollar banks and savings banks, function.

The second part deals with the problem of monetary regulation. The author shows how present attempts to manage and regulate the money supply are hamstrung by uncertainties, which affect every aspect of the matter. He criticises the inclusion within the same money supply definitions of claims that can be used directly in transactions and those that cannot and goes on to try to define an indicator which will take account of the effect that savings and loans have on the velocity of money.

The third part of the book discusses the urgent need for a new international currency which will not be the domestic currency of any privileged state. The author shows why a unit of account conceived as a basket of national currencies in a fixed, immutable relationship, such as the SDR, is unsuitable for the role of international standard of reference. He puts forward his own solution to the problem in the form of a new neutral payment unit, which would be used exclusively for international transactions and which would have the unique quality of constant purchasing power. This unit has been provisionally named the 'Eurostable'.

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## *Introduction*

The creation, the life and the eventual destruction of a unit of money, its effects on the constituent elements of the economy and its relations with economic activity and prices, can all be described in terms of a kind of 'mechanics'. There is a mechanics of money just as there is a soil mechanics and a fluid mechanics, the expression being understood in the sense of a coherent theoretical structure derived from experience and intended to define in time and space the states, positions and effects of certain phenomena in terms of their mutual relations as well as of external factors.

## PART ONE

### THREE KEYS TO MONETARY ANALYSIS

#### *1 What is money?*

A unit of money is nothing more than a transferable claim on an institution, created arbitrarily and artificially and having a maturity and exchange value which are generally indefinite. There is no *natural* or *inevitable* connection between a commodity represented by this unit of money (or its backing) and its value in terms of exchange.

Thinking on these matters will continue to be confused, as will the monetary mechanisms themselves, as long as the old ideas of money as representative of a commodity, defined by the backing which constitutes its guarantee, have not been refuted and replaced.

#### *2 How money works*

'Lotto-money' is a game intended to show the arbitrary nature of the creation of payment instruments and reveal the uncertainties of

present-day knowledge regarding those mechanisms that govern money, its creation and its circulation.

The game is played with small machines—kinds of printing presses—which are worked by handles and which produce counters representing consumption units or investment units. Another press prints monetary units, or MUs, simple pieces of paper which represent money and on which the leader has written ‘I promise to pay the bearer  $x$  MUs.

### *3 Three keys to monetary analysis*

If we want to study the mechanics of money we must begin by looking closely at how and where money is created, using three keys.

First, *payment*, or change of hands: the passage of a unit of money from agent  $X$  to agent  $Y$  in exchange for goods or services transferred from  $Y$  to  $X$ .

Next, *clearing*, the process which makes it possible for banks to superimpose new payment instruments, in the form of claims on themselves, on top of those that are issued by the central bank.

Finally, *reduction* of the liquid wealth of the holders of money, the inevitable corollary of the creation of a new unit of money.

### *4 The first key – Payment*

The main lines of the analysis go beyond the economic agent’s pocket or the bank’s till and take us to the heart of the matter, the fundamental operation of payment (or transaction).

Some units of money have the transaction function, others do not; the two should not be confused. Demand deposits in a bank do have the transaction function, whereas time deposits in the same bank or deposits in a savings bank do not; in order to circulate and exercise their transaction function such units of money need to be exchanged first and replaced by other units (whether transferred from somewhere else or expressly created for the purpose) which do have the transaction function.

We should not rely on criteria such as the degree of liquidity or ease of withdrawal, nor should we take the notice necessary before a deposit can be withdrawn as the decisive factor in order to decide whether or not a particular unit of money has or does not have the transaction function. Nor should we stop too soon in the search for this function. Instead, we should go right to the end of the analysis and look for the final operation of exchange of a unit of money for a supply of goods.

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### 5 The second key *Clearing*

Clearing is generally neglected by monetary analysts. Nevertheless, it constitutes the basis of the power of monetary creation of a modern banking system.

It is thanks to the clearing mechanism that claims on banks which did not originally constitute money come to act as payment instruments. It is by looking to see whether or not clearing takes place that we can tell whether or not there is any creation of bank money over and above what the bank of issue has created. The mechanism of the clearing house can also be used to solve the perennial problem of whether or not Eurodollar banks are capable of creating money.

'Lotto-clearing' is a game specifically invented to demonstrate the mechanism of the clearing house and its role in the creation of money by the banking system. The game faithfully reproduces the clearing mechanism and the players represent the member banks of the clearing house. Tickets given to each player stand for the amount of cheques drawn on the other banks and deposited with each bank. The leader adds up on a clearing chart for each participant the amounts 'owed to' and 'owed by'. Comparison of total movements and total balances which each player has to settle in central bank money demonstrates the mechanism by means of which money is added by clearing banks to the total of money created by the bank of issue.

### 6 The third key – *Reduction*

The mechanics of money can only be properly revealed by using the concept of *reduction*, which is an aspect, an illustration and even a measure of what economists call seigniorage.

Once it has been created, a new unit of money has the power of procuring for the person who puts it into circulation for the first time a certain quantity of goods and services which have not been 'earned' and which in consequence constitute a reduction of the total wealth available to the holders of money. The effects of monetary creation such as inflation and savings and the problems of monetary regulation all become easier to understand when they are looked at from this point of view, that is, from the point of view of a reduction of the assets of those economic agents who hold money.

The mechanism of reduction—and its opposite, restoration—can be studied by analysing the disturbance which results in a stable system of exchanges by the addition or subtraction of a new unit of money. Analysis

further shows how a new unit of money, as it spreads through the money supply as exchanges proceed, causes a series of partial reductions, the total of which is equivalent to the value of the goods and services which the first holder of the new unit of money consumed when he first put it into circulation.

### *7 Use of the three keys, first example—Banks and Non-Banks*

In monetary analysis, it is essential to distinguish between monetary and non-monetary intermediaries.

A non-monetary intermediary is capable of multiplying credit but not of increasing the supply of M1 payment money, whereas a monetary intermediary can. The essence of creation of new money is not credit. The formula 'loans make deposits' is true but misleading, since it makes no distinction between a loan made by a non-monetary intermediary and one made by a monetary intermediary.

It is only by referring to the mechanism of the clearing house that we can hope to sort out the problems raised by the gradual assimilation of savings accounts, whether demand or time accounts, and current accounts, and thus assess the significance of the use of cheques and transfer orders by depositors in savings banks from the point of view of the creation of money.

### *8 Use of the three keys, second example—Eurodollars and Eurodollar banks*

It is a common belief, especially in France, that when a bank operates in the Euromarkets in currencies other than its own national currency it has the same powers of creation of new money as it has in the national currency of the country in which it is domiciled. To attempt to discover whether or not this belief is justified involves comparing the points of view of the two writers who have set out most clearly the two opposite viewpoints: Michel Lelart, on the one hand, in his book *Le dollar, monnaie internationale* and Jane S. Little, on the other, in a book sponsored by the Federal Reserve Bank of Boston, entitled *Eurodollars – the money market gypsies*.

### *9 Use of the three keys, third example—Investment on the basis of monetary creation*

The very notion of reduction leads to the conviction that the use which

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new money is put to and the purposes to which it is allocated ought to be decided in terms of the general interest, which should in turn be determined according to appropriate rules.

### **PART TWO**

#### *Monetary regulation and the monetary indicators*

##### *1 Nature abhors a vacuum*

There is no reason to believe that the fascination that gold has exercised on man's imagination for six thousand years will quickly disappear and that it will cease to be an investment hedge that is earnestly and justifiably sought after. But gold as a money is quite another question and the gold standard system even more so.

The gold standard is based on a wager and a probability. The wager is that the holders of notes will not all wish to exchange them for precious metal at the same time. The probability is that they will not. The wager was a reasonable one for over two centuries; today it would be one that bankers would certainly lose, because the probability is against them.

The real cause of the paralysis of those in power when faced with the present monetary disorders is a general refusal to accept the evidence and an obstinate preference for disciplines that now belong irrevocably to the past, rather than for innovation.

But societies and monetary systems abhor a vacuum, just as much as nature. This is the reason why, now that it is admitted that this vacuum exists, governments are turning towards new systems and new disciplines, such as the control and the regulation of those forms of money that actually or potentially constitute means of payment.

##### *2 Monetarists and monetarians*

The rise of the monetarist doctrine followed the disappearance of the old disciplines. The state cannot let the money supply get out of hand, devoid of control, propulsion and brake, in other words without any regulation. 'Monetarism', as it will be understood in this book, is the search for reliable indicators, intervention instruments, guides and rules according to which to apply them.

*3 The uncertainties of monetary regulation*

Whilst on the one hand the inevitability of monetary regulation and the government's responsibility for it are no longer in question, on the other hand the poverty of the means at governments' disposal, the inaccuracy of the indicators and the defects of the existing instruments are all very much in evidence. All these factors together constitute proof of the uncertainty of knowledge which can only be dissipated by a rigorous analysis of the mechanics of money. Some examples of this uncertainty and its consequences on the monetary policies of France, England, the United States, Germany and Switzerland are given.

*4 A flaw in monetary thinking*

There is a basic flaw in monetary thinking which vitiates interpretation of the indicators, causes wrong decisions to be taken, disrupts the mechanisms and paralyses the regulatory machinery.

This flaw is the confusion of those instruments that are money with those that are not, the attribution of the same nature and the same role to claims whose roles and natures are different, the unjustified confusion of those kinds of money that are used for exchanges with those that do not, those that have the payment function with those that do not, a failure to distinguish between what may *become* money or cause the creation of money and what *is* money.

*5 The search for a new monetary indicator*

The point of attempting to devise a new indicator is not so much to provide better information for those whose responsibility it is to decide monetary policy as to penetrate further into the nature of the mechanics of money using a parameter which is rarely taken into consideration, namely the nature of the transaction in which a given unit of money is involved. To this end we shall use the fundamental data of National Accounts relating to production, consumption and added value.

The corrective factor to be added to M1, which is the ultimate aim of these researches, is an aggregate derived from the following formula:

$$\frac{1.5}{V} \Sigma MR$$

in which  $V$  is the average transaction velocity,  $M$  the quantity of a given category of loan or savings deposit (whether bank or non-bank) and  $R$  the annual rate of turnover of each category.

The proof of this formula illustrates the monetary effect of a payment unit and confirms the special nature of  $M1$ , which distinguishes it from all the other indicators. At the same time, it gives some measure of the mistakes people make when they fail to distinguish, within the same money supply definition, between items that are money and those that are not, even if they are often called 'near-money' or 'quasi-money'.

## *6 Monetary creation and inflation*

### (1) Credit cards

The formula can help us to work out a corrective factor to be added to  $M1$  in order to take due account of the increase in transaction volume brought about by the use of credit cards.

### (2) International money

Looked at from the narrow point of view of creation of money as it takes place within the confines of a state, purely extranational currencies cannot be called inflationary, in spite of the fact that they undoubtedly constitute an artificial form of liquidity. It would be possible to define such a currency so that it retained its purchasing power and thus constituted the unchanging standard of value which every system of measurement requires.

## *7 The taboo of inconvertibility*

The arguments of the previous chapters justify a definitive rejection of the notion of backing, which has dominated monetary thinking for so long and influenced the definition of money as representative of a commodity. In this connection, the example of John Law and his monetary system is discussed and the confusions which it gave rise to, and still gives rise to, are discussed.

**PART THREE***Composite currency units, their future and their shortcomings: the Eurostable**1 The implications of present-day monetary disorders*

If we look beyond the various unsuccessful attempts to create a new monetary system we can see an underlying tendency and a growing need—the need for a new international payment unit which is stateless, stable in terms of purchasing power, independent of foreign exchange market gyrations and price levels, and which is not the privileged instrument of the domestic policies of any national government.

*2 The International Monetary Fund and its Special Drawing Right*

The IMF is one of the most original institutions to have emerged during the post-war period. It was set up in order to prevent a recurrence in the field of monetary and economic relations between states of those mistakes that led the world into the Great Depression of the thirties. It has a dual role.

First, it is supposed to provide liquidity for international financial transfers and exchanges by lending to countries whose payments are in deficit the foreign currency they are short of, using funds provided by member states ('quotas').

Its second function—the one that concerns monetary theory most directly—is to devise a monetary system to replace the now defunct Bretton Woods system, which was characterised by gold definition of the par values of currencies, fixed exchange rates, the pre-eminence of the US dollar and its full convertibility into gold.

A new system is now being developed. It involves the creation of a new unit of value in the form of a composite unit, or basket of currencies, intended to replace gold as the yardstick by which the value of other currencies is measured. The IMF is thus venturing into promising but uncharted territory. The unit (known as the 'SDR'), such as it is defined at present, is in fact seriously affected by certain deficiencies that are likely to compromise its future. The most serious is its instability of value, which makes it unsuitable for use as a monetary standard. But this drawback can be obviated provided due note is taken of the exceptional quality that a purely extranational composite unit reserved exclusively for trade between states could have, namely constant purchasing power.

### *3 An American view of composite currency units*

Professor Machlup recommends the creation of an extraterritorial currency unit, the value of which would be stabilised and the creation of which would be spontaneous.

Yoon Shik Park and Joseph Aschheim look at previous experiences in the field of composite currency units and analyse the reasons why they failed to work. Their conclusion is to call for innovation in this important field.

### *4 An extranational payment unit with constant purchasing power: the Eurostable*

Governments are, by their very nature, ill equipped to invent, to experiment and correct on the basis of experience. Most innovations in monetary and financial techniques have been the work of the private sector. The Eurostable experiment, which would be carried out by a group of Eurobanks in a Eurostable Consortium, ought to help to overcome the obstacles arising from a project which differs so radically from traditional ideas.

Such an experiment would provide governments with useful information which they could use in order to develop the generalised use, within a given monetary zone, of a payment unit which would be peculiar to that zone and which would have the following advantages: it would be an unvarying standard of measure and would supplement the dollar and Deutschemark in their exclusive roles in the field of international finance; it would re-launch the grand design of European Union and give the monetary authorities better control of the Euromarket; it would stabilise international capital by 'fixing' floating masses of capital and constitute a stateless reserve and intervention instrument for central banks.

### *5 Thirty questions on the Eurostable*

This chapter lists the questions most usually asked about the Eurostable. These questions concern: the price indices; the currencies that make up the Eurostable basket; the conversion formula into third currencies; the rules by which the system would function and the planned Articles of Association of the Eurostable Consortium; the problem of possible inflationary effects; the likelihood of the existence of a two-way market

of depositors and borrowers; possible risks which the member banks of the consortium might run; the problem of lender of last resort; the position of the monetary authorities with regard to the idea and the adaptation of the experience gained from such an experiment to other international institutions.

*Epilogue*

*Glossary*

# Author's Preface

As he turns over the pages of this book, the reader will come across certain mathematical formulae. Let no one be dismayed by this; these formulae are only there in order to illustrate certain technical points, such as the question of converting SDRs into currency. Those who wish to ignore them can do so without fear of missing anything important.

The main ideas discussed in this book are, or ought to be, accessible to everyone. Essentially, the reader will find analyses and, more particularly, criticisms of traditional monetary doctrines.

These doctrines are those that are supposed even now to guide public policy in a wide range of everyday matters; to this extent they are the concern not only of professionals but of the educated public as well. Nowadays, stimulated by the frequency with which they see monetary matters reported in the newspapers, people are coming to ask more and more fundamental questions about money. This book attempts to provide some of the answers.

In order to make the book approachable, certain ideas, as well as certain quotations, have been put into supplementary notes, which are placed at the end of each section. These supplementary notes take the form of a series of articles which can be read without referring to the main text.

Finally, the book also offers three 'games'—Lotto-money, Lotto-clearing and Lotto-Eurostable. The purpose of these games, which are similar to the well known parlour game 'Monopoly', is to demonstrate with greater clarity certain basic concepts that may appear too complex in words alone and at the same time reveal defects and merits that may not be immediately obvious.

It is the author's hope that by giving his readers entertainment as well as argument he may the more firmly convince them of the truth of his conclusions.

One final point: the reader who has not time enough to read the whole book may obtain a good idea of the import of the work by reading the final section, entitled 'Epilogue'.

J.R.

# Introduction

In the modern world, money has long since ceased to be expressed in terms of coins made of a precious metal having its own intrinsic value. Everywhere money is nothing other than a claim on an institution, whether central bank or commercial bank, and takes the form of banknotes payable to the bearer or credits to a current account.

Money is created, it starts to circulate, and is divided into smaller units or added to others. It stays for a certain period of time in someone's pocket and then moves on somewhere else; as it passes from one person to another it fulfils its primary function, which is to act as the vehicle of exchanges of goods and services and to promote the conversion of production into consumption or investment. After it has taken part in a certain number of transactions, thereby oiling the wheels of the economy, it dies, or, in monetary terms, it is destroyed. This death is imaginary rather than real when the note enters a bank's till (it is no longer counted as part of the total money in circulation); but it actually is destroyed when a current account deposit disappears in consequence of a repayment of a loan or a transfer to a deposit or savings account.

The way a unit of money is created, used and then destroyed, the effects upon it of the various constituent elements of the economy, and its relations with economic activity and prices, are all factors that obey the laws of a certain mechanics. There is a mechanics of money just as there is a soil mechanics and a mechanics of fluids, this term being understood in the sense of a coherent theoretical structure, based on experience and intended to define in time the states, characteristics and effects of certain phenomena in terms of their mutual relations and in terms of external factors.

It is not my aim here to address myself to such matters as inflation, unemployment, income distribution, the equilibrium of the balance of payments, exchange rates, the 'snake in the tunnel' etc. These matters have already been more than adequately dealt with elsewhere and do not constitute the subject of this book. What is studied here is the process by which a unit of money is created and put into circulation and by which it is then destroyed when its natural life is at an end. Human beings produce,

consume, build, procreate, make and unmake societies, but this is not what biology—another form of mechanics — studies. This science does not concern itself with society, but only with the process by which living cells are formed, combine and are then animated by the mysterious power of life and the ability to procreate. In ‘monetary biology’ this same process can also be studied. The uncertainty which surrounds it is the prime cause of monetary disorders, their persistence and our impotence to correct them.

But we shall not succeed in properly managing national economies and regulating trade within states and between states as long as we have no precise knowledge of the natural or artificial mechanisms, whether spontaneous or planned, which control the movements of units of money (or which are controlled by them) and as long as the differences of opinion which separate so many well-meaning people have not been eliminated. These differences of opinion concern what is money and what is not; the definitions and the interpretation of the indicators, whether or not certain institutions have the power of creating means of payment, the objectives, the means and even the principles of monetary regulation, the meaning and the role of composite currencies, the ability (or not) of the Eurocurrency system to create money and many other aspects and problems of monetary economics.

It is not very often that in books dealing with money, without excepting the most distinguished, one finds explanations of these things. Even when the word ‘money’ is on the cover or included in the title, one generally finds that the problems that are dealt with are exclusively economic in nature. People cannot help referring to money because money is the inevitable vehicle of any economy, but they do not explain the process by which money is created and distributed. In the same way, books dealing with war refer to fire-arms because without fire-arms there can be no war; nevertheless they do not go into the details of how guns and missiles work. This is the reason why the banker’s clearing house, a vital institution by means of which a banking system creates means of payment, is only mentioned *en passant* in the *General Theory* of Keynes. In fact, the author only gives it a few lines. For the management of affairs in the fields of politics, social studies and economics to be efficient, reliable interpretations of events, accurate analyses and precise forecasts of the effects of decisions are required. Unfortunately, there is no such certainty in monetary affairs. The progress that has been made so far is rather in the recognition, now more or less general, that things are uncertain, that something, somewhere has gone wrong. Fortunately, this new awareness has now replaced the self-assurance and the intellectual

arrogance of the high priests of finance, the guardians of orthodoxy, who, forty years ago, dictated the dogmas of the moment.

It would be wrong to say that the Great Depression was caused solely by erroneous monetary doctrines, but it was ignorance of the monetary mechanisms that transformed what ought only to have been a passing crisis into a deep and lasting malaise, which in turn plunged the world into recession and then into war. These dangerous beliefs have not all been abandoned; some still persist. But whereas in the fields of demography, industry, agriculture and military and social matters these mistakes have been denounced and the opinions of our forefathers abjured, in France, at least, no one has dared to have the public hangman solemnly burn the sacred books. Instead, people have simply been content to cease to apply the teachings and have preferred to adopt, and to modify according to circumstances, a purely pragmatic approach. In many respects this is preferable but it is not without its risks.

We cannot continue living on pragmatism for very long. Once we have finished denouncing and destroying we shall have to start to put forward some more positive suggestions and begin the work of reconstruction. The time will come when we shall have to put financial relations between states on a more solid basis, create a payment unit that will not be a national currency and equip the monetary system with a stable standard of value, independent of exchange rates and prices.

Sooner or later we shall have to discipline floating masses of 'hot money' and reinforce the role of the International Monetary Fund, thus putting at the disposal of those responsible for monetary regulation within states undisputed indicators, efficient intervention instruments, properly defined principles and a coherent doctrine. When this moment comes, an exact knowledge of monetary mechanisms will be an essential prerequisite of success. The study of monetary mechanisms requires an approach midway between that of the world of business, which keeps the members of the banking profession decidedly earthbound, and the lofty intellectual abstractions on which university researchers spend their time. The former need to gain altitude, whilst the latter need to come down out of the clouds a little. Only in this way shall we be able to correct the errors and confusions which characterise contemporary thinking on monetary matters and which constitute the greatest obstacles to progress.

## Part One

# Three keys to monetary analysis

# 1 What is money?

All aspects of money, the question of its circulation, the problems of supply and demand, its uses, its abuses, and other desirable and undesirable effects, are subjects of considerable controversy at present and give rise to contradictions which aggravate the uncertainty and the doubt that assail those whose task it is to make choices and take decisions.

The fundamental cause of this is the persistence of the old notion of money as 'representative of a commodity, defined in terms of the backing that guarantees its value'. Instead of accepting a unit of money for what it is, namely a simple acknowledgement of debt (more usually known as a claim on an institution) created *ex nihilo*, many people prefer to look at it as something that 'represents' a commodity, or, failing a commodity, some substitute for a commodity in the shape of another claim, this time on the person to whom the monetary unit is lent, i.e. a borrower.

Money is nothing other than a *transferable acknowledgement of debt, a promise to pay, arbitrarily created and usually with an indeterminate maturity and exchange value*. Any such acknowledgement of debt which is put into circulation and used directly as a means of payment for goods and services is *money*. There is no natural link between the commodity which this unit of money represents, the backing in terms of which payment is guaranteed and its actual value. The backing is only a form of protection, which may be useful but which is not a necessary precondition for the actual creation of the money.

This belief in the nature of money<sup>1</sup> as representative of a commodity has given rise to a complex mythology in which 'genuine claims' are contrasted with 'false claims', 'artificial' money with 'real' money, an astonishing system of verbal sophistry which explains the creation of money by the banking system as the result of the 'monetisation of a non-monetary asset'. If the consequences of such ideas were confined to the arena of academic debate it would not matter very much. But unfortunately they have gone far beyond that. In the eyes of many people these are still the ideas that ought to govern public policy on money and credit.

The rules governing the creation of money based on the idea of a commodity backing have become dangerous because they preserve the

appearance of security whilst the substance of it has disappeared. This traditional definition should be expunged from the monetary canon. Apropos of the central bank reserves on which money is supposed to be 'founded', the Bank of France writes: 'Such a conception goes back to the time when bank notes and, indirectly, bank deposits, were officially convertible into precious metals. It is now obsolete'.<sup>2</sup>

In fact, it is only by going back to the beginning and submitting the traditional ideas on the nature of money to critical analysis that a doctrine can be developed which will be appropriate for the monetary mechanisms such as they really are in the modern world.<sup>3</sup> No progress can be made until the fundamental ideas have been revised and this traditional doctrine of money as a claim which stands in place of a commodity has been definitively refuted. This is what one contemporary writer, M. Michel Lelart, says on this subject:<sup>4</sup>

Nowadays money is exclusively fiduciary. . . . Such a complete transformation in the nature of money has made it impossible to continue to assimilate it to a commodity.

Consequently, it has become necessary to develop a theory which will account for the peculiar qualities of money and which will, in particular, explain the mechanism by which it is created. . . In fact, however, in spite of this radical transformation which the nature of money has undergone, the temptation of comparing money to a commodity is one that few economists have been able to resist. On the contrary, it has been reaffirmed, defended and, as far as possible, justified. Although he considered money to be a form of claim rather than another commodity, Keynes' responsibility in this respect is very great. He did not emancipate himself from the well entrenched habit of defining money not in terms of its nature but in terms of its function.

The nature (of money) has fundamentally changed. . . . Treating money as just one more commodity, the liquid commodity *par excellence*, has naturally led people to ignore the problem of how it is created. . . .

The concept of money as 'representative of a commodity' results from the transformation into a revealed truth of a mechanism which in its day had great merits, namely the mechanism of the gold standard. Before they stood for quantities of gold, units of money had stood for other things, such as shares, as in the system of John Law. Then they stood for property confiscated from *émigrés* during the French Revolution, as in the

case of the *assignats*, and finally they came to stand for goods and then claims on borrowers or on the whole economy.

A new unit of money certainly represents something, but that something is not what most people think. It represents a *drawing* on or a reduction of the resources of the community; more precisely, a drawing on the holders of currency. The effect of this 'drawing' or 'reduction' continues until the new unit of money is destroyed. To try to base this new unit of money, created by an institution and credited to a borrower, on the claim on the borrower that the issuer thereby acquires, is as illogical as the harlequinades of circus clowns. There is no doubt that such a claim is necessary as a guarantee for the lender, but that does not justify the theory. The creation and the functioning of an instrument is something that should not be mixed up with a device intended merely to reduce a lender's risks.

A motor car is not defined by the insurance policy which covers the risks entailed in car ownership any more than pictures or jewels are defined by the alarm systems and locks that protect them. It is a fundamental fault of reasoning to take as the basis of a process something which is nothing more than a guarantee for the lender or, at most, a more or less automatic mechanism which helps to oil the wheels. This kind of muddled thinking and the muddle it leads people into when they try to regulate monetary mechanisms will continue as long as these old ideas have not been refuted and replaced.

## NOTES

<sup>1</sup> The nature of money is a fundamental theme of the author's previous writings. *La vraie nature de la monnaie* is the title he gave to a book published in 1973 by the 'Editions de la RRP'. For further discussion of this topic, see page 106.

<sup>2</sup> *La Banque de France et la monnaie* (Bank of France).

<sup>3</sup> 'The notion of wealth leads to an impasse. This impasse derives from an unjustified comparison of money to a simple asset or item of liquidity . . . What gives money its economic importance, however, is its payment function.'

<sup>4</sup> Michelle de Mourgues, *Economie monétaire* (published by Daloz).

<sup>4</sup> *Le dollar, monnaie internationale* (published by Editions de l'Albatros).

## 2 How money works

'Lotto Money' is a game designed to demonstrate the arbitrary way in which payment instruments are created and to show how little we really understand about money and the way it passes into circulation. I recommend it to everyone who has to deal with money and more especially to those whose job is to talk about it.

The players, who number twenty in all, are divided into two groups of ten (called group *A* and group *B*) and each group has a leader. Each player has a little machine, a kind of die-stamping press, which is worked by a handle and which makes counters or 'units of production', UPs for short. The counters are of two sorts. Some are edible, black in colour and made of liquorice. These are called 'consumption UPs'. The others are hard and inedible; they are made of red plastic and can be used as accessories to the machines that produce the UPs, in order to improve productivity. These counters are 'investment UPs'. Each of the two group leaders has a printing press on which he prints monetary units, or MUs, simple pieces of paper bearing the words 'I promise to pay the bearer 1 MU<sub>a</sub>' (in the case of group *A*) and 1 MU<sub>b</sub> in the case of group *B*. The MU press is worked manually and requires no special effort, even at great speed. It can also be controlled by a kind of automatic pilot which is connected to the player's machine and eliminates any deliberate intervention by the group leader. This is called the 'discount window'.

The game is divided into sessions, each one consisting of several rounds. At the end of each round the players exchange UPs they have made for MUs, which have been made by the group leaders. At the end of the following round, each player uses the MUs he has 'earned' in order to buy UPs. He consumes or saves the black UPs (the consumption UPs) and uses the red ones in order to improve the productivity of his UP machine, his aim being either to produce more UPs in the same time or to produce the same quantity for less effort.

Each group is awarded points calculated by means of a formula incorporating two parameters. The first parameter is the number of UPs produced during one session and is called the GNP. The second parameter is the number of UPs that can be obtained on average during this session in exchange for 1 MU. This is the purchasing power of the MU. The

winner is the group that obtains the greatest number of points; the number of points awarded to a group rises in proportion as its GNP and the purchasing power of its MUs rise.

The game is about to begin. Each group leader must first of all supply his players with enough MUs to enable them to obtain the maximum number of points. To this end he must print and distribute a certain quantity of MUs, but how many and to whom? Each group leader can only find out by trial and error, according to his own temperament. The first, *A*, putting his faith in the purchasing power parameter, distributes his MUs parsimoniously; the leader of group *B* distributes three times as many MUs.

The group leader distributes the MUs by lending them to his players, which means that he becomes a creditor instead of a debtor, as the words 'I promise to pay the bearer 1 MU' imply. But the maturity date is omitted from the MUs, as are also the repayment terms, whereas the promise to pay that the leader of the group receives from the player to whom he lends MUs has a precise maturity, as well as an interest rate.

The game begins, the players start to turn their handles and after a few rounds the first group starts to run out of MUs. At each halt in the game there is a shortage of cash; a certain number of sellers find no buyers for their UPs and in consequence reduce production. In addition to this shortage, which derives, as it were, from purely mechanical reasons, there is also the psychological element of speculation. The value of the MUs starts to rise. The holders prefer to keep them in their pockets, rather than spend them. The conversion of production into consumption or investment, the process on which the whole system is based, is slowed down.

In the second group, on the other hand, this process of conversion is working and even expanding because the participants are using some of the red counters they produce in order to make their machines more efficient. But if the GNP parameter is progressing well and causing the total of points to increase, the second parameter, purchasing power, is tending to work in the opposite direction. The players themselves, by speeding up their exchanges, shorten the gaps between rounds. The total quantity of MUs has not increased but they circulate faster. The time-lags, and therefore the production that takes place between each exchange, are reduced.

The group leaders are starting to get worried, the first because his total of points is too small, which he attributes to the fact that his MUs are circulating too slowly, the second because the velocity of circulation of his MUs is too great, which causes him to worry about the purchasing power.

They consult the experts. Some suggest linking the MU to gold, whilst others mention a lot of so-called 'monetary indicators', called M1, M2, and M3 but without explaining how to use them. The two group leaders are perplexed.

The leader of group *B* has acquired a taste for liquorice and is no longer content with just making credits; instead he now uses the MUs he prints in order to purchase UPs, which he consumes cheaply. The leader of group *A*, who is more prudent, continues to print MUs and lends them to players whom he chooses on the basis of their ability to invest wisely and work hard. Soon his team catches up with the other and then overtakes it.

The harmony that has reigned so far in each group is gradually replaced by differences of opinion, something economists call 'sectoral tendencies'. They assume different forms in each group. In group *A*, one of the players decides to increase the price of his UPs. The reasons for his decision are not clear. Perhaps he thinks that his liquorice is better than the liquorice the other players produce. But more probably recent events have given him cause to expect a rise in prices, so why not anticipate it? The embarrassed replies which he gives to his group leader suggest that he is motivated less by calculations of profit than by pure impulse. What was at first only a sectoral tendency becomes more general. One by one the players, noticing that the price they are paying is higher than the price at which they sell, whilst their number of hours worked remains the same, also raise their prices. The team leader is worried because his total number of points is likely to be affected. Up to this moment he has tried to keep the production of MUs equal to a growth rate in line with the production of UPs by his players, i.e. about 5 per cent per session, but the players have been affected by the price rise, which is higher than the agreed 5 per cent.

At the end of the seventh round, several players find they can no longer afford to buy what is offered with the MUs they have available. Those players who have not been able to sell what they have produced slow down. At the end of the next round they too can no longer buy the goods on offer, even at the old prices.

Production is strangled: it is the beginning of a process of asphyxiation. The same thing is happening in group *B*, though the causes are different. One of the players, growing tired of turning his handle and considering that he is being discriminated against, starts to raise his prices faster. Others start to imitate him, but the leader of the group decides to stop regulating things manually, switches on the automatic pilot and connects it to the MU machine.

As the rise in prices, which at first was purely sectoral, spreads through the system, the automatic pilot takes over. The MUs are produced faster and faster by the machine and pass into circulation. Whether the machine is badly regulated or whether it is operating on false premisses, too many MUs are being produced. Prices start to rise faster and faster.

In group *A*, weary players cause more and more new MUs to be produced and as long as they do so they are able to consume without producing. The team leaders consult their textbooks: 'The Complete Monetarist' and 'Keynesianism in Five Lessons – Results Guaranteed'. The two books are in flat contradiction with each other. All they have in common is the peremptory nature of their assertions and the contempt they have for any attempt at contradiction. The group leaders are no better off for having consulted them. The leader of group *A*, in order to check the price rise and get production going again, decides to curb demand, brake the MU printing machine and increase interest rates so as to attract some of the MUs that have begun to trickle through from the other team. Finally, he imposes taxes on the players in order to absorb some of the liquidity he has so generously created himself in the form of loans.

The hoped for result is not achieved. Demand is effectively curbed, but so is production. The majority of the players have contracted debts because they wished to make their machines more efficient. They accepted high rates of interest only because they were counting on both an increase in production and a continual fall in the purchasing power of money, which would reduce their repayment costs proportionately. In fact the reverse has happened. The negative effects have been magnified by pessimistic expectations and the collapse of confidence on the part of the most enterprising players, who were also the most frequent users of red counters (investment UPs).

In group *B*, the leader, instead of curbing demand, attempts to increase it, believing that by spreading his fixed costs over greater production he will be able to limit price rises. He lowers interest rates and even considers creating more MUs in order to give them as presents to the players, rather as President Carter intended when he planned to give \$50 to every American man, woman, and child. Once again, unfortunately, the results are not those that were expected; various things happen.

The first is a shortage of raw liquorice; the second is a loss of control over the machine that produces the MUs. Having relieved the players of the task of turning the handle, the machine has gone wrong and has increased, rightly or wrongly, the demands made on it. In the formula used for working out the total points, the GNP parameter looks fine, but the MU parameter looks less favourable.

Let us leave the players there. At the end of this fourth session neither of the teams has succeeded in working out the rules of the game that will enable them to win the contest. The conclusion they come to – which is also mine – is that it is preferable to analyse the mechanisms in question, to take them apart and to try to understand the way they work, rather than continue to cling to beliefs of doubtful value and to continue to subscribe to doctrines that lack any foundation. Only in this way can one hope to learn how to make good use of the instruments one has available.

### 3 Three keys to monetary analysis

No attempt to control and direct monetary phenomena can succeed if it is not based on a proper understanding and a correct interpretation of the mechanisms by which money is created and by which it circulates. This means that we must take these mechanisms apart, separate the components from each other and try to discover how they interact, using exactly the same method an engineer would adopt if he wanted to understand how a piece of machinery worked. We are not concerned here with the economic theories of money: our aim is rather to try to understand the phenomenon of money itself and the way it works.

The usual method of economics is to study the way money is distributed and its effects on production and on prices, just as the manufacture of lorries is studied by drawing up statistics, making comparisons, looking into the transport of goods, trade and the distribution of commodities. In other words, economics takes units of money, just as it takes lorries, as they come out of the factory, and remains outside.<sup>1</sup> This is useful but it is not always enough. The purpose of this study is to go *inside* the factory and study in detail the process of manufacture by using one basic premiss and three keys.

The basic premiss, as we saw in Chapter 1, is that a unit of money is nothing more than a claim on an institution arbitrarily created without any natural link with a commodity which it is supposed to represent, a backing which guarantees its value or any tangible counterpart remitted to the issuer in exchange for it.

The three keys are the following.

**Payment**, the fundamental activity by which money carries out its function. It is nothing more than the transfer from one economic agent, *X*, to another, *Y*, of a unit of money in return for a transfer of goods or services between *Y* and *X*,

**The clearing** process, which makes it possible for banks to create

their own means of payment and superimpose them on those deriving from the bank of issue.

*The drawing* on the total wealth of the holders of money which is the inevitable result of the creation of a unit of money. The analysis of this phenomenon of *reduction* (and its opposite, restoration) demonstrates, on the one hand, the relations between money, its velocity, its quantity and the uses it is put to, and, on the other, economic activity and prices. It also causes the artificial divisions between the various sources of money to disappear and provides a basis on which credit may be distributed selectively.

With the help of these three keys one can successfully analyse monetary mechanisms, about which little is really known or, which is worse, which people *think* they know, though the blunders they make prove that the opposite is the case. This happens, for example, in the case of the Eurocurrencies. Many experts – and in France most of them – attribute powers of monetary creation to the Euromarket; some, such as the late Jacques Rueff, consider that it is partly responsible for world inflation.

In fact, to the observer who has not looked closely enough into the subject, it may indeed seem that there is no difference between a payment order to a London Bank in pounds sterling and one given to the same bank in dollars, hence the conclusion that London banks have the same powers of monetary creation in dollars as in sterling, though when they operate in dollars they are not obliged to abide by any discipline, whether British or American. But the truth is that the Eurobanks act as *non-monetary* intermediaries in currencies other than those of the countries they are domiciled in and thus do not create any new money. This can be seen if one analyses what happens using the two keys, payment and clearing.<sup>2</sup>

Another example is provided by the choice and definition of monetary indicators; economic analysis looks for and registers the flows, the quantity and the velocity of money, which presupposes that the indicators that reflect these factors are clearly defined and correctly interpreted. In fact, this is not the case. Of course, it is possible to call into question the very idea of controlling the money supply but certain established facts cannot be called into question: for example, firstly, the fact that in every country the money supply has become an essential indicator; secondly, the fact that qualified experts question the interpretation of these indicators and, consequently, the measures of monetary control based on them.

These three keys help to make the interpretation of monetary

statistics more accurate and to distinguish what is really money from what is not. They also lead to a corrected indicator which reflects more faithfully than M1 the volume and effects of money transactions. At a time when the old concepts and disciplines that governed our thinking are coming to appear more and more discredited it is important that the mechanism by which money is created, put into circulation and finally destroyed should be understood. This is the purpose for which these three keys are proposed.

## NOTES

<sup>1</sup> In his book *L'Impôt sur le capital et la réforme monétaire* (published by Editions Hermann), Maurice Allais writes: 'The application in France of senseless monetary policies has merely been the result of an incredible intellectual backwardness with regard to the nature of money and credit.'

<sup>2</sup> In a well-documented book on Eurodollars with a preface by Henri Bourguinat, entitled *Mécanisme de change et marché des eurodollars* (published by Ed. Economica), Pierre-François Champion and Jacques Trauman write, apropos of the multiplier in the Eurodollar system: 'This is a difficult and very controversial question to which many economists have tried to give a reply, without any success'. This is true: it is a difficult and controversial question. Nevertheless, the need to draw some solidly founded conclusions, on which theoreticians and practical men can agree, still exists. How else can one hope to discipline, let alone regulate, international capital flows, which are essential for the health of the world economy? But there is little hope of rationally analysing the Euromarket as long as the first key to proper understanding of these matters, namely the concept of payment, is neglected and the second, which is the clearing mechanism, continues to be ignored.

As far as 90 per cent of their activities are concerned, the Eurobanks are non-monetary intermediaries, just like savings banks. It is only the assets that the Eurobank has in banks domiciled in the United States which possess the 'payment function'. The deposit at a Eurobank does not have the payment function which a deposit at a bank in national currency has, i.e. the currency of the country where it is domiciled. The fact that Eurobanks do not function as monetary intermediaries is due to the absence of a clearing mechanism. It is this lacuna in the system that explains why a Eurobank does not settle its debts by means of a claim on itself but by means of a claim on a third party (its asset in a bank domiciled in the United States) which consequently means that it does not create any new money.