

**MACROECONOMICS WITHOUT LAWS:  
METHODOLOGICAL AND THEORETICAL ASPECTS**

**by**

**PIET HEIN VAN EEGHEN**

**submitted in fulfilment of the requirements for the degree of**

**DOCTOR OF COMMERCE**

**in the subject of**

**ECONOMICS**

**at the**

**UNIVERSITY OF SOUTH AFRICA**

**SUPERVISOR: C S W TORR**

**NOVEMBER 1999**

## CONTENT

INTRODUCTION	1
CHAPTER 1: A Methodology for Economics without Laws; Choice and Identification Theory	4
CHAPTER 2: Choice Theory without Laws; Towards a Methodology for Tendencies	27
CHAPTER 3: Identification Theory for Macroeconomic Coordination	45
CHAPTER 4: Financial Markets, Interest Rates and Sectoral Equilibrium Conditions	76
CHAPTER 5: The Equilibrium Conditions of the Classics, Wicksell, Robertson and Hayek	98
CHAPTER 6: The Equilibrium Conditions of General-Equilibrium Theory	125
CHAPTER 7: Choice Theory about Macroeconomic Coordination I: Prices and Entrepreneurship	153
CHAPTER 8: Choice Theory about Macroeconomic Coordination II: the Impact of Incorporation and Bank Money	180
CHAPTER 9: The Economics of Keynes's <i>General Theory</i> : an Assessment	209
CONCLUSION	252
BIBLIOGRAPHY	258

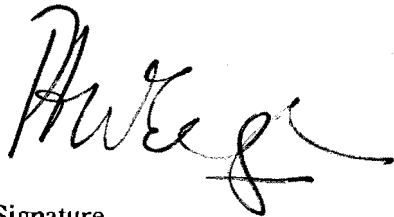
**LIST OF DIAGRAMS**

<b>Figure 7.1:</b>	<b>Demand Schedule of good i</b>	<b>157</b>
<b>Figure 7.2:</b>	<b>Supply Schedule of good i</b>	<b>158</b>
<b>Figure 7.3:</b>	<b>The market demand and supply schedule of good i</b>	<b>161</b>

DECLARATION

Student number: 528-730-8

I declare that *Macroeconomics without laws: methodological and theoretical aspects* is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

A handwritten signature in black ink, appearing to read 'P H van Eeghen', written in a cursive style.

Signature

Mr P H van Eeghen

Date

30 November 1999.

## ACKNOWLEDGEMENTS

I wish to express gratitude to my supervisor Chris Torr for his helpful comments and his encouragements to be tighter, clearer and more precise in my style of argumentation. The process was at times painful, but the end product is, I am confident, much the better for it.

The financial assistance of the Centre for Science Development (HSRC, South Africa) towards this research is gratefully acknowledged. Opinions expressed, and conclusions arrived at, are mine, and are not necessarily to be attributed to the Centre for Science Development.

*Soli Deo Gloria*

330 VANE



0001760781

**ABSTRACT**

This study develops an economic methodology in which behavioural laws (in the sense of necessary connections between cause and effect) play no essential role. Hayek and Menger are important sources of inspiration. Economic behaviour is explained by way of tendencies rather than laws and insight into economic phenomena is gained by laying bare their "action structure" in which behavioural explanation and behavioural laws play no role. This methodology is applied to the explanation of macroeconomic coordination. The appropriate equilibrium conditions are developed and the relevant tendencies away from or towards equilibrium are identified. The institutions responsible for these tendencies are identified and analysed. In the light of these findings, pre-Keynesian macroeconomics, the macroeconomics of Walrasian theory, as well as Keynes's *General Theory* itself are critically assessed.

**Key terms:** Austrian economics, tendency, macroeconomic equilibrium.

## INTRODUCTION

Since a human being has a mind which directs his or her behaviour, the explanation of human behaviour should be conducted in terms of what happens inside the mind: motives, opinions, knowledge and expectations. This is the basic insight of subjectivism in economics, associated mainly with the Austrian and Post Keynesian schools of thought.

Austrian subjectivists view choice with the aid of a means and end framework. To the extent that choice is conscious, it entails a decision to adopt a certain goal and a decision to take on a certain course of action as a means of coming closer to that goal. Because it is taken for granted that people can adopt many different goals and can conceive of many different ways of working towards a given goal, subjectivist theorists regards deterministic models of human behaviour with scepticism. Precisely because orthodox economics tends to endow its agents with only a single goal (the maximisation of profit or of utility) and makes them perceive only a single means of reaching that goal (a closed and unambiguously valued set of choice alternatives), does it tend to model human behaviour in a mechanistic fashion. Even if subjectivists wish to endow economic agents with a single goal, they regard the assumption of a single means as a distortion of real-life human choice and thus reject the machine analogy.

However, even in subjectivist circles there is a widespread suspicion that a rejection of mechanistic modelling implies a nihilistic rejection of all theory (Garrison, 1982: 133). As Kirzner (1992a: 47) notes: "[W]e now find ourselves confronted with the difficulty that the most consistent application of subjectivism appears to dissolve the very notion of economic law... How can one salvage the possibility of economic regularities?" Coddington (1983: 50) similarly called the radical subjectivist position "indiscriminately destructive" (see also, Coddington, 1982).

The aim of this study is to show how the possibility of economic regularity can be salvaged and how subjectivism, even when consistently applied, does not undermine the possibility of formal theory. For this purpose it is necessary to develop a kind of theory-making

in which behavioural laws (in the sense as used in neoclassical theory) play no essential role. That is how the title of this thesis "macroeconomics without laws" is to be understood. This thesis suggests two ways in which macroeconomics without laws can be conducted. In order to point this out, it is necessary to introduce a distinction between two kinds of economic theory: *identification theory* and *choice theory* (Shackle, 1973), each of which avoids using laws in different ways.

The aim of choice theory, as the name suggests, is to explain choice. In principle, choice theory can make use of two kinds of behavioural regularities: a law and a tendency. A law is regarded as a causal regularity which is consistently valid (if A, then *always* B) and which is expressed with reference to concrete, historically-specific events. By contrast, a tendency is defined as a causal regularity which merely posits a predominant outcome (if A, then *in most cases* B) and which is expressed in terms of a broad range or pattern of events, thus abstracting from concrete historical detail (Hayek 1967a, 1967b). We endeavour to demonstrate how choice theory can be conducted, and economic behaviour explained, by way of tendencies rather than laws, which then provides us with our first kind of "economics without laws".

The aim of identification theory is to identify the types of action which, in a certain configuration, are responsible for the occurrence of a certain economic phenomena. As such, it merely establishes what we call the action structure of an economic phenomenon, without necessarily explaining any of the actions involved. Identification theory avoids using laws by simply not being concerned with an explanation of behaviour at all, let alone an explanation of behaviour by way of laws. This gives us our second kind of "economics without laws".

Chapters 1 and 2 will work out the appropriate methodology for choice theory and identification theory. Menger (1985) and Hayek (1967a, 1967b) are important sources of inspiration. The insights developed there will be applied to the explanation of a certain class of economic phenomena, namely those related to the achievement or non-achievement of market coordination, in particular the macroeconomic aspects thereof. Hence the title of our



study: "*macroeconomics without laws*". Macroeconomic coordination refers to the absence of monetary disturbances so that aggregate demand can be realised at the level of planned aggregate supply, i.e. no aggregate demand failure. Such a concept is equivalent to what writers such as Koopmans and Hayek referred to as monetary equilibrium or neutral money. It is also the intent of Say's Law.

Chapters 3 and 4 attempt to develop an identification theory of market coordination, meaning that the relevant equilibrium conditions expressing market coordination will be developed, in particular the ones associated to macroeconomic coordination. Chapter 5 then applies these insights to assess the equilibrium conditions as implicit and explicit in classical and Wicksellian macroeconomics: Say's Law, the Quantity Theory, Wicksell himself as well as the authors writing in his tradition, Robertson and Hayek. Chapter 6 similarly assesses the equilibrium conditions of Walrasian theory.

Chapters 7 and 8 move away from identification theory towards choice theory. They will be concerned with the explanation of actual behaviour relevant to the achievement (or non-achievement) of macroeconomic coordination. In an attempt to apply the insights of chapter 2, they will seek to unearth the tendencies according to which the market process moves towards or away from macroeconomic coordination, as well as the institutional factors which facilitate or impede such tendencies. As for these institutional factors, a distinction between primary and secondary institutions is introduced. Primary institutions determine the strength of the various equilibrating and disequilibrating tendencies, while secondary institutions affect the relevance and effectiveness of the various primary institutions, thus indirectly influencing the relevant tendencies. Chapter 8 identifies the limited-liability corporation and bank money as the two most important secondary institutions which undermine the effectiveness of the spontaneously equilibrating mechanisms.

Chapter 9 assesses Keynes's *General Theory*, from both an identification-theoretical (its equilibrium conditions) and a choice-theoretical (its behavioural tendencies) angle. The institutional context of the *General Theory* is alleged to be one dominated by the corporate firm and bank money.

## Chapter One:

**A METHODOLOGY FOR ECONOMICS WITHOUT LAWS;  
CHOICE AND IDENTIFICATION THEORY**

*It seems to me that the whole complex of theories and models in the textbooks is in need of a thorough spring cleaning. We should throw out all self-contradictory propositions, immeasurable quantities, indefinable concepts and reconstruct a logical basis with what, if anything, remains.*  
Joan Robinson (1985: 160)

**1.1 INTRODUCTION**

The aim of this chapter is to set the first steps towards an economic method in which laws play no role. The search for an economic methodology without laws will be approached by first investigating the nature of theory in general and economic theory in particular. Attention will also be given to the distinction, which we make between laws and tendencies. We will then be ready to introduce two kinds of economic theory for which laws need not be used: identification theory and choice theory. The methodology of identification theory will be exhaustively treated in this chapter, while the methodology of choice theory will be introduced here but more fully elaborated in chapter 2. This chapter is based on Van Eeghen (1994) and Van Eeghen (1996).

The precise ways in which choice and identification theory provide us with an "economics without laws" will be discussed in the body of this chapter, as they can only be fully understood once insight is gained into the precise meanings of choice and identification theory and once cognisance is taken of our meaning of the term "law". Our rejection of laws (in our meaning) applies only to the human sciences, because we do allow for the existence of laws in the natural sciences. Hence, our argument is contrary to the Humean position which discards the existence of laws in general, irrespective of whether they appear in the social or the physical sciences. A brief discussion of the philosophical problems surrounding the concept of causality will also be provided.

## 1.2 THE NATURE OF THEORY

### 1.2.1 Regularity, form and causal relation

Historical processes contain transient as well as (semi-)permanent aspects. There are things which continuously change with time and there are things which exhibit a degree of consistency over time. Similarly, while historical processes exhibit facets which are unique to specific spatial circumstances and therefore different for each of them, there also are facets which are stable across a variation of settings.

Now the aim of theory is to identify those aspects of reality, which can be generalised over time and place. Generalness is what distinguishes theory from "ad-hocery" or anecdote. Knight (1921: 21) observes: "A science ... must talk about things which 'stay put'; otherwise its statements will not remain true after they are made; and there will be no point in making them." Keynes (1973b: 296) similarly remarks: "The object of a model is to segregate the semi-permanent or relatively constant factors from those which are transitory or fluctuating so as to develop a logical way of thinking about the latter." Theory thus has to do with the *regularities* of nature.

As intimated by Keynes in the above quotation, the usefulness of theory lies in providing organisation amidst the diversity of phenomena. Without knowledge of generalities all particular facts will appear new, unique and random to us; they will speak an unknown language. If understanding involves relating the familiar to the unfamiliar then generalities, which provide familiarity by making explicit the regular elements in phenomena, are indispensable. As Menger (1985: 55-56) notes: "We understand phenomena by means of theories as we become aware of them in each concrete case merely as exemplifications of a general regularity".

There are, however, degrees of generalness relative to the size of the domain to which the theory applies. A restricted domain can follow from the fact that we do not always wish to study a phenomenon in all its possible settings (c.f. Musgrave 1981, Lawson 1994: 280). Consequently, a generalisation which is not universally valid but holds true for a narrow

historical setting, may still qualify as theory. A restricted domain can also be the result of the kind of phenomena to be explained. A theory about the swimming techniques of the dolphin naturally only has the sea as its domain. Likewise, a theory about "monetary equilibrium" must have a monetary exchange economy as its domain, since the phenomenon simply does not occur outside that domain.


Two kinds of regularities can be distinguished: in the form of phenomena and in the causal relationship between phenomena (Menger 1985: 36). A regularity in form describes those properties of a phenomenon which are present in all (or most) of its particular time-place manifestations. Such a regularity is often called "type" or otherwise "nature" or "structure". In economics, form regularities would concern the characteristic attributes of phenomena like transaction price, money, production or entrepreneurship, which would then be contained in a definitional description of such concepts. For example, transaction price is (in a monetary context) the actual amount of money exchanged for a certain good, as agreed between its supplier and demander. A regularity in causal relationships, on the other hand, records those causal links which hold true in all (or most) of the instances where the antecedent occurs. For economics, a causal regularity would involve the relationship between, say, changes in demand and changes in price, or changes in income and changes in spending. Two kinds of causal relationships can subsequently be distinguished, namely laws and tendencies, whose precise nature will be more fully elaborated in the next section. Hence, our use of the term law does not refer to all theoretical regularity in general, but to a particular kind of *causal* regularity.

To reiterate, theory is about the regularities of nature, i.e. those aspects of nature which can be generalised over time and place - even if not necessarily all times and all places. Nature displays two kinds of regularities, namely in the form of phenomena and in the causal relationship between phenomena. In turn, we distinguish two kinds of causal relationships, namely laws and tendencies. On the basis of these findings, it can already be concluded that the rejection of the existence of laws of human behaviour does not imply theoretical nihilism. Firstly, there is a kind of causal relationship alternative to law, namely

tendency to be discussed below. Secondly, there is a regularity alternative to causal relationship, namely in the *form* of phenomena. In fact, regularity in the form of phenomena can even be regarded as more fundamental than causal regularity.

The form (nature or structure) of phenomena and the causal relationships between phenomena are not independent aspects of reality. The form of a phenomenon can reveal which other phenomena can or cannot be causally related to its occurrence: "... if we ... have knowledge of what a thing is, then we can deduce its causal powers" (Lawson, 1989: 62; see also Bhaskar, 1978, Sayer, 1984: 95-96, Aronson, 1984: 165 and Lawson 1996). To take a popular Post Keynesian theme as an example, the fact that the money stock (in a closed economy) is demand-determined simply follows from the nature of bank money. In other words, theory about the form of phenomena precedes theory about the causal relationship between phenomena, as Eucken (1951: 89) concurs: ".. morphological analysis of reality must precede [cause-] theoretical work". Nancy Cartwright (1995: 277) similarly notes: "[Causal] regularities are secondary." The nature of a phenomenon conditions the causal factors which may or may not be relevant to its occurrence.

This insight is not always useful in the physical sciences, as they typically deal with phenomena whose form or structure is unobservable, e.g. protons or electrons. As a result, theorists have to hypothesise about that structure and, as such, about the causal relations potentially at play. Theorists subsequently have to deduce observable consequences from their hypotheses in order to test them - hence the hypothetico-deductive method (Stewart 1979: 40). But in economics, the form or structure of phenomena like inflation or unemployment and their institutional environment can be described fairly unambiguously, although fuzziness may exist over what name to give to precisely what phenomenon (but what is in a name?) - for an example of a definition of inflation see below. As a result, knowledge of the potentially relevant causal relations need not be speculated or hypothesised about, but can be deduced from the observable form of things. Economic theory thus becomes a matter of making explicit and manifest what is implicit and latent in the form (nature or structure) of economic phenomena and their institutional setting (c.f. Menger 1982: 53).



Of course, knowledge of people's thought world is unobservable; we cannot directly observe what other people know, imagine, desire or expect - as the apostle Paul observes: "For who among men knows the thoughts of a man except the man's spirit within him?" (1 Corinthians 2:11). But economic theorists do not necessarily face this problem, as they do not need to explain the historical particularity of choice. As we will see in the next section, causal explanation can confine itself to deriving broad Hayekian *patterns* of thought or action. Knowledge about such patterns can be acquired without having to "read the mind" of any person in particular. Hence, the correspondence which Frank Knight saw between the social and natural sciences, namely that both deal with anti-empirical phenomena (see Hammond 1991), is not quite correct. Social science, by virtue of abstracting from the specifics of choice (what we will call *patterning abstraction* below), need not necessarily penetrate the unobservable.

### **1.2.2 Laws and tendencies; patterning and isolating abstraction**

Empirical reality needs to undergo abstraction in order to yield strict regularity; that is why theory needs abstraction. In order to explain the difference between laws and tendencies as causal regularities, two forms of abstraction need to be discussed, namely *patterning abstraction* and *isolating abstraction*. We will start with *patterning abstraction*.

Cause and effect (stimulus and response) can be formulated as historically specific events or as broad classes of events. In the former case, we say, for example, that the price of beans increases by 5.654 cents when demand for beans increases by 519.71 tons on world markets. In the latter case, we merely ascertain that prices tend to rise when demand increases, whereby the magnitude of the increase in demand and the resultant rise in price are neither mentioned nor considered, because such detail is regarded as too irregular to be generalisable over many time/place settings. Such a description of a broad configuration or range of events is what Hayek (1967a, 1967b) calls a *pattern*. *Patterning abstraction* is then the operation of disregarding all individual historical detail in events so as to be left with only their consistent pattern, i.e. those aspects which most (or all) particular time/place manifestations of some broad event-type have in common.

Historical events can also appear irregular and indeterminate because a variety of causal mechanisms interfere with each other, so as to produce an irregular combined result. For example, price is not only determined by factors underlying demand, but can also be influenced by factors underlying supply, such as production cost. Isolating abstraction then consists of the operation of separating out each of the relevant causal mechanisms at play so as to describe them one at a time (c.f. Mäki 1992a). It aims to describe a certain causal mechanism in its pristine purity, uninterfered with by extraneous influences. This is important, because we can often understand the combined effect of various mechanisms only after we have already understood the working of each mechanism separately (and we know all the mechanisms potentially at play)<sup>1</sup>.

We are now in a position to point out the difference between what we regard as a law and a tendency. First, a law is a relation between events, which is the product of isolating abstraction only, while a tendency is a causal relation which is the product of both isolating and patterning abstraction. Second, a law posits a *necessary* connection between cause and effect, meaning that if A happens, B necessarily has to happen as well, while a tendency merely expresses the predominant response to a certain stimulus, allowing for exceptions to the rule. For example, it is not a hard and fast rule that price rises when demand increases, but considering a large number of such cases this will nonetheless be the predominant outcome given a certain institutional context (see chapter 2). Thus, a tendency takes shape by multi-experimentation with the same type of stimulus in the same type of circumstances, whereby one predominant response emerges. Nonetheless, and this may seem contradictory to what has just been said, exceptions to the tendency-rule can effectively be overlooked. Tendencies, by virtue of their pattern nature, automatically deal with the aggregate, average behaviour of many agents, with the result that the a-typical can get drowned in the typical,

---

1. Mäki (1992a: 322) calls "abstraction" what we refer to as patterning abstraction, and he calls "isolation" what we have labelled isolating abstraction. He regards patterning abstraction as but a special case of isolating abstraction, which this writer finds difficult to accept. To be sure, both operations have in common that they ignore aspects of the full historical picture - that is what all forms of abstraction do. But isolating abstraction leaves out causal mechanisms, while patterning abstraction leaves out historical detail for which no stable causal mechanisms can be fitted at all, at least not in the social sciences. This difference has sufficiently important methodological implications to allow for a separate name.

becoming unnoticeable at the aggregate level. Put differently, the globalised, aggregate view inherent in patterning abstraction generates for tendencies a consistency comparable to that of law, even while not positing a necessary link between cause and effect for each and every individual test case. The idea of this will be worked out more fully in the next chapter.

It is our contention that there are no laws in the social sciences, but only tendencies of human behaviour. Laws, in the meaning we give to them, are found in physical science only. Hence, tendencies are the causal regularities of the social world and laws the causal regularities of the physical world. Traditions in the philosophy of science, which reject the notion of law or of causality in general will be addressed in the next section. Because the emergence of laws needs no patterning abstraction, it is implied that laws describe concrete, historically specific events. Of course, laws simultaneously also transcend historical specificness, in the sense of being generalisable over time and place; they hold in various specific circumstances. By contrast, social tendencies can obtain a significant degree of consistency only because they undergo, apart from isolating abstraction, patterning abstraction as well. As such, they can only transcend historical specificness, and thus reach generalness, by altogether ignoring irregular historical detail<sup>2</sup>.

Isolating abstraction as applied to physical science may appear to produce a result which is similar to that of patterning abstraction as applied to social science, namely a discarding of irregular historical detail. The difference is, however, that isolation abstraction as applied to physical science does not *systematically ignore* all historical detail. Rather, it *separates out* historical detail according to the various different causal mechanisms at play, whereby only those interferences due to extraneous mechanisms are left out. After all, the specifics of physical processes are not inherently unsystematic. Isolating abstraction as applied to physical science does not, therefore, generate patterns (in our meaning of the term).

---

2. Hayek (1967a: 9-10) argues that the distinction between the social and the physical sciences along these lines is one of degree rather than kind. He maintains that even the predictions of physical science indicate ranges and patterns of events, rather than specific, pointed events. This is, however, due to disturbance by extraneous mechanisms, which is removed by isolating abstraction. In its pure, isolated form, physical law should be able to provide pointed predictions.



In sum, there are two sources of indeterminateness in empirical reality relating to human behaviour. The one is due to the uncertain interaction between a variety of tendencies, which is removed by isolating abstraction. The other is inherent in any single tendency, which is cleared out of the way (or at least reduced to acceptable proportions) by patterning abstraction. After both isolating and patterning abstraction have done their job, reasonably consistent generalities about human behaviour should be obtainable<sup>3</sup>.

Our basic objection to established neoclassical theory, at least as far as its choice theory is concerned, is that it makes use of laws. Causal regularities in the social world occur only in the form of tendencies. We do not thereby wish to suggest that any theory based on tendencies is necessarily a good theory. It remains quite possible that a certain economic phenomenon is explained by way of the wrong tendencies, or by way of the right tendencies which are wrongly elucidated. How exactly tendencies ought to be explained will be the topic of discussion in the next chapter.

Our use of the concept of tendency differs only superficially from that of Lawson (1989, 1994, 1996). The main discrepancy is that Lawson's tendencies, which seem quite similar to Cartwright's (1989, 1998) capacities when applied to the social sciences, are regarded as mere potentialities or powers, which need not manifest as necessary causal laws at the level of actual events, "because they will typically be juxtaposed with tendencies of other structures. Thus a breakaway leaf does not fall to the ground in strict conformity with an empirical regularity, for its actual path is influenced by aerodynamic, thermal and other tendencies" (Lawson 1989: 63). However, given that we regard a tendency as a causal mechanism which has already undergone isolating abstraction, the non-necessity of tendencies at the level of events is implicitly recognised by us too. Moreover, the causal power or capacity of a tendency does not necessarily lie in the events themselves, but must be sought in the underlying institutional context. Our tendencies are mainly driven by institutions, as the

---

3. Some ambiguity in the literature about tendencies stems from a failure to distinguish between these two separate sources of indeterminateness in historical tendencies. It is, for example, not clear whether the indeterminateness in Rizzo's (1990) "empirical tendency" is due to inherent indeterminacy or to outside interference by other mechanisms. The same applies to Bishop Wately's (1847: 233) description of an empirical tendency on which Rizzo's version is based.

more or less consistent structures of the social environment. This will be explained in chapter 2.

### 1.2.3 Aristotelean realism and the problems of causality

Implicit in the views expressed up to now are philosophical starting points which need to be made explicit, although we shall not attempt to justify them. First, there is an endorsement of scientific realism, which Lawson (1989: 60-61) describes as follows:

... realism asserts the existence of the objects of research as independent of the enquiry of which they are the objects. In other words, according to this doctrine, there is a material and social world that exists independently of any individual consciousness and which is knowable by consciousness - true theories of real entities can be obtained. And a methodological stipulation that needs to be tagged on, here, is that such knowledge, or true theories, should be pursued.

Second, we have displayed an implicit commitment to what may be called the Aristotelian version of realism (or what Lawson 1994 calls "transcendental realism"). Lawson (1989: 62) describes it thus (see also Bhaskar, 1978: 25, Lawson 1996 and compare Cartwright 1989):

... given things can have the power to act in certain ways in appropriate circumstances by virtue of certain enduring intrinsic structures, or constitutions, or, more generally, natures. In other words, a given thing will have the power or disposition to act in a certain way by virtue of being the sort of thing it is.

The Aristotelian-realist world view is obviously in direct opposition to the relativism which pervades (post-)modern philosophy of science. Despairing about the possibility of ever being able to derive and/or test true statements about reality, (post-)modern philosophy of science has increasingly moved towards a relativistic as well as subjectivistic epistemology. Because of its pre-occupation with the mind and its emphasis on the difficulty in obtaining certain and precise explanations of behaviour, the subjectivist tradition in economics seems to show some affinity towards epistemological relativism and subjectivism (c.f. Lawson 1987).

But this is a misunderstanding. The subjectivism and relativism of the subjectivist tradition in economics is ontological rather than epistemological. It is not the mind of the analyst that matters nor its difficulties in obtaining or testing knowledge about reality. Economic subjectivists do not intend to be purely subjective about knowledge, regarding it as

mere construction (they may hold such views, but then independently from their economic subjectivism). The focus is rather on the intrinsic nature of human beings, namely that they possess a mind. As a result, explanations of human behaviour need to refer to what happens inside the mind: thoughts, interpretations, expectations, etc (c.f. Robbins [1932] 1984: 90). Economic subjectivists also do not subscribe to the kind of relativism which regards reality as chaotic and amorphous. They do not maintain that human choice, or economic reality in a broader sense, is devoid of recognisable regularity. The whole aim of this study is precisely to show that there are kinds of regularity in economic events other than laws, which theoretical enquiry can fruitfully investigate.

Although an exhaustive treatment of the subject falls outside the scope of our study here, the philosophical complications surrounding the concept of causality need to be briefly touched on in the light of our Aristotelean-realist starting points.

First, there are problems resulting from the impossibility to prove the uniformity of nature, as first emphasised by Hume (see Salmon 1993). We can never know for certain that the regularities that nature displayed in the past will continue into the future; tomorrow stones may be floating in the sky. Such is the origin of the problem of induction and the impossibility of deriving timeless truth from time-bound observation, however numerous, reliable or controlled these observations may be. Nonetheless, given that nature was stable in the past, we may have some grounds to believe that it will remain so in the future. If we embrace this article of faith (because faith it is) and we scale down our ambitions of wishing to establish timeless truth, the problem of induction seems to lose much of its relevance for the actual practice of theory making and we may proceed unperturbed by it, as indeed all scientists do without thereby being pretentious about their scientific claims or overlooking the possibility of improved future insight.

Second, there are problems connected to the unobservability and complexity of the structure of events, which can make it near impossible to trace the causal chain from singular cause to singular effect. For example, in medicine it is impossible to prove that aspirin cures a headache by following all the chemical reactions in the body. Due to the un-

observability, multiplicity and complexity of the potential processes involved, the generalness of the causal connection between "taking aspirin" and "relief of headache" becomes tenuous and subject to a great deal of qualification (for an overview see Hoover 1998). Hume already recognised the problem and, on the basis of it, rejected the possibility of ever proving causality. Hence, he defined causality as mere association between empirical events, to be established probabilistically. But, in the Aristotelean-realist view of things, even if the causal process is unobservable, complex and variable in its structural components, it is still there: *some* chemical process must be responsible for the success of aspirin to cure most headaches (c.f. Cartwright 1989). Moreover, causal mechanisms are not necessarily unobservable, nor are they always overly complex. For example, economics is in the fortunate circumstance, as mentioned above, that the relevant causal mechanisms can be observable as well as relatively few in number and simple in structure, provided isolating and patterning abstraction can successfully be performed. This we hope to show in the course of this study.

Third, there are problems connected to difficulties in isolating the various causal mechanisms which are simultaneously at play (i.e. creating a controlled experiment). Isolating abstraction will be more fully dealt with in the next chapter, but it can already be stated that, in economics, isolating abstraction need not be performed in actual practice but can be done by way of idealised thought experiment, the reason being that the relevant structures are abstract patterns of events, which are observable. If so, practical difficulties in obtaining theoretical purity vanish.

Nonetheless, how to test the claimed structure of phenomena remains a crucial unresolved issue in the Aristotelian-realist paradigm. To comment on the issue in any detail falls outside the scope of this study, except to express the conviction that it can be done.

#### **1.2.4 The nature of economic theory**

After having discussed the nature of theory in general, we will proceed to investigate the nature of economic theory in particular, for which Shackle's (1973: 321) following remarks give us a good starting point:

Economic theory is about the sources of individual conduct and the consequences of its interaction. It is the intimate fusing together of two questions, concerning the mode of choice of conduct and the outcome of the combination of many men's choices, that constitutes economics as a distinct body of ideas and a discipline on its own.

Shackle suggests that economic theory tries to answer two questions, which are separable though intimately linked. The subject matter of the first question is human choice. It seeks to find out why people think and act as they do ("the mode of choice of conduct"). An answer to that question is, however, not sufficient to understand economic phenomena, like inflation or unemployment. For economic understanding it is also necessary to know *which* choices *by whom* cause the particular phenomenon to happen. That is the concern of Shackle's second question ("the outcome of the combination of many men's choices"). Its aim is to identify the relevant choices which, in a certain configuration, can be held responsible for the occurrence of a certain economic phenomenon. We label theory about the first question *choice theory* and theory about the second *identification theory*.

The remainder of this chapter will be concerned with some of the basic principles of a methodology of choice and identification theory, bearing in mind the general principles of theory-making discussed above. For identification theory, this introduction will suffice. But for choice theory, the issues will have to be worked out in greater detail in chapter 2.

### 1.3 IDENTIFICATION THEORY

With identification theory (our term) the issue is not to explain choice but to identify the type of choices which are involved in the occurrence of a certain economic phenomenon. Consider the following description of inflation, in which a certain theoretical explanation is implicit: "Inflation means that the social product falls short of the total claims made upon it. The real value of each claim is then reduced by the price rise" (Lachmann, 1967: 283-284). In other words, Lachmann argues that inflation is caused by total *ex ante* claims on the social product being higher than total real contributions to the social product. In order to effect the necessary *ex post* equality between claims and contributions, the general price level then needs to rise (see also Mohr 1987: 314-315).

We do not at this point wish to discuss the validity of this theory. Our aim is merely to explain its structure, which is typical of identification theory. Certain categories of actions are mentioned: claiming money income and making productive contributions (the social product). For inflation to occur these actions need to appear in a certain configuration: the value of the income claims must be higher than the value of the social product at existing prices. It should be noted that no attempt is made to explain behaviour. We are not informed why agents make these claims and contributions. Identification theory merely says: these are the action-types that play a role and such is the configuration in which they must occur for phenomenon X to emerge.

In short, identification theory specifies what we may call the *action structure* of an economic phenomenon, without explaining these actions themselves. Because identification theory concerns the (action) structure of phenomena, it is purely theory about form rather than theory about causal relationship. It thus escapes the use of laws by not being involved with causal regularities at all, let alone causal regularities in the form of laws.

A distinction between basic and composite phenomena (our terms) must be introduced. As will become evident in the explanation that follows, this distinction should not be confused with Hayek's (1967b) distinction between simple and complex phenomena. Composite phenomena are not complex in Hayek's sense: ignorance of antecedents or absence of sufficient causal regularity are not problems which play a role in their explanation. We will for illustrative purposes adopt Eichner's (1987: 1559-1560) distinction between a *list price* and *transaction price*, the former indicating the amount of money demanders wish to pay or suppliers wish to receive for a certain good and the latter referring to the amount of money actually paid.

We will call a phenomenon basic when it can be related to a single type of action on the part of a single type of agent. In that case, the *supplier-list price* is a basic phenomenon, because it involves one type of action on the part of one type of agent: a supplier who requires to receive a certain amount of money in compensation for letting go of one unit of good *i*. The same applies to the phenomenon of the *demand-list price*, which is the amount

of money a demander is prepared to pay for one unit of *i*. By contrast, composite phenomena are connected to various types of actions on the part of various types of agents, whereby these actions appear in a specific configuration. For example, the *transaction price* of good *i* is a composite phenomenon because it involves two types of decisions on the part of two types of agents: firstly, the decision by the supplier to accept a certain amount of money in exchange for *i* (supplier-list price) and secondly, the decision by the demander to pay a certain amount of money in exchange for *i* (demander-list price). These actions also occur in a certain configuration, namely whereby the demander and the supplier agree on the amount of money to be exchanged for *i*.

Given that the action structure of a phenomenon is implicit in its form, the method of identification theory is to define the phenomenon and deduce its action structure from that definition. In the case of a basic phenomenon, its action structure is directly identified by defining the phenomenon, simply because the phenomenon *is* the action itself. By contrast, the definition of a composite phenomena does not directly convey its action structure. But this action structure is still derivable from the definition, which will typically mention further basic and composite phenomena, which in turn point to a further action or configuration of actions. Through this process we can obtain a fully elaborated *action structure*, indicating all the action-types which potentially play a role in the occurrence of the composite phenomenon.

To illustrate how this is done, we will indicate how the action structure of the phenomenon of inflation can be deduced from its definition. We will thus be able to show how a concern for definitions need not (though it certainly can) degenerate into scholastic hair-splitting and vain speculation (Lipsey, 1979: 284). There is, of course, a strong hostility in modern philosophy of science towards the idea that fresh knowledge can be extracted from truistic definitions about the nature of phenomena (Popper is well-known for such views, see Popper, 1960: 26-34, 1966: 9-12 and Magee 1973: 50).

We will define inflation as a continuation of transaction-price increases whereby these price increases feed on themselves, price increase leading to price increase; its quantitative

aspect is measured as a rise in the transaction price of some (representative) basket of goods over a certain period. The composite phenomenon of transaction price can then be defined (in a monetary context) as the actual amount of money exchanged for a certain good, as agreed between its supplier and demander. Therefore, underlying any single rise in the transaction price of a good lies a decision by the supplier to increase his money-income by means of raising the price rather than the volume of his sales, as well as a decision by the demander to continue buying the good at the higher price. This is just another way of saying that the supplier has managed to increase his claims on the social product whilst leaving his contribution unaltered, which accords with Lachmann's (1967) description of inflation as mentioned above. This initial, single price rise can occur at the initiative of the supplier, in which case it is often (somewhat inappropriately) called cost-push. Or it may occur as a reaction to increased demand, in which case it is often referred to as demand-pull.

A single price rise provides an inflationary impulse, but does not yet constitute inflation itself; after all, we defined inflation not as a single, momentary price rise, but as a *continuation* of price rises over a period. Whether inflation ensues depends, therefore, on the reaction to this initial price rise, starting with the demander. If, after having paid a higher price for the good concerned, the demander decides to maintain his real spending on other goods, his nominal spending has to increase, thus raising his financial needs. If this demander, in his subsequent role of supplier, decides to obtain the necessary extra finance by raising the price of his own goods rather than drawing on his wealth or producing and selling more goods, price rises start to feed on themselves - that is when inflation proper sets in.

Action-types relating to the monetary sphere also play a role in this process. Firstly, inherent in the nature of the inflationary process is that it necessitates an increase in the (working and permanent) capital requirements of going concerns. When prices increase and demanders wish to retain their real spending, they need extra capital to bridge the interval between their higher nominal purchases and the realisation of higher money income (through increasing the price of their goods when acting as suppliers themselves). Secondly, more



money is also necessary to finance an inflationary impulse of the demand-pull variety. To obtain the necessary finance, agents can dishoard (which has a limit), sell real or financial assets (which does not help the community as a whole), or borrow from the banking sector, which soon becomes the only option. That is why the money stock needs to increase during inflation.

It is thus shown how significant insight into the phenomenon of inflation can be obtained by just indicating its action structure and without explaining any behaviour by way of some choice theory at all. We have not explained why any supplier would wish to increase his price or why any demander would wish to compensate his subsequent losses by increasing his own price when acting as a supplier himself. Hayek hints at the nature of identification theory in the following terms:

It is important to observe that in all this the various types of individual beliefs or attitudes are not themselves the object of our explanation, but merely the elements from which we build up the structure of possible relationships between individuals. Insofar as we analyze individual thought in the social sciences the purpose is not to explain that thought but merely to distinguish the possible types of elements with which we shall have to reckon in the construction of different patterns of social relationships (Hayek 1955: 39).

Once more, because identification theory is divorced from any explanation of behaviour itself, no behavioural laws play a role. That is how identification theory can provide us with our first kind of "economics without laws". Just as we did with the composite phenomenon of inflation above, we will work out the action structure of the composite phenomenon of market coordination in chapters 3 to 6, with particular emphasis on the macroeconomic aspects thereof. The identification theory thus developed will then give us our first kind of "*macroeconomics without laws*".

In the light of our inflation example, some characteristics of identification theory come to the fore.

Firstly, it is strictly speaking not correct to say that single actions "cause" basic phenomena or that combinations of actions "cause" composite phenomena. These actions, or combinations thereof, simply *are* the phenomena. The fact that claims on the social product exceed contributions to it does not cause inflation; it is just another way of saying that there

is inflation. But if a plan is the "cause" of its execution, actions, in their planned form, can be said to "cause" an economic phenomenon. For example, if planned claims on the social product exceed planned contributions to it, such an imbalance could be regarded as the cause of inflation. In an identification theory, the relevant present actions have to be expressed in planned form.

Secondly, the number of action-types which, in a certain configuration, make up a composite phenomenon is limited. There is no endless variety of action-types that can be mentioned in connection with composite phenomena such as inflation. Identification theory is, therefore, not open-ended. The important implication is that it can in principle strive towards generalness, exhausting all categories of action-types which comprise a composite phenomenon without being intolerably complex or unnecessarily detailed. Hence, there is no necessity to simplify identification theory by being selective in the action-types the theorist wishes to mention. Nevertheless, the same broad action-type can always be divided up into further sub-types, according to a more detailed specification of its nature. In that sense, identification theory is open-ended. The theorist would then need to use his or her discretion in deciding on the necessary detail, which will also depend on the institutional context.

Thirdly, identification theory can be considered a-historical, in the sense of being derived from the static nature of phenomena. The institutional setting can, nevertheless, condition the nature of a phenomenon and in that way still influence identification theory. For example, we noticed how supply price is related to a more specifically circumscribed action-type when it occurs under a money-exchange system (the supplier asks *money* in exchange for the good he supplies), as compared to when it occurs under any system of exchange (the supplier asks any good in exchange for the good he supplies). Although not historically specific, identification theory can, therefore, still be regarded as institutionally, and thus also historically, relative.

Fourthly, the main pay-off of identification theory is that it enables us to make an exhaustive taxonomy of causes for the occurrence of a certain composite phenomenon, "cause" being understood (as explained above) as the *ex ante* configuration of plans which, when ex-

ecuted, will bring the composite phenomenon to pass. Taking the case of inflation again, the action-types playing a role in its occurrence can be summed up as follows:

- a. **The initial inflationary impulse:** suppliers decide to increase the list-price of their good, implying loss for the relevant demanders. These demanders decide not to change their spending pattern and to continue buying the relevant goods at the higher price (as well as all other goods at a presumably unchanged price), thereby accepting that loss as well as the need to acquire extra finance.
- b. **The transformation of impulse into inflation:** these demanders, in their subsequent role of suppliers, decide to make up for the loss mentioned under a by raising the prices rather than the volume of their supply, simultaneously deciding to take up more credit from the banking sector, so as to finance their increased capital requirements.

Each of these decision-types (in their planned form) play a role in causing inflation. It will then be up to choice theory (the explanation of actual behaviour) to determine which of these possible causes are most prominent in a certain institutional setting.

Lastly, the identification-theoretical structure of an economic phenomenon, like the one given for inflation above, does not provide an explanation of the decisions responsible for the occurrence of the phenomenon. Using the case of inflation as illustration again, no reason is given for the decision of suppliers to increase their list-price, no reason for the decision of demanders not to change their spending pattern and to continue buying the relevant goods at the higher price (although the decision to take up bank credit to meet increased capital requirements is implied in this decision, given that dishoarding has a limit) and no reason for the decision of those same demanders, in their subsequent role as suppliers, to increase the price rather than the volume of their sales. In that way, identification theory can be separated from choice theory.

To sum up, identification theory explains an economic phenomenon by identifying its action structure, i.e. the configuration of actions which comprise it. The actions themselves remain unexplained and are expressed in an abstract, general form, i.e. as *types* of actions (or decisions) on the part of *types* of economic agents. This action structure follows from the

general nature of the phenomenon, as expressed in its definition. The kind of regularity which identification theory employs is not a causal relation let alone a causal law; it is mere form or structure. The usefulness of identification theory lies in the fact that it enables us to list all possible "causes" of the composite phenomenon, in the sense as explained above. The usefulness of choice theory, by contrast, then lies in ascertaining which of these "causes" is most prominent in which institutional setting, which will be the topic of discussion in the next chapter.

#### 1.4 CHOICE THEORY

As mentioned above, theory can be tackled at the level of form and at the level of causal relationship. Given that causal relationship is derived from form, we will start there. The relevant question for choice theory is then: what is the general form of human choice?; what properties does it possess?

At the most general level, subjectivism provides us with the basic insight that, because people have a mind, their behaviour is directed by a myriad of possible motive forces rather than impersonal forces like gravity or magnetism. To ignore the different categories of forces relevant to the physical and the social sciences leads to obvious absurdities, like trying to explain the fall of the apple to the ground by asking for the apple's motives, as Keynes's (1973a: 300) oft-quoted illustration goes. Human behaviour is, furthermore, structured along the lines of the so-called means/end framework. Implicit in this framework is the idea that human behaviour is purposeful; we always have motives for doing things. That framework also suggests that people adopt certain means for achieving their ends.

The crucial concept of expectations comes into play in the selection of means. An agent decides on the best means to work towards an adopted goal by considering the *expected* outcomes of the perceived action alternatives. A certain general structure of the way expectations are formed can, furthermore, be detected. Expectations are developed on the basis of accumulated knowledge, while knowledge is acquired by interpreting information coming to the agent, either passively or through active search. Human decision-making,

therefore, can be regarded as having the following general structure: actions are decided on the basis of expectations (taking a certain end/motive for granted); expectations, in turn, are formed on the basis of acquired knowledge; and knowledge is gained by gathering and interpreting information.

Such is the pure theory of choice, which is so general that it seems to express valid but rather useless truisms (c.f. Buchanan 1969a: 50-53, 1969b: 41). Economics is, however, not about choice in general, but about more narrow kinds of choices in a more narrow kind of institutional setting. The implication for theory is that it needs to move beyond the pure logic of choice by being more specific about the means and ends of the agents involved. The form of economic choice is such that it is driven by a particular kind of motive and particular means are employed in pursuit of that end.

There is, however, equal danger in the other extreme, namely of trying to make choice theory perfectly specific, in the sense of having it explain concrete historical choice. It appears that most contributions in this area fall into this trap. The causal links between specific information gathered and knowledge acquired (learning), between specific knowledge acquired and expectations formed, between specific expectations formed and choices made, are always loose and variable. People do not consistently draw the same conclusions from the same information, nor do they form the same expectations on the basis of the same knowledge. In addition, a theory explaining concrete choices would need to specify the concrete content of information, knowledge or expectations of all the relevant agents at the starting point of the theory, which is obviously impossible. Such is essentially Hayek's (1967a, 1967b) objection to law-based explanation in the social sciences: the complex of initial circumstances (the antecedents) of the theory cannot be known (see also Lachmann 1976a: 55, 1986: 45-48).

The merit of Hayek's (1937) pioneering paper on the economics of knowledge lies in the fact that it moves beyond the generalness of the pure logic of choice, without falling for the opposite trap of trying to explain concrete choice<sup>4</sup>. It is interesting that Hayek (1937:

---

4. A confusing element of Hayek's (1937) paper is its veering between two conflicting understandings of what the "pure logic of choice" means. On the one hand, he seems to refer to it as indicating the abstract general nature of choice along the lines of Mises's praxeology. On the other hand, he also takes "pure logic of

46) initially suggests that economic theory can and should investigate the historical specifics of knowledge acquisition, but he did not proceed in this vein. Rather he concentrated on what he called a "more fruitful way of approach to the central problem" (1937: 50): an analysis of the particular nature of the knowledge required by entrepreneurs for the achievement of plan coordination (c.f. Snippe, 1987a). Not surprisingly, his findings in this connection, namely that such knowledge lies dispersed among many agents, did prove to be of cause-theoretical importance and formed the basis of much of his later work. A closer look at the method employed is, therefore, warranted.

Hayek's first step is to narrow down the specific kind of action under study, in the process of which he is forced to be more specific about ends and means. Firstly, he assumes that entrepreneurs pursue the profit motive. It is not knowledge in general but knowledge about profit opportunities that the entrepreneur is interested in. But to state the end/motive is not enough. Just about all market participants, whether entrepreneurs or workers, are typically motivated by the desire to make money (which does not necessarily imply that profits will be strictly maximised in neoclassical fashion - see chapter 2). In order to distinguish between the various categories of agents, we also need to consider the differing kinds of means by which they pursue their ends, i.e. make their money. For example, workers typically make money by selling labour services, while entrepreneurs do so by producing and selling goods.

The next step is to deduce from the nature of these decision-types, the more specific kind of expectations, knowledge or information relevant to them. In the case of entrepreneurs, these expectations concern the availability of the right inputs as well as the sellability of outputs. For this, they need to know what suppliers (of inputs) have on offer at what quality and price, and what demanders (for outputs) wish to buy at what quality and price. Hayek (1937) then concludes that the nature (or form) of this information is such that it lies dispersed among many people and decentralised in many places. It is this insight which he

---

choice" to mean a mathematical, Walrasian style general-equilibrium model, whose parameters remain unspecified. The two abstractions are very different indeed, as will be further discussed in the next chapter.

then uses as a basis for a causal explanation of entrepreneurial behaviour: when entrepreneurs operate decentrally they are likely to be more successful in their planning endeavours than when they operate centrally.

To conclude, the method used is this: Hayek starts with the nature of the action-types under study. From that nature, he derives the nature of the knowledge and information relevant to it, which then forms the basis for a causal explanation of such actions. The causal relations thus obtained are, of course, expressed as abstract patterns (Hayek 1967a, 1967b), meaning that individual historical detail is left out and only broad tendencies are indicated. For example, his conclusion that decentralised planners are likely to be relatively more successful than centralised ones makes no mention of the planners' precise identity, disregards the precise industry in which they operate and does not give any indication of the precise degree of the relative greater planning success achieved by decentralised planners.

Such choice theory by way of patternised tendencies, the methodology of which will be worked out more fully in the next chapter, provides us with our second kind of "economics without laws". An analysis of the tendencies towards or away from market coordination (macroeconomic coordination in particular) will be undertaken in chapters 7 and 8, which will then give us our second, choice-theoretical, kind of "*macroeconomics without laws*".

## CONCLUSION

It was found that there are two kinds of "economics without laws". Firstly, there is identification theory, which does not make use of laws, simply because it does not even try to explain behaviour. It is purely theory about form. Such theory can provide insight into (composite) economic phenomena by bringing out, what we called, their action structure. This action structure refers to the configuration of action-types which make up the phenomena and can be derived from its general nature as expressed in its definition.

Secondly, there is a kind of choice theory, which can provide causal explanation of economic behaviour without employing any laws. Rather, these tendencies indicate causal relations between classes of events (Hayekian patterns), which can be derived from the gen-

eral nature of certain more narrowly defined kinds of action on the part of certain more narrowly defined kinds of agents in the context of more narrowly defined kinds of social environment.

Our distinction between choice and identification theory should not be taken to the extreme of insisting that they be conducted in total isolation from each other. While we will certainly be attempting to deal with identification-theoretical and choice-theoretical issues separately, there will nonetheless be instances where the two will interlink. As will become obvious in the ensuing chapters, the explanation of behaviour (choice theory) is very often conditioned by the action structure of the phenomena involved and, as such, by identification-theoretical considerations.



## Chapter Two:

**CHOICE THEORY WITHOUT LAWS;  
TOWARDS A METHODOLOGY FOR TENDENCIES***It is better to be vaguely right than precisely wrong*

Wildon Carr

**2.1 INTRODUCTION**

This chapter is about choice theory without laws. While identification theory avoids the use of laws by not being concerned with causal relationships at all (it consists purely of generalisations about the form of phenomena), our way of conducting choice theory attempts to escape using laws by posing a causal relationship alternative to law, namely a tendency. The previous chapter already indicated how laws are the product of isolating abstraction and tendencies the result of both isolating and patterning abstraction.

Any theoretical explanation of human behaviour encounters the dilemma that such behaviour is neither fully determinate nor totally random. It has a side to it which is regular and a side to it which is indeterminate. These two sides somehow manage to co-exist without encroaching upon each other; the regularity does not negate the indeterminacy and the indeterminacy does not militate against the regularity. The implication for methodology is that a method of explanation is required which does not confirm the one side at the expense of the other. There is a continual temptation in economic theorising to let regularity gobble up indeterminacy, or *vice versa*. This is typically what happens when behavioural regularities are expressed as laws in neoclassical fashion or when the indeterminacy of human choice is said to imply the randomness thereof.

The idea of a tendency is that it does justice to both the order and the freedom in human choice. This chapter, which is based on Van Eeghen (1994), attempts to develop an appropriate methodology for the explanation of tendencies. Because tendencies require both isolating and patterning abstraction, the chapter is mainly concerned with the logical

implications of both these forms of abstraction and with the appropriate methods of applying them.

## 2.2 MENGER ON PATTERNING AND ISOLATING ABSTRACTION

Because both patterning and isolating abstraction play a role in Menger's (1985) early contribution to economic methodology, it is appropriate to pay some specific attention to him.

In his polemic with the German historical school (the *Methodenstreit*), Menger's (1985) first step was to distinguish between the individual and the general sciences. The former deals with the specific, the concrete and the historical while the latter with the general and theoretical, the implicit suggestion being that patterning abstraction is inherent in all theorising. He criticised the German historical school for insisting that economics should deal with the concrete and historical only, thereby overlooking the need for patterning abstraction and blocking all possibility for theory.

The weakness in Menger's approach is that he failed to realise that patterning abstraction is applicable only to social theorising and, therefore, not inherent in all theorising. His advocacy of the unity of method between the physical and the social sciences (Menger 1985: 59) is probably a manifestation of this misunderstanding too. The Aristotelean contrast between the specific and the general does not apply to physical phenomena. To the extent that the physical sciences are able to formulate laws, they combine the specific-historical with the general-theoretical. It is our contention that the laws of physics are historical, because cause and effect are definable as specific, pointed events. But laws are also theoretical, because the causal connections they posit are in principle generalisable over many time-place circumstances, provided the experiments are successfully controlled and nature remains uniform.

In this context, it is important to realise that the results of isolating abstraction, while anti-empirical, are not inherently anti-historical. Outside the controlled conditions of the laboratory, physical law nowhere cleanly manifests itself, which is why isolating abstraction

creates an artificial, anti-empirical reality. But that reality is not anti-historical in the way that patterns are: individual historical detail is not totally ignored but merely separated out according to the different causal mechanisms at play, after which only the influence of extraneous mechanisms is eliminated - as already mentioned in the previous chapter. It is patterning abstraction, not isolating abstraction, which is inherently anti-historical. In the social sciences there is a conflict between theory and history, precisely because social science needs to ignore irregular historical specifics in order to arrive at consistent patterns. It is unique to the social sciences that theory demands both isolating and patterning abstraction.

Menger (1985) correctly realised the importance of isolating abstraction for both the physical and the social sciences (Birner 1990: 247). His empirical-realist orientation, leading to empirical laws, takes the regularities as we empirically find them, with a variety of causal mechanisms interacting with each other (but with probably one predominant mechanism, otherwise no regularity will be empirically discernible at all). His exact orientation, leading to exact laws, separates out the various relevant causal mechanisms and investigates a single, isolated mechanism at a time. Menger's empirical and exact laws must be understood as patterns, as theory always involves patterning abstraction in his scheme. Unfortunately, he obscured the pattern-nature of his empirical and exact laws by using the term law and by frequently referring to physical phenomena as illustrations thereof.

Boettke *et al* (1994: 68-69) regard the conflict between theory and history as the most fundamental challenge facing economic methodology. This conflict was central to the nineteenth-century *Methodenstreit* and has plagued economic theory ever since its inception. It turns on the same issues that underlie the dualities of truth versus precision (Mayer 1992), order versus chaos (Dow 1990, Chick 1995) or rigour versus relevance. Patterning abstraction can settle these conflicts by declining to theorise about the irregular specifics of social processes. With irregular specifics ignored, the theorist is relieved from having to make these specifics determinate by assuming strict optimisation, perfect knowledge and a closed choice set - in good neoclassical fashion. Patterning abstraction (in combination with

isolating abstraction) is capable of laying bare generalisations about social phenomena which are potentially realistic as well as rigorous - be it rigour of a non-mathematical kind, as we hope to show in this study. It can be regarded as one of Menger's (1985) important contributions that he pointed this out.

### 2.3 SOCIAL TENDENCIES AS IMPURE LAWS

There is a powerful and pervasive misunderstanding in economics which ascribes the irregular element in human events solely to the juxtaposition of multiple mechanisms, with the result that the need for patterning abstraction is overlooked. Social tendencies are treated no differently from physical laws and isolating abstraction is regarded as sufficient to reach the generalness and consistency required by theory. Mill (1948: 162), for example, writes: "What is thought to be an exception to a principle is always some other and distinct principle cutting into the former. .. There are not a law and an exception to that law. .. There are two laws .. bringing about a common effect by their conjunct operation."

The interpretation of social tendencies as impure laws, i.e. regularities which fail the full consistency of laws solely because of interference by extraneous mechanisms, is also unfortunate in that it takes the sting out of the subjectivist (Austrian as well as Post Keynesian) critique of orthodox neoclassical economics. It gives conventional theorists a perfect excuse for proceeding undisturbed with a mathematical style of economic theorising based on laws, since it enables them to appeal to the necessity of isolating abstraction as a way of ridding themselves of the noise of intervening mechanisms which prevent strict regularities from cleanly manifesting themselves. After all, it *is* perfectly legitimate for theory to abstract from what can be regarded as an inessential interference with the central mechanism under study (Musgrave 1981).

The indeterminate side to human behaviour is not a mere noise to an otherwise determinate mechanism. It is inherent in, and fundamental to, the essential nature of human decision-making itself, as persuasively argued by Shackle (1969, 1979). Social tendencies are, therefore, not reduceable to strict laws by disregarding the disturbances of extraneous

mechanisms only. A social tendency is not merely the outworking of a compound of laws, but a distinctive kind of causal regularity in its own right, which is precisely why there is scope for a separate methodology for social tendencies. All the same, isolating abstraction remains a crucially important instrument in the theoretical explanation of social tendencies too.

Precisely how patterning and isolating abstraction affect the method of theorising about tendencies will now be investigated.

#### 2.4 THE IMPLICATIONS OF PATTERNING ABSTRACTION

The pattern nature of tendencies has a number of important implications for method.

Firstly, because tendencies abstract from irregular historical detail so as to arrive at generalness, there is a sense in which they are static and outside historical time. Hence, the fashionable call for the development of theory which is dynamic, evolutionary and in historical time, is open to confusion and misinterpretation. Patterns can be dynamic in the sense of being able to portray change over time. But they can never record that change in its full historical concreteness. Only laws, being able to describe events in their pointedness, can be made historical. But given that strict laws in human behaviour do not exist, economic theory can never be dynamic in the fullest sense of that term.

Secondly, as a result of patterning abstraction, Weber's *verstehen* method is not at issue. Hence, the connection often made between Weber's *verstehen* and the Austrian school of thought (e.g. by Robbins 1984, Blaug 1980), insofar the latter is based on Mergerian-Hayekian patterning abstraction, is a mistake. The *verstehen* method is relevant only for the explanation of specific historical behaviour. As pointed out in the previous chapter, we do not need to enter someone else's mind so as to retract his or her thoughts, in order to justify broad behavioural patterns such as "price increases when demand increases". Therefore, all the various objections to *verstehen*, as a method of theory, miss the point. *Verstehen* can never be theory; it is always history. Only the economic historian tries to empathise with his or her subjects in order to understand their behaviour, something which Collingwood (1946:

213-217) even regarded as the distinctive characteristic of the historical method. The economic theoretician, by virtue of the abstraction from individual historical detail (i.e. patterning abstraction), altogether escapes the need for *verstehen* (Schutz 1967 and Prendergast 1986).

Thirdly, the fact that laws describe historically specific events means that they can be expressed as stable equations with parameters, whose values are in principle constant and fully specifiable<sup>1</sup>. This is exemplified by the fact that the parameters of theoretical physics, where in our opinion strict laws really do exist, refer to the constants of nature, e.g. the speed of light, the mass and electrical charge of an electron etc. (c.f. Hayek 1967a: 14, 1967b: 25). And theoretical physics considers it an integral part of its task to specify the numerical value of such parameter-constants. Tendencies, by contrast, cannot move beyond stating broad configurations and rough directions, in the style of "price tends to rise when demand increases". There is no reason to include parameters, because no attempt at further specification is intended. If parameters were to be included, say by stating that "when quantity increases by a, price tends to increase by b", a false impression of theoretical precision is created. We could call this, after Machlup (1967), "the fallacy of misplaced concreteness".

Our use of Machlup's phrase in this context is, however, ironic, as his aim was in direct opposition to ours, namely to defend the use of strict laws in economic analysis, for which he employed his famous "analogy of the theoretical automobile driver" (1967: 6-11). The basic message of that analogy was that laws should be understood and interpreted as tendencies. But if so, why bother about formulating laws? Why not stick to tendencies and explain them as such, using the appropriate methodology? To read laws as laws and demand parameter specification is, according to Machlup, to engage in the "fallacy of misplaced concreteness". But this is turning the world on its head. It is by describing behavioural

---

1. As indicated in chapter 1, when declaring that laws describe historically specific events, we do not wish to imply that the validity of the law is historically relative. Insofar consistent, laws will obviously apply to many particular historical incidences. Rather, the historical specificity of an event means that it is expressed in all its detailed concreteness and pointedness (although *some* of that detail will be ignored due to isolating abstraction so as to arrive at theoretical purity).

regularities as laws and thus adding unspecified parameters, that such a fallacy is committed.

Paqué (1990) expresses a Hayekian pattern as an econometric equation, whose parameters remain unspecified. But, as we saw just now, patterning abstraction intends totally to ignore irregular historical detail, while an econometric relation clearly suggests the intention of being concerned with historical specifics, even if no concrete values are assigned to its parameters as yet. Paqué's (1990) criticisms of Hayek are, therefore, misdirected. But it must be admitted that Hayek's (1967a, 1967b) illustrations of patterns are, at times, formulated in such a way that they give rise to Paqué's misinterpretation (c.f. Van Eeghen 1994: 158, n.3).

Orthodox economic theory masquerades tendencies as laws. The impression of law can be created through the use of equations in the same style as theoretical physics. But the impression is false, because theoretical economics always leaves parameter values unspecified, which runs counter to the concreteness inherent in law. The fact that economic theory could degenerate into mathematical form without empirical content (c.f. Clark 1992: 164-165) is precisely because it afforded itself the luxury of leaving parameters unspecified.

Econometrics does not provide a solution. Its attempts at parameter specification lead either to the abandonment of any preconceived theoretical system, or to a failure to find any short- or medium-term stability; a statistically significant degree of parameter-stability can be achieved only by juggling with the form of the equations. That is why econometric work has to divorce itself from pure theory and why it is forced into a pragmatic instrumentalism, which is not to say it cannot still perform an exceedingly useful function. There is, of course, no objection to parameter specification in statistical and econometric functions, provided it is borne in mind that the form of the functions and the parameter values given are pragmatic and contingent. For example, if the minister of finance wishes to find out what the effect of a two percent increase in the VAT rate on tax income is, an econometric model can certainly be used to establish that precise effect by specifying parameter values. The need for patterning abstraction, and the resultant rejection of the inclusion and

specification of parameters, applies only to relations which are intended to be consistent, which econometric relations are not. There is, furthermore, a sense in which econometric analysis ignores irregular individual detail, which may suggest that it uses patterning abstraction too. For example, parameter specification by way of the least-square method ignores the data which deviate from the established value. But this would be a case of isolating rather than patterning abstraction, because (numerical) specifics are clearly not altogether overlooked. An econometric function still describes historically specific events rather than patterns of events, if only because its functions use specifiable parameters.

Lastly, we come to the most important methodological implication of patterning abstraction.

When studying the impact of the social environment on some kind of behaviour, patterning abstraction relieves us from having to consider that environment in its full particularity. Because the irregular and transient specifics of tendency-outcomes are ignored, the irregular and transient specifics of the social environment can be ignored as well<sup>2</sup>. Patterning abstraction thus enables us to concentrate on the consistent and enduring aspects of that environment, i.e. on institutions. Collingwood (1948: 223) indirectly confirms this idea by noting that "[i]n order that behaviour-patterns may be constant, there must be in existence a social order which recurrently produces situations of a certain kind" (Douglass North, e.g. 1993 and 1994, says very much the same about the role of institutions in economic theorising). In a sense, institutions can thus be regarded as the patterns of the social environment.

It is, therefore, Mengerian-Hayekian pattern analysis, which puts institutional theory on the centre stage of theoretical economics, which seems insufficiently realised by both the New and the Old Institutional Economics (Langlois 1986, 1989, Rutherford 1989, 1996).

---

2. The fact that patterning abstraction leaves out the irregular historical specifics of choice does not imply that the irregularity of choice is denied; that irregularity is ignored only *for the purpose of theory*, because theory is not about the unique and irregular. On the contrary, it is because neoclassical theory fails to apply patterning abstraction that it denies the irregular side to human behaviour, as it must now refashion these irregular specifics of choice so as to make choice regular and determinate, by assuming perfect knowledge, strict optimisation and a closed choice set. The irregular specifics of choice are respected, precisely because they are ignored for the purposes of theory. Such is the importance of patterning abstraction.



While the literature provides no generally agreed, precise definition of an institution (for a discussion, see Mäki 1993: 12-15), for our purposes we will define it as *a relatively enduring aspect of the social environment, which has the potential of shaping and conditioning behaviour in a certain way*. Institutions thus include socio-cultural conventions, habits and traditions, judicial laws and rules, as well as organisational structures. Of course, some institutional arrangements can change overnight, for example by changed legislation, which would then simply mean that the behavioural tendencies dependent on them cease to be operative. Nonetheless, institutions clearly do not continually change with the flow of time and always show a degree of consistency, which is the important point.

The explanation of behaviour patterns by way of institutions has some important methodological advantages. To start with, the explanation is made of immediate and explicit ideological relevance, as institutions obviously concern the social ordering of society. Chapter 8 investigates the institutions primarily responsible for the market's reduced ability to maintain a reasonable level of plan coordination.

Moreover, because institutions are patterns themselves, they can only explain patterns of decision making and expectations formation. As a result, it is unnecessary as well as impossible to model the formation of any historically specific decisions or expectations (see Snippe 1987). In other words, theory about expectations formation cannot and need not go beyond mentioning broad institution-based patterns, of which the Keynesian concept of "conventionality" is a good example (Keynes 1937c). This leads us to the startling conclusion that the whole extensive literature about the mathematical modelling of uncertainty and expectations concerning concrete events is irrelevant and unnecessary to theoretical economics. Chapters 7 and 8 will bear this out.

## **2.5 ISOLATING ABSTRACTION AS APPLIED TO MOTIVES: ECONOMIC MAN**

If we accept that behaviour is shaped by both psychological inducement and social conditioning, two kinds of factors play a role in its explanation: the motivation of the agent and his institutional environment. The isolation of a single causal mechanism, therefore,

involves two operations: the assumption of a single motivational driving force and the assumption of a single behaviour-shaping influence emanating from the institutional environment. Isolating abstraction as applied to the institutional environment will be discussed in the following sections. This section will concentrate on isolating abstraction as applied to the motivation of the agent.

The necessity of assuming a single psychological driving force for the agent is evident. Without the separate consideration of one motive at a time, a single stimulus from the institutional environment can engender many different behavioural responses, according to the different motivations people can have. To retain a consistent response pattern, we are forced to postulate one motivation. Without such a postulate, there would be no possibility of consistent, widely applicable tendencies of behaviour (c.f. Menger 1985: 83). All explanation of behaviour would become historically relative, with economic theory collapsing into economic history, i.e. the interpretation of the historically unique. Theory would thus be reduced to hermeneutics (to use the fashionable postmodern term), without any ability to predict events, even as patterns.

The assumption of a single motive places a limitation on the explanatory power of tendencies. Obviously, any single motive will never apply all of the time for all of the agents. At best, it will apply only most of the time for most of the agents. To the degree that the assumed motive can be accepted as being predominantly operative, to that degree will tendencies be able to give predominantly valid outcomes. Put differently, the number of exceptions to the rule as set by the tendency, will be determined by the number of exceptions to the rule of the assumed motive being operative.

Luckily, economics (unlike psychology) focuses predominantly on a more narrow kind of behaviour, namely in the market place. And for that kind of behaviour (as opposed to intra-firm, intra-organisational behaviour), it can be accepted that one specific motive will apply most of the time for most of the agents: the striving to exploit perceived opportunities to increase profit or utility. In addition, the pattern nature of a tendency means that it automatically deals with the aggregate, average behaviour of many agents, so that a-typical

motives can get engulfed by the typical one. Given that the economic motive is presently not very popular, a brief defence is in order.

Firstly, the economic motive, in the way we describe it, does not imply perfect rationality, because only behavioural patterns need to be explained and exceptions to the pattern-rule are allowed. Patterning abstraction thus frees the economic motive from having to imply strict maximisation (c.f. Kirzner 1992: 201): it is not necessary to assume that agents "definitely realise all possible opportunities to increase profit or utility" in order to arrive at behavioural patterns; a "striving to exploit perceived opportunities to increase profit or utility" suffices for that purpose. Hence, the problems surrounding the claimed lack of realism of the rationality principle as stereotypically emerging from Popper's writings (e.g. Popper 1983, Hands 1985, Caldwell 1991) disappear as soon as the aim of theory is shifted away from formulating laws towards explaining tendencies. This obvious fact seems universally overlooked in the relevant literature. And this "bounded" form of rationality which suffices for the explanation of tendencies is realistic enough: most people as a rule strive for personal gain in the market place and, while they may never be fully rational about the affair, they normally manage to succeed reasonably well.

Secondly, the acceptability of the economic motive suffers from the incorrect supposition that it implies greed and selfishness. The motive merely captures the vital fact that free-enterprise holds people, in the first instance, personally responsible for the provision of their own needs (c.f. Van Eeghen 1997: 104). Consequently, most people are in business primarily to make a living - hence, for profit or any other form of income. And there is surely nothing inherently greedy or selfish about that. Greed or selfishness occur only when people are *exclusively* interested in their own needs. But since tendencies do not presume such uniformity and consistency of behaviour, people are not supposed relentlessly to push their money-making efforts to the absolute limit nor are they assumed consistently to be insensitive to the needs of others. Pattern abstraction thus saves the economic motive from implying pure greed. Of course, greed can occur and it may even be prevalent in modern capitalist practice. But, while consistent with the economic motive, greed is not

inherent in the economic motive. Without being necessarily and inherently greedy, most of us enter the market place simply to make a living, which is all the economic motive, as applied to tendencies, needs to express.

Thirdly, there is an old objection to the economic motive as connected to the concept of utility, understood in its Mengerian sense ([1871] 1982: 115) as indicating the degree to which command over a good is expected to satisfy some unspecified need in an agent. The objection (see e.g. Sweezy 1934) is that utility, as a motive to explain choice, involves circular reasoning: "some good has greater utility than another because it is preferred and it is preferred because it has greater utility". As such, utility as a choice criterion is alleged not to explain anything (c.f. Nell 1981: 176-177). The circular-reasoning problem is, however, applicable only to neoclassical theory, because that theory seeks to explain concrete choice but makes use of a choice-criterion (utility) which abstracts from concrete choice by not specifying any particular need which some particular good is supposed to satisfy. When utility is, however, used in the explanation of pattern tendencies which leave the concrete content of needs and goods unspecified, the problem disappears and utility can retain its rightful place in economic theory. Chapter 7 will explore how the subjectivity of utility can be squared with the objectivity of monetary prices and values.

## 2.6 CONTEXT-SHAPED AND EVENT-TRIGGERED TENDENCIES

Before we discuss how isolating abstraction can be applied to the institutional environment, a distinction between kinds of tendencies must be introduced. As far as the influence of the institutional environment on behaviour is concerned, we distinguish between *context-shaped tendencies* and *event-triggered tendencies*. The former, as its name suggests, describes how a certain institutional context shapes a certain action-type. Hayek's (1937, 1945) discussion of how decentralised planning enhances the degree of coordination success would be a good example of a context-shaped tendency. Such a tendency is not set in motion by some non-institutional event, which comes and goes again. Rather, it is continually driven by the institution in question, which is assumed to remain in place for the foreseeable future. After all, we defined institutions as relatively enduring aspects of the social environment.

By contrast, an event-triggered tendency is set in motion by a more or less unique occurrence. Something must "happen" before it is activated. Take Gresham's Law, which in our parlance is a tendency rather than a law. The tendency for good money to be driven out of circulation is not triggered by an institution but by an event: the emergence of some kind of bad money (i.e. units of commodity money which have a lower quantity or quality than the commodity money already in circulation). Nevertheless, institutions still play an important role in fashioning an event-triggered tendency. For example, it is specifically because the state enforces the exchangeability *at par* of bad for good money, that good money is forced out of circulation by bad money (Rothbard 1970: 783-784). So, an event-triggered tendency is shaped by a change in circumstances *in combination with* an institutional factor (taking the economic motive for granted). Here, the institution in question is not the stimulus setting the causal mechanism in motion, but it guides the stimulus towards a determinate response. We could say, it is the facilitator of such a response - hence we will speak of the *institutional facilitator* of such a tendency.

The coming sections will discuss the method of isolating abstraction for context-shaped tendencies and event-triggered tendencies respectively.

## 2.7 ISOLATING ABSTRACTION AS APPLIED TO INSTITUTIONS I: CONTEXT-SHAPED TENDENCIES

The whole complex of institutions which defines, say, the system of modern capitalism obviously consists of a great many institutions, some of which may exercise a conflicting influence on a given action-type. As a result, such an action will be pushed in different directions at the same time, making the overall outcome unsystematic and uncertain - even when formulated as a broad pattern. For distinct regularities to become recognisable as such, we would then have to take one institutional factor at a time and analyse through what causal mechanism it fashions the action-type under study. There are two ways of effecting such isolation: the *comparative approach* and the *absolute approach*. While discussing these approaches, a number of topical controversies within subjectivist economics come to the fore.

As its name suggests, the comparative approach to isolating abstraction compares two institutional set-ups which differ according to a single institutional factor (e.g. centralised versus decentralised planning), and ascertains how that difference alters the outcome of the economic phenomenon under study. Obviously, the tendency-outcome must then be expressed as a comparative difference rather than an absolute level or value. For example, one cannot, on the basis of Hayek's (1937, 1945) logic, say anything about the absolute level of plan-coordination success achieved by a decentrally- or a centrally-planned economy - only that a decentrally-planned economy will be *comparatively* more successful in this regard. An important advantage of the comparative approach is that the other institutional factors need not be artificially ignored and neutralised; they can still be acknowledged as playing a role in shaping the absolute outcome of the phenomenon concerned. But because the tendency is formulated in comparative terms, the influence of these other factors can effectively be kept at bay. There may, for example, be many factors which make the absolute level of plan coordination achieved in a decentrally-planned economy high, low or just average. But that level, if we accept Hayek's argument, will still be comparatively higher than in a centrally-planned economy, under the same circumstances<sup>3</sup>.

By contrast, the absolute approach achieves isolation by assuming away (by way of *ceteris paribus*) all but one of the potentially influencing institutional factors, so as to see how it shapes behaviour. The advantage of this method is that it enables the theorist to formulate absolute (in the sense of non-comparative) tendency-outcomes, which are indispensable for historical explanation. Historical processes could thus be described and simulated with the aid of theory alone, which is a strong attraction to many a social theorist. But there is rather a high price to be paid for this ability. The absolute approach's manner of

---

3. We can obviously never create the benchmark situation where the institutional set-ups are the same except for one institutional factor, with the result that we can never empirically test an isolated context-shaped tendency, such as Hayek's (c.f. Rizzo 1990: 27). Would Russia, for example, have achieved a higher level of plan coordination if it had had a decentralised planning system? It is impossible to say for certain, since the level of planning "centralisedness" is but one of the many institutional factors that shape the degree of planning success achieved in a country. The empirical testing of context-shaped tendencies will then have to be done by empirically testing the general nature of the actions and institutions from which these tendencies are derived. But, as mentioned in chapter 1, how to test the form of things remains an unresolved issue in the Aristotelean-realist paradigm.

styling the institutional environment always adds an element of arbitrariness and artificiality to the alleged tendency: why should this institutional factor be selected for exclusive consideration and not another (c.f. Menger 1985: 74ff)? Popper (1986: 68) criticises the holistic approach of the historicists on basically the same grounds: "[T]he holistic method turns out to be impossible; the greater the holistic changes attempted, the greater are their unintended and largely unexpected repercussions, forcing upon the holistic engineer the expedient of piecemeal improvisation.." In order to escape arbitrariness in abstraction, Popper similarly advocates a "piecemeal approach", according to which the impact of a single change in the institutional and social environment on economic outcomes is studied, which obviously has much in common with what we call the comparative approach.

To conclude then, theorists have little choice but to employ the comparative approach to isolating abstraction (leading to comparative tendencies), with the accompanying requirement that tendency-outcomes be expressed in comparative terms. Attempts to formulate absolute outcomes requires the arbitrary selection of one out of many institutional factors as being the most important and powerful in the explanation of some action-type under consideration. Naturally, ideological preferences then start to determine the proceedings, with theory becoming the hand-maiden of preconceived ideology. This is all the more unfortunate, since ideological debates normally only need comparative outcomes. It is, for example, not necessary to claim that free-enterprise or state control produce good results in some absolute sense; it suffices to show that the one produces *comparatively* better results than the other.

As an illustration of this ideologically-inspired arbitrariness, we may mention Kirzner's (1985: 10-13, 1992b: 3-37) and Garrison's (1982, 1986a) insistence on the existence of an equilibrium-searching tendency for the market process. After all, equilibrium (as plan coordination) is an absolute outcome which an analysis about the *total* influence of the institutional context on action is incapable of formulating, without arbitrarily assigning greater importance to certain institutions (such as entrepreneurial alertness) above others (such as uncertainty) - see chapter 7.

These latter authors are wont to quote Hayek in defence of their position, especially Hayek's (1935: 34) remark that "...if we want to explain economic phenomena at all, we have no means available but to build on the foundations given by the tendency towards an equilibrium" (see also 1937: 44). It is, however, likely that these words merely reflect Hayek's realisation of the necessity for isolating abstraction. If so, his mistake was to advocate the absolute rather than the comparative approach. But, as Rizzo (1990: 26) notes, the later Hayek changed his mind in this connection and moved towards the comparative approach: "The fundamental change in Hayek's thinking has been to move from a more or less absolute conception of equilibrium to a more radically relativistic one. While the comparative approach is clear in the earlier Hayek ..., it is not until much later that he formulates an equilibrium idea that is entirely free of the near-equilibrium benchmark".

Buchanan and Vanberg (1991) imply that tendency outcomes cannot even be formulated in comparative terms, as their critique of Simons, Polanyi and Barry (1991: 180) suggests. They, therefore, appear to claim the impossibility of even formulating comparative tendencies. This is an overstatement of their own case. Their "nonteleological" perspective denies the possibility of tendencies moving towards some *telos* (i.e. end, outcome, goal) defined in absolute (non-comparative) and concrete terms. But a movement towards some *telos* defined in comparative as well as patterned terms seem very much possible. Buchanan and Vanberg describe *telos* as "...some well-defined objective that exists independently from the separate participants' own creative choices" (ibid), but it is not at all clear that comparative outcomes for tendencies presuppose such independence. They need not postulate any concrete choice outcome, nor need they overrule the creativity in human choice. Rather, they suggest broad ranges and rough directions for outcomes, while even such outcomes are understood as non-deterministic, allowing for exceptions to the rule<sup>4</sup>.

---

4. On a different but related topic, Boehm (1992: 98-99) finds a contradiction in Austrian political philosophy, namely that it claims the superiority of free-market capitalism while rejecting the possibility of quantifying the degree of "social justice" attained in a country. How can Austrians know that capitalism is better, if they think it impossible to measure what "better" means? But Boehm's difficulties would disappear, if Austrians were to treat changes in social justice as comparative pattern-tendencies. While concrete and absolute (non-comparative) changes in the level of social justice (roughly understood as capturing all that matters in economic outcomes: standard of living, level of employment, degree of distributional justice, etc.) are incalculable, comparative pattern-tendencies in the level of social justice should be calculable, i.e. when the direction of change (increase or decrease) is merely indicated and no attempt is made to determine any exact,



## 2.8 ISOLATING ABSTRACTION AS APPLIED TO INSTITUTIONS II: EVENT-TRIGGERED TENDENCIES

As far as event-triggered tendencies are concerned, the isolation of a single causal mechanism is inherent and does not need to be manipulated by abstraction. By nature, such tendencies consider but a single stimulus-event, which, thanks to the institutional facilitator (which may consist of a whole complex of institutions), is guided towards a single behavioural response. The fact that only a single trigger is at stake and the fact that a certain institutional facilitation needs to be assumed, automatically isolate a single mechanism. It should hereby be borne in mind that our abstraction is a matter of thought rather than actual experiment.

The tendency for price to rise when demand increases is a prime example of an event-triggered tendency. The increase in demand is obviously the trigger-event. It causes an increase in competition amongst demanders, which shifts bargaining power towards the supply side and thus increases price. Given that this is the relevant mechanism, the institutional facilitator is provided by the existence of many demanders so that competition amongst them can increase when supply becomes scarce (for an elaboration, see chapter 7).

Menger's (1985) famous explanation of the spontaneous introduction of money can also be regarded as a typical tendency of the event-triggered kind. The case is especially interesting, because its outcome is an institution itself (i.e. money) and because it involves two separate tendencies stringed together. For the first tendency, the trigger-event is the intensification of trade and the institutional facilitator is barter trade. In combination, these two tend to produce a heightened awareness of the inefficiency of barter. For the second tendency, the trigger-event is the discovery of the advantage of exchanging a less marketable good for a more marketable one (for the sole reason of being more marketable), while the relevant institutional facilitator consists of a heightened awareness of the inefficiencies of the prevailing situation of barter trade. The likely outcome of this configuration of

circumstances is that a generally accepted means of exchange gradually emerges (see O'Driscoll 1986 and Vanberg 1989: 340 for fuller statements of the mechanism).

In sum, event-triggered tendencies obviate isolating abstraction, because the consideration of a single causal mechanism happens automatically. At the same time, the advantage of being able to formulate absolute outcomes is maintained. The accompanying disadvantage is, however, that event-triggered tendencies are applicable only in limited circumstances, namely when the specific trigger-event (the primary stimulus) happens and some specific institutional factor, or complex of institutional factors, is in place as well. As opposed to context-shaped tendencies, event-triggered tendencies are conditional, having to be formulated in *if-then* form.

## CONCLUSION

This chapter investigated a methodology for choice-theory which makes no use of tendencies rather than laws. Emphasis was placed on the importance of isolating as well as patterning abstraction for the social sciences, which is traced back to Menger (1985). The implications for method of these two forms of abstraction were elaborated. Patterning abstraction demanded that causal relations not be given as mathematical relations, because it is misleading to include parameters if these are never intended to be specified. Patterning abstraction also pointed towards the importance of institutions, as the patterns of the social environment. Isolating abstraction requires the assumption of a single motive, namely the economics motive. The differences with the neoclassical version of the economic motive were indicated in the process. Isolating abstraction also requires the isolation of a single behaviour-shaping influence from the institutional environment. For this purpose, a distinction between context-shaped and event-triggered tendencies was introduced.

## Chapter Three:

**IDENTIFICATION THEORY FOR MACROECONOMIC COORDINATION**

*Everything must be made as simple as possible, but no simpler*

Anonymous on the internet

**3.1 INTRODUCTION**

Chapter 1 introduced two kinds of economics without laws. The first was identification theory which uses no laws because it is not concerned with the explanation of behaviour. The second was our brand of choice theory, which avoids employing laws by explaining behaviour through tendencies.

We will now take things a step further by applying identification theory to the explanation of market coordination, in particular the macroeconomic angle to it. That is the sense in which this chapter is about *macroeconomics* without laws. It will develop an identification theory of market coordination under the simplifying assumptions of a commodity-money system and the absence of financial markets. Chapter 4 analyses the complications introduced by monetary banking and financial markets.

Chapter 1 mentioned that identification theory is form theory. As such, it is concerned with regularities in the nature or structure of things rather than in causal relations between things. An identification-theoretical analysis of market coordination must, therefore, start with a definitional description of market coordination. To provide such a description turns out to be more complicated than one would imagine at first inspection (see Loasby 1992, Torr 1992). Nonetheless, it could run as follows:

Market coordination refers to a situation in which suppliers plan to supply the sort and quantity of goods (including services, financial assets and labour) which demanders plan - and have the finance - to demand at a price which is acceptable to both. Our reference to demanders and suppliers in this context does not necessarily imply a Marshallian or Walrasian analytical framework, but stems from the logical fact that only demand and supply plans require market coordination; market exchange is, by definition, a matter of

demanders and suppliers finding each other. In short, market coordination refers to a situation in which actual exchanges reflect the desired plans and finances of demanders and the desired plans of suppliers, indicating that these plans turn out to be mutually compatible as well as compatible with external circumstances (c.f. Hayek 1937: 40, Clower 1965, 1967).

The demand and supply plans of moment  $t$  will normally be conceived at some prior moment  $t-x$  ( $x$  being an unspecified interval), especially on the part of suppliers who have to contend with the fact that production takes time. Hence, market coordination at moment  $t$  implies the correctness of the knowledge and expectations of moment  $t-x$  on the part of those particular agents who desire to exercise demand and supply at moment  $t$ . This already provides the clues as to why the achievement of market coordination (in our sense) does not imply perfect knowledge and foresight in some universal sense, as already intimated by Hayek (1937: 42). First, when *both* demanders and suppliers have been ignorant about potentially profitable exchanges between them, neither of them wishes to enter the market and no plans get frustrated. In that way, ignorance need not lead to discoordination. Second, the supply plans of moment  $t-x$  may be partly shaped by the disappointed expectations of an investment decision taken at some prior moment  $t-2x$ ; this is the general result of the capital-intensive mode of production, where capital inputs get used up over an extended period of time. Hence, even when the supply plans of  $t-x$  turn out correct at  $t$ , they may still be the product of failed expectations inherited from  $t-2x$ . We come back to these issues in chapter 7.

This definitional description of market coordination obviously still expresses an ideal, which is nowhere perfectly attained. In the real world, it is normal to allow for a degree of discoordination, even while speaking about the fulfilment of market coordination; there is a degree of "frictional unemployment" in every market. Hence, when defining market coordination in terms of exact and perfect equalities between, say, planned demand and supply, the intention is not to force such a strict notion onto the real world.

It transpires that the terms equilibrium and coordination have the same meaning in our lexicon and will, therefore, be used interchangeably. The choice between them will be

dictated by subjective taste and currency of expression: sometimes it appears to aid communication to speak of coordination and sometimes it seems fit to speak of equilibrium (of course, the choice can be immaterial too). This use of the term equilibrium is in apparent sharp conflict with that of Keynes (1936), for whom it indicates a state of rest. Alternative neoclassical and Keynesian concepts of equilibrium will be briefly discussed in this chapter as well.

Given its title, this chapter is about macroeconomic coordination in particular rather than market coordination in general. But overall market coordination can be divided up in labour-market coordination and goods-market coordination, as these are the two main markets. Goods-market coordination can, in turn, be subdivided in microeconomic coordination and macroeconomic coordination. The former deals with the coordination of demand and supply plans in individual goods markets separately (no disproportionalities), while the latter is concerned with the sufficiency of effective aggregate demand to take up planned aggregate supply (no general glut). This latter condition is our main object of interest in this chapter, which we will refer to as the macroeconomic equilibrium condition or *macec*, although labour-market equilibrium and microeconomic equilibrium will receive attention as well. The logic of these divisions as well as the precise meaning of the terms used will be cleared up as we go along.

It should be emphasised that, in our scheme, market coordination means that *all* plans in the economy are coordinated including the labour market, but that goods-market coordination implies that only the demanders and suppliers of goods coordinate their plans, which does not guarantee that the labour market clears too. Even when entrepreneurs manage to sell all their production (goods-market coordination), they may still fail to take up the whole of the labour force (labour-market discoordination). So it is important to bear in mind the distinction between market coordination and goods-market coordination, in that the former includes full employment, while the latter does not. And because macroeconomic coordination is a sub-set of goods-market coordination, macroeconomic coordination does not necessarily imply full employment either.

Chapter 1 showed how an identification-theoretical analysis of inflation can yield a taxonomy of inflation causes. In a similar way, this chapter will culminate in a taxonomy of causes for market discoordination, and *a fortiori* for unemployment, as follows from our identification-theoretical analysis of market (dis-)coordination.

## 3.2 THE ACTION STRUCTURE OF MARKET COORDINATION

### 3.2.1 Equilibrium conditions and accounting identities

It was noted in chapter 1 that the aim of identification theory is to identify which actions in which configuration are responsible for the occurrence of a certain economic phenomenon. Put differently, identification theory gives us the action structure of that phenomenon.

The action structure of market coordination is precisely captured by equilibrium conditions. Equilibrium conditions list the action-types to be coordinated and they specify the configuration in which these actions must occur for coordination to be achieved. In short, an identification-theoretical analysis of market coordination is about equilibrium conditions. A major part of this study is, therefore, taken up with attempts to derive the correct set of equilibrium conditions for a monetary-exchange economy (chapters 3 and 4) and to compare that set with the equilibrium conditions typically used by the main schools of macroeconomic thought (chapters 5, 6 and 9). It is our contention that the descriptive realism of macroeconomic theory is to an important degree determined by the equilibrium conditions it uses. After all, such conditions reveal the theory's view as to what macroeconomic plan coordination is supposed to mean: the actions which are to be coordinated and the configuration in which these actions must occur for coordination to be achieved. Because identification theory stands divorced from choice theory, such insight can be gained without any concern for the choice-theoretical side of the theories concerned, i.e. their behavioural functions.

After all, being identification theory, equilibrium conditions on their own imply no explanation of behaviour, let alone a behavioural explanation by way of laws. That is how they give us a form of macroeconomics without laws. In a sense, because established

macroeconomic theory also employs equilibrium conditions, it engages in macroeconomics without laws too. But because these equilibrium conditions are always used in combination with a behavioural theory which does make use of laws, in practice, established theory is not involved in macroeconomics without laws at all.

It is also important to emphasise that, by mentioning and deriving equilibrium conditions, we do not wish to suggest that these conditions are necessarily satisfied; ours is not an equilibrium economics in the neoclassical sense of that term. Equilibrium conditions are used merely to express the goal - what it takes to achieve market coordination -, while no requirements are set that the goal ever be reached. That question depends on choice theory (the tendencies towards or away from market coordination), an analysis of which falls outside the scope of this chapter but will be undertaken in chapters 7 and 8.

This brings us to the topic of the distinction between equilibrium conditions and accounting identities (Myrdal 1939). Whereas an equilibrium condition contains planned (*ex ante*) amounts and its equality does not necessarily hold (it is after all but a *condition*), an accounting identity is expressed in terms of realised (*ex post*) amounts whereby its equality does hold by definition. Nonetheless, an equilibrium condition has the same form as an accounting identity, both listing the relevant action-types and both using the equality to express the achievement of coordination. Although an equilibrium condition is not a truism in the same way that an accounting identity is (it does not hold by virtue of recording realised amounts), there still is a sense in which it has truistic qualities too: the validity of its form is implied in the nature of the phenomenon (market coordination as defined above) and the nature of the institutional environment in which the phenomenon of market coordination is investigated (a monetary exchange economy). As explained in chapter 1, the method of identification theory is to deduce implications from the nature of the relevant phenomena and their institutional environment. As long as the phenomenon and its institutional environment are correctly defined and the deductive logic cannot be faulted, the *form* of the equilibrium conditions will be necessarily true - even if the equality which it expresses does not necessarily hold.

This truistic quality of equilibrium conditions may suggest (e.g. to Mishan 1962) that the analysis cannot be very revealing. But this need not be so. Laying bare the latent implications of the plain and manifest nature of things can certainly reveal insight, particularly when we are investigating composite phenomena. As explained in chapter 1, the action structure of composite phenomena (such as market coordination) is not immediately clear from its definition, but needs to be spun out by a process of logical deduction. By contrast, uncovering the action structure of a basic phenomenon is trite, because the phenomenon *is* the action. Therefore, while the truistic nature of identification theory may involve a self-evidency in the case of basic phenomena, this need not be so in the case of complex phenomena.

### **3.2.2 Neoclassical and Keynesian concepts of equilibrium**

Especially in Post Keynesian circles (see Henry 1984, Dore 1985, Ertürk 1996), our use of the term equilibrium as plan coordination tends to be interpreted as a concession to neoclassical economics, where the concept of equilibrium is also closely connected to the idea of plan coordination. Neoclassical equilibrium is, however, not primarily concerned with plan coordination but with the attainment of maximum profit or utility - hence the equality between marginal cost and marginal revenue as the typical neoclassical equilibrium condition. Neoclassical equilibrium is, in the first instance, a choice-theoretical rather than identification-theoretical concept (c.f. Boettke *et al* 1994: 65, who distinguish between market clearing and general equilibrium along similar lines).

Nonetheless, if each agent is to achieve maximum profit or utility, the potentially conflicting plans of various agents need to be coordinated. That is why the achievement of plan coordination gets absorbed into the quest for optimisation and why coordination becomes vital to neoclassical equilibrium too. By adding a flawlessly operating price mechanism (aided, if necessary, by a Walrasian auctioneer), neoclassical theory turns the optimising drive into a drive towards plan coordination as well. Plan discoordination simply becomes a failure to reach maximum profit or utility (assuming no transaction cost and costless information).



By contrast, our equilibrium concept is totally divorced from any dynamic choice-theoretical mechanism, according to which the economy is supposed to achieve coordination or not. No equilibrium-searching or -fleeing tendencies are taken on board, simply because identification theory is not concerned with the explanation of behaviour at all. Our equilibrium conditions merely set the goal, without implying that it will ever be reached. Hence, Hansen's (1970: 3) contention that the "definition of equilibrium obviously calls for laws of motion governing the revisions of plans and expectations" (see also Hayek 1937: 44) is fundamentally mistaken - a mistake born out of a failure to separate equilibrium as an identification-theoretical construct from equilibrium as a choice-theoretical construct.

Moreover, as was already mentioned in the introduction, the mere mention of demand and supply in our definition of equilibrium (coordination) does not mean that we endorse a neoclassical demand-supply framework, in the sense that we accept the neoclassical ways of constructing demand and supply curves (Patinkin's "individual experiment") and determining market prices and market coordination (Patinkin's "market experiment") (Patinkin 1965). In addition, because both individual and market experiments involve behavioural functions, they fall under choice theory which is not under discussion here. Alternative ways of constructing demand and supply curves and determining prices and degrees of plan coordination, which are consistent with our methodological requirements for conducting choice theory, will be discussed in chapter 7. Rather than being inspired by neoclassical choice theory, our reference to demand and supply is based on the nature of market exchange: goods changing hands between demanders and suppliers. Consequently, plan coordination by way of market exchange must, by logical necessity, refer to demand and supply; there is no other exchange than between a demander and a supplier.

The Keynesian idea of equilibrium as a state of rest (Chick 1983: 21) is in some ways radically different but in other ways also quite similar to the neoclassical idea. The similarity lies in the fact that both are choice-theoretical constructs, reached when optimising positions (for the exogenous givens of the model) are attained. The crucial difference is that Keynesian equilibrium does not require plan coordination for optimisation,

because it is reached when only entrepreneurs realise their optimum position and accomplish their plans (c.f. Torr 1988: 15-23). By contrast, neoclassical equilibrium requires *all* agents (not only entrepreneurs) to achieve their optimum positions and fulfil their plans. That is one way of explaining how Keynesian equilibrium can be made compatible with the possibility of unemployment, since the profit-maximising plans of entrepreneurs need not be harmonised with the utility-maximising plans of workers.

It may be mentioned that the concept of unemployment equilibrium need not be in conflict with our approach, simply because goods-market coordination is compatible with labour-market discoordination. As mentioned in the introduction, it is quite possible that not all workers have found a job (unemployment), while entrepreneurs have managed to sell all their produce (equilibrium). If it is subsequently assumed that unemployed workers lack the power to effect change in their unhappy circumstances, unemployment equilibrium can become a state of rest too. Such seems to be the origin of Keynes's concept of equilibrium (see Torr 1988).

### **3.3 EQUILIBRIUM CONDITIONS AND TIME**

#### **3.3.1 The moment as time dimension**

Because identification theory is form theory, it consists of generalisations about the form or nature of phenomena. Such generalisations abstract from the changeable attributes of phenomena, in an attempt to convey their relatively consistent, characteristic properties. In the case of identification theory, these consistent properties concern the action structure of an economic phenomenon, i.e. the actions which, when brought together in a certain configuration, make up the phenomenon. The fundamental question is then: how can we make a theory about the static, consistent characteristics of economic phenomena applicable to the dynamic changeability of history. The answer is twofold: first, by pegging the variables to a single moment in time; and second, by expressing them as patterns, i.e. as broad types whose particular historical content remains unspecified.

The importance of the moment lies in the fact that it can bring historical change to a standstill without doing any damage to its nature. For example, a photograph can capture an

historical moment without distorting the reality of change. Shackle (1967: 232) observes how "[h]istory germinates in moments, it does not spring up in complete segments ready made, and the analysis and explanation of it must proceed by the study of momentary situations." (see also Hicks 1935: 64, Snippe 1985b: 295). The flow of time can then be portrayed by linking and comparing various static moments. Comparative statics, where staticness is momentary, is quite compatible with historical dynamics. By contrast, comparative statics, where staticness is periodic, is incompatible with historical dynamics. Such is the problem with neoclassical economics' treatment of time<sup>1</sup>.

Also, by using patterns and thus ignoring the continuously changing, historically specific content of the actions, the analysis is freed up to focus on the unchanged action structure of the phenomena, while still allowing for historical change - even if that change is ignored for the purposes of theory. All this may sound somewhat vague, but once we get down to the actual description of the equilibrium conditions, our meaning will become immediately clear.

### 3.3.2 Momentary analysis and the stock-flow distinction

Given the momentary nature of our analysis, *all* variables in the equilibrium conditions are stocks rather than flows. As the benchmark moment, we will use the present, designated as moment  $t$ . Consequently,  $t-x$  points to any moment in the past and  $t+x$  to any moment in the future. Given that we deal with the issue of market coordination (of which macroeconomic coordination is a subsection), the relevant moment refers to the moment demand or supply is exercised in the market place, which is also the moment money changes hands.

---

1. The period of neoclassical economics has a somewhat curious nature. During such a period, the endogenous variables are allowed to change but the exogenous givens are required to stay put. Because exogenous variables do not change, this kind of period is almost more like a static moment. That is why conventional period-analysis is often criticised for being "static", even when it tries to be "dynamic" by considering a variety of linked periods. Myrdal (1939: 43) notes in this connection: "In many respects, period analysis requires a greater degree of simplification and a greater sacrifice of generality than is necessary in instantaneous analysis. The element of greater realism which the period analysis gains by introducing the time-sequences as an object for study must be paid for by certain very unrealistic approximations. In fact, such a study must assume most of the world unchanged and the rest changing in a very regularized way."

The concepts of stock and flow are commonly invested with two different sets of meanings, which are not necessarily consistent. As already indicated, a stock can be understood as something that happens at a moment and a flow as something that occurs over a period. But a stock can, for obvious etymological reasons, also be understood as an inventory of goods or money, with a flow then referring to a change in the inventory thus defined. In this sense, capital is a stock and investment a flow, or wealth a stock and income a flow. When these two stock-flow distinctions are superimposed upon each other, wealth and capital become variables which have to be measured at a moment, while income and investment must be measured over a period. But when it comes to the issue of market exchange, there is no reason why income or investment could not be momentary, namely referring to the moment the income was received or the moment the investment was made. After all, the relevant moment for an analysis of market exchange is the moment when offers are made in the market place and money is intended to change hands. Myrdal (1939: 45) notes the same problem: "[T]erms as e.g. 'income', 'revenue', .. 'investments' imply .. a time period *for* which they are reckoned. But in order to be unambiguous they must also refer to a point of time *at* which they are calculated."

Harrison (1980) differentiates between two stock-flow distinctions along very much the same lines. First, he mentions the "inventory versus change-in-inventory" distinction, which he designates as *behavioural* - a label clearly suggestive of choice theory. Second, he mentions the "moment versus period" distinction, which he labels *dimensional* - suggestive of identification theory. Harrison (1980: 113) adds: "[T]rading plans are dimensionally stocks (measured at some reference date) and not flows (measured per some market period)", which confirms our idea of treating all planned exchanges as stocks.

The behavioural stock-flow distinction is necessary for purposes of constructing dynamic period analysis, i.e. analysis which takes a succession of periods into account. The reason is that the planned demands and supplies of a given period need not correspond with the desires to consume or produce of that same period. Some consumptive buying may be for the actual use of the following period, just as some productive selling may come out of

the productive effort of a previous period. As a result, current (i.e. this period) consumption cannot be explained solely in terms of the current desire to consume, just as current supply cannot be explained by current desires to produce only. Stocks, in the sense of inventories, then fulfil the indispensable role of taking care of the inheritances from a past period as well as bequeathments to a next period. Put more simply, behavioural stocks are necessary to take account of the carry-overs between various periods which cannot be accounted for by current utility or profit functions, while behavioural flows register the changes in inventories within a given period, which reflect behaviour dictated by current profit and utility functions. Because identification theory is not concerned with the explanation of behaviour, the behavioural stock-flow distinction is irrelevant to it.

Nonetheless, the behavioural flows of conventional analysis can easily be transposed into dimensional stocks, provided we ignore the behavioural explanations (profit and utility functions) and look only at the equilibrium conditions used. It must thereby be borne in mind that, while the period is used as a means for agents to find and harmonise their optimal plans, these plans are still assumed to be executed at a moment. In other words, in terms of actual transacting, behavioural flows are dimensional stocks. Such flows can then be turned into stocks, simply by postulating that all the accumulated transactions over the assumed period happen at the same moment, which need not alter the explanatory intent of period analysis in any significant way. As Chick (1982: 443) notes, "since the determination of [flow variables] takes place .. at something close to a *point in time*, there is no conflict between stocks and flows.." (Cottrell and Lawlor 1991: 637 make a similar observation). Comparison between conventional theory and our analysis, which will be undertaken in chapters 5 and 6, can thus be undertaken without any risk of compromising the message and intent of either of the two - but, again, provided we view only the equilibrium conditions of conventional theory and ignore any of its behavioural explanations.

Moreover, there is a sense in which moments have to feature in period analysis, just as periods must play a role in momentary analysis. It is, after all, a moment which marks the change-over from one period to the next, just as it is a period which defines the interval

between two static moments (c.f. Snippe 1985a: 133-134). Making use of these moments in period analysis and these periods in momentary analysis, we are able to translate sequential period analysis into sequential momentary analysis (and *vice versa*), provided we assume that all the transactions take place at the period-defining moments.

In view of the fact that we deal with the issue of plan coordination, our equilibrium conditions are expressed in their planned (*ex ante*) form. Nonetheless, because in a money-using economy realised exchanges from the past can have a bearing on planned exchanges in the present, realised (*ex post*) amounts may also feature in our equilibrium condition. Throughout this chapter, variables written in **bold** indicate realised, *ex post* amounts, while notation in normal lettering refers to planned, *ex ante* amounts.

The time dimension given to a certain planned transaction indicates the moment the transaction was planned to be executed, not the moment the plan was conceived, as argued by Hicks (1935: 64). Hence, the plans of moment *t* are not the plans conceived at moment *t*, but the plans intended to be executed at moment *t*. The time these plans were framed is naturally of concern only to choice theory and will date back some shorter or longer time before the time of plan execution, as was already implicit in our definition of market coordination discussed in the introduction. Because conventional neoclassical theory fails to distinguish between choice and identification theory, the moments of plan formation and plan execution unavoidably get muddled up, which, as we will see in chapter 6, has been responsible for some important theoretical confusion with regard to Clower's (1965) "rational planning postulate" (see also Clower and Leijonhufvud 1981a). Finally, the planned quantities of our analysis nowhere refer to whole demand or supply schedules but only to quantities demanded or supplied.

### 3.4 GOODS-MARKET EQUILIBRIUM IN A MONETARY ECONOMY

We now come to the actual derivation of equilibrium conditions. It should, once again, be borne in mind that the analysis offers no explanation of behaviour; no movement toward or away from equilibrium is implied. The aim is purely to formulate the goal: what it takes to

achieve goods-market equilibrium. It is clear that, because no behaviour is explained, this analysis makes no use of laws either. Hence, it all remains a matter of economics without laws.

While it is our ultimate aim to state the coordination requirements for labour-market equilibrium (i.e. full employment), we will initially concentrate on goods-market equilibrium only. The additional coordination requirements (over and above goods-market equilibrium) necessary to reach full employment will be discussed in the final section of this chapter.

Given that market coordination acquires a macroeconomic aspect only in the context of a monetary economy, we will start out by investigating the requirements for goods-market equilibrium under barter and afterwards see how money-use changes that picture by introducing specifically macroeconomic coordination problems. If we assume barter trade (goods exchanging for goods), the action structure of market coordination is relatively uncomplicated: the relevant action-types to be coordinated are the quantity demanded and supplied for each separate market and the requirement for plan coordination consists of the equality between these planned amounts. The relevant set of equilibrium conditions is thus as follows:

$$G_{s,i}(t) = G_{d,i}(t) \quad (i = 1, \dots, n) \quad (3.1)$$

$G_{s,i}$ : quantity supplied of good  $i$   
 $G_{d,i}$ : quantity demanded of good  $i$

The set  $1, \dots, n$  comprises all exchangeable goods, including intermediate goods, final products, second-hand goods as well as pure services.

Two important characteristics of barter trade can be gleaned from equation 3.1. First, the coordination problem is exclusively microeconomic in nature; goods-market equilibrium is achieved when demanders *in each individual market* are willing to demand what suppliers in that market are willing to supply (and *vice versa*), with the result that a separate equilibrium condition is specified for each market<sup>2</sup>. Second, because goods directly

---

2. Strictly speaking, the specification of a separate equilibrium condition for each goods market under barter is impossible without assuming a numeraire. The existence of a numeraire is, however, already a concession to a monetary economy, as it presupposes a kind of generally accepted medium of exchange. A non-monetary unit of account is not impossible but rather academic.

exchange for goods, the coordination requirements can be expressed by way of a set of equations in which all variables refer to the same moment  $t$ .

Under monetary exchange, these two characteristics no longer hold: the coordination problem is no longer exclusively microeconomic and the acts of buying and selling are divorced from each other, taking place at different moments in time. As Clower (1967: 207-208) notes about the essential nature of a monetary economy:

*Money buys goods and goods buy money but goods do not buy goods.* This restriction is - or ought to be - the central theme of a theory of a money economy. The task of reformulating microeconomic analysis to accommodate those aspects of experience that are commonly supposed to distinguish a money from a barter economy consists, indeed, of little more than an elaboration of the implications of this restriction (see also Wicksell [1928] 1950: 159 and Patinkin 1965: xxiii).

We will quite strictly follow Clower's advice and elaborate the implications of the idea that money trades for goods (and goods for money).

When money acts as a medium of exchange, every offer to supply goods is simultaneously also an offer to demand money, just as every offer to demand goods is also an offer to supply money. Hence, prices make their appearance in the equilibrium conditions, because the amount of money changing hands depends on both the quantity of good  $i$  exchanged and the price of  $i$ . At any moment  $t$ , the total supply and demand for goods (aggregated over all agents) can now be expressed by the following identities:

$$\sum P_i G_{s,i}(t) \equiv \sum ME_d(t) \quad (3.2)$$

$$\sum P_i G_{d,i}(t) \equiv \sum ME_s(t) \quad (3.3)$$

$ME_s$ : quantity of money supplied in exchange  
 $ME_d$ : quantity of money demanded in exchange  
 $P_i$ : money price of good  $i$ .

These identities enable us to express goods-market equilibrium at moment  $t$  as follows:

$$\{\sum P_i G_{s,i}(t) \equiv \sum ME_d(t)\} = \{\sum P_i G_{d,i}(t) \equiv \sum ME_s(t)\} \quad (3.4)$$

This equilibrium condition can be broken down into two sub-sections:

$$\sum P_i G_s(t) = \sum P_i G_d(t) \quad (3.5)$$

and

$$\sum ME_s(t) = \sum ME_d(t), \quad (3.6)$$

which must hold simultaneously. A number of different requirements for goods-market equilibrium can be inferred from these equations.



Equation 3.5 stipulates that planned aggregate demand and supply be equal, both in terms of size and in terms of composition. As far as composition is concerned, the same requirement is contained in equation 3.1, which represented the microeconomic equilibrium condition (henceforth abbreviated to *micec*). This means that in a monetary economy as in a barter economy, goods market equilibrium requires that individual supply and demand plans be coordinated. However, in a monetary economy, more than only microeconomic equilibrium is needed, for which equation 3.5 and 3.6, considered in combination, provide the clues.

Equation 3.6 demands that planned money offers be equal to planned money receipts, whereby this equality is achieved at a level corresponding to the aggregate value of the planned goods exchanges of equation 3.5. Hence, equations 3.5 and 3.6 add to the *micec* of equation 3.1, the further requirements that:

- (a) goods demanders have the money as well as the willingness to spend that money on goods at the required level of planned aggregate supply and
- (b) goods suppliers are willing to accept that money in exchange for the goods parted with.

If the commodity or asset functioning as money is indeed a generally accepted means of exchange, requirement (b) is automatically met and of no further concern to us. Requirement (a) is, however, not automatically met, its fulfilment signifying what we will call macroeconomic equilibrium. This concept of macroeconomic equilibrium expresses essentially the same as what authors such as Koopmans (1933), Myrdal (1939) and Hayek (1935) referred to as *neutral money* or *monetary equilibrium* (for a history of the terms, see Patinkin and Steiger 1989). After all, macroeconomic equilibrium points towards the additional requirements for goods-market coordination introduced by the use of money as a medium of exchange.

The suggestion that macroeconomic equilibrium deals with the complications introduced by money has unfortunately caused a great deal of confusion as it led some authors into the mistaken belief that the macroeconomic equilibrium condition such as formulated under (a) above describes a situation of barter (see Lutz 1969; Visser 1971, McCloughry 1982). Of course, the macroeconomic equilibrium condition (abbreviated to

*macec*) is the means by which equivalence between a money and a barter economy is obtained, but the condition itself is clearly inapplicable to barter.

Moreover, the attainment of macroeconomic equilibrium produces equivalence between a money and a barter economy only in a purely identification-theoretical sense: the remaining coordination requirement (the *micec* of equation 3.1) is the same as that of a barter economy. But it does not produce equivalence with barter in a choice-theoretical sense: the dynamic behavioural processes by which plan coordination is achieved (or not achieved) are decidedly not the same under a barter as under a money economy, even when macroeconomic equilibrium is roughly achieved. For example, money aids the dynamic forces of coordination by reducing the informational requirements for coordination through obviating the need for a double coincidence of wants.

As will be elaborated in chapter 5, the mistaken notion that the *condition* for macroeconomic equilibrium describes a situation of barter has led to some serious confusion surrounding Wicksell's and Hayek's monetary thought.

### 3.5 MONEY, FINANCE AND MACROECONOMIC EQUILIBRIUM

#### 3.5.1 Financial equilibrium

The macroeconomic equilibrium condition (*macec*) can be more precisely formulated, after we have first looked more closely at the concept of finance. As also mentioned in the introduction, we initially assume the absence of monetary banking and financial markets, which means that agents make use of internal financing only. The next chapter will relax these assumptions. The supply of finance ( $F_s(t)$ ) will be defined as money which is available to a given agent at moment  $t$  to finance his planned money-uses for that moment. The demand for finance ( $F_d(t)$ ) is the addition of all possible planned money-uses of the agent for moment  $t$ .

Hence, the demand for finance of any individual agent at moment  $t$  can be specified as:

$$F_d(t) = PG_d(t) + M_d(t) \quad (3.7)$$

$M(t)$ : Stationary money in possession of a given agent at moment  $t$ .

In other words, the demand for finance consists of the planned demand for goods ( $PG_d(t)$ ) and the planned demand for stationary money ( $M_d(t)$ ), which is designated "stationary" to distinguish it from money-offered-in-exchange (written as  $ME_s$ , which is definitionally identical to  $PG_d$  - see equation 3.3) at moment  $t$ . Following Keynes, stationary money can also be called liquidity, which is equivalent to what pre-Keynesian authors used to refer to as hoarding; Keynes (1936: 174) explicitly acknowledges the equivalence between liquidity preference and *planned* hoarding. While  $PG_d(t)$  captures the active balances and  $M_d(t)$  the passive balances of moment  $t$ , it would be a mistake to regard  $M_d(t)$  as motivated by Keynesian speculation only. It is quite possible that agents wish to increase their liquidity position at moment  $t$ , with a view to their spending plans for some moment  $t+x$  in the future. Therefore,  $M_d(t)$  combines all non-transaction demands for money *of moment t*, which may include the transactions demand for some anticipated spending in the future, i.e. Keynes's "finance motive" (see Keynes 1937b, Davidson 1965).

The supply of finance of an individual agent at moment  $t$  ( $F_s(t)$ ) has to be derived in a roundabout fashion, namely via the supply of liquidity ( $M_s(t)$ ) understood as the amount of stationary money our agent plans to have in his possession at any moment  $t$ .  $M_s(t)$  can be detailed as follows:

$$M_s(t) = M_d(t-x) + PG_s(t) + \triangle M_s(t) \quad (3.8)$$

Equation 3.8 simply tells us that the agent's planned money holdings of moment  $t$  consists of the existing amount of money in his possession ( $M_d(t-x)$ ), his money receipts from planned sales ( $PG_s(t)$ ) and his planned money creation ( $\triangle M_s(t)$ ). Our notation for  $M_d(t-x)$  and  $\triangle M_s(t)$  require some further clarification.

$M_d(t-x)$  refers to the inherited liquidity from the past, whereby the past is represented by moment  $t-x$ . It is assumed to be handed down by way of a planned demand for liquidity, which was partially or wholly realised at moment  $t-x$ , thus creating existing liquidity for the present moment  $t$ <sup>3</sup>. Bearing in mind that we are assuming a pure commodity-money system,

---

3. By writing the existing liquidity ( $M_d(t-x)$ ) as a realised demand for liquidity from the past (i.e. in bold), we do not wish to suggest that these past plans were necessarily fully realised at their planned levels. Nothing should be inferred about the degree of coordination success achieved at moment  $t-x$ .

$\triangle M_s(t)$  refers to the planned output of the gold minting industry, or whatever commodity happens to be in use as money. It will obviously feature in the liquidity-supply equations of (miners and) minters only - those agents who bring new money into circulation.

After having dealt with the supply of liquidity, we are in a position to clarify the supply of finance on the part of any goods-demander at moment  $t$ :

$$F_s(t) = M_s(t-x), \quad (3.9)$$

which, with the aid of equation 3.8, can be detailed as:

$$F_s(t) = M_d(t-2x) + PG_s(t-x) + \triangle M_s(t-x) \quad (3.10)$$

The reason for expressing the present supply of finance as a realised supply of liquidity from the past is as follows. The supply of finance at moment  $t$  has to constitute actual money ready to be used for the spending and hoarding plans of moment  $t$ , which the supply of liquidity of that same moment can never be. The planned additions to the agent's liquidity of moment  $t$  ( $PG_s(t) + \triangle M_s(t)$ ) do not represent money which can be used to finance the spending and hoarding plans of that very same moment - unless the planned receipt and use of money can be perfectly synchronised, which is impossible in an uncertain world and would remove the rationale for using money anyway (c.f. Keynes's emphasis on uncertainty as the reason for holding money, 1936: ch.17, 1937c: 216ff). Essentially, money must first be obtained before it can be re-used. That is why only realised money supply from the past constitutes finance for the present, an insight also commonly connected to Robertson's (1940) lagged-income approach<sup>4</sup>.

Now that we have arrived at expressions for  $F_s(t)$  and  $F_d(t)$ , the next step is to equate them so as to obtain a "financial-equilibrium condition", henceforth abbreviated to *finec*:

$$M_d(t-2x) + \triangle M_s(t-x) + PG_s(t-x) = M_d(t) + PG_d(t), \quad (3.11)$$

which, when  $(M_d(t) - M_d(t-2x))$  is written as  $\triangle M_d(t)$ , can be simplified to:

$$PG_s(t-x) + \triangle M_s(t-x) = PG_d(t) + \triangle M_d(t) \quad (3.12)$$

---

4. Again, the fact that equation 3.9 writes the liquidity supply of moment  $t-x$  in its realised form (i.e. in bold) should not be taken to mean that we necessarily assume that these amounts were fully realised at their planned levels. The degrees of coordination success achieved at moments  $t-2x$  and  $t-x$  are, once more, left open and undecided.

The message of the *finec* is straightforward: realised income and additions to the money stock must be sufficient to finance planned spending and additions to stationary-money holding of moment  $t$  (c.f. Hicks 1935: 65-66, who also insists on momentary analysis).

The succession of moments used in the *finec* may require some clarification. We have assumed that our arbitrarily chosen agent alternates his role of goods-demander and goods-supplier with perfect regularity: if he demanded goods at moment  $t$ , we assume that he has supplied goods at moment  $t-x$ . Or to extend the time series, if moments  $t-2x$ ,  $t$ ,  $t+2x$ , etc are reserved for the demanding of goods, then moments  $t-x$ ,  $t+x$ ,  $t+3x$  etc have to be committed to the supplying of goods. The degree of unrealisticness introduced by this stylisation should not be serious. Generally speaking, the fact that different moments of time feature in the *finec* can be taken as illustrative of the Keynesian (1936: 293) maxim that "the importance of money essentially flows from its being a link between the present and the future"<sup>5</sup>. Hahn (1973: 230) similarly remarks how "a minimum requirement of a representation of a monetary economy is that there should be transactions at varying dates".

The next step is to aggregate the  $F_s$  and  $F_d$  equations over all goods-demanding agents of moment  $t$ , so as to gain a macroeconomic, economy-wide perspective:

$$\Sigma PG_s(t-x) + \Sigma \Delta M_s(t-x) = \Sigma PG_d(t) + \Sigma \Delta M_d(t) \quad (3.13)$$

No fundamental problems of aggregation are encountered, since all variables are denoted in money terms. In addition, since the analysis does not contain any behavioural functions, aggregation does not require the invocation of some form of "collective consciousness" so offensive to methodological individualists (e.g. Hayek 1935: 4, Lachmann 1976b). Nonetheless, aggregation does involve two important abstractions, which reduce the direct realism of the aggregate *finec*.

Firstly, it turns a diverse group of demanders with differing  $F_s$  and  $F_d$  conditions into one aggregate demander for whom but a single aggregate  $\Sigma F_s$  and  $\Sigma F_d$  equation is assumed to apply. The variety of liquidity positions around this average liquidity position of the

---

5. The fact that Keynes refers to the present and the future, while the past ( $t-x$ ) and the present ( $t$ ) feature in our *finec*, is of no consequence. What matters is that the actions making up the supply of finance lag behind the actions making up the demand for finance.

whole economy is thus removed from sight. Secondly, the economy is supposed to be divided up in at least two groups of agents, one being the mirror image of the other: when the one group plans to demand goods at moment  $t$ , there must of necessity be another group which plans to supply goods at that same moment  $t$ . The goods-demanders of a certain moment are obviously but a fraction of all agents, but can nonetheless be regarded as representative of all agents since demander- and supplier-roles are continuously alternated.

To facilitate comparison with established formulations of macroeconomic equilibrium, it is imperative also to specify the *finec* with reference to saving. We will define saving in a commonsense fashion as "unspent income" (realised income net of planned spending):  $\Sigma S(t) = \Sigma PG_s(t-x) - \Sigma PG_d(t)$ . The *finec* of equation 3.13 can then be simplified further into:

$$\Sigma S(t) + \Sigma \Delta M_s(t-x) = \Sigma \Delta M_d(t) \quad (3.14)$$

### 3.5.2 Macroeconomic equilibrium and financial constraints

An essential characteristic of a monetary economy is that, while goods supply is automatically exercised when planned, goods demand is exercised only when it is both financeable and planned. As Clower (1967: 209) notes: "[T]he traditional (but curiously non-modern) contention [was] that demand in a money economy is effective only if it involves a combination of desire with money purchasing power". For such *financeable-cum-planned* demand, we will use Clower's (1965, 1967) term "effective demand", which obviously differs from how Keynes used it (c.f. Chick 1983: 65)<sup>6</sup>. As for notation, financeable demand will be written in italics as  $\Sigma PG_d$ , planned demand kept in normal lettering as  $\Sigma PG_d$  and effective demand underlined like  $\Sigma \underline{PG}_d(t)$ . Effective demand ( $\Sigma \underline{PG}_d$ ) is, of course, the smaller of either financeable demand ( $\Sigma PG_d$ ) or planned demand ( $\Sigma PG_d$ ).

The macroeconomic equilibrium condition (*macec*) can now more simply be expressed as  $\Sigma \underline{PG}_d(t) = \Sigma PG_s(t)$ , which precisely captures the requirement for macroeconomic equilibrium as described verbally in section 3.4 above: goods demanders have the money as

---

6. When following Clower (1965, 1967) in this nomenclature, we do not thereby take the general-equilibrium context of his theoretical work on board as well. Hence, Chick's (1983: 65) suggestion that Clower's concept of effective demand "confines the analysis to less-than-full employment in advance" does not seem warranted.

well as the willingness to spend it on goods at the required level of planned aggregate supply. By the same token, macroeconomic *disequilibrium* can be expressed as  $\Sigma PG_d(t) < \Sigma PG_s(t)$ , signifying effective demand failure<sup>7</sup>. We can now distinguish two categories of reasons why macroeconomic disequilibrium (i.e. effective demand failure,  $\Sigma PG_d(t) < \Sigma PG_s(t)$ ) may occur:

1. Effective demand is constrained below planned aggregate supply by the insufficiency of available finance, which we will refer to as a "supply-of-finance constraint", abbreviated as  $F_s$ -constraint. It occurs when  $\Sigma F_s(t) < \Sigma PG_s(t)$ , meaning that the total amount of money potentially available at moment  $t$  is insufficient to facilitate demand at the level of planned supply. Given that the supply of finance sets the level of financeable demand ( $\Sigma F_s(t) = \Sigma PG_d(t)$ ), the occurrence of an  $F_s$ -constraint can equally be described as  $\Sigma PG_d(t) < \Sigma PG_s(t)$ .
2. Effective demand is constrained below planned aggregate supply by agents choosing to put their money to uses other than to buy goods with it. As Marshall (1928: 710) already noted: "Though men have the power to purchase, they may not choose to use it". In a monetary economy, money need not be employed exclusively for the purpose of buying goods, but can also be used for hoarding - and when we allow for bank money, secondary financial markets and a foreign sector, further alternative uses of money can be added. This form of effective demand failure will be labelled an "alternative demand-for-finance constraint", henceforth abbreviated to  $aF_d$ -constraint. The name points towards the fact that money is lured away from buying goods towards alternative uses. It occurs when  $\{\Sigma F_s(t) - \Sigma aF_d(t)\} < \Sigma PG_s(t)$  or, what amounts to the same thing, when  $\Sigma PG_d(t) < \Sigma PG_s(t)$ .

This distinction between  $F_s$ - and  $aF_d$ -constraints, also called "income *versus* expenditure constraint" (Clower 1967), "financial *versus* real crowding-out" (Snippe 1985a) or "financial *versus* real constraint" (Kregel 1985), invites three further comments.

---

7. It is, of course also possible that macroeconomic disequilibrium occurs in the form of  $\Sigma PG_d(t) > \Sigma PG_s(t)$ , meaning that there is more demand than there are goods on offer. The result will in most cases be inflation. An analysis of inflation, as an instance of macroeconomic discoordination, largely falls outside the scope of our present analysis, although chapters 7 and 8 will contain some indirect references to it.

First, it is quite possible for  $F_s$ - and  $aF_d$ -constraints simultaneously to contribute towards effective demand failure, namely when  $\Sigma PG_d(t) < \Sigma F_s(t) < \Sigma PG_s(t)$ , i.e. an already insufficient supply of finance is further depleted by agents putting their money to alternative demand-for-finance uses ( $aF_d$ 's).

Second, the distinction between  $F_s$ - and  $aF_d$ -constraints applies only to the initial moment the constraint is taking effect. In subsequent moments, it no longer matters and both constraints manifest themselves as  $F_s$ -constraints. Take, for example, the case of people hoarding rather than spending their money on goods, which may be an instance of an  $aF_d$ -constraint on effective demand, namely when it falls below planned supply. This reduced effective demand subsequently causes a contraction in the income of the relevant suppliers, who may then experience an  $F_s$ -constraint on their spending. In other words, effective demand failure may start off as an  $aF_d$ -constraint for only *some* agents, but it subsequently spreads through the economy as an  $F_s$ -constraint for *all* agents (c.f. Yeager 1986: 370).

Third, the way we defined an  $F_s$ -constraint, it is not the same as a finance constraint *on spending* in general, for which we will use the abbreviation "f-constraint". An f-constraint occurs when demand plans are frustrated by a lack of finance, with the result that effective demand falls below planned demand,  $\Sigma PG_d(t) < \Sigma PG_d(t)$ . By contrast, an  $F_s$ -constraint occurs when  $\Sigma F_s(t) < \Sigma PG_s(t)$ . There is good reason to define macroeconomic disequilibrium with reference to the occurrence of  $F_s$ -constraints rather than f-constraints; what upsets macroeconomic equilibrium is that insufficient finance constrains effective demand *below the level of planned supply*, rather than below the level of planned demand. Surely, the mere frustrating of planned demand by deficient finance does not spell macroeconomic disequilibrium, if the resultant effective demand is still adequate to meet planned supply! This brings us to the next issue.

### 3.5.3 Financial and macroeconomic equilibrium; the continuity condition

The obvious implication of financial equilibrium ( $\Sigma F_s = \Sigma F_d$ ) is that there are no f-constraints on planned demand, thereby turning planned demand into effective demand



( $\Sigma \underline{PG}_d = \Sigma PG_d$ ). But as just indicated, macroeconomic equilibrium does not require that planned demand be effective (financial equilibrium), but that effective demand be sufficient to meet planned supply ( $\Sigma \underline{PG}_d = \Sigma PG_s$ ). With the help of a few simplifying assumptions, the attainment of financial equilibrium can, however, be brought closer to the attainment macroeconomic equilibrium. Assume that:

1. equilibrium prevailed at the starting-off position of moment  $t-x$ , so that past supply plans were more or less realised, thereby providing an equivalent amount of finance for the present:  $\Sigma PG_s(t-x) = \Sigma PG_s(t-x)$ .
2. planned nominal supply of goods does not change between moments  $t-x$  and  $t$ :  $\Sigma PG_s(t-x) = \Sigma PG_s(t)$ , which can roughly be regarded as the absence of economic growth.

If these two assumptions hold, income and output can be treated as equivalent ( $\Sigma PG_s(t-x) = \Sigma PG_s(t)$ ), as is the common usage in textbook macroeconomics<sup>8</sup>. The *macec* can then be reformulated as  $\Sigma PG_s(t-x) = \Sigma \underline{PG}_d(t)$ <sup>9</sup>. In the light of the standard *finec* of equation 3.13 ( $\Sigma PG_s(t-x) + \Sigma \triangle M_s(t-x) = \Sigma PG_d(t) + \Sigma \triangle M_d(t)$ ), the *macec* can then alternatively be expressed as  $\Sigma \triangle M_s(t-x) = \Sigma \triangle M_d(t)$ .

In effect,  $\Sigma \triangle M_s(t-x) = \Sigma \triangle M_d(t)$  specifies the requirements for the *continuation* of macroeconomic equilibrium in the present ( $t$ ), starting from a position of macroeconomic (and microeconomic) equilibrium in the past ( $t-x$ ). We shall, therefore, refer to  $\Sigma PG_s(t-x) = \Sigma \underline{PG}_d(t)$  or  $\Sigma \triangle M_s(t-x) = \Sigma \triangle M_d(t)$  as the *continuity conditions* of macroeconomic equilibrium and to the underlying assumptions (1. and 2. above) as the *continuity assumptions*. The analytical implication of the continuity assumptions is that they rule out  $F_s$ -constraints, as aggregate income is in principle always sufficient to finance aggregate demand at the level of planned aggregate supply ( $\Sigma F_s = \Sigma PG_s$ ). Hence, when the continuity

---

8. Hicks (1946: 119) similarly notes: "It is only in a stationary state that .. income does not need to be distinguished from production.."

9. If the *finec* is formulated with reference to saving (equation 3.14),  $\Sigma PG_s(t-x) = \Sigma PG_s(t)$  can alternatively be expressed as  $\Sigma S(t) = 0$ . The logic of  $\Sigma S(t) = 0$  as a *macec* makes immediate sense, in that zero saving suggests the respending of all income, which is clearly what the continuation of macroeconomic equilibrium is all about. But then we must assume that the negative saving (i.e. dissaving) of some is cancelled out by the positive saving of others, which requires the consideration of financial markets - lending and borrowing. Such will be one of the topics of discussion in the next chapter.

assumptions hold, only  $aF_d$ -constraints can upset macroeconomic equilibrium. What the continuity condition  $(\Sigma\triangle M_s(t-x) = \Sigma\triangle M_d(t))$  effectively does is to rule out  $aF_d$ -constraints as well, with the result that overall macroeconomic equilibrium is ensured.

The continuity condition  $\Sigma\triangle M_s(t-x) = \Sigma\triangle M_d(t)$  is, of course, more familiarly put as "injections equal leakages",  $\Sigma\triangle M_s(t-x)$  representing an injection into the income-expenditure circulatory stream and  $\Sigma\triangle M_d(t)$  a leakage therefrom. In fact, a leakage is just another name for what we called an  $aF_d$  (an alternative demand for finance). A *finec* is indeed nothing but a description of the circular flow of income ( $\Sigma PG_s(t-x)$ ) and expenditure ( $\Sigma PG_d(t)$ ), which is basic to all Wicksellian macroeconomic analysis, including that of Keynes. The fact that the continuity assumptions rule out  $F_s$ -constraints accords with the Keynesian inclination to discard such constraints and concentrate exclusively on  $aF_d$ -constraints as the sole source of aggregate demand failure (c.f. Kohn 1981a, Kregel 1985) - an issue to which we will come back in chapter 9.

When using  $\Sigma PG_s(t-x) = \Sigma PG_d(t)$  or  $\Sigma\triangle M_s(t-x) = \Sigma\triangle M_d(t)$  as the *macec*, it should always be kept in mind that the underlying continuity assumptions are somewhat restrictive. The most generally applicable formulation of the *macec* remains that effective demand is sufficient to take up planned supply ( $\Sigma PG_d(t) = \Sigma PG_s(t)$ ) rather than that all available income is respent ( $\Sigma PG_d(t) = \Sigma PG_s(t-x)$ ) or that the various injections and leakages cancel out ( $\Sigma M_s(t-x) = \Sigma\triangle M_d(t)$ ). Also, as we move closer to a real-world economy and various additional sectors (finance, government, foreign) are included, more leakages and injections become relevant, for which the continuity formulation  $\Sigma M_s(t-x) = \Sigma\triangle M_d(t)$  needs to be adapted.

In summing up, we can state that financial equilibrium is equivalent to macroeconomic equilibrium only if it is additionally postulated that:

- (a) the continuity assumptions hold, which rule out  $F_s$ -constraints
- (b)  $\Sigma\triangle M_s(t-x) = \Sigma\triangle M_d(t)$  holds, which rules out  $aF_d$ -constraints.

Of course, macroeconomic equilibrium is assured when the possibilities for both  $F_s$ - and  $aF_d$ -constraints are neutralised.

### 3.5.4 Money and money-market equilibrium

Robertson (1940: 9) once complained about Keynes having "rendered clear discussion difficult by introducing a number of hybrid concepts, such as 'the supply of finance' and 'the supply of liquidity', which are neither identical with 'the supply of money'". In view of the fact that we make similar distinctions, some special care will be taken to remove all scope for confusion and to reiterate the meanings which we assign to the three different notations for money employed: "stationary money" or "liquidity" (M), "money-in-exchange" (ME) and "finance" (F).

- ME(t) may best be described as money which is in transit between agents at moment t. It relates to the planned movement of money as the necessary counterpart of the planned movement of goods.
- M(t) refers to stationary money in the possession of a given agent at moment t, i.e. liquidity or money hoards.
- $F_s(t)$  is merely a special kind of stationary money, namely that stationary money which is realised in the past and ready to be used as finance in the present (i.e.  $F_s(t) = M_s(t-x)$ ).
- $F_d(t)$  expresses the monetary resources necessary to facilitate the spending and hoarding plans of the present moment t (i.e.  $F_d(t) = PG_d(t) + \triangle M_d(t)$ ).

If we rewrite the *finec* of equation 3.13 in the light of identities 3.2 and 3.3, all three money notations (M, ME and F) can be combined in one expression for the *finec*, namely:

$$\Sigma ME_d(t-x) + \Sigma \triangle M_s(t-x) = \Sigma ME_s(t) + \Sigma \triangle M_d(t), \quad (3.15)$$

The left-hand side as a whole  $\{\Sigma ME_d(t-x) + \Sigma \triangle M_s(t-x)\}$  then represents  $\Sigma F_s(t)$  and the right-hand side as a whole  $\{\Sigma ME_s(t) + \Sigma \triangle M_d(t)\}$  embodies  $\Sigma F_d(t)$ .

Equilibrium in the money market, familiarly expressed as the equality between the *total* demand and supply of money in circulation ( $\Sigma M_s(t) = \Sigma M_d(t)$ ), plays a limited role in our analysis. The reason is twofold. Firstly, when it comes to investigating the influence of money on goods-market equilibrium, we do not have to deal with the monetary resources of the whole economy, but only with those resources in possession of goods demanders (of

moment  $t$ ). Secondly, when  $\Sigma M_s(t) = \Sigma M_d(t)$  is used to portray the finances of goods demanders only, it is deficient as both a *finec* and a *macec*.

As a *finec*,  $\Sigma M_s(t) = \Sigma M_d(t)$  is inadequate, because it overlooks the relevant time lag which defines the difference between the supply of money ( $\Sigma M_s(t)$ ) and the supply of finance ( $\Sigma M_s(t-x)$ ) and because it does not give explicit recognition to the demand for transactions-money ( $\Sigma PG_d(t)$ , which is identically equal to  $\Sigma ME_s(t)$ ). And if  $\Sigma M_s(t) = \Sigma M_d(t)$  is to express anything close to a *macec*, it should be written as  $\Sigma \Delta M_s(t-x) = \Sigma \Delta M_d(t)$ , which is the continuity condition. But the continuity condition is obviously applicable only under the limiting circumstance in which the continuity assumptions hold and all other leakages and injections apart from  $\Sigma \Delta M_d(t)$  and  $\Sigma \Delta M_s(t-x)$  are ignored. When bank money, secondary financial markets and international trade are considered, the number of alternative injections and leakages increases and  $\Sigma \Delta M_s(t-x) = \Sigma \Delta M_d(t)$  will not even do as a continuity condition. Moreover, the continuity condition is expressed with reference to changes in money demand and supply, while money-market equilibrium is denoted in terms of absolute amounts of money demand and supply.

The term "money-market equilibrium" can, however, still be given an important and useful meaning, namely as an alternative label for financial equilibrium ( $\Sigma F_s(t) = \Sigma F_d(t)$ ). The term "equilibrium in the money market" is most often used to convey the idea of financial equilibrium anyway - as will be found in chapters 6 and 9.

### 3.6 GOODS-MARKET AND LABOUR-MARKET EQUILIBRIUM

#### 3.6.1 Goods-market equilibrium dissected

Before we specify the additional requirements for labour-market equilibrium, it is appropriate to sum up how all the various equilibrium conditions discussed up to now relate to goods-market equilibrium.

Goods-market equilibrium under barter is achieved when the planned quantity demanded is sufficient to take up planned quantity supplied in each market separately:  $G_{d,i}(t) = G_{s,i}(t)$ , for each goods market  $i = 1, \dots, n$ . For a monetary economy, this condition

has to be altered to  $\underline{P}_i G_{d,i}(t) = P_i G_{s,i}(t)$ , because demand must now not only be planned but supported by sufficient finance as well. This condition allows itself to be divided up into two sub-conditions:

1. **Microeconomic equilibrium:** Demanders plan to buy what suppliers plan to offer in each separate market. In other words, the *composition* of total planned supply and demand for goods is perfectly matched and does not constrain planned demand below planned supply in any of the markets. In symbols,  $G_{d,i}(t) = G_{s,i}(t)$  for each good  $i = 1, \dots, n$  separately.
2. **Macroeconomic equilibrium:** Effective demand matches the total value of planned aggregate supply. In symbols,  $\Sigma \underline{P} G_d(t) = \Sigma P G_s(t)$ , whereby  $\Sigma P G$  is the aggregation of all goods ( $P_i G_i$ ,  $i = 1, \dots, n$ ) which agents plan to trade at moment  $t$ . This condition can be further broken down into two sub-conditions:
  - a.  $F_s$ -constraint absence: Demanders are able, i.e. have sufficient money, to finance their planned demand at the level of planned aggregate supply. In symbols:  $\Sigma F_s(t) \geq \Sigma P G_s(t)$ .
  - b.  $aF_d$ -constraint absence: Demanders are willing to spend their available money on goods at a level required by total planned supply, rather than direct it towards alternative uses, such as to hoard it. In symbols:  $\Sigma P G_d(t) = \Sigma P G_s(t)$  or  $\{\Sigma F_s(t) - \Sigma aF_d(t)\} = \Sigma P G_s(t)$

The logical consistency of the way in which we divided the overall condition for goods-market equilibrium into a number of sub-conditions can be checked as follows. When taken together, condition 2a ( $\Sigma F_s(t) \geq \Sigma P G_s(t)$ ) and condition 2b ( $\Sigma P G_d(t) = \Sigma P G_s(t)$ ) imply condition 2 ( $\Sigma \underline{P} G_d(t) = \Sigma P G_s(t)$ ). Similarly, condition 1 ( $G_{d,i}(t) = G_{s,i}(t)$ ) and condition 2 ( $\Sigma \underline{P} G_d(t) = \Sigma P G_s(t)$ ) together imply the condition for overall goods-market equilibrium in a money-using economy:  $\underline{P}_i G_{d,i}(t) = P_i G_{s,i}(t)$ , for each market  $i = 1, \dots, n$ .

### 3.6.2 The additional requirements for labour-market equilibrium

Given that a modern economy can be characterised as an "entrepreneur economy" (Torr 1988) in which relatively few agents are goods suppliers while the vast majority are only

labour suppliers offering their services to the goods suppliers, goods-market equilibrium is not sufficient for labour-market equilibrium, i.e. full employment<sup>10</sup>. Let us see what the additional requirements are.

Labour-market equilibrium is attained when planned demand is equal to planned supply in each separate labour market according to skill and location. In symbols,  $W_k N_{d,k} = W_k N_{s,k}$  for each skill-location market  $k = 1, \dots, m$ . This condition again allows itself to be broken down into two sub-conditions:

1. *Microeconomic labour-market equilibrium*: the skill- and location-composition of the aggregate supply and demand for labour are perfectly matched and do not constrain planned demand below planned supply in any of the markets. In symbols:  $N_{d,k} = N_{s,k}$  for each separate skill-location market  $k$ .
2. *Macroeconomic labour-market equilibrium*: aggregate labour demand matches aggregate labour supply. In symbols:  $\Sigma W N_d = \Sigma W N_s$ . This condition can also be expressed with reference to the goods market, namely as the requirement that entrepreneurs plan to supply goods at such a level that the labour necessary to produce these goods is sufficient to engage the total labour force; in symbols:  $\Sigma P G_s = \Sigma P G_{s,FE}$ , whereby  $G_{s,FE}$  is the level of goods supply at which full employment is attained.

The transactions demand for money emanating from trade in labour services has already been catered for in the overall *finec*, namely as part of  $\Sigma P G_s$  and  $\Sigma P G_d$ . Therefore, insofar  $F_s$ - or  $aF_d$ -constraints on labour demand are relevant, they do not need special consideration; for purposes of establishing the conditions for macroeconomic equilibrium, the labour market can be subsumed under the goods market. By adding the condition for

---

10. In chapter 3 of the *General Theory*, Keynes (1936: 26) defines full employment without making explicit reference to the labour market, i.e. the demand and supply of labour, namely as the situation where the supply of output becomes inelastic in reaction to an increased demand for output. But reference to the labour market is implicit, as this situation seems explicable only in terms of the demand for labour having exhausted the available supply of labour. By contrast, chapter 2 (1936: 12) still defines full employment with explicit reference to the labour market, namely as the situation where the real-wage level desired by labour (according to Keynes's version of the classical supply curve) corresponds with the real wage as resulting from the declining productivity of employment (according to Keynes's version of the classical demand curve).

macroeconomic labour-market equilibrium, we merely set trade in labour-services and goods at a certain required level, namely so as to ensure full employment.

Obviously, by including extra conditions for the achievement of labour-market equilibrium, the conditions for goods-market equilibrium are not thereby rendered any less important. While goods-market equilibrium is no longer a sufficient condition for full employment in an entrepreneur economy, it remains a necessary condition.

### 3.6.2 A taxonomy of unemployment causes

One of the uses of identification theory is its ability to provide a neat list all the reasons why a certain economic phenomenon may occur. Our analysis up to now allows us to do so for the case of unemployment.

By definition, unemployment means that the supply of labour overtakes the demand for labour, for which there can be two reasons:

1. Microeconomic labour-market discoordination, i.e. a mismatch between the skill-location composition of total labour demand and supply, which Keynes referred to as the "temporary want of balance between the relative quantities of specialised resources" and which he described as "frictional" (Keynes 1936: 6).

2. Macroeconomic labour-market discoordination, i.e. the insufficiency of total planned labour demand to take up total planned labour supply ( $\Sigma WN_s > \Sigma WN_d$ ), which can alternatively be expressed as the failure of total planned goods supply to reach its full-employment level:  $\Sigma PG_s < \Sigma PG_{s,FE}$ , for which there may be two causes:

2a. Insufficient supply of factor inputs (in particular entrepreneurship and specialised labour) of such quality and skill as to be competitive in the market place, which can be regarded as the main source of what is commonly called "structural unemployment".

2b. Insufficient demand for outputs, i.e. goods-market discoordination:  $\Sigma PG_d < \Sigma PG_{s,FE}$ , for which there can again be two reasons:

- i. Microeconomic goods-market discoordination, i.e. a mismatch between the composition of aggregate demand and supply plans, which classical economists referred to as "disproportionalities".
- ii. Macroeconomic goods-market discoordination, i.e. the insufficiency of realised aggregate demand to take up planned aggregate supply at the full employment level, which classical economists referred to as a "general glut":  $\Sigma PG_d(t) < \Sigma PG_s(t)$ , which can be caused by  $F_s$ - or  $aF_d$ -constraints on demand.

It should thus be obvious how macroeconomic disequilibrium is far from the only reason for unemployment, as seems implied by Keynes's *General Theory*. We come back to this issue in chapter 9.

The function and use of choice theory (the explanation of behaviour) is then to determine which of these possible unemployment causes will be most prominent in which kind of institutional context. Such an analysis will be undertaken in chapter 8.

## CONCLUSION

This chapter set the first steps in the development of an identification theory of market coordination, in particular the macroeconomic aspects thereof. We noted how the concept of an equilibrium condition answers to the stated aims of identification theory. We developed the equilibrium conditions necessary for goods-market equilibrium, which were the micro- and macroeconomic equilibrium conditions (*micec* and *macec*). The reasons for macroeconomic disequilibrium were further analysed with the aid of a financial-equilibrium condition (*finec*). This *finec*, which is going to play a major role in the remainder of this study, was also used to illustrate the income-spending circulatory stream and how the equality between injections into and leakages from that stream can be used as a macroeconomic-equilibrium condition. The requirements for labour-market equilibrium (full employment) additional to those for goods-market equilibrium were also elaborated.



Because this chapter was solely concerned with equilibrium conditions and equilibrium conditions employ no behavioural theory, let alone behavioural theory which makes use of laws, it was also an instance of "macroeconomics without laws".

## Chapter Four:

## FINANCIAL MARKETS, INTEREST RATES AND SECTORAL EQUILIBRIUM CONDITIONS

*The institutional structure of banking is taught in "money" courses as an isolated topic with no attempt to integrate banking into monetary theory per se. .. - something we still do not have!*  
(Richardson 1986: 197)

### 4.1 INTRODUCTION

The analysis of chapter 3 neglected the role played by financial markets in the maintenance or disturbance of macroeconomic equilibrium. This chapter incorporates financial transactions into the established equilibrium conditions. The issue of interest-rate determination will thereby come to the fore. As monetary banking has a major impact on the form of the relevant equilibrium conditions, the analysis will investigate the case of (a) a commodity-money system where financial intermediaries cannot create money, and (b) a bank-money system where most of the financial intermediaries are money-creating banks.

The consideration of financial transactions requires us to relinquish a purely macroeconomic perspective, because such transactions cancel out in aggregation (the overall liquidity of the whole economy does not change) and because various different sectors are customarily assigned different roles as demanders or suppliers of financial assets. For these reasons we will be formulating sectoral *finec*'s for the various relevant sectors: lenders, borrowers, private monetary banks, the central bank, government, the private non-banking sector, which is further divided up into households and firms.

This chapter's topic requires us to introduce some new notation. The totality of economic goods ( $G$ ) can be divided up into  $G^{ld}$ ,  $G^{br}$ ,  $G^{nb}$ ,  $G^b$ ,  $G^{cb}$ ,  $G^g$ ,  $G^f$  and  $G^h$ , whereby the superscripts  $ld$ ,  $br$ ,  $nb$ ,  $b$ ,  $cb$ ,  $g$ ,  $f$  and  $h$  indicate that the goods are traded by lenders, borrowers, non-banks, banks, the central bank, government, firms and households respectively. Any other variable, such as changes in stationary-money holding ( $\Delta M_d$ ) or money creation ( $\Delta M_s$ ), can then be divided up in similar fashion.

This chapter is concerned with identification theory only and, as such, does not make any use of laws. It too is macroeconomics without laws.

#### 4.2 IDENTIFICATION THEORY, FINANCIAL MARKETS AND INTEREST RATES

In considering the role of financial markets, one cannot avoid the issue of interest-rate determination. After all, an interest rate is by definition a yield on a financial asset, which is consequently influenced via the demand for and supply of such assets. As Snippe (1985a: 134) notes:

The interest rate can only be influenced via offers to sell or buy bonds. Accordingly, any theory of interest rate determination will be dependent on the determinants underlying those offers (see also Snippe 1985b: 295).

Snippe hereby neatly summarises the different roles played by identification and choice theory in the explanation of interest rates. Identification theory lists the various "offers to sell and buy bonds" via which the interest rate can be influenced. And choice theory sets out the "determinants underlying those offers": the expected (dis)utility assigned to the funds obtained and parted with, the interest-elasticities of the demand and supply of bonds, etc. - factors which can be ignored for the purpose of this chapter. However, a neglect for choice theory (the explanation of action) does not empty a theory of all content. Identification theory on its own can provide crucial insight into the explanation of interest rates. In fact, the controversy which has dominated interest-rate theory during the last almost fifty years, namely that between liquidity preference and loanable funds, turns almost exclusively on identification-theoretical issues, as is borne out by the fact that Robertson (1936, 1937, 1940, 1966) and Keynes (1936, 1937a, 1937b, 1938) have quibbled about little else than the correct specification of the relevant equilibrium condition, i.e. the nature and configuration of the actions via which the interest rates can be influenced.

The use of equilibrium conditions to determine prices involves an old theoretical problem, which we do well to remove immediately. For argument sake, if the interest rate is claimed to be determined by saving and investment, the relevant equilibrium condition would read: saving = investment. The question then is whether the interest rate is explained

by or explains saving and investment, say, to ensure their equality? Or more in general: is price determined by quantity demanded and supplied or does price determine quantity demanded and supplied? - a dilemma as old as Marshallian price theory itself (see Haavelmo 1974). The problem can be resolved by positioning the variables at different moments in time. The current price is the product of current demand and supply plans, but it influences the demand and supply plans of the future, etc (c.f. Robertson 1940: 8-9, Hicks 1946: 117). Orthodox Marshallian price theory has obstructed this solution, by giving demand, supply and price the *same* time dimension (period or moment). For example, when quantity demanded, quantity supplied and price all represent *current* variables, the causal direction between quantity demanded/supplied and price becomes indeterminate and confused. These issues will be taken further in chapter 7, when we will be discussing the choice-theory of market coordination in general and the price mechanism in particular.

Interest rate theory is furthermore plagued by the difficulty that both the primary and the secondary market for bonds play a role. In other words, the interest rate is both a return on newly-issued bonds (a lending/borrowing rate) and a yield on existing bonds traded in a secondary market. This distinction has a bearing on the controversy between liquidity preference and loanable funds. It has sometimes been argued (Shackle 1967: 206-209) that liquidity preference treats the interest rate as a yield on secondary financial assets, while loanable funds regards it as a return on primary, newly-issued assets. After all, the primary market *is* the market for loanable funds. Keynes himself has encouraged this interpretation by emphatically rejecting the idea of the interest rate being determined by "the demand and supply of credit", clearly referring to loanable funds (Keynes 1936: 244-245). Given that the primary market is always negligibly small relative to the secondary market, the demand and supply of newly created assets can be ignored, whereby liquidity preference theory is vindicated (c.f. Keynes 1937a: 247)<sup>1</sup>.

---

1. The behavioural stock-flow distinction has sometimes been applied to the issue, with "old bonds" being regarded as a stock (an inventory) and "new bonds" as a flow (a change-in-inventory). Liquidity preference is then seen as establishing a flow interest rate and loanable funds a stock interest rate. But as was established in chapter 3, the behavioural stock-flow distinction is irrelevant to identification theory and has introduced all manner of unnecessary confusion and controversy into the debate (see Snippe 1985a: 131-135 for a discussion of the red herrings involved).

This argument pre-supposes a difference between the interest rate as determined in the primary and in the secondary market. We will start our theoretical investigations by trying to establish whether this is indeed the case. The specific form in which Robertson or Keynes poured their respective equilibrium condition will, however, not be discussed; that issue will be saved for subsequent chapters. As was assumed by both liquidity-preference and loanable-funds theorists, all possible differences between financial assets according to size, maturity, issuing agency and risk are ignored and a single interest rate on a single financial instrument is considered, something which the modern trend towards financial asset and liability management has admittedly rendered increasingly unsatisfactory (see Chick 1993: 69-70). The analysis merely attempts to capture how the overall liquidity in the economy influences the broad direction of interest rates, i.e. the tendency in interest-rate levels common to all financial markets, insofar not overshadowed by other tendencies. As for notation, the symbol B for "bond" will be used for our universal financial instrument. Newly issued financial instruments will then be designated by B<sub>new</sub>, indicative of "new bonds". Existing financial instruments traded in a secondary market will similarly be written as B<sub>old</sub>, short for "old bonds". Section 4.3 will start off with the case of a commodity-money system, after which section 4.4. will investigate how financial transactions affect macroeconomic equilibrium and interest-rate determination under a bank-money system.

### **4.3 INTEREST-RATE DETERMINATION IN A COMMODITY-MONEY ECONOMY**

#### **4.3.1 The interest rate as a lending-borrowing rate: the *lbec***

When attempting to incorporate lending and borrowing into the economy-wide *finec*, we face the obvious dilemma that the *finec*, which is descriptive of the financial situation of goods demanders, is not effected by lending and borrowing. Lending and borrowing merely redistribute funds between agents, but do not alter the aggregate finances of goods demanders (Keynes 1936: 75). The solution lies in dividing the economy up in at least two sectors, lenders (ld) and borrowers (br), and in considering their financial situation separately. In other words, instead of regarding the liquidity position of only a single

aggregate goods demander which is unaffected by lending and borrowing (assuming lending and borrowing is more or less equally represented), we view the liquidity position of lenders and borrowers as subsections of goods demanders separately, whose financial position is by definition influenced by lending and borrowing. That is how the inclusion of financial markets forces us to adopt a partially disaggregate, sectoral view of the economy. In what follows, we shall investigate these issues more closely by formulating an equilibrium condition for the primary market, which we will label the "lending-borrowing equilibrium condition", abbreviated to *lbec*.

To the extent that financial institutions intermediate between surplus-units and deficit-units (primary lenders and primary borrowers), the *lbec* will obviously be equal to the sectoral *finec* of intermediaries: the planned lending of surplus-units will be more or less equivalent to the supply of finance for financial intermediaries, and planned borrowing by deficit-units will almost be the same as the demand for finance on the part of such institutions<sup>2</sup>. Moreover, the degree of intermediation makes no difference to the form of the *lbec*, provided money-creating banks do not feature. Financial intermediation (by non-bank intermediaries) merely makes the market for loanable funds more efficient, but does not alter the action-types which make up the total supply of and demand for loanable funds.

The demand for loanable funds (= supply of primary bonds) will appear in the *finec* of borrowers, which is similar to a normal *finec* apart from the fact that borrowing ( $\Sigma Bnew_s$ ) is added as a supply-of-finance item and that each variable carries the superscript "br" for borrower - the sector to which this *finec* specifically applies:

$$\Sigma S^{br}(t) + \Sigma \Delta M_s^{br}(t-x) + \Sigma Bnew_s(t-x) = \Sigma \Delta M_d^{br}(t) \quad (4.1)$$

Borrowing is given in its realised form (i.e. in bold as  $\Sigma Bnew_s(t-x)$ ), since it forms part of the supply of finance for moment  $t$  ( $F_s(t)$ ). In order to arrive at *planned* borrowing ( $\Sigma Bnew_s(t)$ ), the time dimension of equation 4.1 needs to be shifted forward by one period  $x$ , expressing the expected *finec* at moment  $t+x$ . After rearranging,  $\Sigma Bnew_s(t)$  is then determined as:

---

2. The perfect identity between these categories applies only if we assume that financial intermediaries buy and sell primary bonds only, which obviously is never quite the case.

$$\Sigma B_{new_s}(t) = -\Sigma S^{br}(t+x) + \Sigma \Delta M_d^{br}(t+x) - \Sigma \Delta M_s^{br}(t) \quad (4.2)$$

This equation reflects the truism that present borrowing plans are determined by planned future dissaving (the excess of spending over income) and hoarding, insofar present money creation is not sufficient to finance them. It is in principle possible that present borrowers do not plan to dissave, using their borrowed funds exclusively for hoarding purposes, but such a scenario seems artificial and unlikely.

Similarly, the supply of loanable funds (= demand for primary bonds) by lenders can be derived from the *finec* of lenders in the same straightforward manner, the superscript "ld" indicating lenders:

$$\Sigma B_{new_d}(t) = \Sigma S^{ld}(t) + \Sigma \Delta M_s^{ld}(t-x) - \Sigma \Delta M_d^{ld}(t) \quad (4.3)$$

In other words, planned lending is determined by planned saving (the planned excess of income over spending) plus money creation, insofar not used to finance increased stationary-money holding.

Equating  $\Sigma B_{new_d}(t)$  and  $\Sigma B_{new_s}(t)$ , we obtain the lending-borrowing equilibrium condition (*lbec*):

$$\begin{aligned} \Sigma S^{ld}(t) + \Sigma \Delta M_s^{ld}(t-x) - \Sigma \Delta M_d^{ld}(t) = \\ -\Sigma S^{br}(t+x) + \Sigma \Delta M_d^{br}(t+x) - \Sigma \Delta M_s^{br}(t), \end{aligned} \quad (4.4)$$

which can be simplified by writing  $\{\Sigma S^{ld}(t) + \Sigma S^{br}(t+x)\}$  as  $\Sigma S^{ld,br}(t,t+x)$ ,  $\{\Sigma \Delta M_d^{ld}(t) + \Sigma \Delta M_d^{br}(t+x)\}$  as  $\Sigma \Delta M_d^{ld,br}(t,t+x)$  and  $\{\Sigma \Delta M_s^{ld}(t-x) + \Sigma \Delta M_s^{br}(t)\}$  as  $\Sigma \Delta M_s^{ld,br}(t-x,t)$ .

We then obtain:

$$\Sigma S^{ld,br}(t,t+x) + \Sigma \Delta M_s^{ld,br}(t-x,t) = \Sigma \Delta M_d^{ld,br}(t,t+x) \quad (4.5)$$

Given that borrowers normally dissave,  $\Sigma S^{ld,br}(t,t+x)$  signifies net excess saving (when positive) or net excess dissaving (when negative). Furthermore,  $\Sigma \Delta M_s^{ld,br}(t-x,t)$  and  $\Sigma \Delta M_d^{ld,br}(t,t+x)$  refer to additions to the money stock and stationary-holding on the part of both lenders and borrowers.

What is noteworthy about the *lbec* of equation 4.5 is that its form is almost identical to a normal *finec* (such as in equation 3.14), the only difference being that the saving, money creation and hoarding apply to lenders and borrowers in particular rather than goods

demanders in general. But because agents continually turn over their roles as lender, borrower and goods demander, this difference is of little analytical import. We can roughly maintain that, given a commodity-money system, the *lbec* and the *finec* are the same. As a result, the interest rate (as a lending-borrowing rate) is influenced via the same action-types as appear in the *finec*.

#### 4.3.2 Secondary markets and the *finec*

Any form of trade in whatever kind of commodity creates, in Keynesian terms, a transactions demand for money. Even if the aggregate financial position of the economy is not affected by the initial issue of financial paper (money is merely redistributed between agents), claims are laid on financial resources as soon as such paper is subsequently traded in a secondary market. And given the rather large trade volumes in secondary financial markets in a modern economy, the transactions demand for money resulting from such trade will be sizable. As a result, demand for old bonds may crowd out demand for normal goods, leading to a Keynesian  $aF_d$ -constraint on aggregate demand (c.f. Wells 1983: 529).

In order to capture such possibilities, the basic *finec* of equation 3.13 needs to be adapted to take account of secondary trade. This can be achieved as follows:

$$\Sigma PG_s(t-x) + \Sigma \text{Bold}_s(t-x) + \Sigma \Delta M_s(t-x) = \Sigma PG_d(t) + \Sigma \text{Bold}_d(t) + \Sigma \Delta M_d(t) \quad (4.6)$$

Or, with reference to saving:

$$\Sigma S(t) + \Sigma \text{Bold}_s(t-x) + \Sigma \Delta M_s(t-x) = \Sigma \text{Bold}_d(t) + \Sigma \Delta M_d(t) \quad (4.7)$$

These equations show how, for a given supply of finance,  $\Sigma \text{Bold}_d(t)$  can crowd out  $\Sigma PG_d(t)$ . This possibility is especially relevant when there is growth in the trade in secondary assets ( $\Sigma \text{Bold}_d(t) - \Sigma \text{Bold}_s(t-x)$  is positive), in which case secondary financial markets are a net absorber of finance.

#### 4.3.3 The interest rate as a yield on secondary assets: the *sfec*

Insofar as the interest rate is determined in the secondary market, the action-types via which it is influenced can be identified with the aid of the *finec* of equation 4.7. The demand for old bonds is obtained by isolating  $\text{Bold}_d(t)$  on one side of the equation:



$$\Sigma \text{Bold}_d(t) = \Sigma S(t) + \Sigma \text{Bold}_s(t-x) + \Sigma \triangle M_s(t-x) - \Sigma \triangle M_d(t) \quad (4.8)$$

In the same way as with equation 4.2, the planned supply for old bonds is then determined as:

$$\Sigma \text{Bold}_s(t) = \Sigma \text{Bold}_d(t+x) + \Sigma \triangle M_d(t+x) - \Sigma S(t+x) - \Sigma \triangle M_s(t) \quad (4.9)$$

Equalising  $\Sigma \text{Bold}_d$  and  $\Sigma \text{Bold}_s$ , we obtain what can be called the "secondary financial-market equilibrium condition", abbreviated to *sfec*:

$$\begin{aligned} \Sigma S(t) + \Sigma \text{Bold}_s(t-x) + \Sigma \triangle M_s(t-x) - \Sigma \triangle M_d(t) = \\ \Sigma \text{Bold}_d(t+x) + \Sigma \triangle M_d(t+x) - \Sigma S(t+x) - \Sigma \triangle M_s(t) \end{aligned} \quad (4.10)$$

This equation can be simplified in the same way as the *lbec* was simplified above, namely by rewriting  $\{\Sigma S(t) + \Sigma S(t+x)\}$  as  $\Sigma S(t,t+x)$ ,  $\{\Sigma \triangle M_s(t-x) + \Sigma \triangle M_s(t)\}$  as  $\Sigma \triangle M_s(t-x,t)$ ,  $\{\Sigma \triangle M_d(t) + \Sigma \triangle M_d(t+x)\}$  as  $\Sigma \triangle M_d(t,t+x)$  and  $\{\Sigma \text{Bold}_d(t+x) - \Sigma \text{Bold}_s(t-x)\}$  as  $\triangle \Sigma \text{Bold}(t)$ . This yields as an *sfec* in the form of:

$$\Sigma S(t,t+x) + \Sigma \triangle M_s(t-x,t) = \triangle \Sigma \text{Bold}(t) + \Sigma \triangle M_d(t,t+x) \quad (4.11)$$

Two important characteristics of the *sfec* can be highlighted.

Firstly, the *sfec* is again almost identical to the normal *finec*. The reason is the same: the *sfec* is derived from two *finec*'s which differ only in the sense of applying to two different moments. Hence, the same general factors play a role: saving, money creation and stationary-money holding. The only extra variable is  $\triangle \text{Bold}$  signifying trade-growth in secondary markets. Hence, when the interest rate is regarded as a yield on secondary assets, it is roughly set by the same variables as featuring in a normal *finec*.

Secondly, the *sfec* is almost identical to the *lbec* too. The lesson to be learned from this equivalence is that it makes little or no difference whether the interest rate is regarded as a return on old or new bonds, i.e. as a lending-borrowing rate or as a yield on secondary assets. We still need to see whether the same conclusion applies when dealing with a bank-money system. It is to this case that we now turn.

#### 4.4 INTEREST-RATE DETERMINATION IN A BANK-MONEY ECONOMY

A money-creating bank is different from any other financial intermediary in that some of its IOU's function as money, whereby money is defined as a generally accepted medium of

exchange<sup>3</sup>. In a modern economy, there are two different kinds of money-creating banks: the central bank (cb) and private banks (b). The term "cash" will be used for money created by the central bank (notes and token coin) while "deposits" will function as the description of money created by the private banks, for which the shorthand notations  $M_{ca}$  and  $M_{dep}$  respectively will be adopted. Our aim in this section is to see how monetary banking alters the specification of the economy-wide *finec* (the liquidity of the goods market), the *lbec* (the liquidity of the market for primary assets) and the *sfmc* (the liquidity of the market for secondary assets). We start with the influence on the *finec*.

#### 4.4.1 Monetary banking and the *finec*

Under a bank-money system, changes in the money stock ( $\Sigma\Delta M_s$ ) no longer represent the mining and minting of monetary commodities (gold or silver), but now refer to net changes in the monetary liabilities of the banking system insofar held by non-banks. Money can, therefore, be created in three ways:

- (a) Banks extend credit to non-banks in the form of chequable deposits. Because credit extension is a matter of bartering one IOU for another (a bank deposit for a non-bank debt), it can be described as either a demand by non-banks for the IOU's issued by banks or as the demand by banks for the IOU's issued by non-banks. Or as Moore (1989: 23) puts it: "the total volume of nominal lending by the banking system determines the total volume of lending from the banking system." Nonetheless, as the *finec* intends to record the decisions of non-banks rather than banks, it is more appropriate to regard money creation as a planned demand for monetary bonds by the *non-bank public*:  $\Sigma B_{mon}_d^{nb}$ .<sup>4</sup>

3. The complications caused by the blurred distinction between money and the various forms of near-money ( $M_1$ ,  $M_2$ ,  $M_3$ , etc.) can be ignored here, since we are not interested in establishing quantifiable causal relations between the quantity of money and any other macroeconomic variable.

4. It is not uncommon (e.g. Moore 1989, Wray 1992: 302-303) to describe bank-money creation as a "money demand", which may create confusion with our demand for stationary money ( $M_d$ ). Of course, as soon as the demand for credit is realised, it actually *does* become stationary money in the hands of the non-bank public. However, because this stationary money is not necessarily desired in full at moment  $t$ , we do not take it as part of  $\Sigma\Delta M_d$  of moment  $t$ , but rather as  $\Sigma\Delta M_s$  of that moment and, hence, as part of supply of finance ( $\Sigma F_s$ ) of some future moment  $t+x$ . Goodhart (1989: 33) implies something similar when he notes (in criticism of Moore 1989) that the "[d]emand for money, in the sense of the optimal amount that I would want to hold .. is *not* the same thing as - or determined by - the credit-counterpart of the supply of money. The credit market

- (b) Government decreases its balances with the banking system in consequence of net payments to the non-bank public, which is otherwise called "public sector borrowing requirements" (PSBR). For this source of money creation, we will use the symbol  $-Bmon_d^{g,nb}$ , i.e. a negative demand for monetary IOU's held by government (g) insofar used to pay non-banks (nb).
- (c) A net surplus on the balance of payments emerges, which we will write simply as BoP.

These three modes of net money creation can simply be added to arrive at the total:

$$\Sigma \Delta M_s(t) = \Sigma Bmon_d^{nb}(t) + -Bmon_d^{g,nb}(t) + BoP(t) \quad (4.12)$$

The form of the *finec* for a bank-money economy can otherwise remain largely unchanged. The only important adaptation is that bank credit will now be allowed to be extended and repaid, and hence money to be created and destroyed, at each moment in time, i.e. both at  $t-x$  and at  $t$ . After all, the public can use part of its financial resources of moment  $t$  to repay credit and thus effect money destruction. The *finec* for a bank-money economy should thus be expressed as:

$$\Sigma PG_s(t-x) + \Sigma \Delta M_s(t-x) = \Sigma PG_d(t) + \Sigma \Delta M_d(t) - \Sigma \Delta M_s(t) \quad (4.13)$$

In order to effect maximum continuity with the preceding analysis,  $\Sigma \Delta M_s(t-x)$  and  $\Sigma \Delta M_s(t)$  can, however, be netted and written as one variable:  $\Sigma \Delta M_s(t-x,t)$ . Equation 4.13 then becomes:

$$\Sigma PG_s(t-x) + \Sigma \Delta M_s(t-x,t) = \Sigma PG_d(t) + \Sigma \Delta M_d(t) \quad (4.14)$$

The similarity between the *finec*'s of a commodity-money and a bank-money system, however, hides one important difference:

While under a commodity-money system  $\Sigma \Delta M_s$  appears in the *finec* of only a very select group of miners and minters, the introduction of monetary banking causes  $\Sigma \Delta M_s$  to feature in the *finec* of just about all agents. Nearly all agents in a modern bank-money system, whether consumers or producers, take up or repay bank-credit and are thus capable of creating or destroying money at any moment in time. As a result, net money destruction

acquires a much more important role as a possible  $aF_d$ -constraint on present demand and as a possible  $F_s$ -constraint on future demand, as will be further discussed in chapter 8.

#### 4.4.2 Monetary banking and the *lbec*

As transpired from the analysis of section 4.3, the *lbec* is essentially a derivate of the sectoral *finec*'s of lenders and borrowers respectively, including intermediaries. For the case of a bank-money system, these lenders and borrowers comprise banks, the central bank and the non-banking public. In order to obtain the relevant *lbec*, we must therefore start by developing a sectoral *finec* for these three sectors separately. Afterwards we will turn to the formulation of the *lbec* itself.

The sectoral *finec* of non-banking public is given by equation 4.14, which requires no further discussion.

Moving on to the *finec* of the bank sector, the unique quality of this sector is that it can lend out money without losing an equivalent amount of liquidity. In fact, if the public were to use only chequeable deposits as medium of exchange, banks would experience no liquidity constraint on their lending whatsoever and, hence, would have no sectoral *finec* at all. But as long as the non-banking public still uses cash as medium of exchange, a proportion of the money which banks create is taken up in the form of cash. Banks are, therefore, still constrained in their spending and lending activities - not by the scarcity of money (deposits plus cash) but by the scarcity of cash only. The sectoral *finec* of banks must, therefore, be expressed in terms of the equality between the supply and demand of cash-finance ( $\Sigma Fca_s = \Sigma Fca_d$ ) rather than money-finance in general ( $\Sigma F_s = \Sigma F_d$ ). Obviously, only that kind of money which private banks cannot create themselves is scarce for them.  $\Sigma Fca_s = \Sigma Fca_d$  can be specified as follows:

$$\Sigma B_s^{cb,b}(t-x) = \Sigma \Delta Mca_d(t) + \Sigma \Delta Mca_d^b(t), \quad (4.15)$$

with the supply of cash-finance represented by  $\Sigma B_s^{cb,b}(t-x)$  and the demand for cash-finance by  $\Sigma \Delta Mca_d(t) + \Sigma \Delta Mca_d^b(t)$ . These terms require further clarification.

$\Sigma B_s^{cb,b}(t-x)$  refers to the net realised sales of financial assets by banks (b) to the central bank (cb). It is intended to register the net amount of cash-finance which the central bank

provides to banks, either as a result of the net sale of existing assets (discounting) or by direct lending.

$\Sigma\Delta Mca_d(t)$  designates the net increase in the demand for cash-money on the part of the non-banking public *as a whole*, which it can obtain only by withdrawing cash from the banks, i.e. by turning their deposits into notes and coin.

$\Sigma\Delta Mca_d^b(t)$  refers to the net increase in the desired demand for cash on the part of banks themselves. Such increases are meant to protect banks against the eventuality of the non-banking public suddenly increasing its cash-withdrawals.  $\Sigma\Delta Mca_d^b(t)$  is determined in part by changes in the reserve requirements enforced by the central bank and in part by the changes in the excess reserves which the banks may wish to hold.

Equation 4.15 reveals a peculiar characteristic of the banking sector: it does not have direct and full control over its own liquidity. As long as banks are legally required to convert deposits into cash, other sectors can influence their cash holdings. The central bank can alter banks' cash holdings through open-market operations (as well as by changing the reserve requirements), while the non-banking public can change the cash-liquidity of banks by withdrawing or depositing cash. Banks can, however, still indirectly control their liquidity position, namely via the amount of claims (monetary demand deposits as well as non-monetary or quasi-monetary time deposits) they allow to exist against themselves. In order to point this out, we need to digress briefly into choice theory by postulating an obvious statistical relation between the public's cash withdrawals of moment  $t$  and the amount of (deposit) money created by the banks at some moment  $(t-x)$  in the past:  $\Sigma\Delta Mca_d(t) = z\Delta M_s(t-x)$ , with  $z$  denoting the proportion of the total money stock ( $M$ ) which the public desires to hold as cash ( $Mca$ )<sup>5</sup>.

The above analysis brings out how public saving deposited with banks only marginally alters the latter's cash-liquidity position. When such saving ends up on a checking account,

---

5. Chapter 2 emphasised how the use of parameters in behavioural relations is misleading as it implicitly denies the importance of patterning abstraction. Our inclusion of parameter  $z$  here is not in conflict with this idea, as  $\Sigma\Delta Mca_d(t) = z\Delta M_s(t-x)$  is not meant to represent the consistency and purity of theory but rather the pragmatism and contingency of statistical correlation. As was also mentioned in chapter 2, the importance of patterning abstraction for pure theory does not negate the possibility and legitimacy of statistical and econometric analysis, provided its contingency and pragmatism are borne in mind.

there will be no net change in  $M_s$  and consequently no change in the public's cash-withdrawals from banks, assuming that  $z$  remains the same. Alternatively, when public saving ends up on a non- or quasi-monetary time-deposit account,  $M_s$  will shrink by more or less the corresponding amount, which would engender fewer cash-withdrawals by the public. But given the small proportion of public saving that is used to buy non- or quasi-monetary liabilities of the banking sector and given the low value of  $z$  (between 10% to 15% in well-developed economies), the overall influence of public saving on the cash-liquidity position of banks can be considered negligible<sup>6</sup>.

We now turn our attention to the sectoral *finec* of the central bank. As stated above, the *finec* of any given sector should be expressed exclusively in terms of the money which it cannot create itself. For the non-banking public that was deposits as well as cash, while for the banking sector such finance referred to cash only. Pursuing the same logic, the *finec* of the central bank should be expressed in terms of gold and foreign-currency reserves ( $g\&f$ ). Only the scarcity of  $g\&f$  can put an effective financial constraint on the spending and lending activities of the central bank, as illustrated by the fact that, without international transacting, central-bank behaviour is shaped by policy-driven discretion only, unencumbered by any financial constraints on the central bank's spending or lending. The *finec* of the central bank must, therefore, be expressed as  $\Sigma Fg\&f_s = \Sigma Fg\&f_d$ , the equality between the demand and supply of finance in the form of  $g\&f$ , which can be detailed as follows:

$$\text{BoP}(t-x) = \triangle Mg\&f_d^{\text{cb}}(t) \quad (4.16)$$

Equation 4.16, the sectoral *finec* of the central bank, simply tells us that realised balance-of-payments surplus (BoP) of the past must be sufficient to finance net desired increases in gold and foreign-currency reserves on the part of the central bank ( $\triangle Mg\&f_d^{\text{cb}}(t)$ ).

Whereas local-currency dealings between the public and the central bank cannot directly affect the latter's liquidity position, it can again do so *indirectly*. In order to point

---

6. In the light of this, Horwitz (1996: 299)'s remark that "[b]anks are the intermediaries between the savings supplied by liability holders and investment funds demanded by borrowers" seems mistaken, unless savings are interpreted to mean a reduction in  $z$  (a smaller proportion of the total money stock held as cash), which is awkward.

this out, we are once more forced to digress briefly into the territory of choice theory by positing an equally obvious behavioural relation between the reserve losses of the central bank (due to imports and capital outflow) and the total stock of local money in circulation among the non-banking public:  $-BoP(t) = f(M_s(t-x))^7$ . Hence, to the extent that the central bank is faced with a foreign-reserves constraint, it is forced to restrict money creation on the part of the banking sector, which will have an influence on interest-rate determination. In addition to money creation, interest rates can, of course, also be used to manipulate capital flows.

The next step is to derive an *lbec* from the three sectoral *finec*'s as developed above. We will state them once more.

$$\text{Non-banks:} \quad \Sigma PG_s(t-x) + \Sigma \triangle M_s(t-x,t) = \Sigma PG_d(t) + \Sigma \triangle M_d(t) \quad (4.14)$$

$$\text{Banks:} \quad \Sigma B_s^{cb,b}(t-x) = \Sigma \triangle Mca_d(t) + \Sigma \triangle Mca_d^b(t) \quad (4.15)$$

$$\text{Central bank:} \quad BoP(t-x) = \triangle Mg\&f_d^{cb}(t) \quad (4.16)$$

It should be obvious that the integration of these equations into a single *lbec* is an exceedingly cumbersome operation, because all parties can be both lenders and borrowers, and because the various equations must be linked to each other via the behavioural functions,  $\Sigma \triangle Mca_d(t) = z \Sigma \triangle M_s(t-x)$  and  $-BoP(t) = f(M_s(t-x))$  as described above. And the pay-off of such an exercise will be small, because the same action-types that feature in the sectoral *finec*'s will show up in the *lbec* anyway, as we saw in the corresponding analysis of a commodity-money system. So, the relevant actions-types can already be read off equations 4.14-4.16, obviating the reason to integrate them into a single *lbec*.

Broadly speaking, equations 4.14-4.16 teach us that the relevant interest rate is determined by the non-bank public's scarcity of money-finance (as expressed by equation 4.14), the banks' scarcity of cash-finance (as expressed by equation 4.15) and the central bank's scarcity of g&f-finance (as expressed by equation 4.16). However, these three forms

---

7. Again, because this relation represents a pragmatic statistical correlation rather than pure theory, the inclusion and specification of parameters would not conflict with the importance of patterning abstraction for social theory.

of scarcity need not be equally relevant for the determination of interest rates. Their relevance depends on the type of central-bank policy pursued.

If the central bank keeps the discount window open, practising the so-called classical cash reserve system of monetary control (Faure 1986: 25; Rogers 1985a), there is no scarcity of cash-finance for the banking system and consequently no *quantity*-constraint on finance for those non-banking agents who turn to the banking system for credit. In that case, equations 4.14 and 4.15 become irrelevant for the determination of the interest rate on bank-intermediated funds, which is borne out by the fact that the interest rate, under this system of monetary control, is indeed almost totally controlled by the central bank via the bank rate. The determination of the bank rate is in turn governed by internal policy objectives as well as by the scarcity of g&f as determined by the factors in equation 4.16. An actual or anticipated scarcity of g&f can indeed become the single most important factor determining the interest rate.

By contrast, if the central bank were to practice the so-called American cash reserve system of monetary policy (Faure 1986: 25), the action-types featuring in equations 4.14 and 4.15 will also play a role in determining the interest rate. Under this system, the central bank attempts to manipulate and stabilise the cash-reserves of banks rather than the interest rate directly. The interest rate is then allowed to roam more or less freely, being determined by the interplay between the scarcity of money-finance on the part of non-banks (as expressed in its net demand for credit) and the scarcity of cash-finance on the part of banks (as manipulated by the central bank). Of course, banks can reduce the constraining effect of a given amount of cash reserves by way of liability management and financial innovation (see Moore 1989, Wray 1988, 1992, Chick 1993). But to suggest that the central bank has thereby lost all its influence over private banks' cash position would be stretching the point too far.

Nonetheless, most central banks choose to give up their control over private banks' cash reserves (however limited it may be) simply because they prefer to conduct their monetary policy along the lines of the classical system. There are two main reasons for this.



Firstly, the alternative American system allows a degree of interest-rate instability which is normally considered too disruptive. Secondly, the money stock is largely determined by credit demand on the part of the public (disregarding changes in the money stock due to the central bank's open-market transactions with the public, government finance and the balance of payments), while credit demand can only be manipulated via the interest rate. Hence, if the central bank wishes to concentrate on manipulating credit demand as a means of manipulating the money stock, it is forced to adopt the classical system.

All this allows us to conclude the following about the influence of saving on the determination of the interest rate. Under the classical system, the volume of credit demanded by the public (as determined by the factors featuring in equation 4.14 which includes saving) is of no consequence to the level of the interest rate, which would vindicate Keynes's (1936, 1937a: 250-251) dismissal of saving as an influencing factor on the interest rate, though in the way different from indicated by Keynes himself. Alternatively, under the American method of monetary control, the interest rate is influenced by the volume of the public's credit demand, which is in turn determined by the action-types featuring in equation 4.14 including saving: the more internal financing (saving) the non-bank public does, the less their demand for bank credit. Hence, under this system, the level of saving *is* of some influence on the interest rate. Not for nothing does Rogers (1985a) label the classical system Keynesian and the American system monetarist.

Moreover, the level of saving can still influence the rate of interest insofar funds bypass monetary banks. The size of such funding should not be underestimated, given the large amount of savings absorbed by institutional non-bank intermediaries and the increased importance of the securitisation of loans, whereby the buyers of such paper need not necessarily be banks. Even so, the interest rate on non-bank intermediated funds cannot stray too far from the interest rate on bank-financed loans for obvious competitive reasons. This does, however, depend heavily on the different nature of the various financial instruments involved from which our analysis abstracts (see Chick 1993: 69-71).

#### 4.4.3 Monetary banking and the *sfec*

The above section was concerned only with newly-issued financial assets, i.e. bank lending and borrowing. We now turn to bank involvement in the trade in already existing, secondary financial assets, with a view to analysing how monetary banking alters the specification of the *sfec* and, hence, the actions via which the interest rate, viewed as a yield on secondary assets, is influenced.

As with the *lbec*, the *sfec* is also derived from the sectoral *finec* of the buyers and sellers of secondary assets. Because the non-banking public, the banks as well as the central bank can act as buyers and sellers of secondary assets, the *sfec* is also derived from equations 4.14-4.16. The process of derivation will equally be of a forbidding complexity, with the result that we will equally refrain from developing a single *sfec*. This constitutes no loss of explanatory value, as the action-types via which the interest rate is influenced are already identified by equations 4.14-4.16.

#### 4.5 FINANCIAL-MARKET EQUILIBRIUM AND "THE WICKSELLIAN EQUIVALENCE PRINCIPLE"

Section 4.3 led us to the conclusion that it makes no identification-theoretical difference if the interest rate is regarded as a lending-borrowing rate or a yield on secondary assets in a commodity-money system; the same variables play a role in both the *lbec* and the *sfec*. In section 4.4, we came to the same conclusion with respect to a bank-money system; again the same variables play a role in both the *lbec* and the *sfec*. We are, therefore, justified in altogether scrapping the distinction between the *lbec* and the *sfec* (as is also suggested by Snippe 1985a) and henceforth speak only of an *fmec*, short for "financial-market equilibrium condition", which equally applies to the primary and secondary market. Instead, the relevant distinction is between the case when assets are traded by banks as opposed to the case when they are traded by non-banks, including non-bank intermediaries. The interest rate is determined via a totally different set of action-types in each of these cases.

There is a long tradition in macroeconomic theorising which treats financial-market equilibrium as equivalent to macroeconomic equilibrium. We will christen this idea *the*

*Wicksellian Equivalence Principle*, as it is crucial to Wicksell's ([1898] 1936, [1928] 1950) monetary thought which will be discussed in more detail in chapter 5. The important implication of this principle is that interest-rate adaptations can contribute towards the achievement of macroeconomic equilibrium by influencing equilibrium in financial markets.

It was established in section 4.1 that, if we assume a commodity-money system, the *fmec* and *finec* are roughly similar and can, therefore, be expressed as:  $\Sigma PG_s(t-x) + \Sigma \Delta M_s(t-x) = \Sigma PG_d(t) + \Sigma \Delta M_d(t)$ ; or in terms of saving:  $S(t) + \Sigma \Delta M_s(t-x) = \Sigma \Delta M_d(t)$ . To the extent that we are allowed to regard the money stock and the level of stationary-money holding as relatively stable (which will be more fully discussed in chapter 8), the *finec* will reduce to  $\Sigma PG_s(t-x) = \Sigma PG_d(t)$  or  $S(t) = 0$ . Financial equilibrium will thus become equivalent to macroeconomic equilibrium, provided the continuity assumptions hold. The interest-rate mechanism would then be able to contribute towards the maintenance of macroeconomic equilibrium. The assumptions under which the Wicksellian Equivalence Principle holds can now be summed up as follows:

1.  $\Sigma \Delta M_s(t-x)$  and  $\Sigma \Delta M_d(t)$  are reasonably stable
2. the continuity assumptions approximately hold, and
3. demand and supply schedules of financial assets are reasonably elastic and interest rates reasonably flexible.

Although the above assumptions are certainly not necessary nor generally applicable, the Wicksellian Equivalence Principle turns out to be not as far-fetched as one may have suspected at first inspection. In a commodity-money system, we may expect the money stock to be relatively inflexible in the short run. As will be discussed in chapter 8, commodity money also increases the chances for stationary-money holding to be reasonably stable and the continuity assumptions to be applicable.

Outside a commodity-money system, the approximate equivalence between financial-market and macroeconomic equilibrium clearly no longer holds, with the result that the Wicksellian Equivalence Principle is decisively overturned. When funds are intermediated by monetary banks, a perfectly operating interest-rate mechanism will no longer have much

chance of contributing towards the achievement of macroeconomic equilibrium, because the action-types featuring in equations 4.14-4.16 carry very little resemblance to the action-types featuring in the *finec*. Hence, there is no longer any reason why interest rates should spontaneously gravitate towards levels which encourage the attainment of macroeconomic equilibrium. The central bank may still attempt to manipulate the interest rate so as to bring it to the appropriate levels. But that is a different issue, to which we will pay some attention in chapter 8.

#### 4.6 HOUSEHOLDS AND FIRMS: SAVING AND INVESTMENT

This section will endeavour to develop sectoral *finec*'s for firms and households, so as to bring out their particular roles in the maintenance or disturbance of macroeconomic equilibrium and to assess the traditional saving-investment equality in its status as a macroeconomic-equilibrium condition.

It is conventional in macroeconomic analysis to assume that households sell only labour and buy only consumption goods. It is also common to accept that households do not make any profits nor firms spend any of their profits on consumption goods. The household *finec* must, therefore, include a term representing profit distribution, which we will write as a transfer from firms to households. This *finec* is then specified as:

$$\Sigma W N_s(t-x) + \Sigma Tr^{f,h}(t-x) + \Sigma \Delta M_s^h(t-x,t) = \Sigma PC_d(t) + \Sigma \Delta M_d^h(t) \quad (4.21)$$

N: labour

W: unit price of labour, i.e. wage rate

C: consumption goods

Tr<sup>f,h</sup>: transfers from firms to households

Macroeconomic analysis ordinarily assumes (following Keynes 1936) that firms sell only finished consumption goods (C) and investment goods (I) and buy only labour (N) and finished investment goods (I). Trade in raw material, components and semi-finished goods (i.e. all intermediary goods other than investment goods) is thus ignored, which constitutes rather a serious oversight (c.f. Wells 1983: 528-529 who refers to Keynes's *Treatise* in this connection). The sectoral *finec* of firms can then be written as:

$$\Sigma PC_s(t-x) + \Sigma PI_s(t-x) + \Sigma \Delta M_s^f(t-x,t) =$$

$$\Sigma WN_d(t) + \Sigma PI_d(t) + \Sigma \Delta M_d^f(t) + \Sigma Tr^{f,h}(t) \quad (4.22)$$

I: investment goods

The next step is to express the household and firm *finec*'s with reference to saving, with the aim of arriving at a *fmeec* in which saving is juxtaposed with investment. We start with the household *finec*. Defining household saving as realised income (including realised dividend payments) net of planned consumption demand,  $\Sigma S^h(t) = \{\Sigma WN_s(t-x) + \Sigma Tr^{f,h}(t-x)\} - \Sigma PC_d(t)$ , a household *finec* emerges which is similar to the economy-wide *finec* of equation 3.14:

$$\Sigma S^h(t) + \Sigma \Delta M_s^h(t-x,t) = \Sigma \Delta M_d^h(t) \quad (4.23)$$

The definition of business saving is more controversial. The most commonsensical way would be to define business saving as  $\Sigma S^f(t) = \Sigma PC_s(t-x) - \Sigma WN_d(t) - \Sigma Tr^{f,h}(t)$ . As such it would be equivalent to undistributed profit, if profit ( $\pi$ ) can be regarded as  $\pi(t) = \Sigma PC_s^f(t-x) - \Sigma WN_s^h(t)$  (c.f. Lange 1942: 55)<sup>8</sup>. If we furthermore define investment as the net increase in current investment demand over past investment sales ( $\Delta \Sigma PI(t) = \Sigma PI_d(t) - \Sigma PI_s(t-x)$ ), which would be roughly in accordance with Keynes's (1936) concept of investment if we assume that  $\Sigma PI_s(t-x)$  represents investment spending necessary to maintain the stock of capital at its t-x level (i.e. depreciation), the firm *finec* can be expressed with reference to saving as follows:

$$\Sigma S^f(t) + \Sigma \Delta M_s^f(t-x,t) = \Delta \Sigma PI(t) + \Sigma \Delta M_d^f(t) \quad (4.24)$$

If we assume that firms do not save ( $\Sigma S^f(t) = 0$ ) and consequently finance  $\Delta \Sigma PI(t)$  exclusively out of borrowing from households, we obtain the following *fmeec/finec*:

$$\Sigma S^h(t) + \Sigma \Delta M_s(t-x,t) = \Delta \Sigma PI(t) + \Sigma \Delta M_d(t) \quad (4.28)$$

Given this *fmeec/finec*, macroeconomic equilibrium can indeed be written as the famous saving-investment equality:  $\Sigma S^h(t) = \Delta \Sigma PI(t)$ . Because the saving-investment equality is

---

8. The demand and supply of investment goods ( $\Sigma PI_s$  and  $\Sigma PI_d$ ) do not form part of profit, because they are simultaneously a cost and a revenue to the firm sector as a whole. However, no transaction in whatever good by whatever agent should, strictly speaking, be cancelled out against any other, because any demand for goods involves a transaction demand for finance and any realised supply of goods a supply of finance. Interfirm buying and selling cancel out only if the sectoral *finec* of the firm sector is regarded as if gauging the financial position a *single* average firm, which is always an abstraction (see chapter 3).

traditionally afforded a crucial role as a macroeconomic equilibrium condition, it may be useful to spell out the assumptions on which its applicability depends:

- (a) firms are the exclusive borrowers and households the exclusive lenders,
- (b) firms do not save,
- (c) funds bypass monetary banks,
- (d) the continuity assumptions hold,
- (e) net money creation and net hoarding are zero or cancel out:  $\Sigma \Delta M_s(t-x, t) = \Sigma \Delta M_d(t)$
- (f) all other  $aF_d$ 's are ignored: no changes in the nominal volume of trade in raw material, intermediate goods, second-hand goods and secondary financial markets.

This list should make it clear how potentially misleading the saving-investment equality as a macroeconomic equilibrium condition for a modern bank-money economy is, even when used as the roughest of approximations. A great deal of confusion and controversy could have been avoided, if macroeconomic theorists had stuck with the most generally applicable and consistent formulation of macroeconomic equilibrium which does not require any special assumptions:  $\Sigma PG_d(t) = \Sigma PG_s(t)$ , i.e. the sufficiency of effective (planned *cum* financeable) demand for all traded goods to take up planned supply of all traded goods.

## CONCLUSION

This chapter investigated the action-types which make up the demand and supply of primary bonds (*lbec*) and secondary bonds (*sfec*), via which the interest rate is determined. It turned out that, under a commodity-money system, the *fnec*, the *lbec* and the *sfec* are broadly the same. By contrast, under a bank-money system, the *lbec* and the *sfec* are roughly the same, but differ radically from the *fnec*. From this the following conclusions were drawn:

1. The distinction between primary or secondary markets (old and new bonds) is irrelevant to the determination of the interest rate, with the result that a single equilibrium condition, labelled the financial-market equilibrium condition (*fnec*), can be used for both.

2. Under a commodity-money system, because the *finec* is broadly the same as the *fmec*, the interest-rate mechanism can aid the achievement of macroeconomic equilibrium, provided certain assumption hold.
3. Under a bank-money system, because the *finec* is radically different from the *fmec*, the interest-rate mechanism is unable to spontaneously aid the achievement of macroeconomic equilibrium.

The relevant equilibrium conditions can be summed up as follows:

I. For a monetary-exchange economy with commodity money:

- a. *Micec*:  $G_{s,i}(t) = G_{d,i}(t)$ , for each market  $i = 1, \dots, n$
- b. *Macec*:  $\Sigma PG_s(t) = \Sigma PG_d(t)$
- c. *Finec*:  $\Sigma PG_s(t-x) + \Sigma \Delta M_s(t-x) = \Sigma PG_d(t) + \Sigma \Delta M_d(t)$
- d. *Fmec*: broadly the same as the *finec*

II. For a monetary-exchange economy with bank money:

- a. *Micec*: as above
- b. *Macec*: as above
- c. *Finec*:  $\Sigma PG_s(t-x) + \Sigma \Delta M_s(t-x,t) = \Sigma PG_d(t) + \Sigma \Delta M_d(t)$
- d. *Fmec*: an integration of the following sectoral *finec*'s:

$$\text{Non-bank public: } \Sigma PG_s(t-x) + \Sigma \Delta M_s(t-x,t) = \Sigma PG_d(t) + \Sigma \Delta M_d(t)$$

$$\text{Banks: } \Sigma B_s^{cb,b}(t-x) = \Sigma \Delta Mca_d(t) + \Sigma \Delta Mca_d^b(t)$$

$$\text{Central bank: } \mathbf{BoP}(t-x) = \Delta Mg\&f_d^{cb}(t)$$

We also formulated sectoral *finec*'s for households and firms. It was thereby found that the saving-investment equality is highly misleading as a macroeconomic equilibrium condition for a bank-money economy.

All these equilibrium conditions are clearly divorced from any causal theory of behaviour. Because causal relations play no role, laws are irrelevant to the analysis as well. Hence, this chapter is again about macroeconomic without laws.

## Chapter Five:

**THE EQUILIBRIUM CONDITIONS OF THE CLASSICS, WICKSELL,  
ROBERTSON AND HAYEK**

*I cannot refrain from expressing a disappointment .. that is undoubtedly shared by many others: namely, the disappointment that many of the macroeconomic issues about which differences of opinion existed .. still remain unresolved.* (Patinkin 1991: xvi)

### 5.1 INTRODUCTION

This chapter will attempt to assess the equilibrium conditions as used in established macroeconomic theory in the light of the equilibrium conditions as developed in chapters 3 and 4. We will look at the classics (Say's Law and the Quantity Theory), Wicksell, Robertson and Hayek. By exclusively concentrating on equilibrium conditions, it is presumed that these conditions can be divorced from the behavioural laws with which they are normally combined without doing damage to the meaning and intent of the theories concerned. In fact, we hope to show that the equilibrium condition employed by a macroeconomic theory is the most important factor deciding its real-life applicability, as it reveals which actions are allowed to play a role in the achievement or non-achievement of macroeconomic plan coordination and the determination of prices or interest rates.

The previous chapters' efforts will start to pay off in this chapter. It should become evident how the equilibrium conditions developed there allow us to sift through a maze of confusion and ambiguity surrounding the abovementioned theories with relative ease. Choice-theoretical considerations and behavioural laws are ignored. That is again how this chapter links up with our overall theme of macroeconomics without laws. Nonetheless, we will find it sometimes necessary briefly to deviate from pure identification theory and discuss some choice-theoretical aspects of a theory, in order to clarify its overall meaning.



## 5.2 THE CLASSICS

Classical macroeconomics broadly embodies two theories: Say's Law and the Quantity Theory. The identification-theoretical elements of both theories will consecutively be discussed.

### 5.2.1 Say's Law

An astonishing amount of confusion exists surrounding the precise meaning of Say's Law (for an overview see Baumol 1977 and Cowan 1982), although its broad message is and has always been quite clear: market processes maintain reasonable stability around an approximate position of macroeconomic equilibrium.

The first step in trying to bring order into this confusion is to distinguish between:

1. the identification-theoretical side of Say's Law, which is about the correct formulation of the *macec*; we will refer to this as Say's Condition, and
2. the choice-theoretical side of Say's Law, which claims that a monetary-exchange economy,
  - a. will not wander too far off a position of macroeconomic equilibrium, provided there are reasonably stable socio-political conditions,
  - b. will exhibit medium- to longer-term tendencies back towards macroeconomic equilibrium, should more serious disturbances nonetheless occur;

we will refer to these propositions as Say's Tendency.

So the full intent of Say's Law comprises Say's Condition (a theory about what it means to achieve macroeconomic equilibrium) and Say's Tendency (a theory about why macroeconomic equilibrium is often achieved). Say's Law is not really a law in our sense of the term: Say's Condition is an equilibrium condition rather than a law and Say's Tendency is a tendency rather than a law.

If the distinction between Say's Condition and Say's Tendency is overlooked, the mistake can be made of thinking that a mere denial of the satisfaction of Say's Condition implies a denial of Say's Law. Many classical protagonists of Say's Law (including Say

himself) were quite prepared to admit that macroeconomic equilibrium is not consistently attained, while still insisting upon the existence of reasonably effective equilibrium-maintaining and -restoring tendencies (Cowan 1982: 178-179). In line with the aims of this chapter, the ensuing discussion will concentrate mainly on aspects relating to Say's Condition. A more in-depth analysis of Say's Tendency will be undertaken in chapter 8.

A further source of confusion surrounding the meaning of Say's Law can be removed by looking at the various ways in which macroeconomic equilibrium can be formulated.

In accordance with the most general formulation of the *macec*, namely as  $\Sigma PG_s(t) = \Sigma PG_d(t)$ , supply creates its own demand can mean that present aggregate supply ( $\Sigma PG_s(t)$ ) creates an equivalent amount of present effective demand ( $\Sigma PG_d(t)$ ). And if we adopt the continuity version of the *macec*, namely  $\Sigma PG_s(t-x) = \Sigma PG_d(t)$ , supply creates its own demand can also mean that realised income from the past ( $\Sigma PG_s(t-x)$ ) finances a corresponding amount of spending in the present ( $\Sigma PG_d(t)$ ). In this second interpretation, the accompanying demands on Say's Tendency seem considerably less exacting than for the first interpretation. It is clearly much easier to conceive of a medium-term tendency, according to which agents re-spend their income. But this greater realism is bought at the price of a reduced generalness, as the continuity assumptions are obviously not universally applicable<sup>1</sup>.

Supply creates its own demand is, however, most commonly interpreted in a third way, namely as claiming that production creates factor incomes, which in turn generate the necessary demand to buy up that production (Sowell 1972:4, Keynes 1936). Given that Say's primary objective was to show that *production* is the source of demand (Cowan 1982: 166), this interpretation probably comes closest to his intent. According to Hagen (1966:4-8), this version of Say's Law can be broken down in two separate propositions:

- a. *Output equals income*: the total value of factor incomes paid out during the production process is equal to the total value of the realised production, which can clearly be

---

1. As should be recalled, the continuity assumptions were: (a) macroeconomic equilibrium obtained at the starting-off position of moment  $t-x$  and (b) there is no growth between  $t-x$  and  $t$ . The implication is that current supply plans become equivalent to realised income:  $\Sigma PG_s(t) = \Sigma PG_s(t-x)$  (see section 3.5.3).

recognised as the logical implication of the continuity assumptions ( $\Sigma PG_s(t-x) = \Sigma PG_s(t)$ ).

- b. *Income equals demand*: agents respend the incomes created during the production process, which expresses the continuity condition for macroeconomic equilibrium itself ( $\Sigma PG_s(t-x) = \Sigma PG_d(t)$ ).

Hagen (1966: 5) notes how proposition 1 may not be valid because the total value of incomes created during the process of production has to exclude entrepreneurial profits, which can only be realised *after* the final product has been sold (see also Kaldor 1985: 8). But if we start off from a position of macroeconomic equilibrium in the past, the realised profits from a previous production round will be included in the factor-incomes of the present production round. When economic growth is also discarded, these realised profits will be equal to the presently expected profits and sufficient to ensure the equality between the value of total production and realised factor incomes.

Hence, this third way of interpreting Say's Condition is but a special case of the continuity formulation of macroeconomic equilibrium ( $\Sigma PG_s(t-x) = \Sigma PG_d(t)$ ), the only difference being that it assumes the synchronisation of production rounds and that it abstracts from trade in intermediate goods, second-hand goods as well as wholesaling and retailing.

To the extent that the classics defended Say's Law as a logical necessity inherent in the nature of exchange, it is popularly maintained that they "reason[ed] in terms of a barter economy rather than a money economy" (Sowell 1972: 7, see also Cowan 1982: 172ff)<sup>2</sup>. The implicit suggestion is that macroeconomic equilibrium is automatic under barter. This reveals a subtle but serious misunderstanding, to which we already alluded in chapter 3. Barter exchange does not validate Say's Condition, but makes its concerns redundant and inapplicable. Say's Condition (the *macec*) is the means by which equivalence between a money and a barter economy is attained, but does not itself describe a situation of barter,

---

2. It is noteworthy that the classics were inclined to defend Say's Law *in its continuity formulation*, witness the fact that they tended to abstract from economic growth (see Sowell 1972: 26).

precisely because it sets the requirements for the removal of the complications caused by money-use. Since Say's Condition is inapplicable to barter, barter cannot render it valid either. Therefore, the classical argument about the necessary fulfilment of Say's Condition fails, not so much because a money economy is ill-described by way of assuming a barter economy, but more fundamentally because Say's Condition is irrelevant and inapplicable to a situation barter. Little wonder, therefore, that "[m]any classical economists *did* incorporate monetary factors into their analysis of Say's Law ... Say and John Stuart Mill [being] the two most notable examples" (Cowan 1982: 178). Hence, money-use does not in itself invalidate Say's Law, as the popular modern opinion goes. We will come back to this issue in our discussion of Keynes (1936) in chapter 9.

The most well-known modern defender of Say's Law is Hutt (1974), whose argument runs as follows. The downward flexibility of the general price level (the real-balance effect) and the maintenance of "monetary flexibility" by the central bank (Hutt 1974: 22, 30ff) should be able to avoid  $F_s$ -constraints on spending. And the interest-rate mechanism, which ensures that the loanable-funds market clears, should thereby contribute towards avoiding unwanted stationary-money holding and, a such,  $aF_d$ -constraints (Hutt 1974: 89ff). With both  $F_s$ - and  $aF_d$ -constraints warded off, macroeconomic equilibrium is ensured. An assessment of Hutt's ideas does not fit into the scope of this chapter and needs to await chapter 8, when we will discuss the logic of Say's Tendency under a commodity- and a bank-money system.

### 5.2.2 The Quantity Theory

The identification-theoretical side of the Quantity Theory consists of the quantity equation, which has been expressed in two different ways:

1. the Fisherite transactions form,  $MV = PT$ , whereby M indicates the quantity of money, V the velocity of circulation, P the general price level, and T the volume of transactions, and

2. the Cambridge form,  $M = kPT$ , with  $k$  referring to the average demand for stationary money expressed as a fraction of planned transactions, thus making it logically equivalent to  $1/V^3$ .

The choice-theoretical side of the Quantity Theory specifies a dynamic process by which a change in  $M$  leads, in the long run, to a proportional change in  $P$ . While it is our aim to avoid discussing choice-theory, we will nonetheless comment very briefly on the behavioural side of the Quantity Theory, namely where the form of the quantity equation conditions the theory's explanation of behaviour (for a recent discussion of the Quantity Theory, see Blaug et al. 1995).

In order to assess the merit of both the Fisher and the Cambridge equations as identification-theoretical constructs, it is necessary to translate these equations into our notation so as to facilitate comparison. There are, however, a number of difficulties which may hamper such translation. First, while the quantity equation is periodic, our equilibrium conditions are momentary. But, as explained in chapter 3, momentary and periodic analysis can be transposed into each other without any complication as long as the analysis is purely identification-theoretical; the periodic amounts can be obtained simply by summing the momentary amounts over the relevant period. Second, the transactions recorded in the quantity equation all have the same time reference (the current period), while our *finec* must involve two distinct time references (a current and a past period/moment), because  $\Sigma F_s$  contains transactions realised prior to the transactions contained in  $\Sigma F_d$ . However, the quantity equation in a sense also involves two time references, since  $M$  is an inheritance from a past period, even if it provides the finance for the present period.

We now turn to the actual transposition of the quantity equation into our notation, starting with the Fisher version ( $MV = PT$ ). Unfortunately, the literature has interpreted it in two different ways.

- 
3. The difference between  $PT$  and  $PQ$ , between the nominal value of transactions and the nominal value of final goods and services will be ignored for the purposes of the analysis.  $PT$  and  $PQ$  are equivalent if we assume an unchanged level of spending on second-hand goods and assets, and an unchanged degree of vertical integration of the production process. We similarly ignore the various possible measures of  $M$ :  $M_1$ ,  $M_2$  etc.

The first interpretation comes from Lange (1942: 64-65) and Patinkin (1965: xxiii, 166ff), who regard the Fisher equation as an aggregate goods-market equilibrium condition, with  $MV$  representing the aggregate demand for goods and  $PT$  the aggregate supply of goods. As such, it can be rewritten as  $\Sigma PG_s(p) = \Sigma PG_d(p)$ , which in the light of the exchange identities 3.2 and 3.3 can also be rendered as  $\Sigma ME_s(t) = \Sigma ME_d(t)$ . It is in this latter sense that Patinkin (1965: xxiv) is enabled to view the Fisher equation as a possible money-market equilibrium condition as well. The obvious weakness of this interpretation is that the velocity of circulation ( $V$ ) has to be assumed constant, so as to ensure that  $MV$  is equivalent to  $\Sigma PG_d(p)$ . This means that some behavioural theory about the stability of  $V$  has to be taken on board (see Patinkin 1965: 166). The Fisher equation thereby loses its status as neutral identification theory, which is necessarily valid by virtue of the nature of monetary exchange and its institutional setting.

This problem no longer exists in the second interpretation of the Fisher equation, which can therefore be regarded as the more obvious and natural one. According to this interpretation, the Fisher equation is a financial rather than a macroeconomic equilibrium condition, whereby  $MV$  functions as a supply of finance and  $PT$  as a demand for finance. In its *ex ante* form,  $MV = PT$  will then read in our notation:

$$\Sigma M_s(p-x) \cdot V = \Sigma PG_d(p), \quad (5.1)$$

whereby  $\Sigma M_s(p-x)$  indicates the total money stock inherited from a previous period  $p-x$ .

The most remarkable attribute of equation 5.1 is that the demand for stationary money ( $\Sigma M_d(p)$ ) does not directly feature in it, but is represented by  $V$  which measures the number of times  $\Sigma M_s(p-x)$  finances  $\Sigma PG_d(p)$  over the assumed period  $p$ . Hence the smaller  $V$ , the greater the average level of  $\Sigma M_d(p)$  during  $p$ .  $V$  is, however, not an unambiguous measure of  $\Sigma M_d(p)$ , as it also varies with the length of assumed period, having to perform the added function of bringing a length-of-period independent stock ( $\Sigma M_s(p-x)$ ) into correspondence with a length-of-period dependent flow ( $\Sigma PG_d(p)$ ). The resultant ambiguity in the nature of  $V$  is potentially confusing and can thus be regarded as a weakness of the Fisher equation (c.f. Selgin 1994: 142). A direct comparison between equation 5.1 and our benchmark *finec* reveals two further weaknesses.

The first is that the Fisher equation ignores possible changes in the money stock *during the assumed period*  $p$  ( $\Sigma\Delta M_s(p)$ ). Insofar the money stock is allowed to change then only exogenously, i.e. prior to the period for which the transactions ( $\Sigma PG_d$  or  $PT$ ) are reckoned, as  $\Sigma\Delta M_s(p-x)$ . If the assumed period is taken to be relatively long, the abstraction from changes in the money stock can be seriously distortive, especially for a bank-money economy with a somewhat flexible money stock. The result is that  $V$  can easily give an unreliable reading of the average number times money changes hands over the assumed period.

The second is that  $V$  is a measure of the level of stationary-money holding ( $\Sigma M_d(p)$ ) as an *absolute* amount, while, in relation to the maintenance or disturbance of macroeconomic equilibrium, the demand for stationary money matters only as a *comparative* amount ( $\Delta\Sigma M_d(p)$ ): it is *changes* in stationary-money demand which may upset macroeconomic equilibrium. Insofar such changes are recorded by the Fisher equation, it is not during the assumed period but only in the change-over from the previous to the current period, i.e. by comparing two quantity equations of two consecutive periods.

The Cambridge equation differs from the Fisherite version only in that it substitutes  $k$  for  $1/V$ :

$$\Sigma M_s(p-x) = k \cdot \Sigma PG_d(p), \quad (5.2)$$

The apparent superficiality of this difference belies a radically different meaning customarily given to the Cambridge equation. The Cambridge equation no longer represents the total supply and demand for *finance* (transactions as well as stationary money), but rather the supply and demand for *stationary money* only. The demand for transactions money still features in the Cambridge equation, but only as an explanation for the demand for stationary money which is given as a proportion of the transactions demand:  $k \cdot \Sigma PG_d(p)$  or  $kPT$ . Hence, the Cambridge equation changes from an equilibrium condition (or accounting identity, if amounts are taken to be *ex post*) into a behavioural relation, which creates a number of problems.

Having lost its status as pure identification theory, the Cambridge equation is no longer valid by virtue of the nature of monetary exchange and its institutional environment.

Moreover, its demand side ( $k \cdot \Sigma PG_d(p)$ ) ignores the transactions demand and therefore represents only part of the total demand for finance, while its supply side ( $\Sigma M_s(p-x)$ ) supposedly still embodies the total supply of finance. These ambiguities can create serious problems in the interpretation of the Cambridge equation. The fact that Patinkin (1965) as well as Archibald and Lipsey (1958/59) made the unfortunate choice of using the Cambridge version as representative of the quantity equation can be held responsible for at least some of the uncommon amount of confusion surrounding the so-called Patinkin Controversy, to which we will briefly come back in the next chapter.

When the Fisher equation (or the *finec* for that matter) is used for purposes of explaining the price level, some well-known behavioural assumptions are implicitly made, which can be conveyed with the aid of identification theory. First, the causal direction must run from MV to PT (or from  $\Sigma F_s$  to  $\Sigma F_d$ ), which under a bank-money system is only partially true, as we observed in the previous chapter (see e.g. Cottrell 1986, Moore 1988, Blaug *et al* 1995). Second, if M is to determine PT (or  $\Sigma F_s$  determine  $\Sigma PG_d$ ), the velocity of circulation V (or the level of stationary-money holding  $\Sigma M_d$ ) must be considered stable; this means that Say's Law must be taken as roughly legitimate. Third, if M is to determine P rather than PT (or  $\Sigma F_s$  determine P rather than  $\Sigma PG_d$ ), the volume of real transactions T ( $\Sigma G_d$ ) must be taken as stable in the long run too.

But even if all these behavioural assumptions hold, the Quantity Theory is still misleading and partial in its explanation of the general price level. The reason for this concerns an identification-theoretical issue, which was already spotted by Wicksell ([1928] 1950: 159ff, see also Myrdal 1939: 19-21). The general price level is not explained by the confrontation between the demand and supply of finance (i.e. the variables featuring in the quantity equation/*finec*) but by the confrontation between the aggregate demand and supply of goods. In symbols, P is not influenced via  $\Sigma F_s = \Sigma F_d$  but via  $\Sigma PG_s = \Sigma PG_d$ . The Quantity Theory can at best explain only the demand side of the aggregate goods market, because effective demand ( $\Sigma PG_d$ ) features in the quantity equation/*finec*. But it is incapable of saying anything about the supply side of the aggregate goods market, as  $\Sigma PG_s$  does not



appear in the quantity equation/*finec*. The Quantity Theory's bias in favour of demand-pull explanations of the general price level (inflation) is thus exposed.

We can conclude that the quantity equation, both in its Cambridge or its Fisher form, is a theoretical construct fraught with potential ambiguity, which could have been avoided by simply using  $\Sigma PG_s(t-x) + \Sigma \triangle M_s(t-x,t) = \Sigma PG_d(t) + \Sigma \triangle M_d(t)$  as the *finec* and, insofar applicable,  $\Sigma PG_s(t) = \Sigma PG_d(t)$  as the *macec*.

### 5.3 WICKSELL

After having discussed the two pillars of classical macroeconomics, Say's Law and the Quantity Theory, it is appropriate to proceed with Wicksell who can justifiably be regarded as the link between classical and modern macroeconomics (c.f. Leijonhufvud 1981b: 132-133).

Basic to Wicksell's theory is the idea that macroeconomic equilibrium is equivalent to financial-market equilibrium, as already indicated in the previous chapter. This alleged equivalence immediately makes the interest rate the focal point of his investigations. Wicksell ([1928] 1950: 194) subsequently distinguishes between a natural and a market (or money) rate of interest, whereby macroeconomic equilibrium is achieved when these two rates coincide. If they don't, for example when the natural rate exceeds the market rate, a cumulative process of price increases is set in motion, first in the market for investment goods and eventually in market for consumption goods as well. A description of that process need not concern us here, as it resorts under choice theory. Snippe (1987a) applies the label "Wicksell connection" (after Leijonhufvud 1981b) to any theory which attempts to describe processes of concrete, unpatterned behaviour, which he deems logically and practically impossible. In the light of chapters 1 and 2, our agreement with Snippe on this score should be clear. Nonetheless, there remains an identification-theoretical side to the "Wicksell connection", which can fruitfully be explored.

Wicksell determines his market rate in the market for loanable funds. While he does not specify a list of all the relevant actions-types via which the market rate can be influenced, the following *fmecc/fincc* is implicit in his deliberations:

$$\Sigma S(t) + \Sigma \Delta M_s(t-x,t) = \Sigma PI_d(t) + \Sigma \Delta M_d(t) \quad (5.3)$$

By contrast, his natural rate is determined by the physical supply and demand for investment goods (Wicksell [1928] 1950: 190-193):

$$\Sigma I_s(t) = \Sigma I_d(t) \quad (5.4)$$

The comparison between equations 5.3 and 5.4, and hence between the market and natural rates of interest, was intended to bring out how money-use complicates the attainment of goods-market equilibrium. In a barter system, the interest rate is supposed to be determined by factors as appearing in equation 5.4. In order to maintain macroeconomic equilibrium, the money system should emulate the barter system, with the result that equation 5.3 should reduce to equation 5.4. This is supposedly achieved when there are no changes in the bank-money stock ( $\Sigma \Delta M_s(t-x,t) = 0$ ) as well as in the level of hoarding ( $\Sigma \Delta M_d(t) = 0$ ). The argument thereby postulates that the interest rate as determined by  $\Sigma S(t) = \Sigma PI_d(t)$  (the reduced version of equation 5.3) is logically equivalent to the interest rate as determined by  $\Sigma I_s(t) = \Sigma I_d(t)$  (equation 5.4). This idea is invalid for a number of reasons.

Myrdal (1939: 50-51) notes how the natural interest rate as a measure of the productivity of physical capital cannot be established outside a one-good economy, with this one good functioning as both capital and consumption good (see also Rogers 1989: 21-43 and Lutz 1969: 106). But if we were to move to the more realistic situation of a multi-good economy, the values of the various goods need to be compared and aggregated, for which (relative as well as absolute) money prices are required. In other words, in a multi-good economy the natural rate necessitates the existence of money as a unit of account, otherwise there will be as many natural rates as there are goods (c.f. Sraffa 1932: 49; Keynes 1936: 138, ch 17).

To remedy this weakness in Wicksell's theory, Myrdal (1939: 55-58) suggests that the natural rate should no longer be understood as the rate of productivity of physical capital under barter, but as a return on investment in a monetary economy, which, as Shackle (1967: 102) remarks, would make Wicksell's natural rate practically identical to Keynes's marginal efficiency of capital. The identification-theoretical implication of this suggestion is

that the physical quantities of equation 5.4 ( $\Sigma I_s(t) = \Sigma I_d(t)$ ) be replaced by the equivalent monetary amounts:

$$\Sigma PI_s(t) = \Sigma PI_d(t) \quad (5.5)$$

But the problem with Wicksell's natural rate goes much deeper: an interest rate is, by definition, not a yield on capital but a yield on financial assets. And even if we were to regard it as a yield on capital, the interest rate is not determined by  $\Sigma PI_s(t) = \Sigma PI_d(t)$ , but by  $\Sigma PI_s(t) = \Sigma PI_s(t+x)/1+r$ , the latter term referring to the expected net cash-inflows attributable to the investment, which is indeed how Keynes (1936) calculates his marginal efficiency of capital. It is to Keynes's credit that he makes much of this confusion, which has plagued just about all classical theory<sup>4</sup>. Keynes (1936: 187n) insists that "we cannot speak of [a rate of interest as a yield on new capital] at all. We can only properly speak of the rate of interest on *money* borrowed for the purpose of purchasing investments of capital, new or old (or for any other purpose)"<sup>5</sup>. Joan Robinson (1970: 507) similarly remarks how "in the orthodox system .. the rate of interest [was] confused with the rate of return on investment". Therefore, the whole idea of a natural rate as a measure of the productivity or profitability of investment is aberrant and needs to be scrapped.

This does not, however, mean that there is no longer any scope for a Wicksellian dual interest-rate theory. It remains possible to distinguish between a market rate as determined by the *full* version of equation 5.3 ( $\Sigma S(t) + \Sigma \Delta M_s(t-x,t) = \Sigma PI_d(t) + \Sigma \Delta M_d(t)$ ), as opposed to a natural rate as determined by the *reduced* version of 5.3 ( $\Sigma S(t) = \Sigma PI_d(t)$ ), with both these rates being yields on financial assets. Hence, we no longer distinguish between a yield on capital and a yield on financial assets, but between two yields on financial assets, the one acknowledging the potential disturbances of  $\Sigma \Delta M_s(t-x)$  and

---

4. This confusion has had a profound and lasting influence on macroeconomic thought, witness, for example, how it is still clearly detectable in how a contemporary text defines interest: "Interest is the earnings of capital, or the price which has to be paid for the services of capital. In a monetary economy it may be regarded as the price which has to be paid for the funds which are required to purchase capital equipment" (Stanlake and Grant 1995: 265).

5. The irony is, of course, that Keynes hereby endorses a view of the rate of interest which is very close to that of the loanable-funds theorists ("a rate .. on money borrowed"). The irony becomes even greater when it is realised that loanable-funds theorists are customarily charged with the conceptual confusion under discussion (see our discussion of Robertson below).

$\Sigma \triangle M_d(t)$  and the other assuming the absence thereof. The significance of this reformed "natural" rate can remain what Wicksell had originally intended it to be, i.e. the rate which secures macroeconomic equilibrium.

Because both this reformed natural rate and the market rate are applicable to a monetary economy, there is no longer any reason to establish a natural rate applicable to the benchmark situation of barter. It is, after all, illogical to try to apply the natural rate to a situation of barter; if the natural rate is the rate which secures money neutrality (macroeconomic equilibrium), why connect it to barter where the problems of money do not occur? Visser's (1971: 429) following remarks are to the point:

The authors who were concerned with the concept of money neutrality, Wicksell in particular, related this concept to a moneyless economy. But what they actually did was to study a money-using economy for which the conditions for monetary equilibrium were investigated.. In this context, reference to a moneyless economy is clearly incorrect and superfluous (our translation).

Wicksell's desire to create a natural rate for a barter economy stems, therefore, from the old misunderstanding mentioned several times by now that the condition for macroeconomic equilibrium is itself applicable to barter. As explained in chapter 3, the *macec* (in this case,  $\Sigma S(t) = \Sigma P I_d(t)$ ) describes the means by which equivalence with barter is achieved, but is in itself not descriptive of a situation of barter. And when a barter-equivalent of  $\Sigma S(t) = \Sigma P I_d(t)$  is no longer sought, the problem of calculating a barter-rate of physical productivity disappears, with the result that Sraffa's (1932) and Keynes's (1936: ch 17) celebrated criticisms of that aspect of Wicksellian theory (namely that there is a the multiplicity of natural rates under barter) becomes irrelevant too.

Nonetheless, even if we were to accept that the Wicksellian natural rate can be reformed into a monetary rate, a crucially important flaw remains. Chapter 4 established how under a bank-money system the Wicksellian Equivalence Principle breaks down, because the *fmec* deviates radically from the *finec*. The rate of interest is, therefore, no longer determined via the action-types as featuring in the *finec* (such as saving, investment and hoarding), with the implication that it can no longer be relied upon to spontaneously contribute, however partial, towards the maintenance of macroeconomic equilibrium at all.

In short, Wicksell effectively abstracts from bank-money, which is ironic since his express aim was to rectify what he regarded as one of the Quantity Theory's main failures, namely to take proper account of the complexities of a bank-money system ([1898] 1936).

#### 5.4 ROBERTSON

Robertson's loanable funds theory is probably best characterised as Wicksell without the barter rate of interest (c.f. Robertson 1940: 83-91). Chick (1983: 179) similarly notes how "[i]t is probably best to view loanable-funds theory as an attempt to preserve a Classical outlook on interest ..., while adapting the theory to a monetary economy". As such, it is a mistake to criticise it along the lines of Sraffa and Keynes, as done by authors such as Rogers (1989) and Cottrell and Lawlor (1991). The Robertsonian natural interest rate as determined by "productivity and thrift" (saving and investment) is *not* a real interest rate in the sense of a Wicksellian barter-rate of physical productivity. Being constituents of the demand and supply of finance, Robertson's saving and investment are *monetary* factors and the rate determined is a yield on financial assets.

We now move on to the determination of the Robertsonian market rate. The supply of loanable funds is made up of the following factors:

- (i) current saving ..
- (ii) "disentanglements" [provisions for depreciation] ..
- (iii) "net dishoardings" ..
- (iv) net additional bank loans .. (Robertson 1940: 3),

The demand for loanable funds is specified as follows:

- (i) funds destined for expenditure on building up new increments of fixed or working capital
- (ii) funds destined to be put into store
- (iii) funds destined for expenditure on consumption .. in excess of current income (ibid)

Notice how Robertson puts the supply of finance in the present while placing the demand for finance in the future ("funds destined for.."), which does not create any discrepancy with our analysis. What matters is that the time reference of the components of  $\Sigma F_s$  lags behind the time reference of the components of  $\Sigma F_d$ . Given that disentanglements are financed out of past sales and are, therefore, part of what we would refer to as saving, and that "funds

destined to be put into store" and "funds destined for expenditure on consumption .. in excess of current income" are just forms of net stationary-money holding (the latter driven by a "finance motive"), Robertson's *f<sub>mec</sub>* determining the market rate of interest is practically the same as our *f<sub>mec</sub>/f<sub>inec</sub>* for a non-bank money system:

$$\Sigma S(p) + \Sigma \Delta M_s(p) = \Sigma PI_d(p+1) + \Sigma \Delta M_d(p+1) \quad (5.6)$$

The only difference is that Robertson adopts a "sequential period analysis" (Kahn's 1981a term) with all variables being periodic flows, while ours could be characterised as a sequential momentary analysis with all variables referring to momentary stocks. But as already pointed out several times, this difference is of no analytical import as long as we deal with identification theory. Robertson's (1940: 10-20) criticism of the "momentary view" implicit in Keynes's liquidity preference theory is not so much directed at the fact that Keynes's variables are momentary but rather at the fact that Keynes tags all his variables to *the same* moment, thus overlooking the importance of dynamic sequences (various moments) within the *f<sub>inec</sub>/f<sub>mec</sub>*. For example, Robertson (1940: 17) remarks how Keynes' momentary view leads to "inevitable difficulties in expressing in statically-framed terms the situation existing *at a moment of time during a period of change*" (see also Kohn 1981b: 860-861).

Keynes's (1936: ch. 14) criticism of Robertson, and classical interest-rate theory in general, is that investment and saving cannot be independently determined, because investment determines income and income, in turn, determines saving. This critique falls to the ground as soon as proper account is taken of relevant time dimensions (see section 4.2). The *current* interest rate is the product of *current* saving and investment, while *current* investment can at best only determine *future* income and, if a Keynesian saving function be granted, *future* saving.

Nonetheless, Robertson has inherited one important weakness from Wicksell, namely the Wicksellian Equivalence Principle. As such it is ill-suited to a modern bank-money system.

## 5.5 HAYEK

### 5.5.1 The capital structure of production and the composition of aggregate demand

Hayek (1935) adds another dimension to Wicksell's theory<sup>6</sup>. For him the Wicksellian saving-investment equality not only functions as a *macec* guaranteeing aggregate-demand sufficiency, but also as a *micec* ensuring that the *composition* of total aggregate demand is in agreement with the capital structure of production. This composition is captured by the ratio between the nominal demand for intermediate goods (In) and consumption goods (C):  $\Sigma PIn_d / \Sigma PC_d$ , whereby intermediate goods (In) are defined as all goods which are neither finished consumption goods nor original means of production (labour and land); hence, they comprise raw material, components, unfinished consumption and investment goods as well as finished investment goods (Hayek 1935: 36-37).

According to Hayek, a certain degree of capital-intensity requires a certain  $\Sigma PIn_d / \Sigma PC_d$  ratio in order to sustain itself; the greater the degree of capital-intensity, the greater the value of this ratio has to be. Hayek explains this requirement with the aid of his famous triangles, which have been a source of great controversy (e.g. Keynes 1931; Sraffa 1932a, 1932b; Hayek 1932, 1935; Bellante and Garrison 1988; Garrison 1984, 1986b, 1994, Cottrell 1994, Trautwein 1996). These triangles describe the capital structure of production and how an increased degree of capital intensity, interpreted along Böhm-Bawerkian lines, changes that structure. Because the triangles merely identify the actions which in a certain configuration specify a certain structure of production, they can be regarded as specimens of identification theory. With this in mind, we can briefly explain them as follows.

The production process is represented as a progressive development, from the first application of labour to land (the original factors of production) to the putting of the final touches to consumption goods. Hayek divides this process up into a number of production stages, whereby the output of the one stage provides the input into the following stage and

---

6. This section uses the 1935 second edition rather than the original 1931 edition of *Prices and Production*. The differences are, however, minor.

whereby at each stage more labour (and/or material) is infused into the good. In line with Böhm-Bawerkian capital theory, an increased degree of capital-intensity is subsequently interpreted as manifesting itself in an increased number of these production stages.

This portrayal of the production process has obvious shortcomings. For example, it abstracts from capital and consumer durables (Hayek 1935: 41n), it assumes a given and unchanged level of vertical integration (1935: 45-46) and it rules out the possibility of input-output circularity, e.g. steel being an input into coal production and coal into steel production (Garrison 1994: 112). This last weakness is because the triangles postulate a linear progression of successive production stages with the one stage providing the input into the next stage, etc.

But even if these criticisms be granted, one important idea can remain intact: if we assume that each production stage is carried out by a different firm (see Hayek 1935: 62-65), a greater degree of capital intensity, and the resultant increased number of production stages, requires an increased volume of trade in intermediate goods relative to the trade in consumption goods. That is why the  $\Sigma PIn_d/\Sigma PC_d$  ratio has to increase with a rise in capital intensity. Because such changes in trade patterns may have implications for the aggregate demand and supply of finance, Hayek's capital theory thus acquires a specifically monetary-macroeconomic aspect. All this seems fairly uncontroversial.

The trouble starts when Hayek (1935) claims that an increased level of capital intensity is unsustainable, unless  $\Sigma PIn_d/\Sigma PC_d$  can be realised at its planned (*ex ante*) level. In other words, when firms decide to increase their demand for intermediary goods, households must simultaneously decide to decrease their demand for consumption goods. If not, consumers will keep on saving too little and spend too much on consumption goods, with the result that firms cannot sustain their higher demand for intermediary goods and the process of capital intensification needs to be aborted and reversed. Given the task-specific nature of intermediary goods, this reversal may cause significant value destruction, thus precipitating depression. According to Hayek, the great importance of maintaining the saving-investment equality, i.e. financing investment (i.e. increased intermediary-goods



demand) out of saving, lies in the fact that it can maintain voluntariness in the necessary changes in the  $\Sigma PIn_d/\Sigma PC_d$  ratio during the capital-intensification process, thus rendering it sustainable. Such is the essence of the controversial part of Hayek's (1935) macroeconomics.

### 5.5.2 The action-structure of Hayek's triangles

In order to assess this theory, we must probe more deeply into the *finec* which is implicit in it. For that purpose, a few characteristics of the triangles must be specified. Firstly, Hayek considers three categories of goods: original factors represented by labour (N) only; consumer goods (C); and intermediary goods (In). There are also two sectors: consumers (households) and producers (firms), whereby consumers buy C and sell N and producers buy In and N while selling In and C. Secondly, the triangles register flows over a period, the duration of which is the production time of one production stage. If we assume that the relevant money-exchanges are all made at a single moment at the end of each stage, we can maintain our momentary analysis without doing any damage to Hayek's intentions. The interval between each moment, which we have been denoting by  $x$ , will then simply represent the time span of one production stage<sup>7</sup>. In any case, given that a large number of overlapping production processes are going on, the nominal demand for consumption and intermediate goods will, at any moment  $t$ , be more or less representative of a given production structure. Thirdly, Hayek ignores changes in the level of stationary-money holding ( $\Sigma \Delta M_d = 0$ ) (see 1935: 51).

In addition to Hayek, we may simplify the analysis by assuming three production stages. The first designates the primary sector as it buys only labour and sells only intermediate goods, the second captures to a genuine intermediate sector in that it buys and sells only intermediate goods, while the third represents a consumption-goods producing

---

7. However, when we consider capital intensification (lengthening of overall production structure),  $x$  may have to be taken as the time period encompassing the total production process (i.e. comprising all stages from original factors to consumption goods), for such is obviously the time it takes for a changed  $\Sigma PIn_d/\Sigma PC_d$  ratio to work its way through the whole production structure.

sector because it buys intermediate goods and sells consumption goods. The *finec* for each of these production stages will then read as follows:

$$\text{Stage 1: } \Sigma \text{PIIn}^{1,2}_s(t-x) = \Sigma \text{WN}^1_d(t) + \Sigma \text{Tr}^1(t) \quad (5.7)$$

$$\text{Stage 2: } \Sigma \text{PIIn}^{2,3}_s(t) = \Sigma \text{WN}^2_d(t+1) + \Sigma \text{Tr}^2(t+1) + \Sigma \text{PIIn}^{1,2}_d(t+1) \quad (5.8)$$

$$\text{Stage 3: } \Sigma \text{PC}_s(t+1) = \Sigma \text{WN}^3_d(t+2) + \Sigma \text{Tr}^3(t+2) + \Sigma \text{PIIn}^{2,3}_d(t+2) \quad (5.9)$$

$\text{In}^{1,2}$  indicates the intermediate goods sold by stage-1 to stage-2 producers and  $\text{In}^{2,3}$  the same by stage-2 to stage-3 producers.  $\text{Tr}^1$ ,  $\text{Tr}^2$  and  $\text{Tr}^3$  refer to profit-transfers from stage-1, stage-2 and stage-3 producers respectively to households.  $\text{N}^1_d$ ,  $\text{N}^2_d$  and  $\text{N}^3_d$  denote the labour demand by stage-1, stage-2 and stage-3 producers respectively.

Assuming that innumerable, more or less similar production processes are concurrently in operation, equations 5.7-5.9 can be given the same time dimension ( $t-x$  for the supply and  $t$  for the demand of finance) and can be summed to obtain the *finec* for the firm sector as a whole:

$$\Sigma \text{PC}_s(t-x) + \Sigma \text{PIIn}_s(t-x) = \Sigma \text{WN}_d(t) + \Sigma \text{Tr}(t) + \Sigma \text{PIIn}_d(t) \quad (5.10)$$

Moving on to the household sector, its *finec* is straightforward:

$$\Sigma \text{WN}_s(t-x) + \Sigma \text{Tr}(t-x) = \Sigma \text{PC}_d(t) \quad (5.11)$$

Hayek's economy-wide *finec* can then be acquired by summing these two sectoral *finec*'s:

$$\begin{aligned} \Sigma \text{WN}_s(t-x) + \Sigma \text{PC}_s(t-x) + \Sigma \text{PIIn}_s(t-x) + \Sigma \text{Tr}(t-x) = \\ \Sigma \text{PC}_d(t) + \Sigma \text{WN}_d(t) + \Sigma \text{PIIn}_d(t) + \Sigma \text{Tr}(t) \end{aligned} \quad (5.12)^8$$

A further peculiarity of the Hayekian triangles is that they presuppose that  $\Sigma \text{PC}_s(t-x) = \Sigma \text{WN}_d(t) + \Sigma \text{Tr}(t)$ , which will prove to be of major significance in the interpretation of Hayek's argument. It means that firms use their income from consumption sales exclusively and exhaustively to pay wages and distribute profits to owner-households (Hayek 1935: 45, 54). The implication is that profits ( $\pi$ ) are fully distributed to households,  $\Sigma \pi(t) = \Sigma \text{Tr}(t)$ , with  $\Sigma \pi(t)$  defined as  $\Sigma \text{PC}_s(t-x) - \Sigma \text{WN}_d(t)$ . Hayek's economy-wide *finec* thus reduces to:

---

8. In a recent assessment of Hayekian triangles, Cottrell (1994: 207) introduces the assumption that "contrary to Hayek, .. all transactions among the stages are settled simultaneously in each period.." with the result that there is no transactions demand for money in the intermediate goods sector at all. "Money balances are then needed only with respect to the payment of wages and expenditure on final consumer goods.." In that way, Cottrell has defined away the very problem which Hayek addresses and should not be surprised to reach conclusions contrary to Hayek.

$$\Sigma WN_s(t-x) + \Sigma PIN_s(t-x) + \Sigma Tr(t-x) = \Sigma PC_d(t) + \Sigma PIN_d(t) \quad (5.13)$$

When household saving is defined as  $\Sigma S^h(t) = \Sigma WN_s(t-x) + \Sigma Tr(t-x) - \Sigma PC_d(t)$  and  $\Sigma PIN_d(t) - \Sigma PIN_s(t-x)$  is written as  $\triangle \Sigma PIN(t)$ , equation 5.13 can be expressed in terms of saving and investment as follows:

$$\Sigma S^h(t) = \triangle \Sigma PIN(t) \quad (5.14)$$

Equation 5.14 neatly brings out how Hayek regards investment as the increase in intermediate-goods spending and capital as the total amount of intermediate-goods spending (1935: 48).

Because the supply of finance in equation 5.13 ( $\Sigma WN_s(t-x) + \Sigma PIN_s(t-x) + \Sigma Tr(t-x)$ ) represents a given and fixed amount of money, a stringent trade-off between  $\Sigma PC_d(t)$  and  $\Sigma PIN_d(t)$  results: if the one rises, the other *must necessarily* drop. That is how, in the absence of money creation and changes in stationary-money holding, the saving-investment equality guarantees that changes in the  $\Sigma PIN_d(t)/\Sigma PC_d(t)$  ratio are always voluntary and automatic and that *total* spending remains unchanged during the process of capital intensification.

However, when there is the possibility of money creation ( $\Sigma \triangle M_s$ ), the economy-wide *finex* becomes:

$$\Sigma WN_s(t-x) + \Sigma PIN_s(t-x) + \Sigma Tr(t-x) + \Sigma \triangle M_s(t-x) = \Sigma PC_d(t) + \Sigma PIN_d(t) \quad (5.14)$$

or, in terms of saving and investment:

$$\Sigma S^h(t) + \Sigma \triangle M_s(t-x) = \triangle \Sigma PIN(t) \quad (5.15)$$

If, following a capital-intensification of production, the increased demand for intermediate goods is financed by money creation, it is obvious that the redistribution between consumers and producers is no longer effected voluntarily and that the total demand for goods ( $\Sigma PC_d(t) + \Sigma PIN_d(t)$ ) no longer remains the same. Since  $\Sigma PIN_d(t)$  increased without a concomitant decrease in  $\Sigma PC_d(t)$ , total demand had to expand.

Abstracting from the introduction of new, productivity-enhancing technologies (1935: 35), Hayek takes it for granted that the production capacity is rigidly fixed in the short run. Therefore, a greater production of intermediate goods must be facilitated by a smaller

production of consumption goods after present stocks have run out. With nominal consumption spending maintained, the reduced level of real production is bound to cause a rise in the price of consumption-goods (assuming perfect price flexibility) proportionate to the drop in production (1935: 57). This forced drop in real consumption is what Hayek refers to as "forced saving". Indeed, the whole point of his theory is that, when capital intensification is financed by money creation, the necessary redistribution between consumers and producers is no longer effected voluntarily. Instead, it is "forced", the  $\Sigma PIn_d/\Sigma PC_d$  ratio rising involuntarily.

Hayek now employs two behavioural assumptions to hit home his conclusions. Our goal in this chapter is, in principle, to steer clear of any choice theory, but in Hayek's case it is impossible to make sense of his theory without at least making mention of his behavioural assumptions.

Firstly, he postulates that consumers wish to retrieve their lost consumption (through forced saving) and restore their original real consumption pattern. For this purpose, they will increase their nominal consumption spending by an amount proportionate to the increase in consumption-good prices. Nominal saving will then fall by a corresponding amount, causing producers to get correspondingly less finance from consumers. Producers will now be in need of even more bank credit (i.e. more money creation) to sustain their increased intermediary-goods spending ( $\Sigma PIn_d$ ). And so the process goes on.

At this point, Hayek (e.g. 1935: 90) introduces the second behavioural assumption, namely that banks will not forever keep on granting more credit. For lack of finance,  $\Sigma PIn_d$  will at some stage need to fall again, with the implication that the process of capital intensification will have to be reversed. Because of the task-specific nature of most investment goods, this reversal will cause a widespread destruction of value and thus precipitate economic depression (1935: 77ff). Such is the essence of Hayek's theory of unemployment and depression.

This theory comes with an interest-rate theory attached to it (1935: 73-100). As for the identification-theoretical side of it, Hayek implicitly assumes the Wicksellian Equivalence

Principle and distinguishes between a market and a natural rate. As the relevant *f<sub>mec</sub>/f<sub>inec</sub>* Hayek uses,  $\Sigma S^h(t) + \Sigma \Delta M_s(t-x) = \Delta \Sigma PIn(t)$ , as derived above. The market rate is then determined by all the terms featuring in this equation and the natural rate by only  $\Sigma S^h(t) = \Delta \Sigma PIn(t)$ , i.e. when  $\Sigma \Delta M_s(t-x)$  is dropped from the equation. Hence, whenever investment is financed by money creation, the market rate falls below the natural rate.

### 5.5.3 Hayek's trade-offs; a critique

The core elements of Hayek's trade-cycle theory are the idea of forced saving and the assumed desire of consumers to reverse the effects of forced saving (Hayek 1932: 239, O'Driscoll 1977: 51-56, McCloughry 1982, Cottrell 1994). These elements crucially depend on the applicability of two rigid trade-offs:

- (a) between  $\Sigma PIn_d$  and  $\Sigma PC_d$ : an increase in  $\Sigma PIn_d$  must be financed by a decrease  $\Sigma PC_d$  and *vice versa*;
- (b) between  $\Sigma In_s$  and  $\Sigma C_s$ : an increase in the production of *In* can be realised only by lowering the production of *C* and *vice versa*.

A criticism of Hayek's theory needs to focus on these trade-offs. As it transpires, such a critique largely turns on identification-theoretical issues, i.e. on the form of the equilibrium conditions used, especially in connection with trade-off (a).

Trade-off (a) rests on the assumption that the supply of finance is fixed in the short run and that  $\Sigma PIn_d$  and  $\Sigma PC_d$  are the only alternative options for which this finance can be used. To start with, under a bank-money system the supply of finance is exceedingly flexible and banks need not at any stage experience the kind of credit-crunch assumed by Hayek (for an elaboration see Trautwein 1996). But, even if we assume a fixed supply of finance, alternative demand-for-finance items besides  $\Sigma PIn_d$  and  $\Sigma PC_d$  can feature. If these alternatives can be tapped, the trade-off between  $\Sigma PIn_d$  and  $\Sigma PC_d$  becomes less rigid too. While Keynes's (1931, 1936: 79ff) and Sraffa's (1932a) critique of Hayek seem overly harsh, they rightly point towards Hayek's neglect for such alternative sources and uses of finance. When the economy goes through increased capital intensification and capital (as

money) becomes more scarce, it makes sense indeed that, say, average liquidity preference or secondary trade in financial assets should fall, possibilities of which Hayek's scheme takes no account.

In Sraffa's (1932) footsteps, some modern commentators (e.g. Desai 1982, McCloughry 1982, Lawlor and Horn 1992) go so far as to suggest that Hayek's system, on account of its Wicksell connections and its neglect for  $aF_d$ -items (alternative money demand items, such as stationary-money holding and secondary trade in financial assets) is effectively identical to barter. Such suggestions are unfounded. While admittedly not taking account of the full effect of money use, the model of *Prices and Production* is decidedly not one of barter, witness the fundamental fact that Hayek attributes the reversal of forced saving, amongst others, to *financial* crowding out; Hayek's money does *not*, therefore, merely function as a numeraire. Moreover, the fact that the level of stationary-money holding does not change ( $\Sigma \Delta M_d = 0$ ) clearly does not imply that there is no such holding at all; non-change does not mean absence.

The whole misunderstanding is again inspired by Wicksell's erroneous idea that the condition for money neutrality ( $\Sigma S^h(t) = \Delta \Sigma PIn(t)$ ) describes barter, which has been taken over by Wicksell's critics. As already stressed several times by now, money neutrality is not equivalent to barter, but is the means by which equivalence with barter (in an identification-theoretical sense) is achieved, suggesting that money exercises no disrupting influence on the process of plan coordination. It must, however, be admitted that Hayek's language is at times too Wicksellian for comfort. For example, he remarks that his natural rate is determined by "the supply and demand for real capital" (1935: 23) and that "the effect .. [of investment financed by saving] is identical with the effect which would have been produced if the savings were made in kind instead of in money" (1935: 53). In the light of his broader argument, however, one seems justified to conclude that Hayek was not regarding money neutrality as equivalent to barter, but was merely using the then fashionable Wicksellian modes of expression, especially in connection with his interest-rate theory. For example, he explicitly describes money neutrality as a situation where "money exists to facilitate

exchange but exercises no determining influence on the course of things or, in other words, remains neutral" (1935: 145)<sup>9</sup>.

Let us now turn to trade-off (b). Its applicability follows from the assumption of an unchanged production potential in the short run, which creates an artificial bias in favour of Hayek's conclusions. The main incentive for capital intensification surely is to implement new, more productive technologies (i.e. "capital widening", while Hayek considers only "capital deepening"). And such implementation can surely increase the productivity of both consumer and intermediate goods in the relatively short run. In that case, an increase in the production of intermediate goods need not require an equivalent decrease in the production of consumption goods.

With these trade-offs weakened, the influence of bank-money creation automatically becomes less pernicious. The result of a weaker trade-off between  $PI_n_s$  and  $\Sigma PC_s$  is that the extent of forced saving will be correspondingly smaller. And the corollary of a weaker trade-off between  $PI_n_d$  and  $\Sigma PC_d$  is that the increase in nominal consumption spending ( $\Sigma PC_d$ ) aimed at neutralising this forced saving will crowd out  $PI_n_d$  to a smaller degree as well. But there is a more fundamental weakness in Hayek's argument, which undermines the relevance of his idea of force saving and which again concerns an identification-theoretical issue.

The predominant source of finance for capital formation is not saving on the part of consumers nor even credit extension on the part of banks, but profit retention on the part of the firms themselves (see Chick 1993). As Streissler (1969: 250, 269) remarks: "[I]n speaking of the importance of saving one tends to stress that *consumers* have to alter their plans when, in fact, most saving is done *pari passu* with their investment decisions by

---

9. Sraffa (1932a: 47) also erroneously argues that consumers "have no wherewithal to expand consumption" so as to reverse forced saving. But as Hayek (1932) notes in his reply, there is only a lack of finance in the immediate term. Given that the extra money due to credit-creation has to end up in factor incomes (wages plus profit payouts), consumers must eventually obtain the finance to increase  $\Sigma PC_d$  by at least as much as firms increased  $\Sigma PI_n_d$  (see McCloughry 1982: 174-175). Because  $\Sigma PI_n_d / \Sigma PC_d$  ratio is nearly always greater than one, this will have to be sufficient to restore that ratio to its original level. Cottrell's (1994: 207-208) contrary conclusion is due to the fact that he models the process of transition to a new structure of production *without* the money supply increasing.

entrepreneurs. These and other implications have frequently tripped up readers of Hayek in the thirties". Hayek's system overlooks profit retention as a source of finance for investment because of its implicit assumption that realised profits are always fully paid out to consumers (see above). Hence, firms are assumed to contribute nothing towards the financing of their own investment, the duty to finance investment falling solely on consumers who for this purpose have to drop their consumption spending below their income and lending the resultant saving to firms<sup>10</sup>. Streissler (1969: 269) again confirms: "Hayekian entrepreneurs .. cannot satisfy their investment desires by mulcting the consumer: therefore, investment depends on voluntary savings of consumers.. [Hayekian entrepreneurs] absolutely depend upon credit for financing any extension in plant.". Hayek thus artificially enhances the importance of household saving in the financing of investment, which obviously plays an important role in his argument (c.f. Sraffa 1932: 45, n1). To the extent that firms are allowed to finance investment by means of retained profits, investment is accompanied by reduced household income. Faced with less income, households will voluntarily scale down their desired real consumption and, hence, automatically reduce their sense of forced saving.

In his reply to Sraffa's (1932a) critique, Hayek (1932: 242) admits that his conclusions have to be "modified only to the extent that entrepreneurs may not consume [i.e. distribute to households] part of the extra profit made during that period, but may invest it". But he notes that "the effect of this can hardly ever be sufficient to prevent any increase in the relative demand for consumers' goods" (243). However, given that in the real world firms finance a considerable part of their investments by retained profits and that households have good reason to reduce their "relative demand for consumers' goods" in the face of their reduced income, it is surprising that Hayek so easily dismisses this possibility.

---

10. When discussing the case of a completely integrated firm sector, Hayek (1935: 62-66) mentions the possibility of firms contributing themselves towards the financing of increased intermediate good spending: "...if any of these industries decides to save and invest part of its profits in order to introduce more capitalistic methods of production.." (63) or "...during the whole period of transition, it [such an industry] must pay out less to consumers than it receives.." (64). But these anecdotal remarks clearly do not square with the formal structure of Hayek's triangles.



All this is not to say that the trade-offs as assumed by Hayek are totally absent or totally irrelevant, but one cannot escape the impression that the effects are by far not as certain and as strong as Hayek makes them out to be. Hayek's business-cycle theory is really "no more than a conceivable but incomplete scenario" (Yeager 1986: 380). Nonetheless, while Hayek's theory does not provide the only possible cause of depression (and, for one, could not give a credible explanation of the Great Depression), it may still provide the correct diagnosis of other depressions at other times (c.f. Hicks 1967a: 214-215, Streissler 1969, and Machlup 1977: 26-28)<sup>11</sup>. Streissler (1969: 248) more specifically notes how Hayek's depression theory,

was by its very nature the description of a relatively long-term and of a relatively tame phenomenon; and it was the recipe of how to get into a mess more than one for getting out of it.. It was Hayek's tragic mistake that he thought his theory applicable to the much more violent disequilibrium of the thirties and as an indication of how to get out of depression.

This seems the most fair assessment of Hayek's trade-cycle theory. If bank-money supply flexibility is to be regarded as destabilising, about which one may still agree with Hayek, that destabilisation does not seem to work only, nor even mainly, through the mechanism as described in Hayek (1935). Alternative, more potent mechanisms by which a bank-money system may destabilise the economy will be a topic of discussion in chapter 8.

Lastly, Hayek's interest-rate theory can be criticised for aspects carried over from Wicksell, such as taking the continuity assumptions for granted and assuming the Wicksellian Equivalence Principle, which is inappropriate in a bank-money system<sup>12</sup>. This may actually be regarded as the gravest weakness of Hayek's (1935) entire framework.

---

11. According to Hicks (1967a), the main weakness of Hayek's (1935) system is that it assumes "a lag of consumption behind wages" and that such a lag is "obviously unacceptable" (1967a: 208). It escapes the present writer why this time lag plays such an important role in Hayek's system. The trouble seems to be that Hicks assumes that, following a credit-induced increase in intermediate-goods spending, money wages should immediately go up, which makes Hicks wonder why this wage hike has no immediate effect on consumption-goods spending and prices (ibid). But, as Hayek (1932: 242) pointed out in his reply to Sraffa, it takes considerable time before increased intermediate-goods spending "has passed backwards through the successive stages of production until it is finally paid out to the factors [as wages]". So the relevant time lag is not between increased wages and increased consumption spending, but between increased intermediate-good spending and increased wage payment. Our criticism of Cottrell (1994), who also makes much of this supposed lag of consumption behind wage payment, would be the same.

12. Hayek's (1935) assumption of full employment seems, indeed, necessitated by his employment of the continuity assumptions, which posit macroeconomic equilibrium, and *a fortiori* full employment, as the initial starting point of the theory. In the light of this, Keynes's (1936: 79ff) criticism of this assumption seems somewhat harsh (c.f. O'Driscoll 1977: 68-69).

## CONCLUSION

The aim of this chapter was to assess the correctness of the equilibrium conditions commonly used in macroeconomic theory, in particular classical macroeconomics (Say's Law and the Quantity Theory), and the post-classical macroeconomics of Wicksell, Robertson and Hayek. Using the tools as developed in chapters 3 and 4, we were able to expose the weaknesses in these theories. The most common sources of error were:

1. A failure to distinguish between the identification-theoretical and the choice-theoretical side of a theory.
2. A failure to distinguish between financial and macroeconomic equilibrium and to use  $\Sigma PG_s(t-x) + \Sigma \Delta M_s(t-x,t) = \Sigma PG_d(t) + \Sigma \Delta M_d(t)$  as the *finec* and  $\Sigma PG_s = \Sigma PG_d$  as the *macec*.
3. A failure to take account of the wedge which a bank-money system drives between the *fmec* and the *finec* and to realise the consequent inapplicability of the Wicksellian Equivalence Principle.

Because this chapter concerned itself almost exclusively with equilibrium conditions and equilibrium conditions do not explain behaviour, let alone explain behaviour by way of laws, it was all a matter of macroeconomics without laws.

## Chapter Six:

**THE EQUILIBRIUM CONDITIONS OF GENERAL-EQUILIBRIUM ANALYSIS**

*The factual content of [general equilibrium] theory depends very largely .. on restrictions implicit in the budget equations. Accordingly, the main question that we have to answer in order to appraise the empirical significance of contemporary monetary theory is: 'Do the budget equations .. constitute an appropriate definition of choice alternatives in a money economy?'*  
Clower (1967: 203)

**6.1 INTRODUCTION**

This chapter has the same aim as the previous, namely to compare the equilibrium conditions of chapters 3 and 4 with the set of equilibrium conditions as used in established monetary-macroeconomic theory, in this case Walrasian general equilibrium (GE) analysis. The idea is to show how GE analysis' incorrect specification of the relevant equilibrium conditions produces a deficient understanding of the sources of macroeconomic disequilibrium and of the nature of a monetary economy. We also hope to demonstrate the power of our approach by indicating how a correct specification of equilibrium conditions is capable of sorting out, with relative ease, the confusion surrounding the meaning of Walras' Law in connection with the contributions of Hicks (1942), Lange (1942), Patinkin (1965) and Clower (1965).

It could be argued that the debates surrounding these authors' contributions have since become overworked and stale. But "many of the macroeconomic issues about which differences of opinion existed at the time, as well as others that have subsequently arisen, still remain unresolved" (Patinkin 1991: xvi); as someone once said "economists do not resolve their disagreements, they just abandon them". Moreover, because these debates concern the foundations of Walrasian analysis which remains the dominant paradigm of academic macroeconomic and monetary theory, there still is merit in assessing these foundations. We shall concentrate on the identification-theoretical structure of GE analysis, i.e. on its equilibrium conditions used.

Being identification theory, equilibrium conditions bypass any explanation of behaviour itself, never mind explanation by way of laws. Hence, the discussion is once again an

instance of macroeconomics without laws. Nonetheless, we will at times be forced briefly to venture into choice-theoretical aspects of GE analysis, in particular to point out the reasons why GE analysis is unable to do justice to the essential role of money and, as such, to issues related to macroeconomic coordination.

## 6.2 THE EQUILIBRIUM CONDITIONS OF GENERAL-EQUILIBRIUM ANALYSIS

Two equilibrium conditions play role in Walrasian GE analysis, which will be discussed consecutively.

### 6.2.1 The Walrasian microeconomic equilibrium condition

The first equilibrium condition expresses the equality of quantity demanded and supplied in each market separately (c.f. Lange, 1942: 49), in order to capture the requirements for microeconomic equilibrium. Transposed into our notation, this condition is identical to our equation 3.1:

$$G_{s,i}(t) = G_{d,i}(t) \quad (i = 1, \dots, n) \quad (3.1)$$

Being identical to equation 3.1, not a great deal needs to be said by way of criticism about it. Two differences with our analysis should, however, be noted.

First, our analysis treats the collection of goods 1,.....,n as neither a closed nor a uniquely defined set. Because the quantities  $G$  are momentary, different goods and agents are likely to play a role at each successive moment in time  $t$  and the relevant goods and agents of any single moment will be only a very small proportion of all goods and agents in existence. Our equation 3.1 can, therefore, never be used as a basis for *general* equilibrium theory, in the sense of covering all goods and agents. Clower and Leijonhufvud (1975: 183-184) argue that in this regard the generalised Arrow-Debreu model conflicts with Walras' original intent:

Walras regarded his work as an attempt *partially* to characterise equilibrium states of an ongoing economic system. To suppose that Walras conceived his analysis to constitute a *complete* description .. of relevant equilibrium conditions would be an egregious error..

A second difference which follows from the above is that, while our microeconomic equilibrium condition is momentary, the Walrasian one is customarily expressed with reference to a period (like the Hicksian week, see Hicks 1946), which presumably is just long enough to allow all goods to be turned over at least once. As already indicated several times, this difference does not present any analytical difficulties, because dimensional stocks and flows can be transposed into each other without any complications, as long as the analysis is purely identification-theoretical.

### 6.2.2 Walras' Law as a budget constraint

The second Walrasian equilibrium condition concerns an overall budget constraint, which since Lange (1942) has become more widely known as Walras' Law (which in our parlance is an equilibrium condition rather than a law). In our notation, it reads:

$$\Sigma PG_s(t) = \Sigma PG_d(t) \quad (6.1)$$

The intention of Walras' Law is undoubtedly to capture the requirements for financial equilibrium. As such, it is comparable to our *finrec*. The deficiencies of the identification-theoretical structure of GE theory lie primarily in its budget constraint, which fails to take adequate account of the role of money. As a result, it cannot adequately describe the sources of macroeconomic disequilibrium (effective demand failure). The lack of an essential role for money in Walras' Law shows up in a number of areas.

To start with, it was emphasised in chapter 3 that the planned goods supply of the present ( $\Sigma PG_s(t)$ ) can never provide the means to finance the planned goods demand of the present ( $\Sigma PG_d(t)$ ), unless  $\Sigma PG_s(t)$  and  $\Sigma PG_d(t)$  were pre-coordinated in advance of the moment of exchange (Tsiang 1966: 333). Only a realised goods-supply from the past (i.e.  $\Sigma PG_s(t-x)$ ) can function as finance for the present. Shubik (1975: 556) formulates the problem as follows:

[T]he lack of an explicit role for *money and credit* in the general equilibrium model comes in the assumption that the only constraint on individual trade is a *budget constraint* (evaluated in prices which are given in advance!). In the world I live in, individual purchases are limited by a *liquidity constraint* which in turn depends upon the *cash flow* position of the individual and the availability of short term and long term financing.

In other words, the demand for goods in a monetary economy is not constrained by the supply of goods (budget constraint), but by the supply of *finance* (f-constraint).

This critique has an important analytical implication. Walras' Law is commonly understood as causing the demand and supply of one arbitrarily chosen market to be determined by the demand and supply of the other  $n-1$  markets. As a result, one of the  $n$  microeconomic equilibrium conditions can be removed from the system. But this logic applies only if the specific identity of the goods which feature in the complex of microeconomic equilibrium conditions ( $G_{s,i}(t)$  and  $G_{d,i}(t)$ ) is the same as the specific identity of the goods which make up the aggregate variables in the *finec* ( $\Sigma PG_s(t-x)$  and  $\Sigma PG_d(t)$ ).

But this is clearly not the case. Because time has passed between  $t-x$  and  $t$ , we may assume that the precise identity of the goods represented by  $\Sigma PG_s(t-x)$  on the one hand differs from those represented by  $\Sigma PG_d(t)$ ,  $G_d(t)$  and  $G_s(t)$  on the other. If this be granted, Walras' Law no longer renders one microeconomic equilibrium condition dependent on all the others. In real life, it is evidently also not true that our demand and supply plans concerning one commodity are passively determined by our demand and supply plans concerning all other commodities. The reason is the same: the set of commodities sold in the past and giving finance for the present is not identical to the set of commodities presently planned to be bought and sold. The implications are momentous, since just about all monetary/macroeconomic theory conducted in terms of GE analysis utilises this analytical implication of Walras' Law.

The continuity assumptions can obscure this flaw. If we abstract from nominal economic growth and start off from a position of equilibrium, it follows that  $\Sigma PG_s(t-x) = \Sigma PG_s(t)$ . Given this equality, the time lag between  $\Sigma PG_s(t-x)$  and  $\Sigma PG_d(t)$  can be ignored and  $\Sigma PG_s(t) = \Sigma PG_d(t)$  and  $\Sigma PG_s(t-x) = \Sigma PG_d(t)$  become equivalent alternative expressions of the budget constraint. But the equality between  $\Sigma PG_s(t-x)$  and  $\Sigma PG_s(t)$  as resulting from the continuity-assumptions is valid only in the aggregate; it does not necessarily mean that the identity of particular goods is the same for  $\Sigma PG_s(t-x)$  and  $\Sigma PG_s(t)$ . Therefore, the dependence of one arbitrarily chosen market still does not follow. The continuity-

assumptions do, nonetheless, render Walras' Law more realistic as a *finec*, as they increase its resemblance with our benchmark *finec*, even if  $\Sigma \triangle M_s(t-x,t)$  and  $\Sigma \triangle M_d(t)$  are still ignored.

The absence of  $\Sigma \triangle M_s(t-x,t)$  and  $\Sigma \triangle M_d(t)$  in the original Lange-Arrow-Debreu formulation of Walras' Law has the obvious implication of ruling out  $aF_d$ -constraints, simply because there aren't any  $aF_d$ 's. Hence only  $F_s$ -constraints can occur. But we just noted how Walras' Law has to take the continuity-assumptions for granted if it is to have any realism in its portrayal of a financial equilibrium condition, which imply that  $F_s$ -constraints are automatically prevented from occurring as well (it should be recalled from chapter 3 how the continuity assumptions imply  $F_s$ -constraint absence). With both  $aF_d$ - and  $F_s$ -constraints ruled out, financial and macroeconomic equilibrium become synonymous and necessarily attained as well. As Hellwig (1993: 221) notes: "Arguments about the need to make sure that agents actually pay for what they buy .. [i.e. the need for money as a medium of exchange] are rather beside the point in the Walrasian system, because here the requisite quid-pro-quo is automatically ensured by the simultaneity of all exchanges under the Walrasian budget constraint." As such, problems of macroeconomic coordination failure (effective demand failure) cannot be captured by GE analysis; only microeconomic discoordination can occur.

There is, however, also room to argue that GE analysis effectively models a situation of barter, by not allowing money to play an essential role in the process of exchange. If this be granted, all concern about monetary matters such as expressed in the *finec* and the *macec* are out of place anyway. It should once more be remembered that barter does not validate macroeconomic equilibrium, but renders its consideration irrelevant and superfluous. As such, GE analysis should not even consider a budget constraint/*finec* at all. To explain why GE analysis effectively models barter, we are required to pay brief attention to some of its choice-theoretical aspects.

### 6.2.3 GE analysis as a model of barter

The market participants in a GE model make no contribution towards the coordination of their own plans. Rather, plan coordination is the duty of an outside agency, the Walrasian auctioneer, who collects all the necessary non-price information through the *tatonnement* process and announces the market-clearing prices to the agents, according to which the latter determine their equilibrium quantities demanded and supplied.

Hence, agents already know the equilibrium price and quantities *before* they enter the market place. Walrasian exchange occurs only to give effect to a pre-existing and pre-reconciled plan (c.f. Hayek 1937: 37, Shackle 1972, Laidler 1997: 1214-1215). The market is portrayed, not as a place where agents acquire information about what is for sale at what price, but solely as a place where the necessary exchanges occur in order to execute a pre-coordinated plan. While in the real world plan formation and plan execution are part and parcel of the same market process, GE modelling separates plan formation from plan execution and admits a role for market exchange only in the context of the latter.

The fact that GE analysis sets and coordinates plans prior to going to market severely limits the role it can give to money, with the essence of money being regarded as medium of exchange (Menger 1892, Clower 1967, Yeager 1968 and Jones 1976). As first pointed out by Jevons, monetary trade aids the process of plan coordination, because it removes the necessity of a double coincidence of wants as the pre-condition for barter trade. In that way, money reduces the informational requirements for market coordination. Because the plans of its agents are not coordinated in the market at all, GE analysis cannot give recognition to this advantage of money-use.

The question then arises: why can't GE analysis model a real-world market process, during which agents obtain *their own* information and strive to coordinate *their own* plans? The reason is obvious. The free interaction between agents in the market place, during which they learn about buying and selling opportunities, shape their preferences and bargain about prices, can never be described as a concrete, determinate process (though it can, of course, be described by way of isolated pattern-tendencies - see chapter 7). The market



process defies mathematical modelling by way of strict behavioural laws, because creativity and open-endedness play an essential role in it. That is why "[t]here is no story appended to the model to tell us what will happen if we dispose of the 'market administrator' and let buyers and sellers loose on each other directly" (Leijonhufvud 1974: 24, see Richardson 1959: 230ff for a similar conclusion).

Because buyers and sellers cannot be let loose on each other directly, GE analysis is forced to disregard the self-coordinating capabilities of the agents themselves. Instead, their behaviour is modelled as if they are operating in isolation, passively recording the prices provided for them by the auctioneer so as to coordinate the plans set according to exogenously given preferences and states of nature. As such, the role of money as an aid to agents in their efforts to achieve *their own* coordination (however imperfectly they may do so) clearly cannot be given any recognition. Insofar money is allowed to play a role in GE analysis, it is only in contrived and inessential ways.

Starr and Ostroy (1972, 1973, 1974) find a function for money in its ability to reduce the transactions cost of executing the trades required to give effect to the pre-coordinated plan. This treatment of money seems to touch its essence, because it concerns money's attribute of medium of exchange. But as indicated above, the real function of money does not lie in facilitating the cheaper and easier execution of a pre-coordinated plan, but in facilitating the easier coordination of the plans *themselves* by the agents *themselves*, which it does through removing the necessity of double coincidence of wants.

The removal of the necessity for double coincidence of wants features crucially in the Starr-Ostroy argument as well. But, once more, this role is acknowledged, not for purposes of facilitating easier plan coordination but for purposes of facilitating the easier execution of a pre-coordinated plan. Starting off from a situation of single coincidence of wants, money is said to reduce the number of exchanges necessary to let the right goods end up in the hands of the right agents, thus reducing transactions costs. The argument pre-supposes that, in spite of the absence of a double coincidence of wants, barter exchange still takes place, which is highly contrived.

Barter exchange will generally not take place at all unless there is double coincidence of wants; the merit of money lies in the fact that it allows exchanges to happen *which would otherwise not have happened*. And if the benchmark barter exchanges do not occur, the relative cost-saving advantage of money obviously cannot be established either. That is how the Starr-Ostroy argument must fail. Hahn (1973a: 234) seems to pre-empt this criticism by noting:

It is, of course, not true that such double coincidence of wants is required by a proper barter economy for there is no reason why one should not accept in exchange a good in one transaction which one proposes to exchange again in another.

This is indeed true. And such transactions of less for more marketable goods will, in fact, gradually lead towards the development of a genuine medium of exchange, as explained by Menger (1892). But these non-double-coincidence transactions will still be the great exception. The vast majority of trades which take place under a money economy will simply not occur under barter, which must cut the ground from under the Starr-Ostroy argument (c.f. Hellwig 1993: 222-223).

#### 6.2.4 Walras' Law as a microeconomic equilibrium condition

If GE analysis models situations of barter, we may conclude that just as barter renders Say's Law irrelevant rather than automatically valid so also does it render Walras' Law (as a financial-*cum*-macroeconomic equilibrium condition) irrelevant rather than automatically valid. This conclusion is re-enforced by the fact that, under barter, financial equilibrium (the budget constraint or Walras' Law) is implicit in microeconomic equilibrium. This can be shown as follows.

Assume an agent X who offers good i, an agent Y who offers good j and the presence of double co-incident of wants between agents X and Y. In that case, the only constraint on agent X's demand for good j is agent Y's demand for good i and the price at which they are prepared to exchange i for j (the same applies *mutatis mutandis* to agent Y). Agent X's budget constraint then reads,  $G_{d,i}(t) = p^{x,ij}G_{d,j}(t)$ , with  $p^{x,ij}$  being his desired exchange ratio between i and j (the barter price). Agent Y's budget constraint is the same, except that his

desired exchange ratio between  $i$  and  $j$  ( $p^{y,ij}$ ) may differ:  $G_{d,i}(t) = p^{y,ij}G_{d,j}(t)$ . Just as the essence of monetary exchange is that the demand for goods is identically equal to the supply of money (and *vice versa*, see equations 3.2 and 3.3), so also is the essence of barter that the supply of  $i$  is identically equal to the demand for  $j$  (and *vice versa*). Hence, for agent  $X$  it is necessarily true that  $G_{s,i}(t) \equiv p^{x,ij}G_{d,j}(t)$  and for agent  $Y$  that  $G_{d,i}(t) \equiv p^{y,ij}G_{s,j}(t)$  (c.f. Lange 1942: 50n). In the light of these exchange identities, both agents' budget constraints can be rewritten as  $G_{d,i}(t) = G_{s,i}(t)$  or  $G_{d,j}(t) = G_{s,j}(t)$ , thereby taking on the form of a conventional set of microeconomic equilibrium conditions; and when  $p^{x,ij} = p^{y,ij}$ , i.e.  $X$  and  $Y$  agree on the price, these constraints/conditions indicate the same amounts and microeconomic-financial equilibrium is actually achieved.

So budget constraints and market equilibrium conditions are logically equivalent under barter, expressing the same coordination requirement: the necessity of prices reaching their market clearing levels. Davidson (1976: 544) even defines Walras Law as a microeconomic equilibrium condition ("the simultaneous clearing of all markets") rather than an overall budget constraint, which clearly goes against Lange's (1942) original intent (Clower 1965 does the same). Hence, the logic of barter does not guarantee that Walras' Law holds, but altogether makes the addition of a budget constraint to the set of microeconomic equilibrium conditions superfluous. If Walras' Law is really an (aggregate) microeconomic equilibrium condition, it is little wonder that it makes one of the other microeconomic equilibrium conditions superfluous.

If we accept that Walras' Law is an (aggregate) microeconomic equilibrium condition, it also follows that its equality is not necessarily satisfied (Clower 1965). While insensitive to monetary-macroeconomic disturbances (the possibilities of which are ruled out by definition), Walras' Law can be upset by microeconomic coordination failures. Unless barter prices are at their market-clearing levels, there is no reason why the total amount of goods which agents wish to bring to the market should be equal to the total amount of goods which they wish to take away from it.

However, if we take the barter-logic of GE analysis for granted and assume that markets are cleared according to the auction method (as GE analysis does), there is a sense

in which Walras' Law can still hold. The auction method of market clearing implies that all goods brought to the market are by definition always *in the market*. They are always for sale, suppliers already having decided to sell all their goods however low it may require the price to go. As a result, there is no supply schedule. Instead, total physical supply becomes a fixed endowment, which by virtue of the barter-exchange identities (see above) is always equal to total physical demand. Patinkin's (1989a) attempt to prove Walras' Law seems based on the treating supply as a fixed endowment too.

Theorists like Hicks (1946), Lange (1942) and Patinkin (1965) have sought to adapt the budget constraint to a monetary economy by including a money (as well as a bond) market. Moreover, Clower (1965) has tried to incorporate monetary aspects into GE analysis by giving explicit recognition to the possibility of finance constraints on spending as a means of explaining Keynesian unemployment. The remainder of the chapter will be taken up with brief assessments of these attempts to give the budget constraint a stronger monetary flavour. Of course, in the light of the fact that the choice-theoretical nature of GE analysis already rules out an essential role for money (as explained above), all such attempts are, strictly speaking, superfluous. Nonetheless, there should be merit in assessing the logic of these budget constraints *as pure identification theory*, disregarding the fact that GE analysis' choice theory renders money irrelevant anyway.

### 6.3 HICKS

Hicks (1946) has been instrumental in reviving an interest in Walrasian GE analysis as a theoretical tool to investigate macroeconomic and monetary issues. To start off with, Hicks uses his version of the budget constraint as both a *finec* and a *fmec*, thus implicitly endorsing the Wicksellian Equivalence Principle.

The budget constraint for households is described as: "Acquisitions of cash by trading = Receipts - Expenditure - Lending" (Hicks 1946: 156-158). Given that he takes dividend payouts as part of his "Receipts" (1946: 157), the resultant *finec/fmec* reads in our notation:

$$\Sigma WN_s(p) + \Sigma Tr^{f,h}(p) = \Sigma PC_d(p) + \Sigma B_d^h(p) + \Sigma \Delta M_d^h(p), \quad (6.2)$$

with each variable applying to the current period  $p$  (the Hicksian week).

Hicks goes on to specify a budget constraint for firms in the following way: "Acquisitions of cash by trading = Value of output - Value of input - Repayment of old loans + New Borrowing - Dividends" (1946: 158). If we take  $\Sigma B_s^f(p)$  as the shorthand for net borrowing (= new borrowing - repayment of old loans) and we follow Hicks in his assumption that for the firm sector as a whole the demand and supply of intermediate (or investment) goods cancel out in aggregation, this budget constraint can be rewritten as:

$$\Sigma PC_s(p) + \Sigma B_s^f(p) = \Sigma WN_d(p) + \Sigma \Delta M_d^f(p) + \Sigma Tr^{f,h}(p), \quad (6.3)$$

Summing the sectoral budget constraints of households and firms, we obtain the following economy-wide budget constraint:

$$\Sigma WN_s(p) + \Sigma PC_s(p) + \Sigma B_s^f(p) = \Sigma WN_d(p) + \Sigma PC_d(p) + \Sigma B_d^h(p) + \Sigma \Delta M_d(p) \quad (6.4)$$

Hicks (1946: 157) subsequently interprets  $\Sigma \Delta M_d(p)$  ("net acquisition of cash by trading") as the excess demand for money:  $\Sigma M_s(p) - \Sigma M_d(p)$ . This allows him to derive a conventional rendition of Walras' Law (i.e.  $\Sigma PG_s(p) = \Sigma PG_d(p)$ ), the only difference being that the various components of commodities  $G$  (namely  $N$ ,  $C$ ,  $B$  and  $M$ ) are considered separately:

$$\begin{aligned} \Sigma WN_s(p) + \Sigma PC_s(p) + \Sigma B_s(p) + \Sigma M_s(p) = \\ \Sigma WN_d(p) + \Sigma PC_d(p) + \Sigma B_d(p) + \Sigma M_d(p) \end{aligned} \quad (6.5)$$

A number of criticisms can be levelled at this version of Walras' Law.

Firstly, in line with our general criticism of Walras' Law above, Hicks' version is deficient in that a current supply of commodities functions as a current supply of finance, which is logically impossible unless there is pre-harmonisation of plans. We can, however, overlook this weakness insofar the continuity assumptions can be accepted as applicable.

Secondly, the demand and supply of intermediate goods cancel out in aggregation only if we regard the firm sector in an aggregate form, as comprising a *single* average firm. Strictly speaking all trade in whatever kind of good matters, as it creates a demand for finance when planned and a supply of finance when realised. And even if we were to accept that the demand and supply of intermediate goods cancel out, there is no reason there should

not be net investment. The neglect of investment in Hicks' budget constraint is obscured by the fact that he declines to refer to saving and investment at all, citing insurmountable definitional difficulties as his reason (1946: 181-184).

Thirdly, the total supply of finance cannot be made up of the total money stock ( $\Sigma M_s(p)$ ) plus the money received through trading ( $\Sigma WN_s(p) + \Sigma PC_s(p) + \Sigma B_s(p)$ ). If  $\Sigma M_s(p)$  already captures all money in circulation, it is impossible for any further supply of money to play a role as well. By the same token, given that  $\Sigma WN_d(p) + \Sigma PC_d(p) + \Sigma B_d(p)$  represents the transactions demand for money, it is impossible for the total demand for money to be added to that money demand as well. When the demand for stationary money ( $\Sigma M_d(p)$ ) already takes up the total money stock, there would not be any money left to finance transactions ( $\Sigma WN_d(p) + \Sigma PC_d(p) + \Sigma B_d(p)$ ) too (c.f. Tsiang 1966, whose argument runs somewhat differently).

Fourthly, Hicks wrongly interprets net additions to stationary-money balances as the excess demand for stationary money:  $\Sigma \Delta M_d(p) = \Sigma M_s(p) - \Sigma M_d(p)$ . These net additions should accurately be regarded as the excess of present over past *demand* for stationary money:  $\Sigma \Delta M_d(p) = \Sigma M_d(p-x) - \Sigma M_d(p)$ . Because a supply of money ( $\Sigma M_s(p)$ ) does not feature, a money market cannot be derived from the "net acquisition of cash by trading" ( $\Sigma \Delta M_d(p)$ ).

In line with this shortcoming, Hicks effectively ignores possible additions to the total money supply ( $\Sigma \Delta M_s(p)$ ). Hence, he is very careful to describe  $\Sigma \Delta M_d(p)$  as "acquisitions of cash *by trading*" rather than simply calling it "acquisitions of cash" irrespective of whether the increased cash holdings arose out of trade or by money creation. The reason for Hicks' circumspection in this regard is that Walrasian analysis has trouble in accommodating current additions to the money stock. If money is understood as a non-producible good (fiat bank money), it is impossible to add to it by way of current production (Tsiang 1966: 338-339, Carhill 1987: 88). The money supply ( $\Sigma M_s(p)$ ) must be treated as a given and fixed endowment for the period under consideration. For a bank-money system with a flexible money supply, this seems a serious shortcoming.

If we assume that equation 6.5 represents a necessary equality and time lags are ignored, Hicks's approach will be able to dispense with one arbitrarily chosen market: factors (N), consumption goods (C), financial assets (B) or money (M). Hicks (1946: 158-162) uses this possibility to interpret Wicksellian interest-rate theory as leaving out the money market (M) and Keynesian liquidity preference theory as ignoring the market for financial assets/loanable funds (B). We are not in a position yet to assess this interpretation of Keynesian liquidity preference theory (which needs to await chapter 9), but it is obvious that Wicksell's natural interest rate is not determined by equation 6.5 minus the money market, i.e. by  $\Sigma WN_s(p) + \Sigma PC_s(p) + \Sigma B_s(p) = \Sigma WN_d(p) + \Sigma PC_d(p) + \Sigma B_d(p)$ , since investment (the market for capital goods) does not even feature.

#### 6.4 LANGE

Lange (1942) bases his derivation of Walras' Law for a monetary economy on the two identities expressing the essential nature of monetary exchange: if money is exchanged for goods, the demand for goods must be identically equal to the supply of money and *vice versa* (1942: 50, equations 2.3 and 2.4). Transcribed in our notation, these equations are the same as our equations 3.2 and 3.3:

$$\Sigma PG_s(t) \equiv \Sigma ME_d(t) \quad (3.2)$$

$$\Sigma PG_d(t) \equiv \Sigma ME_s(t) \quad (3.3)$$

On the basis of the fact that the *total* demand for all "goods" (in this case: non-monetary commodities plus money) is by definition equal to  $\Sigma PG_d(t) + \Sigma ME_d(t)$  and the total supply to  $\Sigma PG_s(t) + \Sigma ME_s(t)$ , Lange (1942) derives Walras' Law as follows:

$$\Sigma PG_s(t) + \Sigma ME_s(t) \equiv \Sigma PG_d(t) + \Sigma ME_d(t) \quad (6.6)$$

But Lange has clearly proven very little here. Nothing prevents us from substituting  $\Sigma ME_d(t)$  for  $\Sigma PG_s(t)$  and  $\Sigma ME_s(t)$  for  $\Sigma PG_d(t)$  again, which would turn Lange's Walras' Law into:

$$\Sigma ME_d(t) + \Sigma ME_s(t) \equiv \Sigma ME_s(t) + \Sigma ME_d(t) \quad (6.7)$$

which is vacuous, reducing to  $0 = 0$  (c.f. Mishan 1963: 620). The underlying reason for this vacuity is, of course, that Lange has established that goods exchange for money and

money for goods, from which one cannot derive the necessary equality between the total demand and supply for goods (comprising non-monetary commodities and money)<sup>1</sup>. Lange seems to have sensed that all is not well with his version of Walras' Law as in equation 6.7, because he subsequently introduces an alternative version which he does not prove but smuggles into the argument by way of an anecdotal observation about the relation between Say's Law and monetary exchange.

Before we come to that observation, it should first be noted that Lange (1942: 50-53) adopts a particular view of Say's Law, namely as a money-market equilibrium condition ("monetary equilibrium"), which he initially expresses as  $\Sigma ME_d(t) = \Sigma ME_s(t)$  in our notation<sup>2</sup>. There is little to object to this expression of Say's Law, which equally implies macroeconomic equilibrium (see chapter 3). But *as a money-market equilibrium condition*  $\Sigma ME_d(t) = \Sigma ME_s(t)$  is clearly flawed, because it views money only in its function as medium of exchange at the exclusion of its function as store of value. Hence, the demand and supply of stationary money ( $\Sigma M_d(t)$  and  $\Sigma M_s(t)$ ) does not feature in this money-market equilibrium condition. Seemingly to rectify this shortcoming, Lange (1942: 51-52) makes the following anecdotal observation, which turns out to be crucially important to his argument:

It is more convenient to express monetary equilibrium [Say's Law] in relation to the existing stock of money and to the demand for cash balances. A difference between the money demanded in exchange for commodities and the money offered in exchange for commodities implies a desire to change cash balances relative to the amount of money available. The desired change is equal to that difference .. (in excess of a possible increase in the quantity of money)."

- 
1. Lange (1942: 50n) does also try to derive Walras' Law for a non-monetary economy. But all he does is replace the monetary-exchange identities with the very similar barter-exchange identities:  $G_{s,i}(t) \equiv pG_{d,j}(t)$  and  $G_{d,i}(t) \equiv pG_{s,j}(t)$ , with  $p$  being the barter price. As in the case of monetary exchange, Walras' Law thus derived can only be a definitional vacuity. The equality between total demand and supply cannot be derived from the logic of exchange only, whether monetary or real, unless it is assumed that microeconomic equilibrium already holds. But in that case, Walras' Law is not a *finex* but an alternative rendition of the microeconomic equilibrium condition, which we already got and which does not necessarily hold.
  2. Lange (1942: 51-52) makes a distinction between money-market equilibrium and Say's Law, writing the former as an equality and the latter as an identity. Whether equilibrium conditions are met or not (i.e. whether the equality actually holds or not) depends on choice-theoretical (behavioural) considerations, which are never necessarily true. Lange's distinction between money-market equilibrium and Say's Law can, therefore, be ignored (c.f. Klappholtz and Mishan 1962).



By way of this observation, Lange has effectively introduced an alternative version of Walras' Law, suggesting that a *realised* excess demand for money-in-exchange implies a *planned* excess demand for stationary money "in excess of a possible [*realised*] increase in the quantity of money". The content of this observation can be compressed as follows:

$$\Sigma ME_d(t) - \Sigma ME_s(t) = \Sigma \Delta M_d(t) - \Sigma \Delta M_s(t) \quad (6.8)$$

Given that  $\Sigma PG_s(t) \equiv \Sigma ME_d(t)$  and  $\Sigma PG_d(t) \equiv \Sigma ME_s(t)$ , this equation suggests the following form of Walras' Law:

$$\Sigma PG_s(t) + \Sigma \Delta M_s(t) = \Sigma PG_d(t) + \Sigma \Delta M_d(t) \quad (6.9)$$

Apart from the fact that it ignores the relevant time lags, this is a perfectly acceptable rendition of the benchmark *finec*. Given this more correct version of Walras' Law, the way is open for Lange to formulate a more correct expression of Say's Law too:  $\Sigma \Delta M_s(t) = \Sigma \Delta M_d(t)$ , which on the strength of equation 6.9 implies  $\Sigma PG_s(t) = \Sigma PG_d(t)$  as well. Walras' Law in the form of equation 6.9 has thus proved exceedingly useful to Lange. Firstly, it allows him to express Say's Law as both a money-market and an aggregate goods-market (i.e. macroeconomic) equilibrium condition. Secondly, it enables him to acknowledge money in its role as both medium of exchange and store of value.

Unfortunately, Lange does not quite follow his own logic as contained in equation 6.9. Firstly, he (1942: 52) describes Say's Law as  $\Sigma \Delta M_d(t) = 0$  rather than  $\Sigma \Delta M_d(t) = \Sigma \Delta M_s(t)$ , thus ignoring "a possible increase in the quantity of money" ( $\Sigma \Delta M_s(t)$ ) for which he initially made allowance. This is not mere convenience, because GE analysis has fundamental difficulties in incorporating current changes in the money stock in its budget constraint, as explained above. Secondly, like Hicks (1946), Lange (1942: 53) interprets  $\Sigma \Delta M_d(t)$  as the excess of current demand over current supply of money ( $\Sigma M_d(t) - \Sigma M_s(t)$ ) rather than as the excess of current over past demand for money ( $\Sigma M_d(t) - \Sigma M_d(t-x)$ ), which is how it ought to be interpreted. When it is nonetheless accepted that  $\Sigma \Delta M_s(t) = 0$  and  $\Sigma \Delta M_d(t) = \Sigma M_d(t) - \Sigma M_s(t)$ , equation 6.9 can be rewritten as:

$$\Sigma PG_s(t) + \Sigma M_s(t) = \Sigma PG_d(t) + \Sigma M_d(t) \quad (6.10)$$

Lange (1942) has now reached his ultimate goal: to include a money market into Walras' Law as if it were just any other market, while still creating the impression of doing justice to money as both a medium of exchange and a store of value. But the impression is clearly false.

If equilibrium in the money market (Lange's Say's Law) is viewed as the equality between the demand and supply of stationary money ( $\Sigma M_d(t) = \Sigma M_s(t)$ ) which is the norm of Walrasian GE analysis (see Lange 1942: 53, Patinkin 1965:24ff), agents are presumed to hold exactly the amount of stationary liquidity they want and Walras' Law is as in equation 6.10. But our discussion of Hicks (1946) already showed the logical inconsistency of this version of Walras' Law: given that  $\Sigma M_s(t)$  and  $\Sigma M_d(t)$  account for the total stock of money, there cannot be any money left to finance a transactions-demand ( $\Sigma PG_d(t)$ ) nor can there be any additional supply of money arising out of the sales of good ( $\Sigma PG_s(t)$ ). As a result, this version of Walras' Law cannot contain both the goods market and the money market side by side and, hence, do justice to money in its role as both medium of exchange and store of value.

Alternatively, if equilibrium in the money market (Lange's Say's Law) is defined as the equality between the demand and supply of money-in-change ( $\Sigma ME_s(t) = \Sigma ME_d(t)$ ), as Lange initially does, the following version of Walras' Law ensues:

$$\Sigma PG_s(t) + \Sigma ME_s(t) = \Sigma PG_d(t) + \Sigma ME_d(t), \quad (6.6)$$

which is precisely the one which is vacuous and reduces to  $0 = 0$ . Hence in this case too, Walras' Law is incapable of containing both the goods market and the money market side by side and, as such, fails to do justice to both a transactions and a stationary demand for money.

The dilemma disappears as soon as equilibrium in the money market is no longer expressed as  $\Sigma M_s(t) = \Sigma M_d(t)$  nor as  $\Sigma ME_s(t) = \Sigma ME_d(t)$  but as  $\Sigma F_s(t) = \Sigma F_d(t)$ , which is consistent with our earlier remark (in chapter 3) that the concept of money-market equilibrium can be made sense of only as an alternative expression of financial equilibrium. The crucial advantage of representing money-market equilibrium as  $\Sigma F_s(t) = \Sigma F_d(t)$  is that

$\Sigma F_d(t)$  can contain both  $\Sigma ME_s(t)$  and  $\Sigma M_d(t)$  instead of only  $\Sigma M_d(t)$  or only  $\Sigma ME_d(t)$ . And because  $\Sigma F_d(t)$  reflects the financial situation of goods demanders only, it does not take up the total stock of money and can therefore capture both the transactions and the stationary demand for money without overextending the total money stock.

This brings us to a further reason why Lange's Walras' Law in the form of equation 6.10 misrepresents the role of money. If equilibrium in the money market is already captured by the *finrec*/budget constraint ( $\Sigma F_s = \Sigma F_d$ ), the demand and supply of money should not also feature separately as part of  $\Sigma F_s$  or  $\Sigma F_d$  *within* the *finrec*/budget constraint. This is the straightforward implication of the old maxim of monetary theory that "unlike other goods, money has no .. market of its own" (Birch, Rabin and Yeager 1982: 214, see also Yeager 1986: 377). If money has no market of its own, its demand and supply should not appear side-by-side with the demand and supply of any other good in Walras' Law, as is the case in Hicks (1946), Lange (1942), Patinkin (1965) and all monetary GE modelling since (c.f. Tsiang 1966: 341-342). As Clower and Leijonhufvud (1981a: 99) remark: "At no stage in Lange's formal analysis is money endowed with any other special properties as compared with other commodities." Hudson (1988: 177) similarly notes how GE modelling describes "a barter economy with money simply added to it; to n-1 commodities had been added an n<sup>th</sup>." That is the essence of the problem with Walras' Law.

Of course, when we describe equilibrium in the money market as  $\Sigma F_s(t) = \Sigma F_d(t)$ , it cannot simultaneously function as an expression of Say's Law too: the achievement of financial equilibrium does not necessarily imply the achievement of macroeconomic equilibrium. The overlap between financial and macroeconomic equilibrium happens only under fairly restrictive assumptions, namely when (a) the continuity-assumptions hold ( $\Sigma PG_s(t-x) = \Sigma PG_s(t)$ ), (b)  $\Sigma \Delta M_s(t-x, t)$  and  $\Sigma \Delta M_d(t)$  are zero or cancel out, and all alternative injections and leakages are ignored, as pointed out in chapter 3.

## 6.5 PATINKIN

Nonetheless, Lange (1942) goes on to use Walras' Law as in equation 6.10 to expose a certain logical contradiction in classical monetary theory. This supposed contradiction was

subsequently taken up by Patinkin (1965) who gave it its most elaborate treatment. A little bit of Walrasian choice theory must again be considered, if we wish to explain what this contradiction is all about.

According to GE analysis, relative prices are determined as a function of quantity demanded and supplied only. In that case, a system of  $n-1$  goods and money (the  $n$ th commodity) needs  $n-1$  independent equilibrium conditions to determine  $n-1$  relative prices (the relative price of money being one). On the strength of Lange's version of Walras' Law and Say's Law, however, there are only  $n-2$  independent markets, which is sufficient to determine  $n-1$  *relative* prices but must leave the general price level undetermined. Classical monetary theory is then interpreted as using the quantity equation as the additional equation to make the general price level determinate. In that way, the classical dichotomy is upheld, as relative prices are fixed in the goods market while the general price level is determined in the money market according to the quantity equation. The classical system is alleged to be inconsistent, because Walras' Law and Say's Law *taken in combination* contradict the quantity equation in its Cambridge form. This can be explained as follows.

The combination of Lange's Walras' Law ( $\Sigma PG_s(t) + \Sigma M_s(t) = \Sigma PG_d(t) + \Sigma M_d(t)$ ) and Lange's Say's Law ( $\Sigma M_s(t) = \Sigma M_d(t)$ ), implies  $\Sigma PG_s(t) = \Sigma PG_d(t)$ <sup>3</sup>. Put differently, Walras' Law in conjunction with Say's Law guarantees that both the money and the aggregate goods market are always in equilibrium. This means that the two markets cannot influence each other and the classical dichotomy rules: a doubling of prices ( $P$ ) cannot throw either the money or the goods market out of equilibrium. By contrast, a doubling of prices does upset the money market according to the Cambridge equation ( $\Sigma M_s(p-x) = k\Sigma PG_d(p)$ ). After all, the Cambridge equation's demand for money ( $k\Sigma PG_d(p)$ ) is effected by a change in  $P$ , while its supply of money ( $\Sigma M_s(p-x)$ ) is obviously immune to such changes, being a fixed endowment from the past. Conversely, when the money and goods markets are always

---

3. Contrary to Lange, Patinkin's (1965: 36) distinguishes between Walras' Law and the budget constraint, as it seems, on the same grounds that Clower (1965) distinguishes between Walras' Law and Say's Principle, the former being an aggregate microeconomic equilibrium condition and the latter an aggregate budget constraint. The appropriateness of such a distinction will be investigated in more depth below.

in equilibrium, a change in  $\Sigma M_s(t)$  will be absorbed by a corresponding change in  $\Sigma M_d(t)$  and cannot, therefore, effect any change in the price of goods, as dictated by the Quantity Theory. Such is the contradiction.

By questioning the reality of this contradiction, Archibald and Lipsey (1958/59) triggered a protracted controversy which spawned a large literature (for a useful overview see Vermaat 1971). We will indicate the sources of confusion which have plagued both sides of the controversy, insofar they touch on purely identification-theoretical matters. The sources of confusion are as follows:

1. As a portrayal of the *finec*, Patinkin's Walras' Law (equation 6.10, which is also Lange's) is ambiguous and defective, as was already pointed out in our discussion of Lange above.
2. As a portrayal of Say's Law, Patinkin's rendition,  $\Sigma M_s(t) = \Sigma M_d(t)$ , is flawed as well. Say's Law is not about the achievement of equilibrium in the market for stationary money, but about the achievement of equilibrium in the aggregate goods market ( $\Sigma PG_s(t) = \Sigma PG_d(t)$ ), i.e. macroeconomic equilibrium. Of course, Say's Law can also be written as  $\Sigma \triangle M_s(t-x, t) = \Sigma \triangle M_d(t)$ , which does display some similarity with  $\Sigma M_s(t) = \Sigma M_d(t)$  and which does imply the classical dichotomy, i.e. the money market not influencing the goods market. But, as mentioned in chapter 3 and repeated in our discussion of Lange, this similarity belies some fundamental differences and  $\Sigma \triangle M_s(t-x, t) = \Sigma \triangle M_d(t)$  can function as a *macec* only under fairly restrictive assumptions.
3. The quantity equation basically expresses (*ex post*) financial equilibrium and should, therefore, be seen as a *finec*. As such, the potential conflict is between the quantity equation and Walras' Law (both *finec*'s) and not between the quantity equation and Say's Law (a *finec* and a *macec* respectively). Hence Patinkin is not comparing apples with apples. Admittedly, the Cambridge version of the quantity equation, which both Patinkin (1965) and Archibald and Lipsey (1958/59) adopt, is about (stationary) money-market equilibrium and as such attempts to portray something akin to Patinkin's Say's Law. But then, the Cambridge equation is defective as a (stationary) money-market

equilibrium condition, as pointed out in chapter 5, and Say's Law should not be even regarded as a money-market equilibrium condition at all.

4. As was also indicated in chapter 5 during our discussion of the quantity equation, prices are not even determined via action-types as appearing in the *finec*, but by action-types as appearing in the overall goods-market equilibrium condition,  $\underline{P}_i \underline{G}_{d,i}(t) = P_i G_{s,i}(t)$ . The *finec* can only function as a list of action-types via which the level of aggregate effective demand ( $\Sigma \underline{P} \underline{G}_d$ ) can be influenced. Hence, only indirectly, via its influence on effective demand, is the *finec* of relevance to the explanation of prices.

All in all, the Patinkin Controversy (as Hahn 1960 called it) involves a comedy of errors. It is, therefore, not surprising that it proved so sterile and fruitless.

In concluding the issue, we may reiterate that Say's Law and the quantity equation, when correctly specified, are quite compatible. Macroeconomic equilibrium does not conflict with financial equilibrium, if only because they are about different things. Neither does macroeconomic equilibrium necessarily forbid interaction between the demand and supply of stationary money and goods. Of course, the alleged contradiction in classical theory would already disappear when the specific way in which Walrasian GE analysis determines relative prices, namely by letting them solve microeconomic equilibrium conditions, is jettisoned and when Walras' Law is prevented from rendering one such equilibrium condition superfluous. Hence, Lange (1942) and Patinkin (1965) have been concerned with a purely artificial theoretical dilemma specific to Walrasian theory. The whole issue seems a red herring. We may echo Clower and Leijonhufvud (1981a: 99) in their rather damning assessment of Lange (1942), which by implication applies to Patinkin (1965) as well: "So what remains .. when all is said and done? Our answer is, quite bluntly: nothing of value. Nonetheless, his criticisms of Classical economics are now part of the mythology of the subject."

Patinkin attached importance to the real-balance effect (RBE) as a link between the goods and the (stationary) money market (1965: 24, 162-195), which Say's Law allegedly forbade and the Cambridge equation fudged. It may be useful to point out briefly how the

RBE can be based on our *finec*, together with the reasons why it may not be such an effective a goods-market equilibrator. Expressing the *finec* in real terms by dividing both sides by the general price level  $P$  of moment  $t$ , we obtain:

$$\{\Sigma PG_s(t-x) + \Sigma \Delta M_s(t-x,t)\}/P = \Sigma G_d(t) + \Sigma \Delta M_d/P(t) \quad (6.11)$$

Provided the nominal supply of finance ( $\Sigma PG_s(t-x) + \Sigma M_s(t-x,t)$ ) can be taken as given by virtue of being a fixed endowment from the past and the demand for real balances ( $\Sigma M_d/P(t)$ ) is more or less stable, a causal relation between  $\Sigma F_s(t)/P$  and  $\Sigma G_d(t)$  ensues as a logical necessary.

But under a bank-money system these assumptions may be overly stylistic. Under such a system, the nominal supply of finance ( $\Sigma F_s(t)$ ) is not given and fixed, being partly determined by *present* money creation/destruction ( $\Sigma \Delta M_s(t)$ ). Accompanying variations in present money creation/destruction may then partly offset, or even override, any increase in real finance ( $\Sigma F_s(t)/P$ ) due to a drop in  $P$  (Carhill 1987). There is also no reason the real demand for stationary money ( $\Sigma \Delta M_d/P(t)$ ) should be sufficiently stable (Dow and Dow 1989). Finally, a drop in the general price level  $P$  in reaction to a situation of excess goods demand is likely to be sluggish at best, as will be further explained in chapter 7.

## 6.6 CLOWER

The essence of Clower's (1965) contribution is to attempt to interpret Keynesian unemployment in terms of GE theory. For this purpose, he assumes a two-sector economy, consisting of households and firms. Transcribed in our notation, his household budget constraint looks like this:

$$\Sigma WN_s(t) + \Sigma Tr^{f,h}(t) = \Sigma PC_d(t) \quad (6.12)$$

and his firm budget constraint like this:

$$\Sigma PC_s(t) = \Sigma WN_d(t) + \Sigma Tr^{f,h}(t) \quad (6.13)$$

When taken together and letting  $\Sigma Tr^{f,h}(t)$  cancel out, these equations yield as the economy-wide *finec*:

$$\Sigma WN_s(t) + \Sigma PC_s(t) = \Sigma PC_d(t) + \Sigma WN_d(t) \quad (6.14)$$

Given Clower's explicit espousal of momentary analysis (1965: 106n), we have denoted all his variables with reference to the present moment  $t^4$ .

On the basis of the above identification-theoretical structure, Clower (1965: 121-122) gives the following explanation for the persistence of involuntary unemployment. When the price mechanism fails to clear the labour market, realised household income in equation 6.14 falls short of planned household income,  $\Sigma WN_s(t) < \Sigma WN_s(t)$ . As a result, an  $F_s$ -constraint on planned demand for consumption goods emerges,  $\Sigma PC_d(t) < \Sigma PC_d(t)$ . The economy will remain stuck in this position of unemployment, because households lack the finance to make their planned demand effective. Firms will then be disinclined to employ these households in the production of that greater demand. The goods market will now be in equilibrium ( $\Sigma PC_d(t) = \Sigma PC_s(t)$ ) while the factor market remains in disequilibrium ( $\Sigma WN_d(t) < \Sigma WN_s(t)$ ). This situation yields "Clower's Inequality" (see Rhodes 1983, Rogers 1985b):

$$\Sigma PC_s(t) + \Sigma WN_s(t) \geq \Sigma PC_d(t) + \Sigma WN_d(t), \quad (6.15)$$

which Clower (1965:122) interprets as a failure of Walras' Law. Only when effective goods demand is realised at the level of planned goods demand ( $\Sigma PC_d(t) = \Sigma PC_d(t)$ ) will there be equality between total planned demand and supply and will Clower's Walras' Law hold.

Two main criticisms can be levelled at the identification-theoretical structure of Clower's argument.

Firstly, Clower's budget constraint can be criticised for ignoring  $\Sigma \Delta M_s$  and  $\Sigma \Delta M_d$ , which confirms Yeager's (1973:153) remarks that the "[d]emand for goods need not come solely out of currently earned incomes. Goods can be demanded even with money that has not recently (if ever) been received in exchange for goods but that, instead, has been activated out of relative idleness or has been newly created" (see also Edwards 1985). Because the absence of  $\Sigma \Delta M_s$  and  $\Sigma \Delta M_d$  rules out the possibility of a  $F_d$ -constraints on

---

4. Clower is, however, ambivalent on this score. A bit further on in his paper (1965: 116), we read of "intervals" to which variables apply, which is difficult to interpret except in the light of Clower's remarks to the effect that time dimensions do not matter: "No part of the present or subsequent argument is affected in any essential way if time is made discrete.." (1965: 106n). The difference between momentary and periodic analysis is indeed irrelevant if the analysis is purely identification theoretical, which Clower's is not.



spending, Clower's analysis immediately becomes incompatible with Keynes's, which attributes aggregate demand failure mainly to a  $F_d$ -constraints (increased liquidity preference). Davidson (1980: 294) appears to reject Clower's claim to represent Keynes on precisely on this ground.

Secondly, although Clower allows realised income to form an  $F_s$ -constraint on planned spending, this realised income still refers to goods supplies of the *current* moment/period. After all, realised income features in Clower's *finec*, not because current supply plans cannot realistically furnish the money to finance current demand plans, but because the price mechanism has failed to clear the labour market. In this way, Clower effectively treats the appearance of realised income in the budget constraint as a microeconomic *disequilibrium* phenomenon, whereas in reality it is the logical implication of monetary exchange in an uncertain world, irrespective of whether there is equilibrium or disequilibrium in individual markets. Hence Clower's analysis effectively treats Keynesian unemployment as a manifestation of microeconomic-real discoordination, whereas Keynes clearly meant it as an instance of macroeconomic-monetary discoordination. The impression of a macroeconomic approach is created merely by summing the countless individual markets into two aggregate markets, but the fundamentally *monetary* nature of macroeconomic discoordination is not done justice to, witness also the absence of  $\Sigma \Delta M_s$  and  $\Sigma \Delta M_d$  in the budget constraint.

Clower has furthermore confused his audience by using the term Walras' Law in a sense contrary to Lange (1942). While Lange (1942: 50) emphasises that microeconomic discoordination (the failure of equation 3.1) cannot upset Walras' Law, Clower explicitly maintains the contrary, for which he has been criticised by a variety of authors (e.g. Rhodes 1984, Rogers 1985b). However, in Clower's nomenclature, Walras' Law does not describe financial equilibrium at all, for which he introduces a different concept, namely Say's Principle. Say's Principle functions as his version of the *finec*, except that financial equilibrium is supposed to hold almost by definition ( $\Sigma F_s \equiv \Sigma F_d$ ). Clower (1965: 116, see also Clower and Leijonhufvud 1981a) bases the logical necessity of financial equilibrium on the so-called "rational planning postulate". According to this postulate agents only allocate

finance which they already have or simultaneously plan to acquire, which does not sound unreasonable at first inspection. Financial equilibrium is, however, not necessarily attained, because the *finec*'s time references ( $t-x$ ,  $t$ ,  $t+x$ , etc.) do not refer to the moment plans were *conceived* but to the moment plans were *intended to be executed*. Given that the spending plans of moment  $t$  may be conceived long before moment  $t$ , agents may have been mistaken about the available finance at  $t$ . That is why financial equilibrium need not hold and Say's Principle need not be valid. The necessity of financial equilibrium follows only if the moment (or period) of plan formation is the same as the moment (or period) of plan execution, as it is in general-equilibrium analysis which is Clower and Leijonhufvud's frame of reference. But in reality these moments are apart.

Given that Say's Principle is a *finec* and, as such, merely an alternative version of Lange's Walras' Law (Clower and Leijonhufvud 1981a: 97, Rogers 1985b: 121-122), we have to conclude that Clower regards Walras' Law as something different from a *finec*. But this is not quite the case. Clower sees Walras' Law as the necessary attainment of financial equilibrium, *insofar the planned amounts featuring therein are a function of prices only*, thereby implying what he calls a "unitary decision" hypothesis (1965: 72-73, 75). Hence, when the price mechanism works perfectly and all individual markets clear, Clower's Walras' Law holds and becomes equivalent to Say's Principle. But when the price system fails and trading at false prices occurs, realised amounts start appearing in the budget constraint, with the result that demand plans are a function of both prices *and* realised income, implying the "dual decision" hypothesis and the failure of his Walras' Law.

The oddity about the argument is this. On the one hand, the logic of Walras' Law is explained as if it were an aggregate microeconomic equilibrium condition, witness that it is "*the sum of all market excess demands*" (Clower 1965: 122) and that its attainment or failure is solely dependent upon whether prices reach their equilibrium levels or not. On the other hand, the *results* of microeconomic discoordination are illustrated as if Walras' Law were a *finec*/budget constraint; when microeconomic equilibrium is attained financial equilibrium is achieved too, and when it fails there are  $f$ -constraints on spending. In other words, the logic

of Walras' Law is given as microeconomic and real, while the results of its failure are given as financial and monetary - all with the aid of the same equation!

This inconsistency is another manifestation of the old misunderstanding, which regards barter as validating rather than obviating financial and macroeconomic equilibrium. Given the essential barter-logic of GE analysis, there is no reason to give any consideration to a *finec*/budget constraint at all; what it conveys is already contained within the *micec*, as shown in section 6.2 above. Without a *finec*/budget constraint, however, Clower (1965) could not have given the impression of dealing with a monetary economy in which Keynesian-style coordination failures are a possibility. Clower had to give Walras' Law some sort of financial-monetary gloss, so as to pretend explaining Keynesian unemployment. So in a sense Clower needed to create this false impression. If he had wanted to portray macroeconomic-monetary discoordination, he should have written Say's Principle as a full-blown *finec*, in which:

- (a) goods supply is written as a realised amount (i.e. as income), irrespective of the degree of microeconomic coordination achieved, and
- (b)  $\Sigma \Delta M_s$  and  $\Sigma \Delta M_d$  are not ignored.

It is interesting how in a subsequent treatment of the topic, Clower and Leijonhufvud (1981a) allowed for the possibility of  $\Sigma \Delta M_d$  appearing in Say's Principle. But their continued insistence that Say's Principle should contain only planned amounts spoils it all again. But then, if Clower would have admitted to the possibility of realised income featuring in Say's Principle, it would have removed the entire foundation from under his "double-decision hypothesis".

Rhodes (1984) and Rogers (1985b), because they fail to realise that Clower's Walras' Law is primarily a microeconomic equilibrium condition rather than a budget constraint, are not quite correct in their attack on Clower's refutation of Walras' Law. On its own (admittedly confusing) terms, Clower's logic seems impeccable. Suppose all markets are in equilibrium at the initial situation of moment t-x and unemployment arises at a subsequent moment t due to an increase in planned labour supply over an unchanged level of labour

demand. In this scenario, only planned labour supply of moment  $t$  increases beyond its  $t-x$  level, while planned labour demand, household income, effective goods demand and planned goods supply of moment  $t$  all remain unchanged at their  $t-x$  equilibrium levels. The goods market is then in equilibrium ( $\Sigma PC_s(t) = \Sigma PC_d(t)$ ) while the labour market is in excess supply ( $\Sigma WN_s(t) > \Sigma WN_d(t)$ )<sup>5</sup>. Understood as an aggregation of these equilibrium conditions, Clower's Walras' Law will then fail:

$$\Sigma PC_s(t) + \Sigma WN_s(t) \geq \Sigma PC_d(t) + \Sigma WN_d(t) \quad (6.15)$$

By contrast, Clower's overall budget constraint (Say's Principle) can remain intact, as Clower (1965: 119) says it would. For households the budget constraint is  $\Sigma WN_s(t) = \Sigma PC_d(t)$ , with  $\Sigma WN_s(t)$  indicating effective labour supply constrained by an insufficient labour demand,  $\Sigma WN_d(t)$ . And for firms the budget constraint is  $\Sigma PC_s(t) = \Sigma WN_d(t)$ . Aggregating these sectoral budget constraints to obtain Walras' Law in Lange's sense, we get:

$$\Sigma PC_s(t) + \Sigma WN_s(t) = \Sigma PC_d(t) + \Sigma WN_d(t), \quad (6.16)$$

which holds. The same result can be shown to follow if unemployment occurred due to a fall in labour demand rather than a rise in labour supply plans.

The difference between equations 6.15 and 6.16 is that in the latter  $\Sigma WN_s(t)$  is constrained while in the former it is not, the reason being that  $\Sigma WN_s$  as a supply of finance has to be realisable (the finance must be there), while  $\Sigma WN_s$  as a supply of goods in a microeconomic equilibrium condition can feature in a purely planned form irrespective of realisation. Indeed, Rhodes (1984: 119-121) and Rogers (1985b: 117-118) identify as the main weakness of Clower's Inequality precisely the fact that it ignores the constrainedness of effective labour supply ( $\Sigma WN_s(t)$ ) in the budget constraint, which would have restored the validity of Walras' Law. This is quite true but misses the point: Clower's Walras' Law is *not* really an aggregate budget constraint. Rogers' and Rhodes' confusion is, of course, quite understandable given Clower's ambiguous treatment of Walras' Law, explaining its logic as

---

5. Rogers (1985b: 117) fails to realise that the goods market is in equilibrium and that Clower's Inequality emerges because of excess supply in the labour market rather than excess demand in the goods market.

if it were a microeconomic equilibrium condition, but portraying the consequences of its satisfaction or failure as if it were a budget constraint.

In spite of all these shortcomings, Clower's (1965) contribution remains significant in that it brings out the idea that, in a monetary economy, demand is effective only when it is both planned and financeable rather than merely planned (Clower 1965: 119, 1967: 209).

Clower's (1965) paper spawned a research tradition, which has become more widely known as "non-Walrasian", "disequilibrium" or "neo-Keynesian" economics (for overviews see Benassy 1989, 1990). The distinguishing feature of this tradition is that agents' *ex ante* plans need no longer be harmonised as they leave the planning phase and enter the process of exchange. Disequilibrium analysis then models how disequilibrium exchanges modify the *ex ante* plans through the quantity constraints which accompany micro- and macroeconomic discoordination (the price auctioneer is replaced by the quantity auctioneer, Grandmont 1977: 172, 175). But this strategy still does no justice to money as a medium of exchange, because plans are still formed outside of the market place and prior to the process of monetary exchange; while plans may no longer be pre-harmonised, they are still pre-existing. The market is still not modelled as a place where agents form their plans (on the basis of not only prices) *and* execute them. But then, it is impossible to model the free interaction between agents as a concrete, determinate process. *Any* law-based explanation must somehow side-step modelling the market process, as was already mentioned in section 6.2 above.

However defective, disequilibrium economics is at least more tenable than the form of GE modelling which has dominated academic macroeconomics over the last two decades: New Classical macroeconomics. This school of thought simply ignores all forms of disequilibrium, whether microeconomic or macroeconomic, and treats all unemployment as voluntary. Variations in employment and economic activity are then attributed solely to variations in productivity (technology) and propensity to work (Mankiw 1990: 1653). While this kind of theorising may have some forecasting power, it has little explanatory relevance. It boils down to a non-theory of coordination problems. The idea of all unemployment being

voluntary flies in the face of a wealth of historical evidence about recessions and depressions: that most people are out of work *against their will*. Hahn (1985: 105) rightly, but somewhat harshly, comments about theorists in this tradition: "I confess that I sometimes hope that they may come to learn by personal experience what the notion [of involuntary unemployment] is about."

## CONCLUSION

This chapter investigated the ability of Walrasian theory to analyse monetary-macroeconomic issues. The choice-theoretical side of GE analysis has no place for money, because plans are coordinated prior to going to market. Its identification-theoretical side, which is contained in Walras' Law (the budget constraint), turned out to be equally unable to catch the essence of monetary exchange. Either a money market is left out of Walras' Law, or money is treated as any other good, whose supply and demand is simply added as an *n*th market. Walrasian analysis cannot take account of money as both a medium of exchange and as a store of value.

Given the faulty and ambiguous ways in which both financial equilibrium (Walras' Law or Say's Identity) and macroeconomic equilibrium (Say's Law) are defined in GE analysis, it is not surprising that a large amount of controversy surrounding the nature and meaning of these concepts has sprung up. A precise definition of both financial equilibrium and macroeconomic equilibrium (as given by our *finec* and *macec*) helps to resolve such controversy.

This chapter was mainly concerned with the equilibrium conditions of GE analysis. Because equilibrium conditions have nothing to do with behavioural laws, it was about macroeconomics without laws. To the extent that this chapter briefly digressed into the behavioural side of GE analysis, the destructive influence of law-based explanation was pointed out. When the market is modelled as a determinate process ruled by laws, money becomes superfluous.

## Chapter Seven:

**CHOICE THEORY ABOUT MACROECONOMIC COORDINATION I:  
PRICES AND ENTREPRENEURSHIP**

*The central issue in macroeconomic theory is - once again - the extent to which the economy .. may properly be regarded as a self-regulating system. .. How well or badly do its "automatic" mechanisms perform?*  
Leijonhufvud (1981c: 104)

### 7.1 INTRODUCTION

With chapters 3 to 6, the identification-theoretical side of our analysis of market coordination has been completed. We will now turn to the behavioural or choice-theoretical side of things, meaning the relevant equilibrating and disequilibrating tendencies which play a role in the market process. Because tendencies are not laws, this chapter too is about macroeconomics without laws.

Three tendencies are identified. The first is connected to the role of entrepreneurship and is mainly, though not exclusively and essentially, equilibrium searching. The second is the price-adaptation mechanism, which is also predominantly, though not solely and necessarily, equilibrating. The third is driven by uncertain change and is definitely disequilibrating. No separate section will, however, be devoted to the role of uncertain change, as it will adequately be covered under the heading of entrepreneurship and the price-adaptation mechanism.

As mentioned in chapter 2, institutions provide the main explanation for tendencies. In that regard, a distinction between primary and secondary institutions can be made. Primary institutions will be the ones which directly determine the relevance and force of the three tendencies mentioned above. Secondary institutions, by contrast, will determine the presence and strength of the primary institutions and, as such, indirectly influence the force of our tendencies. While this chapter focuses on primary institutions, the next chapter will be devoted to a discussion of the role of secondary institutions. It will concentrate on what are considered to be the two of the most important secondary institutions: bank money and the

corporate form of private business. In order to bring out the difference which bank money makes to the relative strength of the equilibrating and disequilibrating tendencies in the market process, this chapter will discuss the primary institutions under the assumption of a commodity-money system.

The roles of entrepreneurship and the price-adaptation mechanism in the achievement or failure of market coordination cannot be discussed before an understanding is gained of the informational role of prices. Because neoclassical price theory distorts and ignores much of what is important about the informational role of prices, it has been found necessary to expound, in the barest of outlines, an alternative price theory. We start with a discussion of the "individual experiment" side of such an alternative price theory (c.f. Patinkin 1965): the derivation of market demand and supply schedules. The main difference with their neoclassical counterparts will be indicated as well. The insights gained will serve as an input into our analysis of the tendencies connected to entrepreneurship and the price-adaptation mechanism, which will subsequently be discussed. Such will then be the "market experiment" side of our theory.

## 7.2 AN ALTERNATIVE DEMAND AND SUPPLY THEORY

### 7.2.1 Demander-list prices and the market demand schedule

The market demand schedule describes the well-known relationship between the price of good  $i$  ( $P_i$ ) and the quantity demanded in the market for  $i$  ( $G_{d,i}$ ). A treatment of its theoretical underpinnings must begin with an explanation of individual demand.

As in chapter 1, we will use the label *demander-list price* for the value expressed as an amount of money, which an individual demander puts on one unit of  $i$ ; in symbols  $P_{d,i}$ . The label *list price* is used to distinguish it from the price at which good  $i$  actually changes hands, which is designated as *transaction price*, in symbols  $P_i$  (c.f. Eichner 1987: 1558). As follows from the economic motive, an individual demander engages in trade only when he regards the value of good  $i$  more highly than the money spent to acquire  $i$ . Hence, when  $P_{d,i} > P_i$  for our individual demander at any moment  $t$ , there is an opportunity to increase his



profit or utility and he will start to exercise demand. Conversely, if  $P_{d,i} < P_i$  at any moment  $t$ , this particular agent will clearly lose interest in acquiring  $i$ .  $P_{d,i}$  thus functions as a maximum cut-off price, above which  $P_i$  cannot go without this particular demander withdrawing himself from the market.

Let us probe more deeply into what lies behind our demander-list price. A moment's reflection reveals that  $P_{d,i}$  is, in fact, a ratio of two subjective valuations, namely concerning the utility which a given demander assigns to a unit of good  $i$  ( $U_{d,i}$ ) and the utility which this demander gives to a unit of money spent to procure  $i$  ( $U_{d,m}$ ), such that  $P_{d,i} = U_{d,i}/U_{d,m}$ . While  $U_{d,i}$  is, of course, purely subjective and as such unquantifiable, its subjective dimension can be submerged by expressing it as a multiple of the equally subjective utility of having command over a unit of money ( $U_{d,m}$ ). This is effectively what happens whenever a monetary value is put on a good. For example, when my friend tells me that a mountain bike is worth R1000 to her "and not a cent more", what she actually means to say is that, in her estimation, the utility of the bike is a thousand times greater than the utility of one Rand spent to obtain it, i.e.  $P_{d,i} = U_{d,i}/U_{d,m}$ . Hence, by expressing value as a dimensionless ratio of *two* utilities (that of the good traded and that of a unit of money spent to acquire it), it can be objectified without denying the subjectivity of its constituent utilities and without acceding to any search for an objective standard of value, as was the frustrated obsession of the classical writers. The resultant objective ratio has the added advantage of being expressed as an amount of money directly comparable to the transaction price ( $P_i$ ), which obviously refers to an amount of money as well.

Agents consider buying good  $i$ , not only in single units but in batches of several units as well. The case of batch-buying does not complicate our analysis, as agents will automatically and almost instinctively calculate the average  $P_{d,i}$  per unit and compare that with the transaction price,  $P_i$ . In other words, when an agent considers to acquire several units in one go, he does not weigh the desirability of each separate unit (i.e. he does not consistently calculate "at the margin"), but will look at the value of the batch globally, from which an average demander-list price will spontaneously be calculated. Insofar agents do

separately consider the value of each unit in a batch, they will do so only when they regard the buying of these goods as separate transactions.

The important result of the above deliberations is that, at the individual level, there exists no demand *schedule* but only a demand *point*: the (average)  $P_{d,i}$ , which functions as the maximum cut-off price above which the reigning  $P_i$  cannot rise without the individual demander concerned leaving the market. A demand *schedule* emerges only at the market level, where the valuations of many potential demanders with many different  $P_{d,i}$ 's come together.

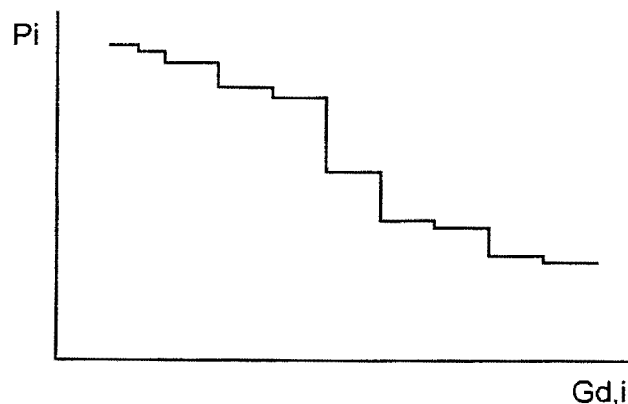
Bearing in mind that  $P_{d,i} = U_{d,i}/U_{d,m}$ , two clusters of reasons can be given for the fact that potential demanders are likely to assign different demander-list prices to good  $i$ . Firstly, the utility of good  $i$  ( $U_{d,i}$ ) will differ because (a) tastes and circumstances differ and (b) the goods which qualify to belong to market  $i$  are never completely homogeneous. Secondly, the utility of money ( $U_{d,m}$ ) will be different in the eyes of each demander because (a) the size of his money-wealth is not the same and (b) his valuation of the alternative allocations of his money-wealth vary. A great deal of controversy, of course, exists over what exactly constitutes and determines the utility of money ( $U_{d,m}$ ), a discussion of which unfortunately falls outside the scope of our analysis here. But it is via the utility of money that monetary-macroeconomic considerations can be integrated into a microeconomic theory about individual markets. And it is because neoclassical theory ignores the utility of money in determining the shape of its demand curve, that it has forced an artificial dichotomy between monetary and real analysis as well as between micro- and macroeconomics.

The groundwork for a behavioural explanation (a choice theory) of market demand ( $G_{d,i}$ ) has now been laid - a groundwork which largely took the form of identification theory in that it established the action structure (or, to be more precise, valuation structure) of market demand. Given the operation of the economic motive and a large variety of  $P_{d,i}$ 's on the part of the various demanders, an increase (decrease) in  $P_i$  tends to cause some demanders to leave (enter) the market, because  $P_i$  is likely to rise above (fall below) the

particular  $P_{d,i}$  of at least some demanders. Hence the negative causal relation between  $P_i$  and  $G_{d,i}$ <sup>1</sup>.

If all the various  $P_{d,i}$ 's are ordered from their highest to their lowest levels and the various quantities involved are horizontally added, a market demand schedule emerges, which is similar to a traditional demand curve with price measured along the vertical and quantity along the horizontal axis:

**FIGURE 7.1: Demand Schedule of good i**



Horizontal sections of the schedule indicate batch-buying or various demanders entertaining exactly the same demander-list price, which causes quantity demanded to make a jump when the transaction price drops below the (average)  $P_{d,i}$  of the buyers concerned.

### 7.2.2 Supplier-list prices and the market supply schedule

Having explained the market demand schedule in some detail, we can be more brief about the theoretical underpinnings of the market supply schedule which establishes a positive causal relation between  $P_i$  and  $G_{s,i}$ .

The *supplier-list price* is the money value an individual supplier assigns to a certain good and similarly refers to a ratio of two utilities:  $P_{s,i} = U_{s,i}/U_{s,m}$ .  $U_{s,i}$  indicates the utility of good  $i$  in the eyes of the supplier. As such, it measures the minimum reward deemed appropriate in compensation for (a) entrepreneurial effort exercised and (b) money

---

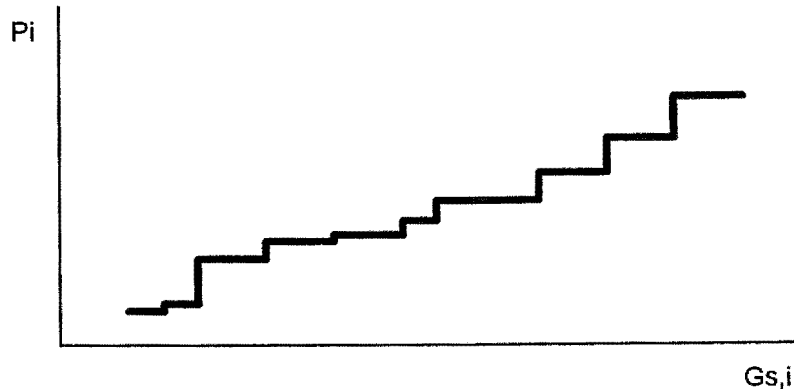
1. As explained in chapter 2, the employment of the economic motive, understood as motivation to exploit perceived opportunities to increase profit or utility, does not necessarily imply neoclassical maximisation or the use of strict behavioural laws.

spent in making one unit of  $i$  available. In turn,  $U_{s,m}$  refers to the utility of one unit of money received in payment for  $i$ ; it is determined in the same way as the utility of money in the eyes of demanders ( $U_{d,m}$ ). So, whereas  $P_{d,i}$  gives us the maximum cut-off price a demander is prepared to pay for good  $i$ ,  $P_{s,i}$  indicates the minimum cut-off price a supplier is prepared to accept in exchange for good  $i$ , below which the exchange price ( $P_i$ ) cannot fall without this particular supplier withdrawing himself from the market<sup>2</sup>.

The reason for the existence of an array of different  $P_{s,i}$ 's is equivalent to the case of the demander-list price, except that it is now related to the differences in cost structures and entrepreneurial rewards deemed appropriate by the various suppliers. Given such an array of different  $P_{s,i}$ 's in the market as a whole, a fall (rise) in  $P_i$  is likely to cause at least some suppliers to withdraw their supply form (enter into) the market for  $i$ , as  $P_i$  drops below (rises above) their specific valuation of  $P_{s,i}$ . Given the operation of the economic motive, this will give us the rationale for a positive causal relation between  $P_i$  and  $G_{s,i}$  in a fashion similar to a traditional supply schedule.

Figure 7.2 pictures such a supply schedule.

**FIGURE 7.2: Supply Schedule of good  $i$**



The reason for the horizontal sections of the market supply curve needs further explanation.

A time lag exists between the production decision and the selling decision, which we will call the "production lag". As White (1976: 4) notes: "The producer as pure

---

2. It is noteworthy that Keynes (1936: 8) designates the wage rate indicated by the (neo-) classical labour-supply schedule as a "minimum" reward for labour supplied, similarly suggesting that supply schedules measure minimum cut-off prices.

entrepreneur faces the ineluctable fact that time must elapse between the committing of resources to production and the sale of the end product" (see also Keynes 1936: 46). This time lag requires that a distinction be made between *planned production* and *planned supply* of moment  $t$ . As the name suggests, the former indicates how much the supplier plans to produce at moment  $t$  and the latter how much he plans to sell at moment  $t$ , whereby planned sales are the fruit of planned production of some moment  $t-x$  in the past. When, for example, the expectations of moment  $t-x$  proved overoptimistic at moment  $t$  and sales significantly less than anticipated, there will have to be consequences for the price the producer is prepared to accept for good  $i$  at moment  $t$ , i.e. for the planned supply of that moment.

Prices are, however, not necessarily nor immediately changed when sales expectations from the past prove wrong. The economic function of variable stock holding and capacity utilisation (in addition to variable stationary-money holding - see chapter 8) is to cushion smaller expectational errors without the necessity of altering prices (Birch, Rabin and Yeager 1982: 214). The horizontal sections in the supply schedule are indicative of the maximum the supplier is prepared to let actual sales deviate from expected sales without changing his list price.

This cushioning obviously has a limit. When expectational errors prove too severe or too sustained, the entrepreneur will decide to revise his expectations about future sales. In the light of these revised expectations, he may mark down the utility of good  $i$  ( $U_{s,i}$ ) and as such his reward for the effort and money expended in the process of producing  $i$ . In addition to marking down the utility of good  $i$  ( $U_{s,i}$ ), an entrepreneur may also mark up his utility of money ( $U_{s,m}$ ), in view of the increased shortage of money caused by unexpectedly low sales. Given that  $P_{s,i} = U_{s,i}/U_{s,m}$ , both these revaluations depress the supplier-list price, which may go so far that the entrepreneur may effectively be willing to sell at a loss. In the opposite case, when a supplier sells much more than originally envisaged at  $t-x$ , he may adapt upwards his desired rewards for the entrepreneurial effort invested to produce  $i$  (the pure profit), increasing his supplier-list price at moment  $t$  correspondingly.

### 7.2.3 Expectations and the production and supply schedules

Corresponding to the distinction between planned production and planned supply, two supply schedules must be distinguished: the production schedule and the supply schedule. The supply schedule of moment  $t$  is the normal market supply schedule as already discussed. It is based on (a) the planned production of some moment  $t-x$  in the past and (b) the actual sales experience of the intervening period between  $t-x$  and  $t$ . By contrast, the production schedule of moment  $t$  records the production plans of that moment, which are the supply plans for some moment  $t+x$  in the future. It is based purely on moment  $t$ 's expectations, which have not yet been tested by any future reality (like Keynes's Z function, 1936: ch 3). For the list prices making up the production schedule, the notation  $pP_{s,i}$  will be used, while the list prices making up the supply schedule will continue to be written as  $P_{s,i}$ .

The uncertainty of expectations which underlie  $pP_{s,i}$  is obviously greater for producers of intermediate goods (raw material, components, semi-finished goods and investment goods) than for producers of consumption goods. The latter need only forecast consumer demand for their goods in the immediate future. The former, however, must forecast the demand of other intermediate-goods producers or consumption-good producers, whose sales must in turn be forecasted and so on, which pushes the events to be forecasted further into the future. After all, the value of intermediate goods ultimately depend on the expected sales of all those consumption goods towards the production of which the intermediate goods have contributed (Menger [1871] 1982: 149ff). And since the sale of these consumption goods lies further into the future, the  $pP_{s,i}$  of an intermediate good is obviously more uncertain than that of a consumption good (Keynes 1937c: 213). This applies especially to those intermediate goods which are investment goods, because the value of their services must, in addition to all this, be forecasted over its expected life span (c.f. the long-term expectations of Keynes 1936: 47).

Just as the production schedule ( $pP_{s,i}$ ), the demand schedule ( $P_{d,i}$ ) is also based on the expectations of moment  $t$ , which have not yet been tested by reality. The calculation of  $P_{d,i}$

involves, amongst others, putting a figure to good  $i$ 's utility. For the same reasons as set out in the previous paragraph, the uncertainty involved in these expectations is greater for buyers of intermediate goods (producers) than for buyers of consumption goods (consumers), who merely need to forecast their own satisfaction with the good concerned.

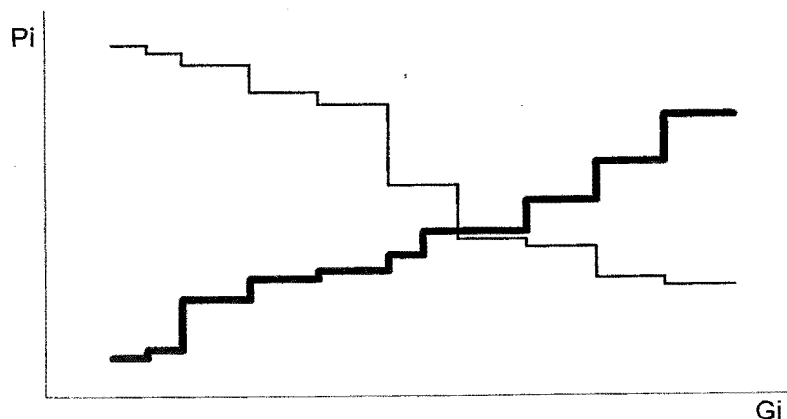
We can now conclude that the state of expectations on the part of all actual and potential market participants at moment  $t$  is captured, *not* by the demand and supply schedules which determine the market price, but by the demand and the production schedules. We will call the complex of expectations registered by these latter schedules, the "expectations map" of market  $i$  at moment  $t$ . By contrast, the "valuation map" of market  $i$  at moment  $t$  will refer to all the valuations captured by the demand and supply schedules. Obviously, the expectations and valuation maps overlap when

1. sales experience for the period between  $t-x$  and  $t$  has been as expected at  $t-x$ , and
  2. expectations for future sales (i.e. beyond moment  $t$ ) have not changed between  $t-x$  and  $t$
- since, under these circumstances, the production and supply schedules become indistinguishable.

#### 7.2.4 The equilibrium price and the ideal price

If the above assumptions 1 and 2 are taken for granted, both the expectations and the valuation map are represented by the market demand and supply schedules as, for example, in Figure 7.3:

**FIGURE 7.3: The market demand and supply schedule of good  $i$**



If we furthermore assume that the transaction price settles at the point of intersection of the demand and supply schedules (how it may get there will be discussed below), the expectations map of moment  $t$ , and all the knowledge that goes into forming these expectations, will be summarised and captured by the reigning transaction price. The market for  $i$  will then have settled on something like Keynes's (1936: 48-49) "long-period employment" trajectory. We will call this the "equilibrium price".

Note that when the transaction price is at its equilibrium level as in Figure 7.3, all the demanders whose  $P_{d,i}$ 's lie above that price and all the suppliers whose  $P_{s,i}$ 's lie below it are *in the market* - all other demanders and suppliers lie dormant, waiting in the wings for when a change in transactions price justifies their entrance. The equilibrium transaction price ( $P_i$ ) must then lie somewhere in between the  $P_{d,i}$ 's and  $P_{s,i}$ 's of the active market participants. Of course, there will never be a uniform transaction price for  $i$ , but the better organised the market is (i.e. the better informed about prices, qualities and uses agents are) and the stronger the competition between demanders and suppliers (free entry and exit with low barriers), the smaller the discrepancy between  $P_i$  and  $P_{d,i}$  and  $P_{s,i}$  respectively, the more closely  $P_i$  converges upon a value which varies only according to variation in the nature and quality of good  $i$  and differences in the tastes of consumers.

Hence, in a well-organised competitive market where recent sales expectations were more or less correct, the equilibrium price ( $P_i$ ) will get tolerably close to both the  $P_{d,i}$  (indicating the utility of  $i$ ) and the  $P_{s,i}$  (measuring the cost of producing  $i$ ). The classical notion of prices varying with cost and the neoclassical-marginalist idea of prices varying with utility will then be approximately equivalent. The equilibrium price which approximates both the  $P_{d,i}$  and the  $P_{s,i}$  of most actual and potential market participants will be called the "ideal price".

### 7.2.5 A brief comparison with neoclassical demand and supply theory

At this juncture, it may be instructive briefly to compare our demand and supply theory with that of standard neoclassical theory, so as to point out some of the main differences.



1. *Marginal analysis.* While the neoclassical demand and supply schedules similarly embody a range of demander- and supplier-list prices, that range is attributed only to decreasing marginal utility or productivity, i.e. variation in quantities already consumed or produced. Variation in  $P_{d,i}$  and  $P_{s,i}$  caused by differences in taste, circumstances and productive efficiency of the various demanders and suppliers involved is thus ignored. While neoclassical theory does not always explicitly abstract from such differences by assuming a representative, identical consumer or firm, variation in  $P_{d,i}$  and  $P_{s,i}$  is never attributed to any other factor than diminishing marginal utility or productivity *on the part of all agents*. The reason is clear: neoclassical theory is in need of marginal amounts for the establishment of maximising positions according to the differential calculus. Indeed, while points on neoclassical demand or supply schedules denote maximising positions, points on our schedules are cut-off list prices, beyond or below which the transaction price cannot go without the deal losing its attraction to some demander or supplier respectively.

Also, because neoclassical theory is period-related, it maximises utility or profit over a period, with the result that the merit of any given consumptive or productive act is determined by calculating its effect, at the margin, on total profit and utility over that period. However, because our analysis is momentary, agents can consider each consumptive or productive act on its own merit (as obviously happens in the real world too), not necessarily having to weigh its utility or profit in the light of its marginal influence on total utility or cost over a period - which is, of course, not to say that previous experience or existing stocks cannot influence present valuations.

2. *Utility as a measurable quantity.* In neoclassical theory, the demander-list price reflects an absolute amount of utility ( $P_{d,i}$  varies with  $U_{d,i}$ ), while our demander-list price measures a *ratio* of utilities, i.e. of good  $i$  and of the money spent to obtain it ( $P_{d,i} = U_{d,i}/U_{d,m}$ ). In the same way, the neoclassical supplier-list price reflects an absolute amount of money spent in production of good  $i$ , whereas our supplier-list price indicates a *ratio* of utilities, i.e. of the money plus effort spent to produce good  $i$  and of the money received in exchange for  $i$

$(P_{s,i} = U_{s,i}/U_{s,m})^3$ . In that way, our theory avoids the insolvable neoclassical conundrums of having to quantify utility and objectify cost (see Buchanan 1969). In addition, by ignoring the influence of the utility of money ( $U_{d,m}$  and  $U_{s,m}$ ) on its demand and supply schedules, neoclassical theory has lost its capacity to explain nominal prices and is forced to ignore monetary factors. An artificial gap between "real" and "nominal" analysis as well as between micro- and macroeconomics is thereby created. Patinkin's (1965) solution, which is to include real balances as an co-determinant of the demand for goods, only partially solves that problem. While it allows for monetary factors (real balances) to influence the shape of the demand curve, that curve still measures  $U_{d,i}$  rather than  $U_{d,i}/U_{d,m}$  and still determines quantity demanded as a function of real rather than nominal prices.

3. *Static analysis.* The valuation and expectations maps of neoclassical theory remain static for its assumed period, while our valuation and expectations maps are momentary and, therefore, continually changing: agents leave or enter the group of potentially interested market participants on an on-going basis and they continuously alter their valuation of good  $i$  in the light of changed expectations as caused by changed tastes, changed input prices, changed outlook on the economy as a whole, or the discovery of new technologies, new raw material reserves, etc. Neoclassical theory is obviously forced to disregard the moment-by-moment variability of demander and supplier valuations and expectations, because of its desire to establish concrete and determinate equilibrium values for quantity demanded and supplied (as well as for price).

In line with its assumption of static valuation and expectations maps, neoclassical supply theory has to overlook the difference between planned production and planned supply, thereby assuming perfect knowledge of future market conditions at the moment of undertaking production (c.f. Richardson 1956: 115ff, 1959: 229). Moreover, by treating

---

3. In neoclassical theory, consumer equilibrium in a two-good economy ( $i$  and  $j$ ) is characterised by  $MU_i/P_i = MU_j/P_j$ , with  $MU$  indicating marginal utility and  $P$  price. Because  $MU_j$  and  $P_j$  are taken to be exogenous factors and, hence, assumed constant,  $P_i$  measures only  $MU_i$ , which is an absolute amount of (marginal) utility. Therefore, if neoclassical demand curves are meant to designate utility-maximising positions, they cannot but use cardinal utility, in spite of ranking its indifference curves ordinally. Producer equilibrium is achieved when  $MC = P_i$  (assuming perfect competition), so that again price reflects an absolute amount of (marginal) cost.

planned production as planned supply, neoclassical theory is forced to disregard the price stickiness inherent in the planned supply schedule and to imply far greater price flexibility than what is useful and necessary in practice. The possible destabilising effects of too great a price flexibility is thus passed over (c.f. Davidson 1974, De Long and Summers 1986, Caskey and Fazzari 1992, Tobin 1993).

4. *Patterning abstraction.* The use of patterning abstraction implies that theory is relieved from having to specify the valuation and expectations maps; our drawing of a demand and supply schedule with a particular form and shape (Figures 7.1-7.3) were, therefore, given only for the sake of illustration. The theoretical non-specification of the valuation and expectations maps is also inspired by the sheer impossibility of doing so. Bear in mind that any particular  $P_{d,i}$ ,  $P_{s,i}$  or  $pP_{s,i}$  is determined by the subjective assessment of circumstances known only to the individual demander and supplier himself and the subjective valuations and expectations based on them. By contrast, while not putting actual figures to the parameters of its demand and supply schedules, neoclassical theory nonetheless suggests that such parameters are fully specifiable *in principle* as well as "given" at some determinate level. It is thus implied that the whole complex of valuations and expectations underlying the demand and supply curves is objectively knowable "by a single mind", which it is clearly not.

This is obviously the crux of Hayek's (1937, 1945) criticism of traditional price and market theory (see Snippe 1987a as well as Hoogduin and Snippe 1987, on the role of patterning abstraction in this regard): by regarding the parameters of the demand and supply functions as given, neoclassical theory assumes that its agents have already solved the very problem real-life agents still need to solve if they wish to realise their plans. In this way, neoclassical theory has fundamentally negated the role of entrepreneurship in market coordination, which to an important degree consists of the collection and interpretation of information, with the aim of arriving at valuations and expectations of increasing quality and reliability, as we will see shortly.

Also, by taking the parameters of its demand and supply schedules as given, neoclassical theory is effectively confusing the knowledge of the model-builder with the

knowledge of the agents who people the model, which has led to a great deal of ambiguity in the interpretation of its theoretical conclusions (Richardson 1956: 117, Torr 1988: 62ff).

### **7.3 THE ROLE OF ENTREPRENEURSHIP IN MARKET COORDINATION**

#### **7.3.1 Entrepreneurship, market information and expectations**

For the purpose of our analysis, entrepreneurship will be defined as the ability to procure and combine productive inputs in such a way that the resultant outputs can be sold at a profit. Put differently, entrepreneurship consists of the ability to discover or create profit opportunities as well as the ability to convert these opportunities into the reality of actual profit (c.f. Kirzner 1982). Information which is, directly or indirectly, useful in forming expectations about future profit opportunities will be called *market information*.

Existing transaction prices (market prices) can already contain a degree of market information, an insight popularised by Hayek (1945). Knowledge of present transaction prices suggests availability and sellability of the good concerned at that price. But knowledge about current prices clearly does not solve all the informational problems of market participants. There are a number of reasons for this. Firstly, prices are not necessarily representative of all the knowledge, which went into the expectations as contained in the demand and supply schedules. They do so only if they are at their equilibrium and ideal levels (as defined above). Secondly, the expectations as contained in the demand and supply schedules do not necessarily include all opportunities for profit or utility increases. If entrepreneurship is less than perfectly alert, many such opportunities will go unnoticed. The mere knowledge of price will then clearly be insufficient to unearth gainful opportunities - in fact, prices presuppose rather than reveal such knowledge. Lastly and most importantly, expectations about the future gains in utility or profit may simply be erroneous.

This means that entrepreneurs not only watch past and current prices for their ability to shape future prices and sales volumes, but also attempt to find out about the underlying non-price factors which may potentially impact on future market conditions, such as broader

technological, social and political developments. Such "going behind prices" conflicts with what Hayek (1945) appears to regard as the essential role of prices, namely that of saving market participants the trouble of having to research the underlying reasons for price changes. Hayek's vision about the informational role of prices seems, therefore, mistaken. Curiously enough, he was well aware of the incompleteness of price information (1937: 51).

Even if they do not capture all relevant market information, current and past prices still play an important informational role. Firstly, because changes are normally gradual, there is scope for extrapolating past trends into the future. That is why businesses often keep records of prices and sales volumes, with respect to both their own sales and the sales of the market as a whole (Menger [1871] 1982: 92-93, Keynes 1936: 50-51). But it hardly needs stressing that the past is never a perfect guide to the future, if only because it cannot reveal anything about the profitability of *new* products about which the market has obviously not given us any verdict yet.

Secondly and more importantly, if we assume that prices are more or less at their equilibrium and ideal levels, their informational role lies in their ability to reveal the *present, imperfect* state of entrepreneurial alertness, drive, knowledge, forecasting skills and organisational talent. As such, current prices are an essential input into the calculations of entrepreneurs who wish to evaluate the profitability of *new* expectations based on *new* information as well as the profitability of *new* techniques, *new* drive and *new* organisational forms. After all, and this is the important point, the profitability of the new depends on its relative superiority over the old. Kirzner (1984: 200) captures the idea well: "Disequilibrium prices [in the sense of being based on imperfect expectations] can, if at all, be described as 'coordinating' only in the sense that they reveal to alert market participants, how *altered* decisions on their part .. may be wiser for the future" (see also Kirzner 1997). This underlines once more how neoclassical theory, by assuming *perfect* knowledge and expectations, has effectively disqualified itself from saying anything useful about the informational role of prices, which lies precisely in informing agents about the present, always *imperfect* state of knowledge, alertness and expectations.

The types of knowledge which go into the formation of entrepreneurial expectations can be divided up as follows:

1. knowledge of the *systematic* aspects of the environment (what Hayek 1945: 80 calls "scientific knowledge"), which includes
  - a. all relevant behavioural tendencies as derived from all relevant institutions (whether economic, socio-cultural or legal), enabling the entrepreneur to form patterned visions of his socio-economic environment, albeit fragmented due to the necessity of isolated abstraction as explained in chapter 2,
  - b. all relevant physical laws on the basis of which certain aspects of the physical environment, where applicable, can be forecasted.
2. knowledge of the *unsystematic* aspects of the entrepreneur's specific time-place environment, such as the particularities of the relevant people as well as the specifics of the political, socio-cultural and natural circumstances.

Chapter 2 emphasised how the market process is a product of the unsystematic interaction of a variety of context-shaped tendencies, with the result that its outcome is subject to a limitless number of chance occurrences. Moreover, event-shaped tendencies are set in motion by specific events, which may be unsystematic and therefore unforecastable. For these reasons, it is impossible rationally to calculate the future with the aid of one's systematic knowledge as mentioned under 1. The quality of forecasting is also the product of one's ability to use the unsystematic knowledge mentioned under 2 to refine his view of the future, which is at least as much a matter of art as it is of science, at least as much imagination, intuition and creativity as it is rational calculation (Laosby 1992: 145) - even if an increased thoroughness of one's knowledge mentioned under 1 and 2 can always enhance the rational-calculative element in forecasting. Therefore, the success of entrepreneurial planning remains precarious, especially the further into the future the expectations go, which led Keynes (1936: 161-162) to describe the pursuit of profit opportunities based on such expectations, somewhat derogatively, as "animal spirits".

### 7.3.2 Decentralised entrepreneurial planning and the profit motive

The fact that price information cannot provide sufficient market information is more suited to Hayek's own (1937, 1945) argument about the relative superiority of decentralised entrepreneurial planning above centralised state planning. That argument entailed the idea that relevant market information lies decentralised, with the result that decentralised planners have better access to it and are consequently able to make relatively better plans than their centrally operating counterparts. This market information is certainly not about prices only, which are fairly public and broadly known anyway (provided the market is reasonably well organised); one does not need to operate on a decentralised level to be in a better position to discover prices. Rather, improvements on the current state of entrepreneurial knowledge and expectations will mostly be obtained by researching non-price factors which lie decentralised and are specific to certain time-place circumstances.

Still, the comparative superiority of private entrepreneurial planning over state planning is not only nor even mainly due to the latter's greater decentralisedness. Rather, it is caused by the fact that decentralised entrepreneurs, being private operators, have a comparatively stronger incentive to seek out market information. Given that market information carries the promise of profit and that state planners do not reap the full reward of their planning successes nor carry the full cost of their planning failures, there is comparatively less incentive for them to acquire that information and less reason for the best entrepreneurial talent to surface and survive. The contribution of entrepreneurship towards market coordination is thus mainly driven by the profit motive, simply because market information and the successful forecasting of the future based on that information constitute profit opportunities. This insight has, of course, become the trademark of Kirzner's contributions to our understanding of the market process (Kirzner 1973, 1979, 1985, 1992b).

Certainly, the profit motive does not always contribute towards market coordination (c.f. Laosby 1992: 141-144). When profit opportunities are connected to the introduction of new technologies and products, their reaping can set a Schumpeterian process of creative

destruction in motion, which may cause greater discoordination and the emergence of monopoly power in the markets concerned. While the innovative firms gain supernormal profits, other firms may be unable to adapt effectively enough to the new situation and be forced out of the market - such is the price of progress. It remains true that the better the standard of entrepreneurship in an economy, the fewer firms are taken by surprise, the quicker they adapt themselves to new technologies and products, and the smaller the pains of adjustment will generally be. While the entrepreneurial pursuit of profit may cause temporary discoordination by its introduction of novelty, that same pursuit in its negative form (the avoidance of loss) will also provide the incentive to adapt as quickly as possible to the novelties concerned (c.f. Kirzner 1973: 72-73). And the contribution of entrepreneurship surely lies not only in helping to achieve market coordination *pure and simple*, but also in providing for the introduction of superior techniques and products (c.f. Hayek 1946, 1978).

This is not to say that the net effect of the entrepreneurial pursuit of profit is always and consistently equilibrating. There is no way of being certain that the disturbances of innovation are consistently overtaken by the efficiency of adaptation. The point is rather that the profit motive produces incentives for both creating disturbances and instigating the efficient adaptation to these disturbances.

### 7.3.3 The institutions of entrepreneurship

As should be clear from the above, the equilibrium searching tendency which can be ascribed to entrepreneurship is of the event-triggered kind, with the stimulus-event being the creation or discovery of a profit or (equally important) loss-avoidance opportunity. As mentioned in chapter 2, event-triggered tendencies require institutional facilitation, which in this case is provided by:

- i. socio-cultural traditions and educational standards conducive to the development of entrepreneurial drive and skill,
- ii. the "openness" of society in the sense of information of any kind being readily available to all,



- iii. the stability of the legal, socio-political and monetary environment so that superior entrepreneurial expectations are not unnecessarily disturbed, and
- iv. the existence of low barriers of entry to markets so that inferior entrepreneurial expectations can effectively be challenged by superior ones.

By contrast, the comparative superiority of decentralised-private planning over centralised-state planning is a context-shaped tendency, whereby the isolation of a single institutional factor (market planning) is effected by the comparative approach (see chapter 2).

## 7.4 THE ROLE OF THE PRICE-ADAPTATION MECHANISM IN MARKET COORDINATION

### 7.4.1 Price adaptation toward microeconomic coordination

The basics of the mechanism are straightforward and can briefly be explained by way of the following example. Assume a significant change in the expectations map, such that the market for  $i$  is thrown out of equilibrium by a shift in the demand schedule. At the original transaction price ( $P_i$ ), a situation of planned excess supply now develops. Excess supply leads by definition to the emergence of competition amongst suppliers for a limited amount of available demand. Demanders thus gain bargaining advantage over suppliers. Assuming the profit motive, they will use this advantage to push down the original transaction price ( $P_i$ ). Given the demand and supply schedules as derived above, this fall in price will tend to decrease planned market supply and increase planned market demand, thus creating a tendency back towards equilibrium. The case of excess demand is analogous: competition arises among demanders for a limited supply, suppliers gain a bargaining advantage over demanders, prices get bid up, demand decreases and supply increases according to the demand and supply schedules, the market moves back towards demand-supply equality. Such is the "market experiment" of our theory.

The equilibrating mechanism as described above is a tendency rather than a law, for a couple of reasons. Firstly, it applies patterning abstraction with the result that it makes no use of mathematical relations with parameters which are *in principle* specifiable, as neoclassical theory does. As a result, no precise and quantifiable shifts in the curves are

mentioned, no precise and quantifiable changes in price are indicated, and no precise and quantifiable changes in quantity demanded or supplied are expressed. The description did not go beyond mentioning broad increases and decreases in the relevant variables. Secondly, the causal connections mentioned are neither necessary nor instantaneous, as the law-based connections in the neoclassical price-adaptation mechanism are. Rather, their speed and efficiency depend on the following conditions:

1. *A high degree of competition.* When market power is concentrated on either the demand or supply side, prices will not necessarily change, or change as much, in reaction to changes in the expectations map (shifts in the demand or supply curve). For example, in modern economies dominated by powerful corporations and unions, market power is concentrated on the supply side, with the result that prices seldom come down when excess supply emerges. In addition, cost increases tend to be carried forward into higher prices rather than absorbed into lower nominal income. Under these circumstances, an inherently inflationary bias gets built into the economy (see Lachmann 1967), which does not altogether cripple the informational and allocative function of prices but certainly impairs it, as agents are given the added task of having to distinguish between general and relative price changes (Lavoie 1983).
2. *Highly elastic demand and supply schedules.* As in neoclassical theory, the elasticity of demand and supply is given by the shape and position of the demand and supply schedules - the flatter the schedules, the greater the elasticity, the more effective the price-adaptation mechanism will be, in that only a relatively small price change is sufficient to restore market clearing.

In terms of our theory, a flat demand schedule presupposes (a) a large number of actual and potential demanders and (b) these demanders having a stable and similar  $P_{d,i}$ , i.e. a stable and similar valuation of the utility of good  $i$  ( $U_{d,i}$ ) as well as of the utility of money ( $U_{d,m}$ ). These factors already provide us with a good explanation for the reasons why, for example, unemployment may not necessarily be resolved by wage reductions. First, there may not be a sufficient number of potential labour demanders (entrepreneurs) in the market

willing and able to employ more people. Second, these labour demanders may suddenly drop their valuation of the worth of labour to such an extent that wage decreases become insufficient to compensate for this. And third, increased scarcity of finance may push up their utility of money to such an extent that they are unwilling to part with the money spent on wages to employ more labour, even if the extra employment of labour promises extra profit.

In turn, a flat supply schedule requires (a) a large number of actual and potential suppliers and (b) these suppliers having a stable and similar  $P_{s,i}$ , i.e. a stable and similar valuation of the utility of good  $i$  ( $U_{s,i}$ ) as well as of money ( $U_{s,m}$ ), which points towards similar reward claims and cost structures.

3. *A short time lag between changed expectations and changed quantities demanded and supplied.* Two lags play a role in this regard, namely (i) between the discovery of market discoordination (excess demand or supply) at the current price and the resultant change in transaction price and (ii) between the change in transaction price and the resultant effect on actual quantity demanded or supplied.

The lag mentioned under (i) is important, since smaller unsystematic expectational errors tend not to be coordinated by price changes but get absorbed by variation in inventories and capacity utilisation. Only sustained and systematic expectational errors, which cause major inventory build-ups or depletions, call forth a change in price (and production) decisions; such is "the rationality of price stickiness" (Birch, Rabin and Yeager 1982: 214). By nature, producers need time to be able to distinguish between transient and unsystematic errors which do not require such adaptations, and sustained and systematic errors which do necessitate them (ibid). The shortness of this time lag is, therefore, no condition for the effectiveness of the price-adaptation mechanism, since that mechanism has not yet been called upon. Only the lag mentioned under (ii) is relevant in that regard.

This second time lag is applicable in particular to producer-suppliers, who cannot immediately alter their supply plans the moment a change in price warrants such a alteration. For example, it may take considerable time before an increase in price has led to

more suppliers entering the market or existing suppliers increasing their production. However, there should be no reason why the time lag between changed demand plans and changed demand in the market should be very long. For demanders this lag is thus hardly relevant.

4. *A relatively stable the expectations map.* The expectations map must not be so variable that current price adaptations become inappropriate for what is required to contribute towards the market equilibration some time later when actual quantities demanded and supplied change. Hence, the expectations map should not be more unstable than what the time lags discussed above allow it to be - the longer these lags, the more stable the expectations map should be.

#### **7.4.2 The institutions of price adaptation**

It thus transpires how the price-adaptation mechanism involves a string of event-triggered tendencies, starting with a change in the expectations map and ending with the demand and supply changes necessary to rectify the original market imbalance. The institutional facilitation of these tendencies can now be elaborated for each of the above four conditions. The first condition (a high degree of competition) presupposes low barriers of entry and a sufficient availability of alert entrepreneurship (c.f. Hayek 1946). In addition to these, the second condition (elastic demand and supply schedules) also requires well-organised markets with agents well-informed about the best possible production techniques and uses for good  $i$  (making for similar valuations of the utility of good  $i$ ,  $U_i$ ) and a stable monetary environment (making for stable valuations of the utility of money,  $U_m$ ). The third condition (short lags) also calls for low barriers of entry, a high standard of entrepreneurship, and "relatively flexible production structures and versatile resources in organisation" (Loasby 1992: 150) which facilitate relatively easier adaptation of the production process to different products or production volumes.

As for the fourth condition (stability of the expectations map), some degree of instability can obviously never be avoided, in particular changes in tastes and technology - if

this were not so, the price-adaptation mechanism would not even be necessary. But such changes will not normally be so volatile as to make price adaptations themselves a source of further instability. The more serious expectational volatility which can be undermine the price-adaptation mechanism tends to be related to socio-political and monetary turmoil, such as wars and banking crises. It was noted in section 7.2 above how neoclassical theory, by treating planned production as planned supply, overlooks the price stickiness inherent in the planned supply curve, thereby overestimating the necessary price adaptations to clear markets.

As it turns out, the institutions which facilitate the price-adaptation mechanism are very similar to ones which facilitated the tendency due to entrepreneurship. There is, after all, a close interrelation between the two. The price-adaptation mechanism is called into action when entrepreneurial expectations have failed, which they are bound to do in an uncertain world. Were entrepreneurial expectations always correct, current prices would reflect all future happenings and need never change - we would end up with an Arrow-Debreu kind of world in which a single round of price setting would suffice for all perceivable eternity.

Because the future is inherently uncertain, entrepreneurs continually make mistakes with the result that prices need to change so as to help coordinate the incorrect supply plans with the demand that can be induced by price alterations. Hence, even if price adaptations were always able perfectly to restore market coordination in the sense of re-establishing demand-supply equality, they cannot ensure that all entrepreneurs realise their planned profits at the moment of committing resources to production. A perfectly operating price-adaptation mechanism may therefore still leave many entrepreneurs with disappointed profit expectations, which provide the incentives for new improved expectations next time around. And so the process goes on, with the well-planning entrepreneurs reaping good profits and the poorly-planning ones realising poor profits or even losses, which may eventually force them out of the market.

### 7.4.3 Price adaptation towards macroeconomic coordination

The price-adaptation mechanism can also play a role in assisting market clearing in the aggregate goods market (macroeconomic coordination). Four separate price effects can be distinguished in this regard. In discussing them, we assume a commodity-money system. Aggregate demand failure ( $\Sigma PG_d < \Sigma PG_s$ ) will be taken as the initial disequilibrium position to be cured by the price-adaptation mechanism.

1. *The real-balance effect (RBE)*. Aggregate demand failure will by definition be accompanied by an overall excess supply of goods. That very fact creates bargaining advantage for demanders over suppliers in the aggregate goods market (including the labour market) as explained above. Demanders will use that advantage to push down the general price level (P) causing a reduction in the nominal transactions demand for money ( $\Sigma PG_d$ ), which will help relieve aggregate demand failure. The adequacy of the mechanism depends on whether:

- a. market concentration does not prevent the general price level from coming down; the downward movement of the general price level is, however, sluggish in the best of times "[i]n view of the piecemeal way in which the general price level is actually determined .. [and because] the individual agent may not find it rational promptly to cut .. price or wage .. even though it is above the general-equilibrium level" (Birch, Rabin and Yeager 1982: 215, see also Yeager 1986: 374-378)<sup>4</sup>,
- b. the money stock remains more or less stable during the process of adaptation ( $\Sigma \Delta M_s = 0$ ) (c.f. Weintraub 1982: 448ff), and
- c. the demand for finance emanating from the various possible  $aF_d$ 's, such as the demand for stationary balances, remains more or less stable during the process of adaptation (e.g.  $\Sigma \Delta M_d = 0$ ).

It is easy to recognise how chapter 2 of Keynes's *General Theory* throws doubt on the realism of condition a, on the grounds (amongst others) that workers are unable or unwilling

---

4. This inherent sluggishness should be regarded as beneficial, as it stabilises the value of money in terms of goods, which aids the informational role of prices and reduces general uncertainty (c.f. Yeager 1983: 307).

to reduce the real-wage rate, while chapter 19 of the *General Theory* questions the validity of conditions b and c, mainly because the demand for stationary balances is not considered stable. Conditions b and c also reveal how the effectiveness of the RBE depends on the approximate validity Say's Law.

2. *The money-production effect.* To the extent that aggregate-demand failure does lead to a drop in the general price level, the value of money in terms of goods rises. Just as for any other good whose price increases, the quantity of money supplied will tend to increase according to the supply schedule as explained above, whereby the strength and speed of this effect will depend on the relevant elasticities and lags. Accepting that precious metals such as gold or silver are the commodities customarily used as money, this would mean the increased mining and minting of such metals or the increased minting of output previously used for non-monetary purposes. For economies lacking the appropriate mining industries, money production can occur by minting existing non-monetary gold stocks, such as in ornaments or jewellery. The resultant increase in the money supply ( $\Sigma \Delta M_s > 0$ ) would obviously reduce the scarcity of finance accompanying aggregate-demand failure and thus contribute towards the restoration of macroeconomic equilibrium and the original general price level.

Of course, variation in the cost of gold production may also have an exogenous, potentially destabilising influence on the money stock. Severe production-price shocks seem, however, unlikely in the gold-mining sphere. And the ratio of monetary to non-monetary gold production as well as the minting of previously non-monetary gold stocks will adapt themselves in such a way as to soften such destabilising influences.

3. *International-trade (Hume's specie-flow) effect.* The possible drop in prices of local goods following an aggregate-demand failure, apart from providing incentives for the increased local production of money, encourages the demand for local goods by foreigners (exports) and discourages the demand for foreign goods by locals (imports), the extent of these effects depending on the relevant elasticities and lags. Increased exports and decreased imports, just as increased money production, cause a rise in the local money supply (i.e. a positive  $\Sigma \Delta M_s$ ).

4. *The interest-rate effect.* As already mentioned in chapter 4, under a commodity-money system the *finec* and *f<sub>mec</sub>* become approximately equivalent. That chapter also concluded that, if

- a. the money stock and stationary-money holding is reasonably stable,
- b. the continuity assumptions approximately hold,
- c. demand and supply of financial assets is reasonably elastic and interest rates reasonably flexible,

the interest-rate mechanism can contribute to some degree or other to macroeconomic equilibrium. Hence, when agents are frustrated by a lack of actually available finance and they plan to obtain more funds externally, f-constraints in the goods market spill over into financial markets where they will cause an excess demand. By a mechanism equivalent to the one described for the case of the goods market, this will lead to an increase in the interest rate, which implies an increased opportunity cost of both stationary-money holding and goods spending. Depending on the relevant elasticities, this will induce an increase in the supply and a decrease in the demand for loanable funds. In that way, the interest-rate mechanism may relieve f-constraints for borrowers by further bringing down the overall level of planned stationary-money holding and, insofar this is no longer possible, by reducing planned spending again<sup>5</sup>.

Because these price effects indicate patterns, are uncertain and depend on institutions, they similarly indicate tendencies rather than laws. In fact, their strength and speed depends on the same institutions which determine the strength and speed of the price effects towards microeconomic coordination, as discussed above. Their efficiency is also shaped by the secondary institutions, which will be discussed in the next chapter: the predominance of bank money and the corporate firm.

---

5. Of course, the real-balance and money-production effects, insofar operative, will also relieve the scarcity of external finance, thus lowering the interest rate and increasing planned spending (although it may also increase stationary-money holding).



## CONCLUSION

This chapter analysed the role of entrepreneurship, price adaptations and uncertainty in the maintenance or disturbance of microeconomic and macroeconomic plan coordination. For that purpose, we developed an alternative theory of market demand, supply and price, which is based on the methodology of patterning abstraction. It turned out that the contribution of entrepreneurship and price adaptations towards plan coordination is never necessary, but always depends on a certain institutional context. Because the role of entrepreneurship and the price-adaptation mechanism are captured in tendencies rather than laws, this chapter fitted into the overall theme of macroeconomics without laws.

## Chapter Eight:

**CHOICE THEORY ABOUT MACROECONOMIC COORDINATION II:****THE IMPACT OF INCORPORATION AND BANK MONEY**

*[T]he characteristics of the special case assumed by the classical theory happen not to be those of the economic society in which we actually live, with the result that its teaching is misleading and disastrous if we attempt to apply it to the facts of experience.*

JM Keynes (1936:3)

**8.1 INTRODUCTION**

The institutions which are conducive to the strength and effectiveness of the equilibrating tendencies connected to entrepreneurship and the price mechanism can be summarised as follows:

1. socio-cultural traditions and educational standards conducive to the development of entrepreneurship with sufficient drive and skill,
2. an "open" society with easy availability of information of any kind,
3. a stable legal and socio-political environment,
4. low barriers of entry to markets
5. a stable monetary environment with a stable utility of money and stable aggregate spending levels.
6. relatively low levels of capital intensity of production.

These are what the previous chapter called primary institutions.

This chapter will discuss the role of what we called secondary institutions, which determine the effectiveness of entrepreneurship and the price mechanism indirectly via their influence on the primary institutions. Two such secondary institutions were mentioned as being most important: the limited-liability corporation and bank money. Our aim in this chapter is to show that, while these institutions greatly enhance the growth potential of capitalism, they also make for a more unstable environment with higher levels of structural unemployment. It will be demonstrated how the power and importance of the

disequilibrating tendency connected to uncertainty is increased by the dominance of the corporate firm and of bank money.

Implicit in our deliberations is, therefore, the somewhat unconventional policy preference for a return to commodity money and a ban on free incorporation. Corporate status should once again become a privilege, temporarily granted by the state on the grounds that the recipient firm serves some genuine public interest, as was the historical practice (c.f. Simons 1948: 33-35, 57-60, 81-83). The practical difficulties connected to such a turning back of the clock will not be explored here.

This chapter endeavours to show that a modern economy, and the economy of Keynes's *General Theory*, is set apart from that faced by the classics by precisely the two institutions under discussion: the corporation and bank money. We start out by investigating the nature of these institutions and will then explore how, as a consequence of these natures, the stability and self-equilibrating powers of the economy are undermined. The analysis of the limited-liability corporation is based on Van Eeghen (1997).

Because this chapter is concerned with the institutions which indirectly determine the strength and efficiency of macroeconomic tendencies, it accords with our overall theme of macroeconomics without laws.

## **8.2 THE LIMITED-LIABILITY CORPORATION**

### **8.2.1 The nature of the limited-liability corporation**

From roughly the 1870s onwards, the limited-liability corporation increasingly became the preferred legal form of private business enterprise in the West. Before that time, the scene of capitalism had been dominated by unincorporated proprietorships and partnerships. The corporation differs from proprietorships and partnerships in that it possesses what is called corporate personality.

The possession of corporate personality means that the firm has acquired a separate legal status, in the sense of enjoying legal rights, powers and duties as if it were a natural person, but wholly distinct from the natural persons who own or manage it (shareholders

and managers). Originally, incorporation had to be done by a special state grant, giving the firm a so-called charter. As a rule, such a charter limited the firm to certain specific commercial or charitable activities and regularly gave them certain monopoly privileges as well. But from roughly the middle of the previous century onwards, most Western countries introduced legislation, which allowed private firms to draw up their own charter (or incorporation contract), the state automatically granting corporate status without any limiting clauses or special privileges (Berle and Means 1932: 119-140).

There are various legal implications of incorporation, but the crucial one is that the firm's assets no longer belong to the firm's owners (i.e. its shareholders), but to the firm in its own right. Shares in a corporation are therefore not shares in the assets of the firm, but only shares in the right to appoint management and receive dividends, as and when these are declared. Incorporation thus separates ownership of the firm from control over its assets. As a result, ownership rights in a corporation (i.e. shares) can change hands without affecting the capital position of the firm. While partners in an unincorporated partnership can, in principle, force their co-partners to buy them out or to liquidate part of the firm's assets, shareholders in a corporation have no such rights. The only way a corporate shareholder can liquidate his or her shares is by selling them to some third party.

Limited liability for shareholders follows logically from the corporate-personality principle (Berle and Means 1932: 120). According to that principle, not the shareholders but the corporate firm in its own right is responsible for its debts. As a result, the firm's creditors can no longer lay any claim against the personal possessions of the (supposed) owners (i.e. the shareholders), who can at the most lose their initial investment. That is how the liability of shareholders is limited.

It is noteworthy that free incorporation, by limiting the power and responsibility of ownership, contravenes what can be regarded as the most basic liberal-capitalist value: the principle of personal responsibility. As Hayek (1960: 71) notes: "Liberty and responsibility are inseparable." Indeed, there have always been free-market advocates who have strenuously objected to free incorporation. Simons (1948:34), for example, writes: "Having

perhaps benefited briefly by corporate organisation, America might now be better off if the corporate form had never been invented or never made available to private enterprise." Röpke (1963: 236) similarly labels the corporation "the most disturbing disfigurement of the modern economic system". It may sound paradoxical to many, but the corporation is strictly speaking an anti-capitalist institution (see Van Eeghen 1997: 86-88).

The predominance of the corporate firm has had three main influences on capitalist practice. Firstly, it instigated an increased average firm size and greater market concentration. Secondly, it enhanced capitalism's growth potential and the strength of the profit motive. And thirdly, it increased the size and speculativeness of stock markets. We will discuss each in turn.

### **8.2.2 Increased firm size and market concentration**

As compared to unincorporated proprietorships or partnerships, it is much easier for the limited-liability corporation to mobilise large amounts of capital. Due to the divorce of ownership from control, an outside investor can become a co-owner of a corporation without assuming any responsibility for its management, while assuming but limited responsibility for its debts (he can only lose the initial amount invested). This makes it possible for an infinite number of small or large savers to contribute to the capital base of the corporation. As Hicks (1982: 12) notes: "[The] original use of limited liability ..[was] to enabl[e] entrepreneurs to get control of more capital than they could put up themselves, or could borrow on bonds or debenditures.." <sup>1</sup>. The corporation knows just about no capital restrictions on its size whatsoever; anyone with money to spare can become a co-owner and contribute to its capital base.

---

1. The straight partnership can, however, be modified in various ways, so as to facilitate a greater non-managing shareholdership. The general pattern of such arrangements is that some partners transfer some of their risks and responsibilities to the remaining partners, usually in return for a lower profit share. The risks of the managing partners thereby become correspondingly greater. Since the capacity for accepting risk of any natural person is limited, the size of such adapted partnerships remains limited relative to that of the corporation.

The resultant increased size of the average firm already increases (*ceteris partibus*) the degree of concentration in any given market. But there are further ways in which the corporate form stimulates market concentration.

Firms can grow by means of three strategies: share in the growth of the total market, take market share away from competitors and, lastly, buy up competitors. The first two growth options require competitive strength and they are, therefore, not so easy to attain. Since the emergence of the corporate form of business the last option has become relatively more easy to realise and has been instrumental in the erosion of competition in many markets. Shares in unincorporated businesses are less marketable and the owners tend to be the managers as well: owner-managers who are intimately involved with the company and have toiled to build it up are obviously much less inclined to sell their firm "to the opposition" than a scattered mass of uninvolved shareholders with little loyalty towards the firm beyond return on investment. In addition, corporations are, for reasons already indicated, in a better position to mobilise the necessary capital to buy up other firms.

Hence, the limited-liability corporation has significantly contributed towards the concentration of markets in modern capitalism. A defender of free-enterprise like Hayek (1947: 116) is surprisingly frank about this: "I do not think that there can be much doubt that the particular form legislation has taken in this field [i.e. providing for incorporation] has greatly assisted the growth of monopoly".

### **8.2.3 Increased growth potential and strength for the profit motive**

There is a common perception that modern capitalist practice is unduly geared towards economic growth and wealth creation. The mere fact that the environment has been damaged and natural resources been depleted to the degree that they have, suggests that some kind of balance has been disturbed.

The legal form of the modern corporation is partly to blame for this. The removal of constraints on economic growth posed by the difficulty of accumulating capital from a restricted number of owners and by being exposed the full risk of enterprise, have loosened

up the potential for growth. Free incorporation was, in fact, instituted for the very purpose of artificially stimulating investment and growth, which might have been understandable in the 1850s but which is far less appropriate now. The ease with which the corporation can bring large amounts of capital together has also brought the efficiency advantages of large-scale production within incomparably easier reach. In this context, Perrott's (1982: 85) remark is revealing: "One might expect ... attitudes to limited liability to vary according as the prevailing ideology is materialist-expansionist or idealistic and conservative".

In addition, there are reasons why corporate behaviour tends to be more strongly motivated by profit than a non-corporate firm would be. The management of a corporation, while enjoying considerable autonomy as far as its power over assets is concerned, is still strongly responsive to shareholder wishes. Since corporate shareholders are normally so diversified that they become a unanimous mass, only the "lowest" common denominator of their wishes can be attended to, which is to maximise return on investment - the wish which the greatest number of shareholders have in common. Put differently, the profit motive is given added impetus, because it has to perform the added function of bridging the gap between management and an estranged, diversified ownership. Furthermore, the divorce of ownership from control leads to the development of a large, impersonal market in corporate control. The existence of such a market makes it even more difficult for management to compromise the primacy of profit, as they live under the continual threat of losing their position through take-overs.

#### **8.2.4 Increased scope for financial speculation**

Because incorporation separates ownership from control, shares in a modern corporation can be traded without necessarily affecting the management or capital position of the firm. As a result, an active market in such shares more easily develops.

Unfortunately, marketability and the potential for speculative trading go hand in hand. Since incorporation has significantly increased the marketability of ownership stakes, it has thereby also increased the opportunities for speculative activity in share markets. In

addition, many of the participants in share markets are corporations themselves and consequently enjoy a degree of risk protection in the form of limited liability. The institutional protection against risk has the obvious effect of encouraging risk-taking. Because the balance between risk and reward is tampered with, speculative activity is artificially stimulated.

Ricardo's friend and disciple J.R. McCulloch, who was a fierce opponent of the limited-liability corporation, once remarked about the Limited Liability Act of 1862: "Were Parliament to set about devising means for the encouragement of speculation, over-trading and swindling, what better could it do?" (quoted by Diamond 1982: 42). McCulloch may have overstated his case somewhat, but he clearly was not totally off the mark either. It is significant that Keynes also attributed the excessively speculative character of modern stock exchanges to the divorce of ownership from control, i.e. to the corporate form of business: "With the separation of ownership and management which prevails to-day and with the development of organised investment markets, a new factor of great importance has entered in, which sometimes facilitates investment but sometimes adds greatly to the instability of the system" (Keynes 1936: 150-151). This supports the proposition that Keynes presupposed corporate capitalism as the institutional context of the *General Theory*.

### 8.2.5 The results: increased macroeconomic instability

The implications of incorporation as discussed above will increase the instability of free-market capitalism in a number of ways.

Firstly, a greater average firm size means that the required capital necessary to set up shop is increased and greater demands are made on entrepreneurial and technological skill, both of which raise barriers to entry<sup>2</sup>. This may mean that fewer entrepreneurs have the

---

2. Carr and Mathewson (1988) come to the exact opposite conclusion, arguing that unlimited liability raises barriers to entry, thus creating greater scope for monopoly-rent seeking. Unlimited liability is said to increase the cost of ownership by the potentially expensive liability suits to which unlimited partners are exposed, thus raising the barriers for potential entrants. To be sure, full responsibility can be more costly than limited responsibility and it is, therefore, easier to become a shareholder in a limited-liability corporation than to enter an unlimited partnership. But that does not mean it is easier to start up a corporation in a corporate environment than it is to set up a partnership in a non-corporate environment. And it is these environments that we are comparing.



ability and desire to set up and expand businesses, which limits the equilibrating role potentially played by entrepreneurship and may be a contributory factor towards the high level of structural unemployment in especially developing countries. Higher barriers also limit the effectiveness of the price mechanism, as indicated in the previous chapter.

Secondly, increased market concentration (especially on the supply side) prevents the general price level from coming down. The RBE, which is a fairly weak and long-term stabiliser at the best of times, is thus rendered inoperative. But increased market concentration not only makes prices inflexible downward, it also makes them flexible upward. The resultant inflation proneness can have a seriously destabilising effect on the macroeconomy. Incidentally, the fact that Keynes (1936: ch. 21) determines prices on a cost-plus basis (labour being the most important cost) and that he emphasises the downward inflexibility of prices, provides further indirect indication for the fact that he assumes an economy dominated by powerful corporations (and powerful unions)<sup>3</sup>.

Thirdly, the increased average firm size raises the average capital-intensity of production, which has a number of negative effects on the chances for market coordination, although it has also spectacularly increased productivity:

- a. It raises the ratio of intermediate-good to consumption-good spending, thereby making total spending more unstable. As established in chapter 7, intermediate-good spending is more risky and therefore more unstable, as the utility of intermediate goods depends on expectations which extend further into the future than the expectations on which the utility of consumption goods are based (c.f. Keynes 1937c: 213). The forecasting task of entrepreneurs is thus made more difficult, thus weakening the equilibrating force of the tendency connected to entrepreneurship.
- b. It increases the ratio of fixed to variable cost, which increases both the potential risks and the potential rewards of enterprise: the profit margins are potentially greater, but

---

3. Keynes's D-Z model (1936: ch 3), however, assumes perfect competition, which runs counter to the idea that he presupposed an economy dominated by large corporations. But this move seems inspired by convenience rather than principle, namely that Keynes wishes to concede as much as possible to the Marshallian orthodoxy without compromising his central message. And, as will be seen in the next chapter, Keynes's attempt to root the D-Z model in Marshallian analysis is responsible for much of the ambiguity in that model.

firms are also made financially more fragile. Such greater fragility adds to the potential damage to the economy caused by aggregate-demand instability. The similarities with Minsky's (e.g. 1982, 1986) diagnosis of capitalism's instability should be clear. In this context it is noteworthy that Henry Simons exerted an important influence on Minsky and that their analysis and policy recommendations are strikingly similar (see Whalen 1988, 1991). And Simons (1948) is well-known for specifically blaming the corporate form of business for capitalism's instability. The increased financial fragility of firms compromises the equilibrating role played by entrepreneurship especially in the labour market, as employment becomes relatively more prone to disruption.

- c. It makes it more painful and time-consuming for businesses to adapt themselves to unexpected change in tastes and technology, because greater investments are made in the *status quo* with the result that greater losses are tied up in change. The potentially equilibrating roles played by the price mechanism and by entrepreneurship are thus undermined.

Fourthly, the corporate form of business stimulates the size and speculativeness of financial markets (stock exchanges), with the result that potentially large amounts of wealth are created and destroyed there. This adds further variability and uncertainty to aggregate spending levels (Keynes 1936: 94-95), wealth obviously being an important determinant of spending. Moreover, stock-exchange instability has an unsettling effect on the general psychology of the market, unnerving the "animal spirits" of entrepreneurs, which adds to the instability of intermediate-good (or investment) spending in particular (Keynes 1936: ch. 12). Also, the large volumes of transactions on the stock exchange imply a large transactions demand for money, which adds an additional potentially disruptive alternative money demand ( $aF_d$ , c.f. Wells 1983: 529). Lastly, the potentially large wealth losses on the stock exchange can suddenly expose the banking system to significant levels of bad debt, which can undermine the stability of the system as a whole. Again, the greater uncertainty and instability of the system makes the forecasting role of entrepreneurs more difficult and enfeebles its equilibrating role especially in the labour market.

And the greater pressure on corporate firms to optimise profits encourages such firms to take on more risk, the more so since the liability for shareholders is limited. Especially banks, whose business it is to accept risks, are thus inclined to push their risk taking against the very boundaries of what is prudent (c.f. *The Economist* 1999: 28-31). This circumstance tends to undermine the stability of capitalism, especially its financial markets where banks are predominantly active. We will come back to this below.

All these destabilising influences, which are traceable to the corporate form of business, play a (larger or smaller) role in Keynes's argument about capitalism's instability, adding further weight to the idea that the *General Theory* implicitly assumed a corporate economy as its institutional context. The above analysis also confirms how a link can be made between Austrian principles and Keynesian market failures. As Lachmann remarks:

it is possible to develop from Austrian components a theory of general unemployment that has some striking similarities to that of Keynes. These similarities derive from a combination of two Austrian principles: that knowledge is dispersed, incomplete and sometimes wrong, and that complex roundabout structures of production [capital intensity] are often the most productive (Laosby 1992: 151-152).

### **8.3 THE BANK-MONEY VERSUS THE COMMODITY-MONEY SYSTEM**

The aim of this section is to establish how bank money, as compared to commodity money, creates relatively greater instability in aggregate spending levels. As such, it undermines the ability of entrepreneurship to play its equilibrating role. Because that role can only be captured in a tendency rather than a law, this section is indirectly about macroeconomics without laws too. Before the influence of bank money on the stability of aggregate spending can be established, its nature relative to that of commodity money must first be analysed.

#### **8.3.1 The nature of bank and commodity money**

A bank-money system, as understood for the purposes of this study, is a system where commodity money has been forced out of use altogether. This is done by three state regulations, namely

- (a) enforcing a single abstract unit of currency as legal tender

- (b) giving the monopoly right to provide this legal tender to a single banking institution, the central bank, and
- (c) suspending convertibility of this legal tender (notes and token coin) into conventionally monetary commodities like gold or silver.

The practical result of these three measures is that the central bank is handed the power of *riskfree* money creation, which it uses to protect the government as well as the private banking system against financial risk - the latter by the provision of a lender-of-last-resort facility. The risk at which private banks can create deposit money is thereby reduced, which obviously stimulates the creation and use of such money. Under a bank-money system, *all* money is fiat bank money, of which about 15% consists of cash (bank money created by the central bank itself) and the remaining 85% of deposits (bank money created by the private banking sector).

The opposite is not true: a commodity-money system does not force all fiat bank money out of use. The essence of a commodity-money system, as the term will be used here, is the removal of all institutional privileges presently afforded the private banking sector, in particular the risk protections inherent in limited liability and the lender-of-last-resort facility provided by the central bank. The fact that a bank-money system thus depends on deliberate state protection means that the changeover from a commodity-money to a bank-money system is not a matter of spontaneous evolution as popularly believed (e.g. by Hicks 1967b).

The removal of these institutional risk protections automatically restricts the extent to which banks are willing and able to issue their own fiat money, while not placing a categorical ban on all fractional-reserve banking (as argued by some commodity-money advocates, e.g. Rothbard 1962). A system will thus emerge whereby most money will consist of gold or silver coin (including 100% backed notes and deposits), although an appreciable but limited role may still be played by fiat bank money. Such a policy of full risk acceptance by banks accords, once again, with the basic liberal-capitalist value of personal responsibility (Van Eeghen 1997: 86-88). Just as in any other type of business, if

bankers wish to receive the benefit of enterprise when things go well, they should equally be willing to accept the corresponding cost when things turn sour. Apart from anything else, this is a mere principle of fairness: the considerable advantage of being able to issue IOU's which serve as money should be counterbalanced by a corresponding disadvantage of having to endure the full risk inherent in fractional-reserve banking.

A commodity-money system as viewed here should not be confused with what is generally known as "the gold standard". Friedman (1961), who was the first to draw attention to this distinction, speaks in this context of a "real gold standard" versus "pseudo gold standard". What is popularly known as "the gold standard" and what was the dominant monetary system during most the nineteenth and early twentieth century, is a pseudo gold standard. Under this system, countries still have an officially enforced abstract legal tender, which is linked to a certain amount of gold via an officially fixed gold price. By contrast, a real gold standard denotes money in units of weight and fineness of gold itself. As a consequence, abstract units of legal tender need no longer be converted into units of gold via an officially set gold price, which has been an important source of instability for the pseudo gold standard anyway (see Eichengreen, 1985: 4-5). It is worth noting that most if not all modern legal tenders started out life as genuine commodity moneys, i.e. as units of weight of gold or silver, and that their conversion into abstract money units was, once again, not a matter of spontaneous organic evolution, but of deliberate government intervention aimed at enhancing the powers of the state to raise finance at the expense of the citizenry (White 1984)<sup>4</sup>.

---

4. There is the positively bizarre tendency amongst some Post-Keynesian authors (e.g. Graziani 1989: 3, Guttman 1994: 87) to regard a genuine commodity-money system (a "real" gold standard in Friedman's terms) as an instance of barter. The fact that gold is, in a certain sense, also a good like any other good does not mean that commodity-money exchange is like barter, goods trading for goods. After all, monetary commodities are, in another sense, also fundamentally different from any other good: they enjoy *general acceptability* in exchange for other goods. As such, they can function as medium of exchange, overturning the necessity of a double co-incidence of wants inherent in barter. Hence, by virtue of being medium of exchange, commodity money is clearly also money (on any normal meaning of the term) and commodity-money exchange is definitely not barter exchange. This strange tendency to deny commodity money the status of money originated, to an important degree, in chapter 17 of Keynes's *General Theory*, which will be more fully discussed in chapter 9.

Given the scope of this chapter (and this study), the practicality of a return to a commodity-money system has to be left undiscussed. We will simply take it for granted that:

- the private sector will spontaneously revert back to using gold or silver as money when the institutional risk-protections given to the banking system are withdrawn, simply because the inherent attributes of these commodities uniquely qualify them to be used as such (Rockwell 1985),
- these monetary commodities can be provided competitively by private mining and minting companies (White 1994, Rockwell 1985, Selgin and White 1994),
- money is not a public good and its use does not create externalities requiring state intervention (Vaubel 1977, 1984, White 1984),
- there will still be room for fractional-reserve banking and the creation of fully convertible bank money (notes as well as deposits), albeit on a much reduced scale (White 1984, Selgin and White 1994, Dowd 1996 and Selgin 1996),
- the main function of the state lies in enforcing contracts (in particular, enforcing convertibility of bank money into coin or specie) and vigorously prosecuting fraud (such as counterfeiting),
- a system of full private accountability without institutional risk protection (of limited liability or lender-of-last resort facility) can minimise the likelihood of over-issue, wild-cat banking, generalised banking failure or bank runs (White 1984, Selgin and White 1994, Dowd 1996 and Selgin 1996), the simple philosophy being that the enforcement of full personal responsibility stimulates responsible behaviour.

Under the assumption that the above system is practicable and feasible, we will proceed by analysing its broad macroeconomic stability advantages, taken in combination with a repeal of free incorporation.

### **8.3.2 The macroeconomic stability of a commodity-money economy**

In a (non-corporate) commodity-money world, the volume of secondary trade in financial paper is small relative to total trade ( $\Sigma \text{Bold}_s$  and  $\Sigma \text{Bold}_d$  are negligible) and the total amount

of money in circulation is relatively stable and inflexible in the short run ( $\Sigma \Delta M_s$  approaches zero) (c.f. Chick 1997:178). Under these circumstances, the *finer* can roughly be reduced to:

$$\Sigma PG_s(t-x) = \Sigma PG_d(t) + \Sigma \Delta M_d(t) \quad (8.1)$$

Hence, a stable level of stationary-money holding ( $\Sigma \Delta M_d$  approaching zero) implies a more or less stable level of total spending<sup>5</sup>. When the rate of economic growth is relatively small, the continuity conditions can be accepted approximately to hold as well (i.e. no  $F_s$ -constraints). Under these circumstances, the significance of a stable level of total spending (i.e. no  $aF_d$ -constraints) goes even further. It becomes a sufficient condition for the achievement of macroeconomic equilibrium. So it all boils down to this: under a commodity-money system, stable stationary-money holding roughly implies macroeconomic equilibrium.

It should first be mentioned that the unavoidable *microeconomic* instability, due to expectational errors about tastes and technology in individual markets, is not likely to produce instability in overall stationary-money holding. After all, the very function of stationary-money holding (as it is of stock holding) is to act as a buffer against smaller expectational errors and disruptions in individual markets, with the result that increased hoardings in some sections of the economy are likely to be balanced out by a more or less equivalent reductions elsewhere in the economy (c.f. Leijonhufvud 1981c: 122-123, Laidler 1983). The microeconomic variability of stationary-money holding around some overall level is, therefore, a normal and even desirable phenomenon, which should roughly cancel out in aggregation provided the overall confidence in the economy, and its monetary system, is not fundamentally shaken.

In spite of the added flexibility facilitated by a limited amount of bank-money creation, the money stock under a commodity-money system will still be significantly inflexible in the short run. Finance being scarce, the economy will continually push against the limits of

---

5. Yeager (1986) mistakenly applies this observation to all monetary systems, irrespective of whether it concerns a commodity-money or a bank-money system.

what an inflexible money supply allows, thereby continually applying downward pressure on stationary-money holding. Simultaneously, there is a minimum necessary level of stationary-money holding determined by institutional factors such as payments habits. Because these institutional factors can be accepted as relatively unchanging in the short run, that minimum necessary level of stationary-money holding will be relatively unchanging in the short run too. In short, a relatively inflexible money supply will exercise a downward push on stationary money holding, which will thus be stabilised around some institutionally determined minimum level.

The interest-rate mechanism can make an added contribution towards this minimisation-*cum*-stabilisation of stationary money holding. The inherent scarcity of money and finance under a commodity-money system puts a significant opportunity cost on idle stationary-money holding, provided the possibility exists for earning interest by invested excess funds on financial markets. This possibility will then exercise added downward pressure on stationary-money holding.

Of course, a commodity-money world cannot guarantee perfectly stable levels of overall stationary-money holding. But smaller variations can be accommodated by variations in bank-money circulation, a limited degree of which a commodity-money system still allows. And to the extent that sudden and large increases in hoarding do occur, they are most likely to be socio-political rather than economic in origin and therefore require socio-political rather than economic solutions. And such disturbances are not likely to have an indefinite lifespan either, simply because a sustained accumulation of hoards makes no economic sense (as classical authors emphasised as well, see Sowell 1972: 15-16, 23); few of us have the inclinations of a Scrooge MacDuck. As hoardings accumulate, the utility of additional stationary-money holding should eventually start to decline, with the result that total spending should start to increase again. And, given enough time, the various other price effects (money production, real balance, interest rate and international trade) should also start to contribute towards the restoration of macroeconomic equilibrium.

A further stabilising characteristic of a commodity-money system is provided by the fact that prices are denominated in quantities of gold or silver, which are in relatively stable



supply and have a relatively high degree of general acceptability. This circumstance stabilises the utility of money ( $U_m$ ), which should contribute towards the stability of the general price level and the level of stationary-money holding. A stable general price level and stationary-money holding should in turn

- (a) reduce *ceteris paribus* the risk of lending and thereby of interest rates,
- (b) aid economic calculation in general, and
- (c) cause microeconomic price adaptations to leave the general price level largely undisturbed, thereby contributing towards a more optimal "trade-off between price-flexibility and price-rigidity" (Garretsen 1992: ch. 7).

Such are the theoretical underpinnings of the behavioural side of Say's Law, i.e. Say's Tendency. Of course, the classics fully realised that total spending is never totally stable and that the self-correcting mechanisms will not instantaneously and automatically neutralise all shocks (see Sowell 1972: 210). They merely suggested that total spending is significantly stable and that the self-correcting mechanisms are significantly effective in restoring equilibrium in the medium to longer term, assuming reasonably stable socio-political circumstances.

#### 8.3.4 The macroeconomic instability of a bank-money economy

A commodity-money system limits economic growth through the inherently slow pace of commodity-money production, the limited degree of bank-money creation, and the inherently slow downward flexibility of the general price level (Birch, Rabin and Yeager 1982; Yeager 1986). The bank-money system largely removes the first two constraints, thus loosening up the potential for growth. By raising the speed and ease at which money can be created and injected into the system, economic growth is no longer held back by a significantly inflexible money stock. Financial constraints being relaxed, economies can now grow almost as quickly as the availability of profitable investment opportunities and acceptable levels of business risk allow them - business risk which is already reduced by the limited-liability provision. In the light of this, it is little wonder that modern capitalism is so powerfully growth-oriented.

This greater growth potential is, however, bought at the price of greater instability. The alleged instability of a bank-money system may appear off-beat and eccentric now, but it has been the overriding theme of monetary theorising over the last couple of centuries (see Hicks 1967b), from the Currency School via Wicksell ([1898] 1936, [1928] 1950) to the modern neo-Wicksellians such as Mises ([1912] 1971) and Hayek (1935, 1970). Hence the intuition of a significant number of monetary theorists has always been that there is something amiss with a monetary system dominated by fiat bank money. Even Keynes's (1936) *General Theory* is, in the view of this writer, essentially an analysis of the inherent instability of a corporate bank-money economy. In fact, we will argue that the *General Theory* provides an explanation of that instability which is in many ways superior to that given by the neo-Wicksellians such as Mises and Hayek.

In a bank-money world, the total quantity of money can quickly change according to variations in the level of bank lending. The relative inflexibility of the money stock can no longer be relied upon to exercise a stabilising influence on total spending. Instead of checking and stabilising spending decisions, the money stock is now partly determined by spending decisions themselves and therefore subject to the same volatile factors which determine spending plans. After all, credit demand (i.e. money creation) depends largely on spending plans.

The same point can be made in a different way. Although a bank-money system does not render the supply of finance totally passive and credit-demand driven, it does nonetheless make realised income (i.e.  $\Sigma PG_s(t-x)$ ) less important and the utility of the planned purchases (i.e.  $\Sigma PG_d(t)$ ) more important as a determinant of spending. And since goods' utilities depend on expectations about their future performance, which will be more unstable than the inflexible level of total income under a commodity-money system, total spending will become more unstable as well. That is how the institution of bank money lends further importance to the disequilibrating tendency connected to uncertainty.

Under a bank-money system, a reduction (or reduced rise) in spending is no longer accompanied by a corresponding increase in hoarding only, but much more importantly by a

fall (or reduced rise) in the demand for bank credit, i.e. by money destruction (or reduced money creation). Keynes (1936: 161) seems to hint at money destruction as the cause of recession when he writes: "Those who have emphasised the social dangers of the hoarding of money ... have overlooked the possibility that the phenomenon [of recession] can occur without any change, or at least any commensurate change, in the hoarding of money." This money destruction (or reduced money creation) will tend to keep total spending down, until such time that credit demand picks up again. There is, however, no inherent reason why people should spontaneously wish to increase their bank borrowing when the economy is depressed. On the contrary, since borrowing and investing money is risky business and the confidence in future earnings is reduced, the demand for credit is not likely to improve spontaneously during recession or depression. Paradoxically enough, when a bank-money system is depressed and credit demand is weak and inelastic, income resumes its role of finance constraint on spending again (as it had under a commodity-money system), but now with a vengeance. In the absence of bank credit being taken up, a diminished and inflexible level of income becomes the main source of finance again. The economy is thus trapped in a vicious circle, until such time as optimism recovers and people start taking up credit from the banking system again. The Keynesian flavour of these observations should once more be obvious (c.f. 1936: 158).

The role of a low and inelastic credit demand in perpetuating recessions/depressions does not imply that a high and sustained liquidity preference (stationary-money holding) has become irrelevant in this regard. Increased liquidity preference following greater pessimism about future earnings will reduce future incomes, which will in turn depress future spending and weaken the financial position of firms and households, adding to the sense of pessimism in the economy and further reducing the chances of credit demand spontaneously picking up again (see Dow and Dow 1989).

To sum up, while a commodity-money system couples recession to a built-up of stationary-money holding, a bank-money system couples it mainly to money destruction (or reduced money creation), the seeds of a reversal to which are not intrinsic to the depressed

state. Also, because financial restrictions on spending are lessened, there is less of a downward pressure on stationary-money holding, which is, therefore, likely to be more volatile. Such are the reasons why Say's Law has a considerably reduced chance to hold under a bank-money system as compared to a commodity-money system (see Simons 1948: 55). Essentially, a bank-money system loosens the financial restrictions on spending (and thus on economic growth) at the expense of creating more volatility in total spending levels (and thus in growth).

This brings us to the issue of the increased financial fragility of the firm sector under a bank-money system. Because of the greater ease with which credit can be granted (especially during a cyclical upswing), a bank-money system provides a stronger incentive for firms to finance their activity through debt. The increased gearing of firms, while amplifying profits when things go well, magnifies losses when things go wrong, the reason being that interest is a fixed contractual commitment. In combination with more unstable total spending levels, the resultant increased financial fragility of firms spells cyclical instability. Once again, there are important likenesses with Minsky's Financial Instability Hypothesis (see e.g. Minsky 1982, 1986) which is clearly inspired by Keynes's *General Theory*, providing further indication for the fact that the *General Theory* presupposes a corporate bank-money system.

### 8.3.5 The disempowered price effects of a bank-money economy

A bank-money system also undermines the potential contribution which the various price effects can make towards macroeconomic stability, such as the real-balance effect (RBE) as well as the interest-rate, money-production and international-trade effects. Moreover, the bank-money system introduces a further price effect associated with the exchange rate. We will discuss each of these effects consecutively.

As already noted in our discussion of the influence of the corporation, the efficacy of the RBE is undermined by the concentration of market power on the supply side of markets (powerful suppliers of goods and labour), which prevents the general price level from

coming down. But even if the general price level could come down (or rise more slowly), the contribution of the RBE is further enfeebled by the inherently slow pace of general-price level movements relative to the rate at which the money stock can change under a bank-money system. The swings in total spending under such a system will be quick and short term, while the changes in the general price level (especially decreases) can at best only be sluggish and long term, which prevents the RBE from playing much of a stabilising role anyway.

We also noted in the previous chapter that the efficacy of the RBE depends, amongst others, on stationary-money holding remaining more or less unchanged ( $\Sigma \Delta M_d = 0$ ). But as we saw above, stationary-money holding levels will be more unstable and volatile under a bank-money system. Moreover, the deflation inherent in the RBE (in case of aggregate demand failure), insofar unanticipated, will cause a redistribution of purchasing power from debtors to creditors. If the latter are assumed to have a higher liquidity preference, total spending will drop (c.f. Keynes 1936: 264). Insofar anticipated, deflation may also increase liquidity preference in order to realise expected purchasing power gains.

Furthermore, actual (rather than anticipated) price decreases may undermine the financial position of debtor-firms, thereby increasing the chances of bankruptcy and compromising the general stability of the system (e.g. Caskey and Fazzari 1992). The risk of this is, however, closely linked to a corporate bank-money economy, where the financial gearing of firms is increased and deflations can be more dramatic due to sudden money destruction.

As explained in chapter 4, the interest-rate mechanism can no longer contribute toward the maintenance of macroeconomic equilibrium in a bank-money economy, because it is determined by action-types which do not feature in the *macec* nor the *fincc*. That is why neo-Wicksellians such as Mises and Hayek, who regard bank-money creation as macroeconomically destabilising because it divorces the money rate from the natural rate, are fundamentally mistaken. Under a bank-money system, the interest-rate mechanism is no longer an automatic stabiliser anyway. Insofar the interest rate contributes to the

stabilisation of a bank-money economy, it is the result of deliberate policy activism by the central bank rather than spontaneous adaptation by the market. Moreover, the interest rate in a bank-money system mainly regulates the degree of money creation rather than the demand and supply of loanable funds.

The money-production effect has altogether lost its relevance in a bank-money world, simply because money is no longer produced but created in the process of bank-credit extension (c.f. Keynes 1936: 230, suggesting that Keynes takes a bank-money system for granted). The price which may induce more bank-money "production" is no longer the general price level, but the interest rate. Whereas a drop in the general-price level increases the value of commodity money and thus induces more of its production, a drop in the interest rate or an improvement in future confidence induces more "production" of bank money. But as already mentioned, there is no inherent reason why future confidence should spontaneously improve during recession, although the central bank can always manipulate a drop in interest rates so as to stimulate money creation and spending during depression. We come back to that below.

Something like an international-trade effect (Humean specie-movement effect) can still occur under a bank-money system, in that general-price level adaptations can, to some degree or other, impact on the level of imports and exports and hence relieve the scarcity of local finance. But because the general price level is inflexible downwards in an economy dominated by powerful corporations and unions, the effect (just as the RBE) is prevented from being set in motion (Guttman 1994: 88). Moreover, even if the general price level were to come down, its impact on imports and exports is likely to be small for another reason. Imagine, say, a recession in the local economy due to aggregate demand failure. The effects of the resultant a drop in the domestic general price level relative to the price level abroad will become partially neutralised by a rise in the exchange rate, through the very trade flows the fall in the domestic general price level engenders: the increased exports and reduced imports raise the exchange rate and thus dampen these movements to some extent. Their contribution to the reversal of the depressed state of the local economy is thus

partially lost. Exchange rates, rather than reacting to internal macroeconomic disequilibrium and contributing to its resolution, react to external balance-of-payments (BoP) disequilibrium and contribute to its resolution. While BoP equilibrium shields an equilibrated local economy from destabilising influences from abroad, it equally shields a disequilibrated local economy from equilibrating influences from abroad.

This brings us to exchange rates. The necessity of converting national currencies by way of an exchange rate is the direct result of the relinquishment of commodity for bank money. Because gold and silver possess attributes which make them inherently suited as media of exchange, trading nations (just as trading individuals) can be expected spontaneously to gravitate towards their recognition and adoption as money. These moneys thereby automatically gain international status, international trade no longer requiring the conversion of national currencies<sup>6</sup>. A commodity-money system thus turns all countries into regional economies, regional competitiveness and productivity becoming the only requirements for regional prosperity, without any scope for mercantilist manipulation. By contrast, a bank-money system turns currencies into abstract units of account with no intrinsic value. Lacking inherent attractiveness, their use requires undergirding by the force of law (the principal point of Frankel's 1977 famous study). And since the necessary jurisdiction to enforce the use of a specific legal tender exists only nationally, currencies become uniquely national and thus demand mutual conversion by way of exchange rates.

In the context of a corporate bank-money economy, the size of funds seeking currency conversion will at any moment of time be large and changeable, because:

1. bank money can be created and destroyed with speed and ease,
2. financial markets are inherently speculative in a corporate economy (as explained above),
3. financial markets are increasingly globalised due to the information revolution,

---

6. Insofar some local gold coin lacks international recognition and conversion is required, it will merely be a matter of exchanging coins of different stamping or weight-denomination, which implies hardly any price distortion, apart from the probable payment of a small handling fee for the proverbial "money changers".

4. corporate business (due to the increased capital intensity and strengthened profit motive) generates large surpluses, leading to the large savings handled by institutional investors.

Hence, the exchange rate of especially smaller, developing countries with limited reserves to resist speculative pressure, will be inherently unstable.

### 8.3.6 Dissenting voices: the alleged macroeconomic stability of a bank-money economy

There are also economists who argue that a bank-money economy is relatively more stable (in a macroeconomic sense) than a commodity-money one.

Echoing nineteenth-century Banking School doctrine, some authors from a wide variety of ideological and theoretical persuasions (e.g. Hutt 1974, Yeager 1986, Greenfield and Yeager 1989, Guttman 1994: 87-89) argue that, because the bank-money stock can adapt itself more easily to the "needs of trade", the macroeconomic stability of the economy is enhanced. Generally speaking, by loosening up the supply of finance and reducing the scope for a financial constraint on spending, a bank-money system is believed to contribute towards macroeconomic equilibrium. A number of criticisms can be levelled at this view.

Firstly, the Banking School view ignores the fact that variability in spending plans is in itself a source of instability - an instability facilitated by the lack of a disciplining influence of a stable and relatively inflexible stock of money. Implicit in the Banking School argument is the idea that macroeconomic stability is a matter of ensuring that all planned spending can be financed: financial equilibrium is macroeconomic equilibrium. But this idea, which also underlies Yeager's (1986) notion of "monetary disequilibrium", is surely mistaken. Macroeconomic equilibrium is attained when actual spending is roughly equal to planned aggregate supply (i.e.  $\Sigma PG_d = \Sigma PG_s$ ), *not* when all spending plans, whatever their level, can be financed (i.e.  $\Sigma PG_d = \Sigma PG_d$ ). It has to be admitted that, under a commodity-money system, variable liquidity preference can indeed cause a degree of macroeconomic instability, which a bank-money system may to some extent remove. But in its place, a bank-money system introduces a new, in all likelihood greater volatility into the system by



dethroning a stable money stock as a main determinant of total spending and crowning unstable expectations in that position.

Secondly, a bank-money system cannot even guarantee that the money stock perfectly adapts itself to the "needs of trade" (as the Banking School held) and that no financial constraints on spending (and economic growth in general) exist. There may still be finance- and income-constraints on spending under a bank-money system, more particularly when the system is in recession or depression. As discussed above, recession tends to make credit demand low and inelastic, with the result that income takes on an even more constraining role.

Alternatively, a commodity-money system is viewed as macroeconomically destabilising for the very reason that the money stock is inflexible, which is alleged to force depression and unemployment on the economy. This view too is upheld by authors from very different ideological and theoretical persuasions - from the monetarist Anna Swartz (1982: 141, "a new noninflationary gold standard can [not] be achieved without bankruptcy and loss of employment") to the Keynesian Steven Plaut (1982: 114, "even if the system were feasible .. the 'gold standard' contains a serious deflationary bias"). Indeed, a greater scarcity and inflexibility of the money stock will enforce a significantly reduced pace of capital accumulation, which will certainly cause depression if the capital needs of firms are not concurrently reduced. But, as explained above, this is exactly what will happen when the size and capital-intensity of the average private business firm is brought down by a repeal of free incorporation: the full-employment level of goods supply ( $\Sigma PG_{s,FE}$ , see chapter 3) will be significantly brought down, so that spending levels ( $\Sigma PG_d$ ) can be deflated without necessarily causing unemployment. Any thought of a restoration of a commodity-money system should, therefore, be coupled with a repeal of free incorporation, as seems to be overlooked by the traditional advocates of the genuine gold standard. In that way, it can be ensured that the increased scarcity of finance need not lead to recession and unemployment.

Coupling a return to a commodity-money system to a return to non-corporate business forms is important in another sense as well. The relatively rigid supply of money of a

commodity-money world will under normal circumstances be flexible enough to adapt itself to the financial needs of real economic growth. But in an economy dominated by powerful corporations and labour unions prices are capable of increasing very rapidly, much more rapidly than what a commodity-money system can adapt itself to. Hence, in order to eliminate inflationary biases and enhance the downward flexibility of prices/incomes, it is imperative to reduce market concentration in both goods and labour markets. An important step in that direction is provided by a return to predominantly non-corporate business forms, which will also evaporate the need to create a countervailing power in the form of a legally privileged trade-union movement, which largely emerged in reaction to corporate power anyway (see Munkirs 1988: 14).

#### **8.4 GOVERNMENT STABILISATION OF A CORPORATE BANK-MONEY ECONOMY**

Up to the present moment, we have only talked about the inherent instability of a corporate bank-money economy, when left to its own devices. But governments can, of course, try to compensate for that instability by manipulating total spending or money creation in appropriate ways. As it turns out, there are aspects to a corporate bank-money economy which impede government stabilisation, as well as aspects which facilitate it. We will start with the impediments. Given the extent of the topic, the various issues will only be discussed globally, concentrating on broad institutional issues.

Starting with fiscal policy, while an overheated economy can more or less effectively be cooled down by a fiscal surplus, the stimulation of a depressed economy by a fiscal deficit, though sometimes necessary and appropriate, can also have negative side-effects which have proven increasingly troublesome: the efficiency of an expanding public sector is not unquestionable, there are risks of triggering inflationary spirals, and the increased interest payments can place a heavy burden on government resources. Even so, when a corporate bank-money system is seriously depressed (and depressed for non-structural reasons), there is probably no better way of stimulating it than by expansionary fiscal policy financed, if necessary, by money creation (Simons 1948: 117).

As for monetary policy, the central bank can try to stabilise total spending by stabilising money creation. Money creation has, however, proved only partially manipulable. The interest-elasticity of credit demand tends to be reduced by pessimistic expectations during depressions and by financial innovation during booms. Moreover, in small open economies, the central bank cannot always set the interest rate in accordance with the stabilisation demands of the domestic economy, also having to take account of the requirements for external (exchange-rate and balance-of-payments) equilibrium.

A corporate bank-money economy, however, also displays important stabilisation advantages. The main interest groups in such an economy (labour, business and government) tend to be so large and powerful, that centralised agreements can be made about wage and price increases. Hence, provided the necessary social cohesion exists, the government can apply a kind of moral suasion to convince business and labour to link their nominal income demands to expected productivity gains, through which the general price level can eventually be brought under control (Guttman 1994: 99). Such has indeed been the way in which the main European nations rid themselves of their inflation in the eighties.

With the general price level stabilised, the table is cleared to stabilise money-creation and spending levels around some appropriate growth path, so as to avoid inflationary impulses. A corporate bank-money world displays similar advantages for monetary stabilisation: banks tend to be relatively large and few in number. To the extent that this is the case, monetary authorities are once again in a position to apply moral suasion by personally approaching those relatively few bankers with the request to exercise restraint in their lending practices. Such moral suasion stands divorced from any formal policy, except that the central bank can use its ability to manipulate banks' profit margins as a stick or carrot to encourage compliance. When the government furthermore disciplines its own finances, the domestic money-growth rate can be adapted with reasonable effectiveness to some projected real-growth rate. Incidentally, the fact that money-growth targets are customarily linked to real-growth targets implies that the monetary authorities are not overly concerned about spending variations linked to short-term instability in stationary-money holding, which is difficult to anticipate anyway.

With the general price level and domestic money creation reasonably stabilised, the remaining concerns for the authorities are the stabilisation of the exchange rate and the protection of the economy against financial-market disturbances from abroad. In this context, the best a government can do is to ensure that its local economy is well-managed (in the sense as described above), competitive and investor-friendly as well as to build up sufficient reserves to discourage the most capricious of currency speculators. Even so, there will always be a degree to which countries remain exposed to disruption due to currency speculation and short-term movements on its capital account.

This brings us to the real instability problem of modern capitalism. Even the most secure and best-managed economies cannot protect themselves against the instability of inherently nervous and fragile financial markets. This nervousness and fragility can again be attributed to the institutions of private incorporation and bank money. The risk protections of limited liability and the central bank's lender-of-last-resort facility encourage financial institutions to take on more risk. As a result, banks are inclined continually to push their risks against the outer limits of what is prudent (see Chick 1997: 539), also because the profit motive is boosted by the corporate form. And when these limits are overstepped (as seems inevitable from time to time), the results can be all the more serious, because the safety of the banking system's credit pyramid is probably significantly exposed to stock-market slumps. Therefore, to adapt Minsky's (1982) phrase, "it' *can* happen again" - even if disasters of apocalyptic proportions remain unlikely, in view of the greater power and skill of modern monetary authorities.

In sum, formal policy (whether market-related or direct regulatory intervention) can provide only partial control over a corporate bank-money system, with a considerable amount of stabilisation having to be effected informally, i.e. by the authorities personally and directly approaching the big players (big labour, big business and big banking). Hence, the macroeconomic stability of a corporate bank-money system, insofar achieved, is but in part the fruit of formal policy, has virtually nothing to do with the successes of spontaneously operating market mechanisms and is to an important degree the result of

effective central bargaining through moral suasion by the authorities. But even such a policy has its limits, especially when it comes to attempts to stabilise financial markets.

The stabilisation of a corporate bank-money system is problematic in another respect as well. Even if such stabilisation manages to approximate macroeconomic equilibrium, there is no guarantee that full employment will be attained. Because a corporate bank-money economy makes high demands on entrepreneurial skill and requires large amounts of starting-up capital, the chances are good that the supply of entrepreneurship and capital is insufficient relative to the size of the total labour force - especially in developing-country environments where political turmoil and inadequate educational standards tend to frustrate the development of entrepreneurship and the accumulation of capital. Such countries, of which South Africa is a good example (in spite of recent political progress), have little hope of generating sufficient employment in the foreseeable future, the more so because an increasingly globalised economy requires a country to keep up with the best - or lose out.

## CONCLUSION

We defined secondary institutions as those institutions which impact on the power and relevance of tendencies connected to entrepreneurship, the price mechanism and uncertainty. As the most important secondary institutions we identified the limited-liability corporation and the bank-money system. The nature of these institutions was indicated, from which we deduced the ways in which they tend to undermine the spontaneously equilibrating powers of the market process, particularly by bolstering the role of uncertainty as a determinant of total spending, by making higher demands on entrepreneurship and by frustrating the potential contribution of the various price effects.

Insofar a corporate bank-money system can be stabilised, an important role has to be played by the informal moral suasion by the authorities of the main players in the economy. Such a stabilisation mechanism totally bypasses market relations and has nothing to do with any spontaneously stabilising market device. Nonetheless, the inherent instability of financial markets and chronic unemployment in developing countries with weaker

entrepreneurial cultures will probably remain beyond the reach of the most successful stabilisation of a corporate bank-money world. Implicit in our argument is that a return to a non-corporate commodity-money world should be able to provide both more macroeconomic stability *and* more employment, although questions surrounding the practicality of such an idea have remained unaddressed.

It was also concluded that the institutional characteristics of "the economic society in which we actually live", which make reliance on classical (*laissez-faire*) policies "misleading and disastrous" (Keynes 1936: 3), are that of a corporate bank-money economy. We found compelling evidence that the *General Theory* presupposes such an institutional setting. But why a corporate bank-money system should be regarded as the "general case", as opposed to the "special case" of the non-corporate commodity-money world of the classics, remains debatable. That topic will be further pursued in the next chapter.

Because this chapter conducted behavioural theory in terms of tendencies rather than laws, it fitted within our topic of "macroeconomics without laws".

## Chapter Nine:

THE ECONOMICS OF KEYNES'S *GENERAL THEORY*:

## AN ASSESSMENT

*It is a good proof of Keynes' intuitive genius that he reaches practical results which in many respects are very much superior to his deficient statements of the central theoretical problems*  
 (Myrdal 1939:33)<sup>1</sup>

## 9.1 INTRODUCTION

After having completed both the identification- and choice-theory of macroeconomic coordination, we are finally ready to turn our attention to Keynes's economics, in particular as concerns the *General Theory*.

This chapter falls within our broad theme of macroeconomics without laws, because it shows how (a) Keynes's analysis runs into trouble as soon as it adopts a Marshallian approach by using laws to explain behaviour (b) his behavioural functions are meaningful only when interpreted as institution-driven tendencies and (c) the various theoretical constructs of the *General Theory* (the D-Z model, the multiplier model, liquidity preference theory and the theory of money) can be assessed in terms of identification theory, making hardly any use of behavioural theory at all, let alone law-based behavioural theory. At times, our assessment of these theoretical constructs is also conceptual, arguing that the meaning which Keynes invests in concepts like the interest rate or money is contrary to common usage. Such a conceptual critique, however, also fits the broad theme of this study (even if not directly the title), in that it illustrates the important Aristotelean notion expressed in chapter 1 that theory about the form or nature of phenomena can provide important insight and, in fact, precedes theory about the causal relationships between

---

1. It should be noted that Myrdal comments on Keynes's *Treatise on Money* rather than the *General Theory*. Undoubtedly with ironic intent, Myrdal is echoing Keynes's own remarks on Marshall: "It is an essential truth to which he [Marshall] held firmly that those individuals who are endowed with a special genius for the subject and have a powerful economic intuition will often be more right in their conclusions and implicit presumptions than in their explanations and explicit statements. That is to say, their intuitions will be in advance of their analysis and their terminology." (quoted by Kaldor 1985: 5).

phenomena. Because Keynes starts with the wrong notion of what is an interest rate or what is money, he ends up with a wrong theory about what determines the level of interest rates or of the utility of money.

## 9.2 THE BASIC THEORETICAL STRUCTURE: THE D-Z MODEL

### 9.2.1 An outline of the model

We start with an overview of the D-Z model, as expounded in chapter 3 of the *General Theory*.

The aim of the model is to determine the demand for labour by entrepreneurs as the point of intersection between two schedules: the Z and D functions. These functions are drawn in proceeds-employment ( $\Sigma PG - \Sigma N$ ) space, with proceeds ( $\Sigma PG$ ) being defined as aggregate sales minus user cost. User cost refers to total spending on intermediate goods net of investment goods<sup>2</sup>. Hence, proceeds comprise total sales of *finished* (consumption and investment) goods only or, what amounts to the same thing, total value-added attributable to employing a certain amount of factor inputs, labour in particular.

In the light of Keynes's definition of Z, namely as "the expectation of proceeds which will just make it worth the while of the entrepreneurs to give that employment" (1936: 24), its logic is clear. It expresses the sales expectations required to induce entrepreneurs to provide a certain amount of current employment (N), whereby the level of Z is obviously determined as a function of currently planned employment:  $Z = \Phi(N(t)_{\text{planned}})$ . Given that Z refers to future sales, it can in terms of our notation also be written as  $\Sigma PG_s(t+x)$  if G includes only finished goods. Since the realisation of future sales depends on a corresponding amount of future demand ( $\Sigma PG_d(t+x)$ ), Z can equally be regarded as *required* future demand. The Z function should then be written as  $\Sigma PG_d(t+x)_{\text{required}} = \Phi(N(t))$ . As an additional quality of the Z function, Keynes (1936: 25) mentions that Z designates that amount of expected sales at which expected profits are maximised for a given

---

2. If intermediate goods are defined, as we do, as goods bought and sold by firms (entrepreneurs), intermediate-goods spending covers all transactions within the firm sector, including spending in final investment goods.



level of planned  $N$ . Without explaining exactly how, Keynes thus suggests that at each point on the  $Z$  function marginal cost is equal to (expected) marginal revenue, in standard Marshallian microeconomic fashion.

By contrast, the  $D$  function gives the level of expected sales of final goods as a function of presently planned employment:  $D = f(N(t))$  or  $\Sigma PG_d(t+x) = f(N(t))$ . Whereas the  $Z$  function determines proceeds *required* to justify a currently planned  $N$ , the  $D$  function specifies proceeds *actually expected* as a function of a currently planned  $N$ . The suggestion of present employment levels determining expectations about future proceeds is based on the idea that incomes are created in the process of providing employment. These incomes, in turn, give rise to future spending and thus to the formation of expectations about future spending. However, Keynes suggests that only part of expected future spending is so determined, namely consumption spending ( $C$ ). Hence, the  $D$  function boils down to a version of the consumption function, with expected consumption demand being explained in terms of currently planned employment/income ( $\Sigma PC_d(t+x) = f(N(t))$ ). Expectations about investment spending ( $I$ ) are taken to be determined independently from any present levels of employment/income.

The intersection between the  $D$  and  $Z$  schedules then gives us the point of effective demand ( $D = Z$ ), which determines the level of current  $N$  at which expected demand equals required demand ( $\Sigma PG_d(t+x) = \Sigma PG_d(t+x)_{\text{required}}$ ) with expected profits being maximised as well. When expected demand is greater or smaller than what is necessary to justify current employment  $N$  ( $D > Z$  or  $D < Z$ ), incentives obviously exist to increase or decrease  $N$ . Given stable and fully specified  $Z$  and  $D$  functions, the point of effective demand, and hence the level of current employment, is determined by the level of expected  $I$  only - an idea commonly described as the Principle (rather than the point) of Effective Demand (PoED) and regarded as the core of the *General Theory*.

Keynes (1936: 26) emphasises that there is no reason for the point of effective demand to coincide with the point of full employment except by chance, namely when expected investment happens to be at a specific full-employment level. Say's Law is then interpreted

to mean that current employment  $N$  will always generate an amount of expected proceeds necessary to justify  $N$ , with the result that  $Z = D$  for all levels of  $N$  and the  $D$  and  $Z$  functions overlap. Under these circumstances, the profit motive can be relied upon to drive entrepreneurs towards increasing their labour demand until labour supply is finally used up and production becomes inelastic, at which point full employment is reached. In that way, Say's Law is taken to imply "the proposition that there is no obstacle to full employment" (1936: 26).

Basically, the D-Z model contends that employment remains stable at its present level if future macroeconomic equilibrium is expected - after all,  $Z = D$  can also be expressed as  $\Sigma PG_d(t+x) = \Sigma PG_s(t+x)$ . Hence, when  $\Sigma PG_d(t+x) > \Sigma PG_s(t+x)$ , current employment plans are revised upwards, when  $\Sigma PG_d(t+x) < \Sigma PG_s(t+x)$  current employment decreases. This confirms how Keynes's concept of equilibrium indicates a position of rest.

A certain chronology is implicit in the D-Z model. First of all, the model is periodic rather than momentary, each production round taking up one period  $x$ . The model also assumes that all production rounds run concurrently and that employment decisions are taken right at the start of the current period  $x$ , which we will designate as moment  $t$ ; at approximately that time, the corresponding factor incomes are paid out as well. At the end of period  $x$  (moment  $t+x$ ), the production attributable to current employment decisions is finished and brought to market. That is also the time the factor incomes derived from current employment decisions are supposed to be spent (c.f. Chick 1983: 15-22).

The D-Z model is ambiguous about how long period  $x$  should be. On the one hand, the suggestion is that it should be fairly short, as it is supposed to correspond with the length of a single production round, which one imagines not to be longer than a week or two at the most. On the other hand, there may also be reason to suppose that period  $x$  is longer than that, as the employment decisions at the start of period  $x$  are based on expected demand at the end of period  $x$ . And firms do not base their employment decisions on expected demand of two weeks into the future, but rather something like a year - especially in a modern economy where retrenchments are drawn-out affairs.

The D-Z model, which is foundational to the whole theoretical structure of the *General Theory* ("the substance of the General Theory of Employment" 1936: 25), has spawned an uncommon amount of confusion and controversy. We will discuss some of the main problems in broad outline.

### 9.2.2 A Critique of the Z function

Our aim in this section is to point out how the problems with the Z function are due to Keynes's failure to apply patterning abstraction to the determination of Z, with the result that the Z function becomes a law rather than a tendency. We also explore some of the particular problems connected to Keynes's use of the Marshallian method. On the basis of identification-theoretical considerations, Keynes's elimination of intermediate goods (user cost) from income and spending will also be criticised.

As mentioned in chapter 1, theory about the form or nature of phenomena precedes theory about causal relationships between phenomena. Given that production takes time, the nature of labour demand is such that it is partly based on expectations about future demand. Firms require a certain level of future sales in order to vindicate a certain level of current employment. And if we assume the profit motive, these sales must include a certain amount of profit sufficient to induce the entrepreneurial effort involved. Otherwise, employment will eventually fall due to disappointed profit expectations. The basic idea behind the Z function is, therefore, valid and uncontroversial: the productive output derived from a certain amount of current employment must be sold, and sold at a certain price, for that employment to be justified. While this logic applies in the first instance to the individual firm, there is no problem in making it applicable at the aggregate level as well. The required future sales of all the current firms can simply be added together (c.f. Torr 1988: 74-76). The only unrealistic abstraction is that all production rounds are taken to be of equal length and perfectly synchronised, with the result that current employment is supposed to be vindicated by the sales of the same future moment.

The problems with Keynes's Z function only start when Keynes treats Z as a concrete amount to be determined as a quantitatively precise function of present employment

decisions by way of the differential calculus in Marshallian fashion (c.f. Keynes 1936: 39-40), with the result that the  $Z$  function becomes a law rather than a tendency. Amongst others, all the weaknesses of Marshallian theory as discussed in chapter 7 are taken on board; an intolerable degree of exactness is forced on the determination of profit/income (as Keynes defines these terms) introducing unnecessary complexity and obscurity (Keynes 1936: chs 4-7) and aggregation difficulties are encountered (Patinkin 1982: 126, Torr 1986: 74).

It proved particularly difficult to make the  $Z$  function consistent with all the analytical rigours of Marshallian analysis, without deviating from the attributes Keynes himself ascribed to that function. Such problems, insofar soluble, turned out to require a considerable amount of ingenuity to overcome, almost to the point of spuriousness (for overviews of the relevant literature see Asimakopulos 1982, Patinkin 1982: ch 5 and King 1994). While space and relevance prevent us from going into the detail of all of these problems, one issue can briefly be mentioned, primarily because it seems overlooked by the main Marshallian interpreters of the  $Z$  function (Weintraub 1957, Wells 1960, Chick 1983, Davidson 1987 and Torr 1988).

Wells (1960) arrives at the aggregate level by multiplying both sides of  $P = MC$  (the profit-maximising condition under perfect competition) with total production  $Q$ , so as to obtain  $P.Q = MC.Q$  (1960: 537), whereby  $P.Q$  represents proceeds and, as such,  $Z$ . It should, however, be clear that  $MC$  cannot be used to calculate total cost for the firm (and, assuming a single representative firm, for the whole economy) by multiplying it with  $Q$ , since any particular value of  $MC$  is obviously unique to *the particular marginal unit* concerned. Assuming decreasing marginal returns,  $MC.Q$  must seriously overstate total variable cost. Moreover,  $Z$  should comprise the sum of both total cost and profit (Keynes 1936: 23-24), while profit obviously cannot be calculated on the basis of marginal cost only, requiring (as any first-year microeconomics student knows) knowledge of both marginal cost ( $MC$ ) and average cost ( $AC$ ). Only if constant returns are assumed ( $MC = AC$ ), can  $MC.Q$  be made to represent total factor cost.

While the other Marshall-Keynes harmonisers avoid the problem by not explicitly deriving total cost from marginal cost, this derivation is nonetheless implicit and unavoidable<sup>3</sup>. Profit maximisation under perfect competition demands that at every point on the Z function,  $P = MC$  must hold. Given that proceeds are defined as  $P.Q$ , the necessary implication is that  $Z = MC.Q$ , which must overstate total cost. The fact that Weintraub (1958) and Davidson (1987) have abandoned Keynes's assumption of perfect competition and, instead, have determined prices as a mark-up over marginal cost ( $P = f(k, MC)$  with  $k$  referring to the mark-up) to give expression to the market power of firms under imperfect competition, does not solve the problem: proceeds will still be determined as a multiple ( $Q$ ) of marginal cost. In this context, it is significant that Davidson (1962) emphasised the logical equivalence of Weintraub's (1958) and Wells's (1960) versions of the Z function, with the latter being quite explicit about  $Z = MC.Q$ .

If we indeed assume constant returns ( $MC = AC$ ), two results follow. The first is that profits are maximised at a level of zero excess profit, entrepreneurs being rewarded with the normal profit included in cost only. The second is that the Z function becomes linear, which is exactly what Keynes suggests in a much-discussed footnote (1936: 55, n2). This footnote implies that Z measures total variable cost, which can only be true if  $MC = AC$  and profits are zero, although the footnote also states somewhat mysteriously that the slope of Z is unity (c.f. Patinkin's 1982: 146). Moreover, when drawn in income-spending space, a linear Z function turns into the familiar 45° line of IS-LM analysis complete with a fixed price level (c.f. Chick 1983: 255). This suggests that "bastard 45° Keynesianism" is, perhaps, not so aberrant after all, although the spending axis should, strictly speaking, indicate *expected-future* spending rather than current spending as in IS-LM<sup>4</sup>. Nonetheless, constant returns would conflict with Keynes's explicit earlier endorsement (in chapter 2, 1936: 17) of decreasing returns.

---

3. Some, like Asimakopulos (1982) and Chick (1983), determine total cost independently from the Z function, namely as employment times nominal wage ( $N.W$ ). But when  $MC = AC$ ,  $N.W$  becomes the actual Z function (as Chick 1983: 255 acknowledges), provided we ignore fixed cost.

4.  $MC = AC$  is obviously equivalent to  $MP = AP$  (marginal product = average product). For a given nominal wage, a linear production function would indeed imply a linear Z function, but not necessarily a 45° Z function, when it is drawn in proceeds-employment space.

Furthermore, the application of Marshallian maximisation analysis forces Keynes to provide an intimate link between total sales and total profit (the variable to be maximised), which causes him to regard only value-added and deduct intermediate goods (user cost) from total sales (Keynes 1936: 23-24). The exclusion of user cost fits Marshallian analysis in another way as well: because Marshall assumes only one variable input in the short run (namely labour), short-run marginal cost includes labour cost only. The same is achieved by Keynes through subtracting user cost from total sales (c.f. Keynes 1936: 66-73).

However, our identification-theoretical analysis of chapter 3 established how macroeconomic equilibrium is related to financial equilibrium (the *finec*) and, as such, about the circular flow of income and expenditure. If so, any form of trade in whatever kind of good or service matters, since any such good or service gives an income when sold and creates a transactions demand for money when bought. Intermediary-good sales should, therefore, remain part of total sales. While national-income accounting has to remove all double-counting, macroeconomic-monetary accounting (as embodied in our equilibrium conditions) surely has to leave them all in! National-income accounting should strictly speaking not be integrated in monetary circular-flow analysis at all, whatever its uses and merits may otherwise be.

In this context, it is important to note that the share of intermediate-goods spending in total spending is not negligible. If goods go through various production stages and each stage is performed by a different production unit, they are sold several times before reaching their final users. Hence, a significant proportion of total spending must, at any single moment in time, be on raw material, components and semi-finished goods, in addition to finished investment goods - probably the lion share (see Hayek 1935: 47-48, Yeager 1986: 369). And then we are not even taking into account the transaction volumes due to pure trading (i.e. wholesaling, retailing as well as trading in second-hand goods and financial assets, such as at the stock exchange), which evidently should be included in the income and spending figures of the *finec* as well.

Similarly, our identification-theoretical analysis suggests how income can straightforwardly be defined as money received from the sale of *all* goods or services of

*whatever kind*, instead of Keynes's (1936: ch 4) unnecessarily complicated definition of income as value added from production which can be spent without jeopardising real wealth. With income simply defined as money received from all sales, complications with the definition of saving and investment (as discussed by Keynes 1936: chs 6-7) vanish as well. Household saving becomes income (defined in our sense) minus consumption spending which thus becomes finance available for increased stationary-money holding, lending or loan repayment (see chapters 3 and 4 above), though it may also be destined for goods spending at some further removed moment, in line with Keynes's finance motive. By contrast, business saving, which Keynes does not consider, can be defined as income net of all planned spending, except for planned increases in investment. Investment can simply refer to increases in spending on investment (or intermediary) goods ( $\Sigma \Delta PI_d$ ) (see chapter 4 above).

If Keynes had applied patterning abstraction, had steered clear of Marshallian analysis and had included all spending in his proceeds, his Z function would merely have involved two uncontroversial theoretical constructs. Firstly, it would have needed an aggregate production function broadly representative of current skills, technology and capacity utilisation, necessary to transform aggregate levels of employment (N) into aggregate levels of real production ("the physical conditions of supply", 1936: 89). Secondly, it would have to consider some average margin of nominal profit over total nominal cost, not necessarily representing maximality but only sufficiency - a profit sufficient to call forth the entrepreneurial effort necessary to employ  $N^5$ . These two constructs (the one determining the institutional context and the other offering the motive force) would then have given Keynes a level of required nominal sales (price times quantity), for each level of N.

Finally, it is difficult to avoid the impression that Keynes excluded user cost from proceeds in a somewhat mischievous bid to render Hayek's (1935) *Prices and Production* irrelevant. A crucial element of Hayek's theory is the idea that capital intensification

---

5. Patterning abstraction relieves the theory from having to generate any further concretisation of that production function or these profit-sufficiency levels, which would have added nothing to its explanatory power anyway, given that neoclassical theory never specifies the parameters of its functions.

lengthens the structure of production (increases the number of production stages), thereby magnifying the ratio of intermediate-good to consumption-good spending ( $\Sigma PIn_d/\Sigma PC_d$ ) for any given moment or period in time. With intermediate goods excluded, the whole point of Hayek's theory is removed from view.

### 9.2.3 A Critique of the D function

The problems with Keynes's D function are unrelated to any attempt on his part to couch his analysis in Marshallian terms. Rather they turn on identification-theoretical issues as related to the form of the *finec* and on choice-theoretical issues as related to the causal relation which can be derived from the *finec* in a certain institutional context. After all, the D function exploits the behavioural relation between current aggregate income and future aggregate spending, which can be derived from the *finec* if it is assumed that current income is the main source of finance of future spending and, therefore, its main determinant. As established in the previous chapter, this behavioural tendency presupposes the institutional context of a commodity-money system, because only under such a system is income the main source of finance for spending.

To start with, it is difficult to imagine how individual firms can relate their sales expectations to their current employment decisions, as if they can individually engineer their own sales by their current employment decisions. It is in the nature of incomes paid out as a consequence of the employment decisions of particular firms, that the spending of these incomes is spread out over many markets. As a result, such spending has a marginal effect on any particular market, let alone the particular sales of the firm who paid out the incomes (Asimakopulos 1982: 18). At best, the *finec* establishes a link between aggregate income and aggregate spending, not between the particular income of some firm and the particular spending on some good.

The aggregate perspective is not unimportant, as it is not uncommon for firms (particularly the larger ones) to hire the expertise of macroeconomic forecasters to provide them with a general outlook on future aggregate spending in the economy, which may have



an important influence on spending in their particular market - especially if we abstract from microeconomic coordination failures, i.e. mismatches in the *composition* of aggregate demand and supply, as we are allowed to do in macroeconomic analysis. Such macroeconomic forecasting is, however, not sufficient to vindicate Keynes's D function. Firstly, there is no reason why macroeconomic forecasters should have sufficiently similar views on future spending to warrant a solitary, stable D function for the whole economy. Secondly, the D function explains expectations about future demand in terms of current employment decisions, while our macroeconomic forecaster, insofar he bases his forecasts on current employment/income at all, can only consider *actual* levels thereof. After all, he cannot know what the hypothetical employment decisions of all the firms at any single moment are.

But Keynes seems to have anticipated this problem. In chapter 5 of the *General Theory*, he introduces a distinction between short-term and long-term expectations, the former referring to the sales expectations of consumption-good producing entrepreneurs and the latter to the sales expectations of investment-good producing entrepreneurs. He then assumes short-term expectations to be stable and approximately correct, on the strength of which the difference between actual and planned current employment/income levels as well as between actual and expected future spending may be overlooked - at least in the consumption-goods producing industry. The standard Keynesian consumption function may then be taken as a proxy for the D function: instead of employment/income plans determining expectations about future spending (as the D function does), *actual* employment/income levels may be taken to determine *actual* future spending levels (as the consumption function does).

But Keynes has not thereby solved all his problems. It must be realised that the D function is not just an explanation of future sales as a function of current employment/income, but also an explanation of exactly those future sales which are able to justify current employment decisions. In other words, the current income derived from current employment must be used to buy up the production derived from that same current

employment. For that to be true, a number of additional assumptions need to be made, namely that:

1. the income-spending lag (i.e. the time between the receipt and the spending of income in the *finec*) is fixed and stable, and starts at the same time for all income earners; hence, income-spending rounds are perfectly synchronised,
2. the production lag (i.e. the time between the committing of resources and the coming to market of the resultant production) is fixed and stable and starts at the same time for all firms; hence, production rounds are perfectly synchronised,
3. both lags are equally long and run concurrently (c.f. Chick 1983: 15-21).

Because in real life the income-spending and production lags are variable, uncertain and do not run concurrently, there is no reason whatsoever why current income should be used to buy up precisely the production derived from current employment, as suggested by the D function (in combination with the Z function). This too can be regarded as an identification-theoretical issue, because it assumes a particular form of the *finec*, namely such that the interval  $x$  between  $\Sigma PG_s(t-x)$  and  $\Sigma PG_d(t)$  is fixed and equal for all agents, that *all* incomes are earned at  $t-x$  and that period  $x$  co-incides with the production lag.

It is also not obvious that the consumption function, assuming it were valid, could help us to forecast future consumption spending. The reason is that the relevant income levels may still be unknowable - even when realised. After all, the income out of which future consumption spending is to be financed is obviously generated not only in the consumption-good industry but in the investment-good industry as well. Hence, if the state of long-term expectations is accepted as unstable (as Keynes rightly does, see 1936: ch 12), the income emanating from the investment-goods industry is unstable as well. And when the entire intermediate-good producing industry rather than only the finished investment-good industry is taken into account (as it should), the proportion of total income depending on unstable longer-term expectations becomes considerably larger than Keynes takes it to be. The instability of current income should undermine our ability to forecast future consumption spending on the basis of it, because short-term variations in current aggregate income levels

cannot be closely monitored and the relevant future consumption spending is likely to be financed out of an unknowable series of incomes from the recent past and near future. These are identification-theoretical considerations too, because relating to the form of the relevant *finex*: incomes explaining future spending cannot be claimed to emanate from only some industrial sectors and these incomes date back from an unknowable series of different moments.

There are also reasons to doubt whether future spending is a sufficiently stable function of income anyway, i.e. whether the consumption function is valid at all. As discussed in chapter 8, the essential influence of a bank-money system is that it makes income less important and expectations about the desirability of goods more important as determinants of spending. Hence, the whole idea of future spending being determined by current income seems particularly ill-suited to a bank-money system. Keynes's distinction between the household sector (whose spending is determined by income according to the consumption function - the  $D_1$  function, 1936: 29) and the business sector (whose spending is determined by long-term expectations according to the investment function - the  $D_2$  function, *ibid*) is ostensibly based on the idea that households make little or no use of bank credit while firms finance most of their (investment) spending by bank credit (c.f. Chick 1983: 105). This may have been true in the 1930s, but it no longer applies to the modern situation, where households make extensive use of bank loans and credit cards. When credit demand is unstable, future income is unstable, so that future spending cannot be forecasted on the basis of income, even if we take income to be an important determinant of spending. In short, the consumption function can be regarded as an event-triggered tendency (income changes being the trigger for consumption changes) whose institutional facilitator (households making no use of bank credit) has been lost.

Only to the extent that the authorities can be relied upon to stabilise credit demand through policy measures as discussed in chapter 8, will total spending follow a more or less regular growth path and can future spending be forecast on the basis of present income (assuming a reasonably stable stationary-money holding). But such a relation will then apply

to total spending in general rather than consumption spending in particular, as suggested by the Keynesian consumption function. If a Hayekian pattern prediction of future spending (and income) in a corporate bank-money economy is to be made, our analysis of chapter 8 suggests that the following factors be watched:

1. the willingness and ability of the authorities to stabilise wages/prices through formal policy and informal moral suasion,
2. the willingness and ability of the authorities to stabilise money creation through formal policy and informal moral suasion,
3. the level of foreign-exchange reserves of the central bank (determining the country's vulnerability to currency speculation),
4. the performance of the country's main export markets (assuming an open economy), and
5. the stability of world financial markets.

Indeed, most macroeconomic country-studies focus on precisely such factors.

Econometric studies, insofar they establish a stable relationship between aggregate income and consumption, do not thereby prove that current income is a reliable indicator of future consumption (except if the future is taken to be meaninglessly close), because that relationship is not inherent but depends on the institutional factors as enumerated above.

### **9.3 KEYNES'S TREATMENT OF SAY'S LAW**

A particular view of Say's Law is, furthermore, implicit in the D-Z model. The errors in this view relate to identification-theoretical issues, namely Keynes's incorrect specification of the macroeconomic-equilibrium condition, or they can be ascribed to Keynes's inability to realise that the failure of Say's Condition (the identification-theoretical side to Say's Law) does not imply the failure of Say's Tendency (the choice-theoretical side to Say's Law).

Firstly, Keynes implicitly regards Say's Condition in its continuity form, as is evidenced by the fact that the respending of income is treated as a sufficient condition for macroeconomic equilibrium. In doing so, the continuity conditions are implicitly taken for granted: macroeconomic equilibrium obtains in the starting-off situation and there is no

economic growth in the interim. It was observed in chapter 8, however, that these conditions are more applicable to a non-corporate commodity-money world than to a corporate bank-money economy, as the latter creates possibilities for rather large, short-term variations in spending and growth. The awkwardness of this is that Keynes otherwise accepts a corporate bank-money system as the institutional context of the *General Theory*.

Secondly, Keynes interprets Say's Condition as meaning that  $D = Z$  obtains along the entire length of the  $D$  and the  $Z$  functions (the functions totally overlap). As such, Say's Condition becomes equivalent to "the proposition that there is no obstacle to full employment" (1936: 26). But in any normal understanding, Say's Condition refers only to the achievement of aggregate goods-market equilibrium, which is not a sufficient condition for labour-market equilibrium (full employment). Frank Knight's critical review of the *General Theory* mentions precisely this point: "Mr. Keynes quotes Mill on Say's Law, but does not mention either Mill's explicit exception for crisis conditions which occurs a few pages previously in his *Principles*, or, of course, Mill's doctrine that the demand for products is not a demand for labour, which (however absurd) was one of his chief bids for fame" (1937: 72 n4). Sowell (1972: 210) notes the same objection: "Say's Law .. meant for Keynes not only a coincidence of supply and demand functions but also the automatic maintenance and restoration of full employment. *No such doctrine was expressed by the classical economists..* (emphasis added)". Clower (1994) has more recently criticised Keynes on this issue too.

The implication of Keynes's mistaken interpretation of Say's Condition is that only aggregate demand failure can frustrate the attainment of full employment. Hence, any cause for involuntary unemployment other than insufficient demand is ruled out. While Keynes was certainly justified in chiding the classics for implicitly denying the possibility of involuntary unemployment, he can similarly be criticised for implicitly denying the possibility of structural unemployment, i.e. involuntary unemployment not due to aggregate-demand failure. And this oversight is not harmless, as it provides the theoretical rationale for the kind of economic populism, which attempts to apply expansionary monetary and

fiscal policies as the cure for involuntary unemployment in all and every circumstances. Especially for developing economies with typical structural unemployment rates of between 20% to 30% (such as in South Africa), such policies spell serious macroeconomic destabilisation.

Thirdly, because Keynes's D and Z functions are formulated as precise mathematical relations dealing with concrete amounts, any deviation of aggregate spending from aggregate supply, however small, becomes a violation of Say's Law. In other words, Keynes regards Say's Law solely as Say's Condition ( $\Sigma PG_d(t) = \Sigma PG_s(t)$ ) and any violation of that condition becomes a violation of Say's Tendency. Such an interpretation surely misrepresents the classics. As mentioned in chapters 5 and 8, Say's Tendency does not suggest the perfect maintenance of macroeconomic equilibrium, but merely a relative stability of aggregate spending around planned aggregate supply as well as a medium- to longer-term tendency back towards equilibrium after more serious disturbances have occurred. Sowell (1972: 210) notes how classical authors "postulated a stability, though not absolute constancy, of velocity over longer periods, but recognised short-run changes during various phases of the business cycle". Harris (1981: 99) remarks in the same vein:

[I]t is quite wrong to suppose that [the classics] believed in Say's Identity [Say's Condition in our terminology] except as a long-run proposition .. Say's Identity as a short-run proposition cannot be pinned on them. It is therefore inaccurate for Keynes, who was primarily (but not wholly) concerned with short-run analysis, to write (1936): "From the time of Say and Ricardo the classical economists have taught that supply creates its own demand".

The essence of Keynes's misrepresentation of Say's Law comes out clearly in Davidson (1987: 50) following observation: "Keynes wrote the *General Theory* (1936) in order to show that Say's Law .. was not applicable to a monetary, production economy." But because Say's Condition does not describe a situation of barter (as emphasised *ad nauseam* by now) and because the mere inequality between aggregate supply and demand does not prove its failure (Say's Tendency does not require the perfect satisfaction of Say's Condition), it is quite applicable to a monetary production economy.

Of course, there is good reason to doubt whether Say's Tendency has much chance of holding for the corporate bank-money variety of a monetary production economy. If Keynes

would have argued that in such an economy short-term discrepancies between aggregate demand and supply are much greater and more harmful than the classics supposed them to be and that the long-term self-correcting tendencies are much weaker than the classics supposed them to be, he would have been quite correct. But Keynes unfortunately does not put things like that, nor does he mention that the institutional context of the classics more closely resembled a non-corporate commodity-money system, for which Say's Tendency immediately is a more reasonable proposition.

Lastly, at the risk of appearing pedantic, it may also be pointed out that the classics did not regard Say's Condition as *a subjective expectation* of macroeconomic equilibrium in the minds of entrepreneurs, as Keynes's D-Z model presents it. Rather, they viewed it simply as *an actuality* of macroeconomic equilibrium, be it only approximately and as a longer-term tendency towards such approximate equality. To be sure, if Say's Tendency (the choice-theoretical side to Say's Law) holds, entrepreneurs may have reason to expect the continuation of macroeconomic equilibrium. But that does not justify us to define Say's Condition in terms of expectations about the future. Macroeconomic equilibrium is achieved when  $\Sigma PG_d(t) = \Sigma PG_s(t)$ , not when  $\Sigma PG_d(t+x) = \Sigma PG_s(t+x)$ .

#### 9.4 THE MULTIPLIER MODEL

Keynes (1936: chs 9-10) furthermore extracts an investment-multiplier mechanism out of his D-Z model, in particular its consumption function. According to this mechanism, the eventual effect on income (and employment) of an increase in investment is a multiple of that initial increase:  $\Delta \Sigma PG_s = k \cdot \Delta \Sigma PI_d$ , with  $\Sigma PG_s$  representing income,  $k$  the multiplier and  $\Sigma PI_d$  investment spending. Underlying this logic is a well-known model, customarily described as the "simple Keynesian model":

$$\Sigma PG_d = \Sigma PC_d + \Sigma PI_d \quad (\text{Constituents of total spending}) \quad (9.1)$$

$$\Sigma PC_d = mpc \cdot \Sigma PG_s + X \quad (\text{Consumption function}) \quad (9.2)$$

$$\Sigma PG_d = \Sigma PG_s, \quad (\text{Equilibrium condition}) \quad (9.3)$$

whereby  $X$  is autonomous consumption and the price level  $P$  is assumed to be fixed. We have written all variables in bold, as they express actual, realised amounts rather than

planned amounts. Given that the equilibrium condition holds, the model can be solved as  $\Sigma PG_s = k.(\Sigma PI_d + X)$ , whereby  $k = 1/1-mpc$ . Keynes nowhere explicitly spells out a set of equations like this (though 1936: 63 comes close, merely lacking a consumption function), but since the multiplier effect *can only* be obtained with the aid of such a model, one should surely be allowed to treat it as Keynes's.

From an identification-theoretical point of view, the most conspicuous weakness of this model is its total lack of concern for the variables' time dimensions. If we insert these dimensions into the equilibrium condition and, as a consequence, into the other equations as well, the model changes as follows:

$$\Sigma PG_d(t) = \Sigma PC_d(t) + \Sigma PI_d(t) \quad (9.4)$$

$$\Sigma PC_d(t) = mpc.\Sigma PG_s(t-x) + X \quad (9.5)$$

$$\Sigma PG_d(t) = \Sigma PG_s(t) \quad (9.6)$$

The pivotal change occurs in the consumption function: current consumption spending is made a function of lagged income in Robertsonian style. This is logically necessary by virtue of the fact that income functions *as finance* for current consumption spending and must, therefore, be treated as resulting from realised goods supplies *from the past*. Because the issue turns on the form of the *finrec* establishing a relation between income and spending, it is identification-theoretical in origin. And when consumption is a function of lagged income, multiplier effects are prevented from occurring, as the feedback loop from current spending back into current income is sabotaged.

The analytical significance of the fact that "the logical theory of the multiplier .. holds good continuously, without time-lag, at all moment of time" (Keynes 1936: 122) is that spending bits belonging to *various* moments/periods are added together and used to determine the income of *one* moment/period. This strategy, which squashes a dynamic process into a static equilibrium moment/period (Chick 1983: ch. 14), is clearly inadmissible: the income of a given time frame should be linked to the spending of a time frame which, if not the same, should at least be of equal length - this too is an identification-theoretical issue as it related to the time dimensions of income and spending as these occur



in the *finex*. It is, of course, possible for the effect of an increase in investment on future income to be spread out over a longer period of time and one is allowed to add these time-separated increases in order to judge the overall effect of the investment measure. But that does not mean one can let that accumulated spending determine the income (or employment) of a more condensed period, in Keynes's case even the same moment/period at which the initial investment took place. If one allows spending to be multiplied in this way, one should surely be allowed to multiply the benchmark level of full-employment income as well, both of which would be equally absurd<sup>6</sup>.

Questions can also be raised as to how well the multiplier model fits into the broader logic of the D-Z model, more in particular the former's equilibrium condition. Because we deal with equilibrium conditions, the link with identification theory should once more be clear. The equilibrium condition of the multiplier model,  $\Sigma PG_d(t) = \Sigma PG_s(t)$ , is fundamentally different from that of the D-Z model:  $D = Z$ , which implies the equality between expected and required future demand:  $\Sigma PG_d(t+x) = \Sigma PG_d(t+x)_{\text{required}}$ . A closer resemblance between the two equilibrium conditions can, however, be manipulated by assuming that required demand (Z) is a function of present income rather than employment and that constant returns to scale apply (for which we may possibly have Keynes's approval - see section 9.3 above). In that case, the D-Z equilibrium condition can be rendered as  $\Sigma PG_d(t+x) = \Sigma PG_s(t)$ . If we were to adapt the multiplier model for such an equilibrium condition, it would become:

$$\Sigma PG_d(t+x) = \Sigma PC_d(t+x) + \Sigma PI_d(t+x) \quad (9.7)$$

$$\Sigma PC_d(t+x) = \text{mpc} \cdot \Sigma PG_s(t) + X \quad (9.8)$$

$$\Sigma PG_d(t+x) = \Sigma PG_s(t) \quad (9.9)$$

Again no multiplier effect ensues, because the model merely determines future spending without any feedback into present income. If equilibrium is not achieved at moment t,

---

6. When chronological sense and order is restored, the whole controversy surrounding whether the increase in investment, which sets off the multiplier process, should be regarded as once-off or continuous (for an overview see Chick 1983: 256-267, 1997: 172), melts away. The multiplier model's disregard for proper time references is responsible for the emergence of ambiguity between "once-off" and "continuous".

because, say, future demand is expected to be less than current income ( $\Sigma PG_d(t+x) < \Sigma PG_s(t)$ ), entrepreneurs will simply reduce their current income payments (and thus current employment) by the same amount as the shortfall in future demand. It also becomes clear that once the consumption function determines future spending, the spending variables can no longer express realised amounts, as in the multiplier model. Hence, equations 9.7-9.9 are no longer written in bold.

All in all, we may conclude that the multiplier mechanism, as Keynes presents it in chapter 10, is significantly at odds with his own D-Z model in chapter 3. In the light of this, it is understandable that those Post-Keynesian authors who attach great importance to the D-Z model (such as Weintraub and Davidson) should wish to detach themselves from the equilibrium condition of the multiplier model, which is equivalent to the familiar 45° line of the Hicks-Hansen IS-LM model. While they may be quite right in their criticism of the 45° line, they seem quite wrong in not attributing it to Keynes.

Firstly, the multiplier mechanism depends on the 45° line; hence, if one accepts Keynes's multiplier (as these authors do), one is forced to endorse the 45° line as well. Secondly, the verbal model which Keynes spells out in chapter 6 of the *General Theory* (1936: 63) definitely implies the equality between spending and income analogous to the 45° line. And thirdly, if we assume constant returns (as Keynes may have done as well - see section 9.3 again), the Z function turns into a 45° line when drawn in income/spending space. Indeed, Patinkin (e.g. 1982, 1989b) is always keen to remind Post-Keynesians about the fact that Keynes used the 45° line, to which Davidson (1989: 739) can only reply that Keynes was in this context merely endorsing an *ex post* accounting identity, which holds by definition. Some passages in the *General Theory* (in particular, 1936: 62-65, 85) suggest that Davidson may be right, but it would not help Keynes very much.

First, whether an accounting identity or an equilibrium condition, the equality between income and spending still implies a 45° line in income-spending space. Second, there is strictly speaking no place for *ex post* identities in a model containing dynamic behavioural functions, as it would destroy the concept of choice (c.f. Robertson 1937: 249). As Snippe

(1985b: 295) notes: "[T]he coordination of economic activities presupposes that these activities can be chosen. It is always too late to choose *ex post* magnitudes." This problem is, of course, all over the *General Theory* and not confined to the multiplier model. On the one hand, Keynes explains the logic of his behavioural functions (the employment function  $\{1/Z\}$ , the consumption function, the liquidity-preference function and the investment function) with reference to the underlying decision-making processes, thereby creating the impression that they are about planned amounts. On the other hand, he also uses these functions to analyse actual *ex post* levels of employment, spending and hoarding. This problem, at least for the consumption function, is obscured in the *General Theory*, because:

1. the consumption function is treated as a causal relation between aggregates, which thereby becomes a statistical correlation and bypasses the necessity to explain decision making processes,
2. supply is assumed to be passively accommodating demand (the reversal of the causal direction of Say's Law), with the result that spending plans are automatically realised and demand plans need not be coordinated with corresponding supply plans.

This points to a further problem with the equilibrium condition of the multiplier model and a further way in which it deviates from the D-Z model. By stipulating that current aggregate demand be accommodated by current aggregate supply (thus creating current income), this equilibrium condition is almost more of an aggregate supply function ( $\Sigma PG_s(t) = f\{\Sigma PG_d(t)\}$ ) than it is an equilibrium condition. And this is to be expected. An equilibrium condition can only retain its status as equilibrium condition, if both sides of the equality are independently explained. Otherwise, the unexplained side will automatically get determined by the explained side; in this case, aggregate demand will start to determine aggregate supply and the aggregate-demand function becomes the aggregate-supply function as well<sup>7</sup>. Whatever may be wrong with the D-Z model, the same criticism cannot be

---

7. Because the equilibrium condition of the multiplier model implies a supply function too, it is logically impossible to append the IS-LM model with an AD-AS model containing a second aggregate supply function. Hence, AD-AS is incompatible with IS-LM.

levelled at its equilibrium condition, since both sides of the equality ( $D = Z$ ) are at least explained by separate behavioural functions.

Keynes's acceptance of the equilibrium condition of the multiplier model can now be confirmed in a further way. When saving is defined as income minus consumption ( $\Sigma S = \Sigma PG_s - \Sigma PC_d$ ), that equilibrium condition can alternatively be expressed as  $\Sigma PI_d = \Sigma S$  (Keynes 1936: 63). And just as the full version of the equilibrium condition ( $\Sigma PG_d = \Sigma PG_s$ ) effectively means that spending determines income, so also does the reduced version ( $\Sigma PI_d = \Sigma S$ ) effectively mean that spending (investment) determines income (saving). The fact that Keynes interprets the saving-investment equality in precisely this way (see 1936: 110-112) indicates that he regards it as a version of the equilibrium condition of the multiplier model, hence the 45° line.

## 9.5 FINANCE, SAVING AND INVESTMENT

Keynes's suggestion that investment causes saving and is, in that sense, self-financing, raises further issues, which can be evaluated identification theoretically because they relate to the form of the *finrec* and the nature of its constituent action-types. The idea of investment instigating saving depends on at least two assumptions.

The first is that income should *not* be interpreted as goods supply realised in the past ( $\Sigma PG_s(t-x)$ ), but rather as goods supply realised in the present ( $\Sigma PG_s(t)$ ), which can then be used as a source of finance for the future ( $\Sigma F_s(t+x)$ ). The thoroughly confusing character of a passage like (1936: 77-84) is mainly due to Keynes alternating between these two meanings. Incidentally, Keynes's investment-saving equality does not qualify as a macroeconomic equilibrium condition (Say's Law), precisely because it should be read as  $\Sigma PI_d(t) = \Sigma S(t+x)$  rather than  $\Sigma PI_d(t) = \Sigma S(t)$ . Because the multiplier model is lacking in any temporal reference, Keynes's readers are excused for not spotting the distinction and being confused again.

The second assumption is that, because current investment is supposed to be independent from any prior decision to save on the part of households or firms, it must be

exclusively financed by bank credit (Keynes 1937a: 248). In the light of this, it is clearly more correct to say that it is money creation, and not investment in itself, which causes future saving. Hence, the relevant causal relation is  $\Sigma \Delta M_s(t) \rightarrow \Sigma S(t+x)$  rather than  $\Sigma PI_d(t) \rightarrow \Sigma S(t+x)$ , money creation simply expanding the circular flow of income and spending. The Keynesian suggestion of exclusive bank-money finance implies that income (saving) no longer plays any causal role in determining spending whatsoever, which is an obvious overstatement. As explained in the previous chapter, a bank-money system renders income *less* important (as long as credit demand remains elastic) and the utility/profitability of the desired goods *more* important as determinants of spending decisions. Hence, while the role of income (saving) is lessened in this regard, it certainly is not altogether abolished. After all, even in a bank-money economy, a significant proportion of investment remains financed by non-bank lending and retained profit (see Chick 1993)<sup>8</sup>!

In spite of overstating his case in this way, Keynes can still be credited for the very important insight that, insofar investment is financed by bank credit, there is a sense in which saving gets realised *after* the investment has been made and has produced its profits. When these profits are subsequently used to retire the original bank debt (as is to be expected), the money supply shrinks again and the continued prosperity of the economy depends on continued credit-financed investment and, hence, continued positive profit expectations of firms (Foster 1990: 417-421, Chick 1997: 178). If future optimism falters and credit demand declines, the money stock will decrease (or increase at a decreased rate), which will inevitably depress total spending. This dependence on erratic expectations is indeed one of the main reasons for the inherent instability of bank-money capitalism when it is left to its own devices, as discussed in the previous chapter.

However, the saving which realises in investor profit and out of which credit is repaid is *not* necessarily equal to the saving to which Keynes refers when he argues that investment

---

8. Chick (1997: 537) adds the proviso that, when firms hold their financial reserves as liquid assets and they sell these assets to banks to finance their investment, the result is equivalent to money creation. This is true, but it cannot be relied upon that banks will necessarily be the only buyers of these assets and, insofar they are, the resultant money creation may simply be a reversal of a previous money destruction when firms bought the liquid assets from banks.

causes saving. Firstly, Keynes views his saving as immediately realised once the investment spending occurs, irrespective of how productive the investment turns out to be. But there can only be a significant time lag between the moment of investing and the realisation of the profit from investment, during which time all sorts of things may happen which effect these profits, such as changes in expectations, hoarding levels, the interest rate and the money stock (Asimakopulos 1983, Chick 1997). Secondly, Keynes's saving accrues to the economy in general rather than firms in particular. The money creation which accompanies credit-financed investment can cause a corresponding increase in firm profits only if the incomes of all other sectors (e.g. wages, taxes and net imports) are assumed to remain unchanged, which surely is contrived. In short, the validity of Keynes's claim that investment is inherently self-financing depends on assumptions, which cannot generally be relied upon<sup>9</sup>.

Asimakopulos' controversial (1983) paper makes precisely this point, but unfortunately on ambiguous grounds. He argues that, even if investment were financed by bank credit, saving still needs to play an indirect role in financing that investment. Because bank reserves are depleted by the bank credit until the investment has yielded its profit and the loan has been repaid, increased saving is necessary to replenish the reduced liquidity of banks in the interim. But, as we saw in chapter 4 (section 4.3.2), increased saving marginally alters the level of cash reserves of private banks. Moreover, insofar the central bank follows the classical cash-reserve system of monetary control, the discount window is effectively always open and banks experience no scarcity of cash reserves anyway (c.f. Wray 1988: 132-136). All this does not mean that saving (or income in general) does not still play an important role as a source of finance for investment (or spending in general). But the reason is different from that which Asimakopulos advances and much more simple and straightforward: spending is not, and can never be, exclusively financed by bank credit.

---

9. Models which attempt to follow the liquidity position of the various sectors through the multiplier process inevitably involve too many *ad hoc* assumptions to be of much theoretical interest or practical relevance (see Chick, 1997: 176-179 for an overview).

## 9.6 THE PRINCIPLE OF EFFECTIVE DEMAND

The Principle of Effective Demand (PoED) is regarded here as the proposition that, for a given consumption function, an increase in employment is unsustainable without an increase in investment spending. This idea can be criticised choice-theoretically by questioning the validity of the consumption function or identification-theoretically by questioning whether the savings gap left by the consumption function should necessarily be filled by investment.

As we saw above, in a modern environment where credit cards and consumption credit are common features of household finance, there seems little reason to suppose that consumption spending is a stable function of income or that households consistently leave a saving gap. To the extent that government policy manages to stabilise spending on some predictable growth-path, that stability concerns total spending in general rather than consumption spending in particular. And even if households do consistently spend less than their income, it does not follow that investment spending thereby becomes the critical factor in deciding whether total spending will be sufficient or not. It does so only because Keynes abstracts from all spending categories other than consumption and investment. There is no identification-theoretical reason why an increase in intermediary-good spending (such as during a period of Hayekian capital intensification) or an increase in exports could not equally do the job<sup>10</sup>.

A further curious feature of the PoED is that its identification-theoretical structure conflicts with that of the D-Z model in which it lies embedded. While the strict logic of the D-Z model's equilibrium condition requires that current employment be determined by *expected future* investment, Keynes's descriptions of the PoED normally refer to *current* investment in this context (e.g. 1936: 27). As if uneasy with this inconsistency, Keynes regularly alternates between expected-future and current investment as being the variable which plays a role in determining employment (e.g. 1936: 29, 78, 98). However, Keynes's

---

10. The PoED is sometimes explained in an alternative way, which takes its cue from Kalecki (see e.g. Robinson and Eatwell 1973: 102-126, Kregel 1975: 53-67, Wray 1988). A discussion of the Kaleckian version of the PoED falls outside the scope of our present discussion.

subsequent theoretical deliberations about the investment function are exclusively concerned with *current* investment and the future dimension is entirely lost.

One can understand why Keynes shifts his focus from expected-future to current investment in the context of the investment function, as it is impossible to link expectations about future investment to current variables, such as the consumption function does. Expected-future investment can only be explained in terms of the expected future interest rate and the profit expectations held at the relevant future moment. The problem cannot be resolved by using the current interest rate and profit expectations as proxies for the future ones on the basis of an assumed stability. Especially the idea of stable profit expectations (Keynes's long-term expectations) would go against the very essence of the *General Theory's* message about capitalism's inherent instability<sup>11</sup>.

The reason Keynes wished to single out investment as the critical determinant of employment is, of course, that investment is particularly unstable, being mainly a function of volatile long-term expectations. In that way, he was able to underline the inherent instability of capitalism (Keynes 1936: chs 11-12). But Keynes does not need the PoED in order to make the point that investment plays a particularly important role in the overall instability of total spending. He could simply have drawn attention to the fact that:

1. the institution of bank money, by rendering the supply of finance more flexible, enhances the importance of utility at the expense of realised income as determinants of spending,
2. the utility of goods is obviously more unstable than realised income, being determined by expectations,

---

11. The instability of long-term expectations ("the fickle and highly unstable marginal efficiency of capital", 1936: 204) appears to conflict with other features of the *General Theory*. First, there is an instance where Keynes calls "the state of long-term expectations .. often steady" (1936: 162). Second, because Keynes treats long-term expectations as exogenously determined for purposes of the investment function, the logical implication is that they are unchanging for the assumed analytical period (which can run from a couple of weeks to a year, as discussed above). After all, without given long-term expectations, no given *mec* and, hence, no stable investment schedule can exist. One's impression of the broad message of the *General Theory* is, however, that the precariousness and instability of long-term expectations should be treated as the rule rather than the exception. The above two contrary suggestions should, therefore, be put down to Keynes's celebrated eclecticism.



3. the institution of the corporate firm, by the greater capital intensity it facilitates, increases the ratio of investment-good (or, more generally, intermediate goods) to consumption-good spending.
4. the utility of investment goods is more uncertain than that of consumption goods, because based on expectations about a more distant future (Keynes 1937c: 213 makes exactly this point).

In fact, Keynes himself acknowledges that he does not need the strict logic of the PoED to underline the importance of investment, by noting that investment is singled out "not because this is the only factor on which aggregate output depends, but because it is usual in a complex system to regard as the *causa causans* that factor which is most prone to sudden and wide fluctuations" (1937c: 221).

## 9.7 LIQUIDITY PREFERENCE

In assessing Keynes's liquidity-preference theory of interest-rate determination, our aim is to determine its underlying *f<sub>mec</sub>*, i.e. the equilibrium condition expressing the equality between the demand and supply of bonds. As such, our treatment is once again identification theoretical. The use of equilibrium conditions does not, of course, imply an endorsement of the equilibrium approach (see chapter 3, section 3.1.1), but merely acknowledges the fact that, because the interest rate is by definition a yield on bonds, its level can only be influenced *via* the demand and supply of bonds (Snippe 1985a: 134), with bonds being our short-hand for financial assets in general. Together with Keynes himself, we will also simplify the analysis by assuming a single archtypal bond B. Trying to uncover the *f<sub>mec</sub>* which underlies liquidity-preference theory turns out to be no easy task, as Keynes (1936: ch. 13) seems to have utilised a variety of them, each similar but never quite the same as the preceding one.

Keynes (1936: 166) starts his explanation of liquidity-preference theory by stating: "The psychological time-preferences of an individual requires two distinct sets of decisions to carry them out completely". The first set of decisions is about the "propensity to

consume", i.e. how much an individual decides to consume out of his income and, by implication, how much to save out of that same income. The second set of decisions concerns "in what form he will keep the command over future consumption which he has reserved", either as cash (liquidity) or as some financial asset. These two sets of decisions can be represented by the following *fmc*:

$$\Sigma PG_s^h(t-x) - \Sigma PG_d^h(t) = \Sigma S^h(t) = \Sigma \Delta M_d^h(t) + \Sigma B_d^h(t) \quad (9.10)$$

The first is about the level of consumption ( $\Sigma PG_d^h(t)$ ), which, for a given level of household income ( $\Sigma PG_s^h(t-x)$ ), determines the level of saving ( $\Sigma S^h(t)$ ) as well. The second is about liquidity preference ( $\Sigma \Delta M_d^h(t)$ ), which, if  $\Sigma S^h(t)$  can be regarded as given, implies a decision to demand bonds ( $\Sigma B_d^h(t)$ ). And it is via the decision to demand bonds that Keynes determines his interest rate.

This *fmc* appears to be basically the same as that of the loanable-funds theorists (see our discussion of Robertson in chapter 5), except that it ignores money creation ( $\Sigma \Delta M_s$ ) and determines the demand for bonds on the part of lenders only. The influence which decisions to supply bonds have on the interest rate is strangely overlooked, with planned investment being one of the ignored constituents of bonds supply<sup>12</sup>. This one-sided concentration on the demand side of the bond market also comes out in Keynes's (1936: 167) definition of the interest rate as "the reward for parting with liquidity". Surely, the interest rate is as much a penalty for obtaining liquidity by selling bonds as it is a reward for parting with liquidity by buying bonds.

Keynes then claims that "the mistake in the accepted theories of the rate of interest lies in their attempting to derive the rate of interest from the first of these two constituents of psychological time-preference [i.e. the decision to consume and, by implication, to save] to the neglect of the second [i.e. the decision to hold saving as liquidity]; and it is this neglect which we must endeavour to repair" (1936: 166). The charge that "accepted [loanable-funds] theory" concentrated on the decision to save is obviously unfounded, as our discussion of

---

12. The problem as to how investment can both determine and be determined by the interest rate was already resolved in chapter 4. Robertson (1937: 431) speculates that this problem may have caused Keynes to exclude the possibility of investment influencing the interest rate.

Robertson in chapter 5 should have made clear. Ironically, because the charge of one-sidedness against the loanable-funds theorists is unfounded, Keynes's "endeavour to repair" this one-sidedness by concentrating exclusively on the decision to hoard/buy-bonds, *does* become one-sided. The demand for bonds on the part of lenders is evidently determined by the decision to save *as well as* the decision to keep one's saved income as liquidity. In this regard, Robertson's (1937: 431) complaint about Keynes's "curious inhibition against visualising more than two margins at once" seems entirely justified.<sup>13</sup>

Keynes subsequently alters his narrative in subtle ways so as to let saving disappear from the *fmc*. This happens as follows. Having defined the interest rate as "the measure of the unwillingness of those who possess money to part with their liquid control over it", he posits the idea that the interest rate is determined by the "availability of cash" and "the desire to hold wealth in the form of cash" (1936: 167). Assuming that bonds are the only alternative form in which "cash" or "wealth" can be held, the *fmc* which is implicit in these descriptions reads as follows:

$$\Sigma M_s(t) = \Sigma \Delta M_d(t) + \Sigma B_d(t) \quad (9.11)$$

So, for a given and fixed supply of liquidity ( $\Sigma M_s(t)$ ), the demand for liquidity implies the demand for bonds and, as such, determines the interest rate (c.f. Keynes 1937a: 241, 245). This equation is effectively the same as equation 9.10, with the result that the same objections can be raised against it, particularly its curious neglect for the supply side of the bond market. The only main difference is that saving ( $\Sigma S(t)$ ) is substituted for the supply of money ( $\Sigma M_s(t)$ ).

This, however, creates no serious deviation from equation 9.10, given that the present supply of finance is equal to the past supply of liquidity (see equation 3.9), the latter consisting of income and money creation:  $\Sigma F_s(t) = \Sigma M_s(t-x) = \Sigma PG_s(t-x) + \Sigma \Delta M_s(t-x)$ . If we abstract from money creation ( $\Sigma \Delta M_s(t-x) = 0$ ) and ignore differences in time

---

13. It seems that liquidity preference derives its intuitive appeal from the fact that the successful coordination of financial markets prevents unwanted excess liquidity in the hands of lenders/investors. But, while true, this fact clearly does not mean that the interest rate is solely determined by the decision to hold one's financial resources in the form of liquidity rather than financial assets.

dimensions ( $\Sigma M_s(t) \approx \Sigma M_s(t-x)$ ), the supply of liquidity becomes equivalent to realised income ( $\Sigma M_s(t) = \Sigma PG_s(t-x)$ ), of which saving is part<sup>14</sup>. Keynes's emphatic "finance has nothing to do with saving" (1937a: 247) or "'finance' is essentially a revolving fund .. [i]t employs no savings" (1937b: 666) is difficult to understand on any meaning of the terms used.

Keynes still has a further, slightly altered *fme* in store. He subsequently argues that "the quantity of money .. in conjunction with liquidity-preference, determines the actual rate of interest" (1936: 167-168), which suggest that the *fme* now becomes:

$$\Sigma M_s(t) = \Sigma M_d(t) \quad (9.12)$$

with  $\Sigma M_s(t)$  being the quantity of money and  $\Sigma M_d(t)$  designating liquidity preference. It is this equilibrium condition, which has finally made it into popular LM curve analysis. Two differences with the previous *fme* of equation 9.11 stand out. First, the demand for bonds ( $\Sigma B_d(t)$ ) is taken out of the equation, thereby fortuitously rectifying the one-sided emphasis which was previously placed on the demand side of the bond market<sup>15</sup>. Second, the impression is created that liquidity preference ( $\Sigma M_d(t)$ ) no longer refers to the (additional) demand for stationary money as was its clear previous meaning, but to the demand for finance in general. This impression is reinforced by Keynes's subsequent (1936: 168-171 and ch. 15) discussion of the incentives for liquidity, which is taken to include transactions as well as stationary balances. Hence, what equation 9.12 actually means is  $\Sigma F_s(t) = \Sigma F_d(t)$  reshaped as:

$$\Sigma M_s(t) = \Sigma PG_d(t) + \Sigma \Delta M_d(t) \quad (9.13)$$

If we accept that  $\Sigma M_s(t) \approx \Sigma M_s(t-x) = \Sigma PG_s(t-x) + \Sigma \Delta M_s(t-x)$ , this equation is equivalent to a normal *fec/fme*<sup>16</sup>. Keynes has thus, via a complicated and confusing detour, arrived

14. The distinction which introductory macroeconomic texts traditionally make between income and money ("income is not money") is, therefore, artificial and unnecessary. It is due to Keynes's failure to acknowledge that income is part of the supply of finance.

15. Given that the *fme* represents an elaboration of  $\Sigma B^s(t) = \Sigma B^d(t)$ , the terms  $\Sigma B^s(t)$  and  $\Sigma B^d(t)$  themselves should not appear therein. Only if the *fme* were (wrongly) taken to express the demand for bonds only, can  $\Sigma B^d(t)$  feature in the *fme*, as it does in equation 9.10 and 9.11.

16. The suggestion that Keynes implicitly assumes  $\Sigma M_s(t) \approx \Sigma M_s(t-x) = \Sigma PG_s(t-x) + \Sigma \Delta M_s(t-x)$  is supported by a casual remark in his 1937 *Quarterly Journal of Economics* article: "But the quantity of hoards can only be altered either if the total quantity of money is changed or the quantity of current income (I speak broadly) is changed" (1937c: 216).

back at a position, which is roughly equivalent to loanable-funds theory (see Robertson 1937: 182, Snippe 1985a). As a result, the main objection which was raised in chapter 4 against loanable funds, namely that it fails to take proper account of a bank-money system, applies to liquidity preference as well. The ill-suitedness of Keynes's interest-rate theory to a bank-money system comes out in another way: if liquidity preference (i.e. the demand for liquidity) is singled out as determining interest rates, the supply of liquidity (money) must be treated as exogenously fixed (c.f. Lavoie 1984). In the light of our identification-theoretical analysis of chapter 4, this is not justified.

Loanable-funds theory is, however, superior to liquidity preference in a number of ways. First, it is not burdened with the abundant confusion, which Keynes introduces by working with at least four different *fmc*'s and repeatedly changing the meaning of his terms; one is even hard-pressed not to gain the impression that Keynes is deliberately evasive and obscurantist in his (1937a, 1937b) reaction to Robertson's (1936, 1937) and Ohlin's (1937) critical comments. Second, loanable funds is superior in that it gives more explicit recognition to the time lags which play a role in the *fmc*, namely that the *present* supply of finance is made up out of *past* realised supply of liquidity ( $\Sigma F_s(t) = \Sigma M_s(t-x)$ , see equation 3.9). Third, liquidity-preference theory is problematic in that it conflicts with other parts of Keynes's theory. For instance, while liquidity-preference theory is explicitly momentary (c.f. Shackle 1967: 145), Keynes's income-determination theories (D-Z and multiplier models) are explicitly periodic. This conflict has given rise to well-known difficulties in integrating both theories into a single model (such as attempted by IS-LM), because the supply of money has to be regarded as a momentary stock, while the transactions demand for money, being a function of income, has to be treated as a periodic flow<sup>17</sup>.

One last important weakness of liquidity-preference theory needs to be pointed out. Liquidity preference, or the propensity to hold stationary money (Keynes 1936: 174), is

---

17. The mistaken view that the loanable-funds interest rate is a version of the Wicksellian barter rate and determined only by saving and investment ("productivity and thrift"), as put forward by authors such as Rogers (1987) and Cottrell and Lawlor (1991) was already discussed in chapter 5, together with Keynes's (1936) unfounded criticisms.

accorded a pivotal role in Keynes's system, presumably because a high level of liquidity preference is held responsible for aggregate-demand failure and ultimately unemployment. As Davidson (1980: 301) notes: "Keynes' theory of underemployment equilibrium is therefore *simultaneously* a theory of money and liquidity and a theory of the determination of the money prices of production flows." But, as we saw in the previous chapter, not a high and unstable level of stationary-money holding, but a low and unstable demand for credit (money creation), is the critical factor responsible for unstable and insufficient spending levels in a bank-money system. In that sense, Keynes's emphasis on liquidity preference is ironically more suited to a commodity-money system than it is to a bank-money system. After all, unstable liquidity preference is mainly responsible for spending instability in a commodity-money system.

## 9.8 KEYNES'S THEORY OF MONEY

Keynes's theory of money, as contained in chapter 17 of *The General Theory*, is an extension of his liquidity-preference theory. It aims to show how the interest rate, by being sticky downwards, sets a limit to the profitability of investment and as such to economic growth and employment. In the process Keynes develops a theory about the own-rate of interest of durable assets, in the context of which a theory of money is formulated. In this section, we will pay attention to these latter issues only: Keynes's theory about own-rates of interest and the theory of money which is implicit therein. Our critique of these theories is identification-theoretical in nature, in that we will regard Keynes's view of the interest rate and of the utility of money as in conflict with their action structure, i.e. the configuration of action-types to which their value can be related. Our critique also turns on simple conceptual issues: Keynes's use of the terms interest rate and money is at odds with the plain meaning commonly assigned to these concepts.

Keynes (1936: 222) starts out by defining the normal interest rate as the rate of change between the spot and forward price of money over a certain period. He then suggests that this is the "own-rate of interest" of money and poses the possibility of calculating "own-

rates of interest" for durable commodities in general. If the spot and forward price of a commodity can be measured in quantities of the commodity itself, a commodity-rate of interest can be established using the same method. For example, the own-rate of interest of wheat (or the wheat-rate of interest) is the percentage change between the spot and forward price of wheat expressed as quantities of wheat. Keynes borrowed the concept of "own rate of interest" (though not the term) from Sraffa (1932a, 1932b), who introduced it in criticism of Hayek's (1935) use of a unique Wicksellian natural rate of interest<sup>18</sup>. Sraffa argued that there is not one natural rate under barter, but as many natural rates as there are durable commodities. The own-rate of interest is, therefore, a specimen of a Wicksellian barter rate of physical productivity. Some fundamental problems with Keynes's own-rates immediately present themselves.

First, there is a conceptual confusion between money and bonds implicit in the own-rates approach. Because the interest rate is by definition a yield on bonds (our short-hand for financial assets in general), it is strictly speaking the own-rate of bonds. To regard the interest rate as the own-rate of money (a yield on money) is a half-truth, namely that which emerges when the bond market is one-sidedly viewed from the demand side, which incidentally was Keynes's habit in liquidity-preference theory as well (see previous section). While for bond demanders the interest rate is indeed a yield on money invested (in bonds), for bond suppliers it is a penalty rate on money obtained (by issuing or selling bonds). To avoid both half-truths, the interest rate should be regarded as a yield on bonds, which is really what it is. If this be accepted, there are no separate own-rates for money, wheat or houses; there is only one own-rate, namely that of bonds - bonds, which may nonetheless be paid for in various types of commodities and may promise future delivery of various types commodities, such as money, wheat or houses<sup>19</sup>.

Ironically, insofar Keynes regards the interest rate as a yield on commodities rather than bonds, he commits the same error as he charged Wicksell with, namely that of treating

---

18. However, Barens and Caspari (1997) trace back the concept to Irving Fisher rather than Sraffa.

19. Only if money is a bond (a financial asset) would it be correct to call the interest rate a yield on money. Interestingly enough, chapter 17 does indeed regard only bank money as money, as will be seen shortly.

the interest rate as a return on investment (see chapter 5, section 5.2). Lerner (1952: 152) notes in this connection: "[Keynes] was so emphatic in criticising economists who identified the marginal efficiency of capital with the rate of interest, that one hesitates to charge him with so similar a confusion. But it does not seem that the charge can be avoided." Keynes's confusion is, however, not surprising, since his own-rate originated with Sraffa (1932), who intended the commodity-rate to be a Wicksellian natural rate!

Second, the definition of an interest rate as the rate of change between the spot and forward price (of money or non-monetary commodities) is confused and confusing. This definition implicitly regards "spot price" as the price of the bond promising forward delivery: the quantity of the commodity (money or non-money) given up now for the promise of some stipulated quantity of that same commodity later. And "forward price" is taken to mean the quantity stipulated for future delivery; the face value of the bond. But these meanings are clearly at odds with how the concepts of spot and forward price are commonly used. Conventionally, spot price refers to the money price of a commodity for spot delivery and forward price to the (also currently paid) money price of a commodity for forward delivery. Hence Keynes's spot price comes, perversely enough, close to the conventional forward price, except that the latter is expressed in quantities of money rather than of the commodity itself; indeed, to buy a commodity forward is to buy a bond spot. By contrast, to buy spot is not to buy a bond at all. That is why a spot price, in its conventional meaning, cannot be expressed in quantities of the commodity itself, as that would imply exchanging commodities for themselves, which is absurd. Hence, own-rates of interest, defined as the rate of change between spot and forward prices measured in quantities of the commodity itself, are an impossibility.

Third, seemingly in order to mask or circumvent such problems, Keynes (1936: 223) suggests an alternative method of calculating own-rates making use of spot and forward prices in their conventional meaning. To illustrate this method, we use Keynes's own numerical example. Assuming the spot price of 100 quarters of wheat to be £100, the forward price £107, and the normal interest rate 5%, Keynes calculates the wheat-rate as follows:



£100 spot will buy £105 for forward delivery, and £105 for forward delivery will buy 105/107.100 (= 98) quarters for forward delivery. Alternatively £100 spot will buy 100 quarters of wheat for spot delivery. Thus 100 quarters of wheat for spot delivery will buy 98 quarters for forward delivery. It follows that the wheat-rate of interest is *minus* 2 per cent per annum (1936: 223).

Roughly, the own-rate is thus established as the interest rate minus the rate of change between the spot and forward price. This calculation method is peculiar in a number of ways. The rate of change between the spot and forward price indicates how drastic future market conditions are expected to differ from the present ones (as well as the uncertainty attached to these expected differences). Hence, the own-rate as calculated by Keynes's method expresses by how much the interest rate overtakes the expected rate of change in the conditions in the wheat market. The practical meaning of this seems somewhat arbitrary and is unrelated to the productivity or utility derived from possessing wheat for a period, which is what an own-rate is supposed to be about. One suspects the method is merely designed as an expedient for arriving at a rate of increase in quantities of the commodity itself. But even for this purpose, the method fails. £105 for forward delivery cannot be used to buy wheat at its forward price (£107), as forward prices pertain to the present not the future. Keynes seems to confuse forward price with future spot price. Granted, if perfect certainty about the future be assumed, the forward price would become equal to the future spot price. But such would be a very unKeynesian move and does not fit well into the broader intent of chapter 17<sup>20</sup>.

All such problems can be avoided if we altogether abandon the idea of an interest rate as a rate of change between the spot and forward price of a commodity (irrespective of whether these prices are expressed in money or in quantities of the commodity itself) and

---

20. Sraffa's (1932: 50) corresponding method is slightly different but equally confusing: "When a cotton spinner borrows a sum of money for three months and uses the proceeds to purchase spot, a quantity of raw cotton which he simultaneously sells three months forward, he is actually 'borrowing cotton' for that period." First, as with Keynes's version, the obtained own-rate is mainly an expression of the cotton spinner's attitude towards risk and his willingness to speculate on the future spot price, which has little to do with the meaning of the own-rate. Second, at the end of these transactions, the cotton spinner sits not only with cotton and the obligation to deliver cotton three months hence, but also with cash (the result of selling cotton forward now) and the obligation to pay back cash three months hence. Third, a cotton spinner is supposedly selling cotton thread rather than raw cotton forward. Because raw cotton and cotton thread are different goods, there is, strictly speaking, no borrowing of cotton.

instead stick to the idea of an interest rate as a yield on a bond promising future delivery. The commodity-rate is then a yield on a bond, whose price and face value are expressed in quantities of commodity. But even then we are not out of the woods. First, if the commodity is indivisible (such as a house), the own-rate can only be calculated in multiples of 100%, which is awkward. Second, the own rate will partly be a reflection of the productivity of the commodity during the period considered, which must then be expressed in quantities of the commodity itself. Such an expression, however, presupposes that the commodity can reproduce itself. Keynes's use of wheat as an example is, in this sense, somewhat contrived, as wheat has the highly exceptional quality of being able to reproduce itself, with the result that it should in principle be possible to conceive of a wheat-rate of interest (disregarding the fact that wheat is not the only input into its own reproduction). But most durable assets, like a house or a machine, do not reproduce themselves, houses not generating houses (but housing services) and machines not producing machines (at least not of the same particular kind)<sup>21</sup>. In that case, the utility of the productive output of the commodity must be valued in money prices and supposedly converted back into quantities of the commodity via its money price. But such a rate will then be identical to a normal yield in money terms (such as Keynes's own *mec*).

And it is to such a normal yield that Keynes eventually turns back when formulating his theory about the yield on durable assets (c.f. Lerner 1952: 181). Having thus effectively relinquished the own-rates concept (although he mischievously still labels that yield an own-rate or a physical yield, 1936: 225), one wonders why Keynes choose to lead his readers along this confusing and eventually unproductive detour about own-rates. Given the fundamental problems with the concept, it is also little wonder that many of the modern commentators on Keynes's own-rate (like Rogers 1987, Mongiovi 1990 and Barends and

---

21. This problem, of course, follows from the essential weakness of Wicksellian natural-rate theory, namely that it has to presuppose a single-good economy (as mentioned in chapter 5), with this single good naturally having to reproduce itself. Given that Wicksellian natural rates (barter rates of physical productivity) cannot really be established outside a single-good economy, Sraffa's (1932) critique that there are many Wicksellian natural rates in a many-good economy seems awkward; it imposes a context on the theory (namely a many-good economy), to which the theory cannot be adapted in the first place.

Caspari 1997) do not strictly follow Keynes's (or Sraffa's) explanation for it, but rework the concept in their own private way, attaching their own shade of meaning to it.

Keynes (1936: 225-227) proceeds by introducing the following formula for the determination of the yield on durable assets, intended to be applicable to monetary and non-monetary durables alike:

$$r = q - c + l + a \quad (9.14)$$

The  $q$  term refers to the expected utility of the output derived from the capital asset concerned, whereby this utility is valued in money prices and expressed as a percentage of the original value of the capital asset concerned (also in money prices). The  $c$  term reflects carrying cost defined as the automatic physical depreciation due to "the mere passage of time" (Keynes 1936: 225). The liquidity premium  $l$  is a measure of the marketability of the asset (its "power of disposal", 1936: 226), understood as the ease of exchanging it for other goods with minimal value loss (selling it for a price commensurate with  $q - c$ ), search time or transaction cost. Lastly, the  $a$  term expresses the expected change in the money price of the asset over the period concerned, although it should, strictly speaking, incorporate changes in the money price of the asset's output as well, which obviously influences an asset's yield too.

This formula enables Keynes to place the yield on money on a comparable footing with the yield on other durable commodities. For example, the yield on a consumption durable like a house is determined by  $q + a$ , as its carrying cost and liquidity premium can be considered negligible in the short run. Similarly, the rate of return on idle capital, like wheat, is  $-c + a$ , as  $q$  is obviously nil for such assets. Lastly, the rate of return on money (the interest rate) is dominated by the liquidity premium  $l$  only, with  $q$  and  $c$  being negligible and factor  $a$  by definition nil.

In essence, the formula of equation 9.14 describes a theory about the utility of durable assets. What accounts for much of its complexity, is that this utility is expressed as a yield on the original money value of the asset; this yield-expression requires that the utility be valued in money prices, which is then calculated as a percentage of the original value of the

asset concerned (also valued in money prices), taking account of expected price changes as well. However, because we are mainly interested in Keynes's theory of money *pur sang*, we may be justified in ignoring the yield-expression of the assets' utilities and its attendant complications. The theoretical import of equation 9.14 can then be captured by two simple propositions:

1. The utility of a durable asset, whether monetary or non-monetary, is derived from two sources:
  - a. its capacity to perform some useful function due to its intrinsic qualities ( $q - c$ ), and
  - b. its exchangeability for something else with minimal value loss, time delay or transaction cost ( $l$ ).
2. Non-monetary durable assets derive utility almost exclusively from source a and money almost exclusively from source b.

Hence, the uniqueness of money lies in the fact that it is almost perfectly marketable with minimal value loss, i.e. its "utility is solely derived from its exchange value" (Keynes 1936: 231)<sup>22</sup>.

These propositions have two main implications, one for Keynes's theory of interest rates and one for his theory of money. As for interest-rate theory, the implication is that, because the uniqueness of money lies in its near-perfect liquidity, the interest rate should be regarded as a "reward for parting with liquidity", thus confirming liquidity-preference theory. But, as concluded on the basis of our identification-theoretical investigations of the previous section, this view of the interest rate one-sidedly views the bond market from its demand side and fails to take proper account of the fundamental difference which monetary banking makes to the way interest rates are determined. This is ironic since Keynes's theory of money otherwise recognises only bank money (financial assets) as money. Indeed, the

---

22. However, this statement about money's utility is ambiguous. It is not clear whether "exchange value" refers to the value of liquidity (the utility derived from  $M_d(t+x)$ ) or to the value of specific goods planned to be bought (the utility derived from  $PG_d(t+x)$ ), as both can be said to be connected to money's "exchange value". After all, "exchange value" refers to money's primary function as medium of exchange, which underlies both sources of money utility. This ambiguity has led to some confusion about the meaning of Keynes's second essential property of money (see e.g. Barends and Caspari 1997). Nonetheless, Keynes reference to the "utility of money" confirms our idea that this is mainly a theory about the utility of durables.

second main logical implication of the above propositions is that, because the utility of money is virtually unrelated to its intrinsic qualities as a good, only bank money qualifies as money, having no intrinsic usefulness and requiring legal enforcement for its general acceptability.

This impression is reinforced by Keynes's "essential properties of money". The first property, namely that money "cannot be readily produced by labour" (1936: 230), seems to rule out commodity money as this kind of money obviously requires labour for its production. The same can be inferred from the second property, which stipulates that there is no risk of money being used as a good or, conversely, goods adopting the role of money, in case its hoarding increases and its value relative to other goods decreases (1936: 231). This presupposes that money has no utility related to its intrinsic qualities as a good and that its use has to be legally enforced, which is again applicable to bank money only. The third property is that money has "low (or negligible) carrying cost" (1936: 231-234), which is more applicable to bank money than to the customary commodity moneys such as gold or silver, which may have to be stored and protected at some cost. It is interesting that Davidson (1978, 1980), who is mainly responsible for the recent resurgence of interest in chapter 17, similarly regards the ruling out of commodity money as the main message of Keynes's essential properties. Lawlor (1994: 74) agrees: "Keynes always had [a fiat standard] in mind when he spoke of money".

Moreover, by treating the utility of money as a special instance of the utility of durable assets, Keynes implicitly promotes money's store-of-value function over its medium-of-exchange function (c.f. Keynes 1937c: 215-216). After all, the essence of money and its sole source of utility is said to lie in its liquidity, i.e. its ability to store value as generalised purchasing power. But the distinguishing characteristic of money lies by definition in its status as medium of exchange, meaning that it is generally accepted in exchange for other goods. Although liquidity is a close consequence of being a medium of exchange (only a good which is generally accepted in exchange for other goods allows us to keep our spending options open and transport generalised purchasing power over time), it is not the distinguishing characteristic of money itself.

The mistake of regarding liquidity as money's distinguishing characteristic is somewhat masked by the fact that Keynes explains the "liquidity premium" as the premium for marketability rather than liquidity in the strict sense of that term. In that way, Keynes lends some indirect support to money's real distinguishing characteristic, as marketability and general acceptability are probably more closely linked than liquidity and general acceptability. However, as recognised by Chick (1983: 304-306), there still is an important difference between marketability and general acceptability in exchange for other goods. To explain this difference, we need to look at the meaning of the relevant concepts somewhat more closely.

The degree of marketability measures the ease with which a good can be sold at close to its ideal price (as defined in chapter 7) with minimal search time and transaction cost, which is a function of factors such as the number of actual and potential market participants and how well-informed these participants are about the uses of the good and each others identity, preferences and expectations (the "depth" or "thickness" of the market). In the light of this, it is possible to characterise the medium of exchange as perfectly marketable, because the number participants in its market is as large as the whole economy and knowledge of its use *as money* and of the identity of the participants is perfect (being generally acceptable in exchange, everybody wants it).

At the same time, there also is an important sense in which the marketability of a medium of exchange transcends the way in which any normal good is marketable. The perfect marketability of money is no longer about being able to fetch an ideal price with minimal search time and transaction cost, simply because money is no longer desired for its usefulness *as a good*. Rather, the perfect marketability of money is about the fact that money enters into each and every exchange, the demand for each good becoming the supply of money and *vice versa* (Clower 1967: 207-208). Hence, money is unique in that "unlike other goods, [it] has no .. market of its own" (Birch *et al* 1982: 214 and Yeager 1986: 377). In this way the marketability of money becomes fundamentally different from the marketability of any other good. Keynes's theory of money obscures this uniqueness by

failing to distinguish clearly between the disparate ways in which money and normal goods (including financial assets) are marketable and by suggesting degrees of marketability ("moneyness") for all assets along a continuum (1937: 239). This fuzziness about the essence of money seems, once more, a symptom of Keynes's insistence on regarding money primarily as a store of value rather than a medium of exchange<sup>23</sup>.

This brings us to the final important defect in Keynes's theory of money. The theory forces an unbridgeable chasm between the intrinsic qualities of a good and its utility as money. It insists that, because money derives its utility from being perfectly liquid, it is automatically barred from also deriving utility from having certain intrinsic qualities as a good. Of course, this insistence contains an important element of truth, namely that, once a good functions as medium of exchange, it can no longer derive utility from its usefulness *as a good*, simply because a good cannot simultaneously be used as money and in some industrial application. But the insistence obscures the fact that usefulness-as-a-good and usefulness-as-money can both be rooted in the intrinsic qualities of a good. For example, the usefulness of gold in its industrial application is rooted in its chemical qualities and the usefulness of gold in its monetary application is equally rooted in its inherent qualities, namely those which make for universal desirability, which leads to general acceptability in exchange for other goods. Hence, there is no reason to insist on a zero substitutability between money and goods, as Keynes's second essential property does.

All in all, Keynes's theory of money, as his theory of interest, seems a jumble of ambiguity and confusion. Indeed, most of the early commentators of the *General Theory*, even the sympathetic ones, had little positive to say about chapter 17 and Keynes himself once "admit[ted to] the obscurity of this chapter" (1973b: 519). Barends and Caspari (1997) recently found that the own-rates framework does not even play an essential role in Keynes's broader argument about the causes of unemployment: "Own-rates of interest are redundant,

---

23. Garretsen (1992: 145-155) claims that Keynes's essential properties were designed to underline money's status as medium of exchange, which seems to ignore the fundamental fact that the theory treats money as a durable asset among durable assets, thereby focusing on its ability to store value. Of course, because money's liquidity is closely related to its general acceptability in exchange for other goods, the link with being medium of exchange is always close, even if liquidity does not capture the distinguishing characteristic of money.

because every relevant statement about the influence of the money rate of interest on the level of production and employment can be made in terms of the marginal efficiency of capital." The only function which the theory appears to perform in modern Post Keynesian thought is to feed its not fully reasoned prejudice against commodity money. Grossman (1991: 324) makes the following pertinent remarks in this connection:

[N]either logic nor experience support the suggestion that media of exchange are necessarily financial assets, rather than tangible assets. In fact, in history and anthropology, media of exchange usually are tangible assets .. The use of financial assets instead of tangible assets as money has been associated only with the development of sophisticated legal systems and has become common only in modern times.

### 9.9 THE METHODOLOGY OF THE *GENERAL THEORY*

A comprehensive treatment of the methodological issues raised by the *General Theory* obviously falls far outside the scope of this chapter. Nonetheless, in the light of our approach developed in chapters 1 and 2, an important tension within the *General Theory's* methodology can be pointed out.

On the one hand, the *General Theory* follows the methodology of neoclassical economics (more in particular Marshall), in that it seeks to model and explain historically specific (i.e. unpatterned) outcomes by way of law-like functions. All Keynes's behavioural functions fit into this mould. On the other hand, the *General Theory* also follows our methodology, namely insofar it seeks to explain only the broad pattern of human decision-making by way of broad institutional factors, which in our definition incorporate social conventions as well. As an example of this, we can mention the *General Theory's* treatment of the uncertainty of long-term expectations and the instability of share prices, which it attributes (implicitly and explicitly) to an institutional factor like the corporate form of private business. It would have enhanced the clarity of the *General Theory* if Keynes had similarly attributed the increased instability of total spending to an institution, namely that of bank money. Instead, he introduces a theory of money, finance and interest rates, which alternates between presupposing a commodity-money and a bank-money system.



Hence, the *General Theory* is characterised by an uneasy attempt to harmonise and combine the neoclassical and patterning-institutional methodology. As Kaldor (1985: 6) notes:

The result was an extraordinary paradox in that while Keynes took every opportunity to emphasise the novelty of his approach, and his rejection of.. 'mainstream economics'.., this merely disguised the extent to which his theory suffered from an almost slavish adherence to prevailing (Marshallian) doctrine - to which his own ideas were 'fitted' more in the manner of erecting an extra floor or balcony here or there, while preserving the pre-existing building.

Much confusion and ambiguity in the *General Theory* stems from the fact that the two methodological approaches are irreconcilable.

Some authors like Dow (1985, 1990) and Chick (1995) regard this kind of methodological eclecticism as a virtue. One can have sympathy with what these authors seem to be driving at, namely the importance of doing justice to both the order and the chaos in human behaviour. But it is possible to move "beyond [the] dualism" (c.f. Dow 1990) of order and chaos, without having to indulge in logical contradiction as the *General Theory* seems to have done. As we showed in chapters 1 and 2, our patterning-institutional approach is able to give both order and chaos their rightful place without playing them off against each other and while maintaining logical consistency.

## CONCLUSION

This chapter fits the broad theme of macroeconomics without laws, because it showed how the *General Theory's* use of Marshallian law-based analysis causes it to run into logical difficulty, how its behavioural functions make sense only as tendencies shaped by institutions, and how most of its theoretical construct can effectively be assessed in the light of identification theory or as conceptual confusions.

## CONCLUSION

The aim of this study is to develop a macroeconomics built on subjectivist rather than neoclassical choice-theoretical foundations. Our approach rejects the use of strict laws in social science and interprets neoclassicism as the stance which embraces such laws. Hence the title "macroeconomics without laws". Fundamental to this study is the distinction between choice theory and identification theory. The former is about the explanation of action and the latter about identifying the configuration of actions connected to a certain phenomenon.

Our brand of choice theory escapes the use of laws by explaining behaviour through tendencies. An appropriate methodology for tendencies was developed for that purpose, in which the operation of patterning abstraction played an important role. Patterning abstraction means that historical detail is ignored to such a degree that only the consistent patterns of behaviour are left, which are then explained primarily by way of institutions (the patterns of the social environment). Patterning abstraction resolves the perennial conflict between rigour and relevance, order and chaos, or truth and precision. While laws describe strict regularities in historically specific events, tendencies describe regularities in patterns of events.

Identification theory avoids using laws simply by not being concerned with causality at all. Rather identification theory is about the action structure of phenomena, which can leave the explanation of behaviour untouched. A significant part of this study was taken up with attempts to show how important insight into economic phenomena can be gained by merely identifying their action structure. The methodology of choice and identification theory was subsequently applied to the issue of plan coordination, in particular the macroeconomic aspects thereof.

We started with an identification theory of macroeconomic plan coordination, which took the form of formulating the goods-market equilibrium condition, which could be divided up in both a microeconomic equilibrium condition (the *micec*) and a macroeconomic

equilibrium condition (the *macec*). The achievement of macroeconomic equilibrium was subsequently related to the concept of financial equilibrium (the *finec*). The *finec* is nothing but a representation of the income-expenditure circulatory stream. A set of additional conditions for the achievement of labour-market equilibrium was added, which enabled us to provide a taxonomy of unemployment causes.

The analysis was subsequently expanded to take account of financial markets. A financial-market equilibrium condition (the *fmec*) was formulated, which lists the action-types via which the interest rate can be influenced. The role of primary and secondary markets makes no difference to the *fmec* and thus to the determination of interest rates. Under a commodity-money system, the *fmec* is equivalent to the *finec* and the interest-rate mechanism can potentially contribute towards macroeconomic coordination. We called this the Wicksellian Equivalence Principle. Under a bank-money system, the *fmec* becomes radically different from the *finec*, with the result that the interest-rate mechanism can no longer contribute towards the achievement of macroeconomic equilibrium and the Wicksellian Equivalence Principle is overturned.

These equilibrium conditions were used to assess established theory about macroeconomic coordination and interest-rate determination. Hence, we looked at the equilibrium conditions implicit in Say's Law (which is not a law in our parlance), the Quantity Theory, Wicksell, Hayek and Robertson. It was shown how light can be thrown on the usefulness and realism of these theories, while not being concerned with their behavioural explanations (and, hence, their behavioural laws). We concluded that confusion about the meaning of Say's Law can be cleared up by distinguishing between its identification theory (Say's Condition, the *macec*) and its choice theory (Say's Tendency) and by noting the different ways in which the *macec* can be formulated. The quantity equation in both its Fisher and its Cambridge forms was shown to be fraught with potential confusion and ambiguity. Wicksell's natural rate is based on a conceptual confusion between an interest rate and a yield on capital. Because there is no reason to link this natural rate to a situation of barter, as Wicksell does, Sraffa's (1932a, 1932b) celebrated criticism of

Wicksell is rendered less relevant. Wicksell's theory obviously also suffers from endorsing the Wicksellian Equivalence Principle and is, therefore, inapplicable to a bank-money system. Robertson's interest-rate theory can be regarded as Wicksell without the barter context. It therefore escapes the Sraffa critique, but remains vulnerable because it subscribes to the Wicksellian Equivalence Principle. With the aid of behaviour-neutral equilibrium conditions, we also managed to assess Hayek's business-cycle theory. His idea of forced saving was criticised for neglecting internal financing by firms and for ignoring sources and uses of finance alternative to realised income.

In assessing the equilibrium conditions of Walrasian GE theory, we focused primarily on its budget constraint, which is more widely known as Walras' Law and which intends to express something like our *finec*. We noted that GE analysis, by assuming a pre-reconciliation of plans, has no essential role for money and effectively models barter. Hence any concern for a *macec* or a *finec* is, strictly speaking, superfluous. We nonetheless identified the failings of Walras' Law as a *finec*, and, furthermore, concluded that the dropping of one market from the set of equilibrium conditions on the strength of Walras' Law is unwarranted. The various attempts to adapt Walras' Law to a monetary economy, such as undertaken by Hicks and Lange, were shown to be flawed, mainly because they merely add a money market as if it were just any other market. The contradiction in classical theory unearthed by Lange and taken further by Patinkin was shown to be artificial and based on a series of confusions about the nature of macroeconomic and financial equilibrium. Clower's dual-decision hypothesis represents unemployment as an instance of microeconomic rather than macroeconomic-monetary discoordination and his rational planning postulate is based on a confusion between the time plans are made and the time plans are executed.

We next turned our attention to choice theory, which we conducted by way of tendencies rather than laws and in that way fitted into the overall theme of this study. Our methodology for the explanation of tendencies was applied to the issue of plan coordination, in particular macroeconomic plan coordination. Three relevant tendencies were identified,

namely induced by (a) entrepreneurship, (b) the price mechanism, and (c) uncertainty. In order to describe tendencies (a) and (b) it was found necessary to gain insight into the informational role of prices, for which an alternative price theory was developed in brief outline. That role turned out to lie mainly in informing entrepreneurs about the present, imperfect state of knowledge and expectations, which forms an indispensable input into establishing the profitability of new, altered knowledge and expectations. It was found that the strength and effectiveness of tendencies (a) and (b) is neither necessary nor automatic, but depends on appropriate institutions. The latter require socio-cultural traditions and educational standards conducive to the development of entrepreneurship with sufficient drive and skill, an "open" society with easy availability of information of any kind, a stable legal and socio-political environment, low barriers of entry to markets, a stable monetary environment with a stable utility of money, stable aggregate spending levels, and relatively low levels of capital intensity of production.

These are the primary institutions. Secondary institutions determine the presence and relevance of the above primary institutions. We identified two such institutions: the corporate form of private business and bank money. In analysing the influence of these two institutions on macroeconomic stability, we contrasted and compared two broad institutional environments: a non-corporative commodity-money system as opposed to a corporative bank-money system. We argued that the latter, which we regarded as the world of Keynes's *General Theory*, makes for considerably greater macroeconomic instability than the former, which we regarded as the world of the classics.

The dominance of the corporate firm and of bank money undermines the equilibrating role of entrepreneurship and the price mechanism by raising barriers of entry, by creating an unstable monetary environment with an unstable money supply and unstable stationary-money holding levels and by raising the capital-intensity of production. A corporate bank-money system undermines the effectiveness of the equilibrating tendencies connected to entrepreneurship and the price mechanism and it increases the strength of the disequilibrating tendency connected to uncertainty, by making total spending levels more

unstable, by increasing the instability of financial markets and by making firms financially more fragile. Our deliberations point towards the advantages of a return to a non-corporate commodity-money world, although the practical difficulties connected to such a return were left undiscussed. A non-corporate commodity-money system increases the chances for macroeconomic stability and full employment, although it would slow down economic growth.

Insofar a corporate bank-money economy achieves macroeconomic stabilisation, it has nothing to do with spontaneously operating market mechanisms, relatively little to do with formal government policy, and probably most to do with informal kinds of moral suasion exercised by the government over the most important players in the economy (labour, business and banks) which are large in size and few in number. Nonetheless, the most careful and competent stabilisation policy will probably not be able to counteract the inherent instability of financial markets and the high levels of structural unemployment in particularly developing-country contexts. Both these problems were ascribed to the institutions of bank money and the corporate firm as well.

We concluded with an assessment of Keynes's *General Theory* in the light of our identification-theoretical and choice-theoretical findings. All its main theoretical constructs (the D-Z model, the multiplier model, the theory of finance and saving, the Principle of Effective Demand, the liquidity-preference theory and the theory of money) are plagued by error, ambiguity and inconsistency. Nonetheless, the *General Theory's* central message remains valid and exceedingly important, namely that the level of total spending in a corporate bank-money world is likely to be unstable and often insufficient for the achievement of full employment. The overriding methodological problem of the *General Theory* is its attempt to marry and combine law-based explanation in the style of orthodox Marshallian theory with tendency-based explanation in our style as facilitated by patterning abstraction and conducted with reference to institutions.

In summing up, we may say that this study attempted to do two main things:

1. To indicate the distinction which can be made between choice theory and identification theory and to show how significant insight into economic phenomena can be gained

through the latter kind of theorising, which stands divorced from any attempt to explain behaviour, let alone do so with the aid of laws.

2. To elaborate the implications of what we call patterning abstraction. It is patterning abstraction which relieves economic theory from having to probe the mind of its subjects through some *verstehen* method. It is patterning abstraction which resolves the dilemma between history and theory as well as between rigour and relevance. It is patterning abstraction which enables economic theory to rid itself from the mathematical method. It is patterning abstraction which eliminates the unreal characteristics (perfect knowledge and strict optimisation) from the economic motive. And it is patterning abstraction which points towards the centrality of institutions in the explanation of behaviour.

If it managed to succeed in doing these two things, this study was worthwhile to its author.

## BIBLIOGRAPHY

- Aronson, J L 1984. *A realist philosophy of science*. New York: St Martin's Press.
- Asimakopulos, A 1982. Keynes's Theory of Effective Demand Revisited. *Australian Economic Papers* 21: 18-36.
- Asimakopulos, A 1983. Kalecki and Keynes on Finance, Investment and Saving. *Cambridge Journal of Economics* 7: 221-233.
- Barens, Ingo and Caspari, Volker 1997. Own-rates of Interest and their Relevance for the Existence of Underemployment Equilibrium Positions. In Harcourt, G C and Riach, P A (eds) 1997. *A 'Second Edition' of The General Theory*. London and New York: Routledge, 283-303.
- Baumol, William J 1977. Say's (at Least) Eight Laws, or what Say and James Mill may really have meant. *Economica* 44: 145-162.
- Bellante, Don and Garrison, Roger W 1988. Phillips Curves and Hayekian Triangles: Two Perspectives on Monetary Dynamics. *History of Political Economy* 20: 207-234.
- Benassy, Jean-Pascal 1989. Disequilibrium Analysis. In Eatwell, John, Milgate, Murray and Newman, Peter (eds), *The New Palgrave: General Equilibrium*. London and Basingstoke: MacMillan, 120-130.
- Benassy, Jean-Pascal 1990. Non-Walrasian Equilibrium, Money and Macroeconomics. In Friedman, Benjamin M and Hahn, Frank H (eds) *Handbook of Monetary Economics*. Amsterdam: North Holland, 105-169.
- Berle, Adolf A and Means, Gardiner C 1932. *The Modern Corporation and Private Property*. New York: Harcourt, Brace and World.
- Bhaskar, R 1978. *A Realist Approach to Science*. Brighton: Harvester Press.
- Birner, Jack 1990. A Roundabout Solution to a Fundamental Problem in Menger's Methodology and Beyond. In Caldwell, Bruce J (ed) *Carl Menger and his Legacy in Economics*, Annual Supplement to Volume 22, *History of Political Economy*. Durham and London: Duke University Press, 241-261.



- Birch, Dan E, Rabin, Alan A and Yeager, Leland B 1982. Inflation, Output, and Employment: Some Clarifications. *Economic Inquiry* 20: 209-221.
- Blaug, M 1980. *The Methodology of Economics*. Cambridge: Cambridge University Press.
- Boehm, S 1992. Austrian Economics and the Theory of Entrepreneurship: Isreal M Kirzner interviewed by Stephan Boehm on 2 May 1989. *Review of Political Economy* 4: 95-110.
- Boettke, Peter J, Horwitz, Stephen and Prychitko, David L 1996. Beyond Equilibrium Economics: Reflections on the Uniqueness of the Austrain Tradition. In Boettke, Peter J and Prychitko, David L (eds) *The Market Process; Essays in Contemporary Austrian Economics*. Aldershot: Edward Elgar, 1-16.
- Buchanan, J M 1969a. Is Economics the Science of Choice? In Streissler, E (ed) 1969. *Roads to Freedom; Essays in Honour of Friedrich A von Hayek*. London: Routledge & Kegan Paul, 47-64.
- Buchanan, J M 1969b. *Cost and Choice; An Inquiry in Economic Theory*. Chicago and London: University of Chicago Press.
- Buchanan, J M and Vanberg, V J 1991. The Market as a Creative Process. *Economics and Philosophy* 7: 167-186.
- Caldwell, Bruce J 1991. Clarifying Popper. *Journal of Economic Literature* 29: 1-33.
- Carhill, M 1987. A Note on Edwards' "Effective Demand Failure: Critique of an Anti-Monetary Theory". *South African Journal of Economics* 55: 86-89.
- Carr, Jack L and Mathewson, G Frank 1988. Unlimited Liability as a Barrier to Entry. *Journal of Political Economy* 96: 766-784.
- Cartwright, Nancy 1989. *Nature's Capacities and their Measurement*. Oxford: Oxford University Press.
- Cartwright, Nancy 1994. *Ceteris Paribus* Laws and Socio-Economic Machines. *The Monist* 78: 276-294.
- Cartwright, Nancy 1998. Capacities. In Davis, John B, Hands, Wade D and Mäki, Uskali (eds) *The Handbook of Economic Methodology*. Cheltenham: Edward Elgar, 45-48.

- Caskey, J P and Fazzari, S M 1992. Debt, Price Flexibility and Aggregate Stability. *Revue d'Economie Politique* 102: 520-543.
- Chandler, Alfred D 1977. *The Visible Hand; The Managerial Revolution in American Business*. Cambridge: Belknap Press.
- Chick, Victoria 1982. A Comment on 'IS-LM: an Explanation'. *Journal of Post Keynesian Economics* 4: 439-444.
- Chick, Victoria 1983. *Macroeconomics After Keynes*. Deddington: Philip Allan.
- Chick, Victoria 1993. Sources of Finance, Recent Changes in Bank Behaviour and the Theory of Investment and Interest. In Aristis, Philip (ed) *Money and Banking: Issues for the Twenty-First Century*. New York: St. Martin's Press, 55-74.
- Chick, Victoria 1995. 'Order out of Chaos' in Economics?. In Dow, Sheila and Hillard, John (eds) *Keynes, Knowledge and Uncertainty*. Aldershot: Edward Elgar, 25-42.
- Chick, Victoria 1997a. The Multiplier and Finance. In Harcourt, G C and Riach, P A (eds) *A 'Second Edition' of The General Theory*. London and New York: Routledge, 164-182.
- Chick, Victoria 1997b. Some Reflections on Financial Fragility in Banking and Finance. *Journal of Economic Issues* 31: 535-541.
- Clark, C M A 1992. *Economic Theory and Natural Philosophy; The Search for the Natural Laws of the Economy*. Aldershot: Edward Elgar.
- Clower, R W 1963. Classical Monetary Theory Revisited. *Economica* 30: 165-170.
- Clower, R W 1965. The Keynesian Counter-Revolution; A Theoretical Appraisal. In Hahn, F H and Brechling, F P R (eds) *The Theory of Interest Rates*. London: Macmillan, 103-125.
- Clower, R W 1967. A Reconsideration of the Microfoundations of Monetary Theory. Reprinted in Clower, R W (ed) 1969. *Monetary Theory; Selected Readings*. Harmondsworth: Penguin, 202-211.
- Clower, R W and Leijonhufvud, A 1975. The Coordination of Economic Activities: A Keynesian Perspective. *American Economic Review; Papers and Proceedings* 65: 182-188.

- Clower, R W 1994. The Effective Demand Fraud. *Eastern Economic Journal* 20: 377-385.
- Coddington, A 1982. Deficient Foresight: A Troublesome Theme in Keynesian Economics. *American Economic Review* 72: 480-487.
- Coddington, A 1983. *Keynesian Economics; the Search for the First Principles*. London: George Allen & Unwin.
- Collingwood R G 1946. *The Idea of History*. Oxford: Oxford University Press.
- Cottrell, Allin 1986. The Endogeneity of Money and Money-Income Causality. *Scottish Journal of Political Economy* 33: 2-27.
- Cottrell, Allin and Lawlor, Michael Syron 1991. 'Natural Rate' Mutations: Keynes, Leijonhufvud and the Wicksell Connection. *History of Political Economy* 23: 625-643.
- Cottrell, Allin 1994. Hayek's Early Cycle Theory Re-examined. *Cambridge Journal of Economics* 18: 197-212.
- Cowan, Tyler 1982. Say's Law and Keynesian Economics. In Fink, Richard H (ed) *Supply-Side Economics: A Critical Appraisal*. Frederick: University Publications of America, 160-184.
- Dahlberg, A O 1984. *How to Reduce Interest Rates and Poverty*. Greenwich: Devin-Adair.
- Davidson, Paul 1962. More on the Aggregate Supply Function. *Economic Journal* 72: 452-457.
- Davidson, Paul 1965. Keynes's Finance Motive. *Oxford Economic Papers* 17: 47-65.
- Davidson, Paul 1974. Disequilibrium Market Adjustment. *Economic Inquiry* 12: 146-158.
- Davidson, Paul 1977. Money and General Equilibrium. *Economie Appliquée* 30, 541-563.
- Davidson, Paul 1978. *Money and the Real World* Second edition. London: Macmillan.
- Davidson, Paul 1980. The Dual-faceted Nature of the Keynesian Revolution: Money and Money Wages in Unemployment and Production Flow Prices. *Journal of Post Keynesian Economics* 3: 291-237.
- Davidson, Paul 1987. The Aggregate Supply Function. In Eatwell, John, Milgate, Murray and Newman, Peter (eds) *The New Palgrave, Volume 1*. London and Basingstoke: MacMillan, 385-389.

- Davidson, Paul 1989. Patinkin's interpretation of Keynes and the Keynesian Cross. *History of Political Economy* 21: 737-741.
- De Long, Bradford and Summers, Lawrence H 1986. Is Increased Price Flexibility Stabilizing? *American Economic Review* 76: 1031-1044.
- Desai, Meghnad 1982. The Task of Monetary Theory: The Hayek-Sraffa Debate in a Modern Perspective. In Baranzini, M (ed) *Advances in Economic Theory*. New York: St Martins Press, 149-170.
- Diamond, Aubrey L 1982. Corporate Personality and Limited Liability. In Orhrial, Tony (ed) *Limited Liability and the Firm*. London: Methuen.
- Dore, M H I 1985. On the Concept of Equilibrium. *Journal of Post Keynesian Economics* 7: 193-206.
- Dow, Alexander C and Dow, Sheila C 1989. Endogenous Money Creation and Idle Balances. In Pheby, John (ed) *New Directions in Post-Keynesian Economics*. Aldershot: Edward Elgar, 147-164.
- Dow, Sheila C 1985. *Macroeconomic Thought: A Methodological Approach*. Oxford: Basil Blackwell.
- Dow, Sheila C 1990. Beyond Dualism. *Cambridge Journal of Economics* 14: 143-159.
- Dowd, Kevin 1996. *Laissez-Faire Banking*. London: Routledge.
- The Economist 1999. *Supplement on International Banking*, April 17.
- Edwards, J R 1985. Effective Demand Failure: Critique of an Anti-Monetary Theory. *South African Journal of Economics* 53: 124-40.
- Eichengreen, Barry (ed) 1985. *The Gold Standard in Theory and History*. New York and London: Methuen.
- Eichner, Alfred S 1987. Prices and Pricing. *Journal of Economic Issues* 21: 1555-1584.
- Ertürk, Korkut 1996. On the Keynesian Notion of Equilibrium and Dynamics. *Cambridge Journal of Economics* 20: 371-386.
- Eucken, W 1951. *This Unsuccessful Age*. London: William Hodge and Co.
- Faure A P 1986. The 'Money Market Shortage' and its Causes. *The Securities Markets* 1: 15-28.

- Foster, Gladys Parker 1990. Keynes and Kalecki on Saving and Profit: Some Implications. *Journal of Economic Issues* 24: 415-422.
- Frankel, S Herbert 1977. *Money: Two Philosophies*. Oxford: Basil Blackwell.
- Friedman, Milton 1961. Real and Pseudo Gold Standards. *Journal of Law and Economics* 4: 66-79. Reprinted in Friedman, Milton 1968. *Dollars and Deficits*. Englewood Cliffs: Prentice-Hall.
- Garretsen, Harry 1992. *Keynes, Coordination and Beyond*. Aldershot: Edward Elgar.
- Garrison, R W 1982. Austrian Economics as the Middle Ground; Comment on Loasby. In Kirzner, I M (ed) *Method, Process and Austrian Economics*. Lexington: Lexington Books, 131-138.
- Garrison, R W 1984. Time and Money: The Universals of Macroeconomic Theorizing. *Journal of Macroeconomics* 6: 197-213.
- Garrison, R W 1985. Intertemporal Coordination and the Invisible Hand: an Austrian Perspective on the Keynesian Vision. *History of Political Economy* 17: 309-321.
- Garrison, R W 1986a. From Lachmann to Lucas: on Institutions, Expectations, and Equilibrating Tendencies. In Kirzner, I M (ed) *Subjectivism, Intelligibility and Economic Understanding*. London: Macmillan, 87-101.
- Garrison, R W 1986b. Hayekian Trade Cycle Theory: A Reappraisal. *Cato Journal* 6: 537-453.
- Garrison, R W 1994. Hayekian Triangles and Beyond. In Birner, Jack and Van Zijp, Rudy (eds) *Hayek, Co-ordination and Evolution*. London and New York: Routledge, 109-126.
- Goodhart, Charles 1989. Has Moore become too Horizontal?. *Journal of Post Keynesian Economics* 12: 29-34.
- Grandmont, Jean-Michel 1977. The Logic of the Fix-Price Method. *Scandinavian Journal of Economics* 79: 169-186.
- Graziani, Augusto 1989. The Theory of the Monetary Circuit. *Thames Papers of Political Economy*: 1-26. Reprinted in Musella, Marco and Panico, Carlo (eds) 1995. *The Money Supply in the Economic Process*. Aldershot: Edward Elgar, 516-541.

- Greenfield, R and Yeager, L 1989. Can Monetary Disequilibrium be eliminated. *Cato Journal* 9: 405-421.
- Grossman, Herschel I 1991. Monetary Economics: A Review Essay. *Journal of Monetary Economics* 28: 323-345.
- Guttman, Robert 1994. *How Credit-Money Shapes the Economy: The United States in a Global System*. Armonk and London: M.E. Sharpe.
- Haavelmo, Trygve 1974. What can Static Equilibrium Models tell us? *Economic Inquiry* 12: 27-34.
- Haberler, G 1958. *Prosperity and Depression*. Cambridge: Harvard University Press.
- Hagen Everett E 1966. The Classical Theory of the Level of Output and Employment. Reprinted in Mueller, M G (ed) *Readings in Macroeconomics*. New York: Holt, Rhinehart and Winston, 3-15.
- Hahn, F H 1960. The Patinkin Controversy. *Review of Economic Studies* 28, 37-43.
- Hahn, F H 1965. On Some Problems of proving the Existence of an Equilibrium in a Monetary Economy. In Hahn, F H and Brechling, F P R (eds) *The Theory of Interest Rates*. London: Macmillan, 126-135.
- Hahn, F H 1973. On the Foundations of Monetary Theory. In Parkin, M and Nobay, A R (eds) *Essays in Modern Economics*. London: Longman, 230-242.
- Hahn, F H 1985. *Money and Inflation*. Cambridge: MIT Press.
- Hammond, J Daniel 1991. Frank Knight's Antipositivism. *History of Political Economy* 23: 359-381.
- Hands, Douglas W 1985. Karl Popper and Economic Methodology. *Economics and Philosophy* 1: 83-99.
- Hansen, B 1970. *General Equilibrium Systems*. New York: McGraw-Hill.
- Harris, Lawrence 1981. *Monetary Theory*. New York: McGraw-Hill.
- Harrison, Glenn W 1980. The Stock-Flow Distinction: A Suggested Interpretation. *Journal of Macroeconomics* 2: 111-128.
- Hayek, F A 1932. Money and Capital: A Reply. *Economic Journal* 42: 236-249.

- Hayek, F A 1935. *Prices and Production*. Clifton: Augustus M Kelley.
- Hayek, F A 1937. Economics and Knowledge. Reprinted in Hayek, F A 1976. *Individualism and Economic Order*. London and Henley: Routledge, 33-56.
- Hayek, F A 1945. The Use of Knowledge in Society. Reprinted in Hayek, F.A. 1976. *Individualism and Economic Order*. London and Henley: Routledge, 77-91.
- Hayek, F A 1946. The Meaning of Competition. Reprinted in Hayek, F A 1976. *Individualism and Economic Order*. London and Henley: Routledge, 92-106.
- Hayek, F A 1947. 'Free' Enterprise and Competitive Order. Reprinted in Hayek, F A 1976. *Individualism and Economic Order*. London and Henley: Routledge, 107-118.
- Hayek, F A 1955. *The Counter-Revolution of Science*. Glencoe: The Free Press.
- Hayek, F A 1960. *The Constitution of Liberty*. London: Routledge and Kegan Paul.
- Hayek, F A 1967a. Degrees of Explanation. In Hayek, F A 1967. *Studies in Philosophy, Politics and Economics*. London and Henley: Routledge & Kegan Paul, 3-21.
- Hayek, F A 1967b. The Theory of Complex Phenomena. In Hayek, F A 1967. *Studies in Philosophy, Politics and Economics*. London and Henley: Routledge & Kegan Paul, 22-42.
- Hayek, F A 1970. *Profits, Interest and Investment*. New York: Augustus M. Kelley.
- Hayek, F A 1978. Competition as a Discovery Procedure". In Hayek, F A *New Studies in Philosophy, Politics, Economics and the History of Ideas*. Chicago: University of Chicago Press, 179-190.
- Hellwig, Martin F 1993. The Challenge of Monetary Theory. *European Economic Review* 37: 215-242.
- Henry, John F 1984. On Equilibrium. *Journal of Post Keynesian Economics* 6: 214-229.
- Hicks, J R 1935. A Suggestion for Simplifying the Theory of Money. Reprinted in Hicks, J R 1967. *Critical Essays in Monetary Theory*. Oxford: Oxford University Press, 61-82.
- Hicks, J R 1946. *Value and Capital*, second edition. Oxford: Clarendon Press.
- Hicks, J R 1967a. The Hayek Story. In Hicks, J R 1967. *Critical Essays in Monetary Theory*, Oxford: Oxford University Press, 203-215.

- Hicks, J R 1967b. "Monetary Theory and History - An Attempt at Perspective". In Hicks, J R 1967. *Critical Essays in Monetary Theory*, Oxford: Oxford University Press, 155-173.
- Hicks, J R 1982. Limited Liability: the Pros and Cons. In Orhnlial, Tony (ed) *Limited Liability and the Corporation*. London & Canberra: Croom Helm, 11-21.
- Hoogduin L H and Snippe, J 1987. Uncertainty in/of Macroeconomics: an Essay on Adequate Abstraction. *De Economist* 135: 429-441.
- Hoover, Kevin 1998. Causality. In Davis, John B, Hands, Wade D and Mäki, Uskali (eds) *The Handbook of Economic Methodology*. Cheltenham: Edward Elgar, 48-54.
- Horwitz, Steven 1996. Capital Theory, Inflation and Deflation: The Austrians and Monetary Disequilibrium Theory Compared. *Journal of the History of Economic Theory* 18: 287-313.
- Hudson, Michael 1988. Keynes, Hayek and the Monetary Economy. In Hillard, J (ed) *Keynes in Retrospect*. Aldershot: Edward Elgar, 172-184.
- Hutchison, Terence 1984. Our Methodological Crisis. In Wiles, Peter and Routh, Guy (eds) *Economics in Disarray*. Oxford: Basil Blackwell, 1-21.
- Hutt, W H 1974. *A Rehabilitation of Say's Law*. Athens: Ohio University Press.
- Hutt, W H 1979. *The Keynesian Episode*. Indianapolis: Liberty Press.
- Jones, Robert A 1976. The Origin and Development of Media of Exchange. *Journal of Political Economy* 84: 757-775.
- Kaldor, N 1985. Keynesian Economics after Fifty Years. In Worswick, D and Trevithick, J (eds) *Keynes and the Modern World*. Cambridge: Cambridge University Press, 1-28.
- Keynes, J M 1931. The Pure Theory of Money. A Reply to Dr. Hayek. *Economica* 11: 387-397.
- Keynes, J M 1936. *The General Theory of Employment, Interest and Money*. New York: Harcourt, Brace & World.
- Keynes, J M 1937a. Alternative Theories of the Rate of Interest. *Economic Journal* 47: 241-252.



- Keynes, J M 1937b. The Ex-ante Theory of the Rate of Interest. *Economic Journal* 47: 663-669.
- Keynes, J M 1937c. The General Theory of Employment. *Quartely Journal of Economics* 51: 209-223.
- Keynes, J M 1938. D.H. Robertson and 'Mr. Keynes and Finance', Comments. *Economic Journal* 48: 318-322.
- Keynes, J M 1973a. *Collected Writings; Volume XIII*. New York: St Martin's Press.
- Keynes, J M 1973b. *Collected Writings, Volume XIV*. New York: St Martin's Press.
- Kirzner, I M 1973. *Competition and Entrepreneurship*. Chicago: Chicago University Press.
- Kirzner, I M 1979. *Perception, Opportunity and Profit: Studies in the Theory of Entrepreneurship*. Chicago: University of Chicago Press.
- Kirzner, I M 1982. Uncertainty, Discovery, and Human Action: A Study of the Entrepreneurial Profile in the Misesian System. In Kirzner, I M (ed) *Method, Process, and Austrian Economics*. Lexington: Lexington Books.
- Kirzner, I M 1984. Prices, the Communication of Knowledge, and the Discovery Process. In Leube, Kurt R and Zlabinger, Albert H (eds) *The Political Economy of Freedom: Essays in Honour of F A Hayek*. Munich and Vienna: Philosophia Verlag, 193-206.
- Kirzner, I M 1985. *Discovery and the Capitalist Process*. Chicago: University of Chicago Press.
- Kirzner, I M 1992a. Subjectivism, Freedom and Economic Law. *South African Journal of Economics* 60: 44-62.
- Kirzner, I M 1992b. *The Meaning of the Market Process*. London and New York: Routledge.
- Kirzner, I M (1997), Entrepreneurial Discovery and the Competitive Market Process: An Austrian Approach. *Journal of Economic Literature* 35: 60-85.
- Klappholz K and Mishan, E J 1962. Identities in Economic Models. *Economica* 29: 117-128.

- Knight, Frank H 1921. "Ethics and the Economic Interpretation", *Quarterly Journal of Economics* 36: 454-481. Reprinted in Knight, Frank H 1935. *The Ethics of Competition and Other Essays*, New York: Augustus M. Kelley, 19-40.
- Knight, Frank H 1937. Unemployment and Mr. Keynes's Revolution in Economic Theory. *Canadian Journal of Economics and Political Science* 3: 100-123. Reprinted in Hazlitt, Henry (ed) 1960. *The Critics of Keynesian Economics*. New York: Van Nostrand, 66-95.
- Kohn, Meir 1981a. In Defense of the Finance Constraint. *Economic Inquiry* 19: 177-195.
- Kohn, Meir 1981b. A Loanable Funds Theory of Unemployment and Monetary Disequilibrium. *American Economic Review* 71: 859-879.
- Koopmans, J G 1933. Zum Problem des 'Neutralen' Geldes. In Hayek, F A (ed) *Beiträge zur Geldtheorie*. Vienna: Springer Verlag, 211-259.
- Kregel, J A 1975. *The Reconstruction of Political Economy*, second edition. London: Macmillan.
- Kregel, J A 1985. Constraints on the Expansion of Output and Employment: Real or Monetary? *Journal of Post Keynesian Economics* 7: 139-152.
- Lachmann, L M 1967. Causes and Consequences of the Inflation of Our Time. *South African Journal of Economics* 35: 281-291.
- Lachmann, L M 1976a. From Mises to Shackle: an Essay on Austrian Economics and the Kaleidic Society. *Journal of Economic Literature* 14: 54-62.
- Lachmann, L M 1976b. Toward a Critique of Macroeconomics. In Dolan, E G (ed) *The Foundations of Modern Austrian Economics*. Kansas City: Sheed & Ward, 152-160.
- Lachmann, L M 1976c. On the Central Concept of Austrian Economics: Market Process. In Dolan, E G (ed) *The Foundations of Modern Austrian Economics*. Kansas City: Sheed & Ward, 126-132.
- Lachmann, L M 1986. Austrian Economics under Fire: The Hayek-Sraffa Dual in Retrospect. In Grassl, W and Smith, B (eds) *Austrian Economics: Historical and Philosophical Background*. New York: New York University Press, 225-242.

- Lachmann, L M 1986. *The Market as an Economic Process*. Oxford: Basil Blackwell.
- Laidler, David 1983. On the 'Buffer Stock' Notion in Monetary Economics. *Economic Journal* 94: 17-34.
- Laidler, David 1997. Notes on the Microfoundations of Monetary Economics. *Economic Journal* 107: 1213-1223.
- Lange, O 1942. Say's law: A Restatement and Criticism. In Lange, O, McIntyre, F and Yntema, T O (eds) *Studies in Mathematical Economics and Econometrics*. Chicago: University of Chicago Press, 49-68.
- Langlois, R N 1986. The New Institutional Economics: An Introductory Essay. In Langlois, R N (ed) *Economics as a Process: Essays in the New Institutional Economics*. New York: Cambridge University Press, 1-26.
- Langlois, R N 1989. What was wrong with the Old Institutional Economics (and what is still wrong with the New)? *Review of Political Economy* 1: 271-298.
- Lavoie, Don 1983. Economic Calculation and Economic Stability. *Cato Journal* 3: 163-170.
- Lavoie, M 1884. Credit and Money: The Dynamic Circuit, Overdraft Economics and Post-Keynesian Economics. In Jarsulic, M (ed) *Money and Macro Policy*. Dordrecht: Kluwer.
- Lawlor, Michael Syron and Horn, Bobbie L 1992. Notes on the Sraffa-Hayek Exchange. *Review of Political Economy* 4: 317-340.
- Lawlor, Michael Syron 1994. The Own-rates Framework as an Interpretation of the *General Theory*; A Suggestion for Complicating the Keynesian Theory of Money. In Davis, John B (ed) *The State of Interpretation of Keynes*. Boston: Kluwer, 39-90.
- Lawson, T 1987. The Relative/Absolute Nature of Knowledge and Economic Analysis. *Economic Journal* 97: 951-970.
- Lawson, T 1989. Abstraction, Tendencies and Stylised Facts: a Realist Approach to Economic Analysis. *Cambridge Journal of Economics* 13: 59-78.]
- Lawson, T 1994. A Realist Theory for Economics. In Backhouse, Roger E (ed) *New Directions in Economics Methodology*. London and New York: Routledge, 257-285.

- Lawson, T 1996. *Economics and Reality*. New York: Routledge.
- Leijonhufvud, A 1974. *The Varieties of Price Theory: What Microfoundations for Macroeconomy?*, Discussion Paper no 44. University of California at Los Angeles.
- Leijonhufvud, A and Clower, R W 1981a. Say's Principle; What it means and doesn't mean. In Leijonhufvud A 1981. *Information and Coordination; Essays in Macroeconomic Theory*. New York and Oxford: Oxford University Press, 79-102.
- Leijonhufvud, A 1981b. The Wicksell Connection: Variations on a Theme. In Leijonhufvud, A 1981. *Information and Coordination; Essays in Macroeconomic Theory*. New York and Oxford: Oxford University Press, 131-202.
- Leijonhufvud, A 1981c. Effective Demand Failures. In Leijonhufvud, A 1981. *Information and Coordination; Essays in Macroeconomic Theory*. New York and Oxford: Oxford University Press, 103-130.
- Lerner, A P 1952. The Essential Properties of Money. *Quarterly Journal of Economics* 66: 172-193.
- Lipsey, R G 1979. World inflation. *The Economic Record* 55: 281-291.
- Loasby, Brian J 1992. Market Co-ordination. In Caldwell Bruce J and Boehm, Stephan (eds) *Austrian Economics: Tensions and New Directions*. Boston and Dordrecht: Kluwer, 137-156.
- Lotz, F A 1969. On Neutral Money. In Streissler, E (ed) *Roads to Freedom; Essays in Honour of F.A. von Hayek*. London: Routledge and Kegan Paul, 105-116.
- Machlup, Fritz 1967. Theories of the Firm: Marginalist, Behavioral, Managerial. *American Economic Review*, 57: 1-33
- Machlup, Fritz 1977. Hayek's Contributions to Economics. In Machlup, Fritz (ed) *Essays on Hayek*. London and Henley: Routledge & Kegan Paul, 13-60.
- Magee, Brian 1973. *Popper*. Glasgow: Fontana Modern Masters.
- Mäki, Uskali 1992a. On the Method of Isolation in Economics. In Dilworth, Craig (ed) *Idealization IV: Intelligibility in Science*, Amsterdam-Atlanta: GA, 317-352.

- Mäki, Uskali 1992b. The Market as an Isolated Causal Process: A Metaphysical Ground for Realism. In Caldwell, Bruce J and Boehm, Stefan (eds) *Austrian Economics: Tensions and New Directions*. Boston: Kluwer Academic Press, 35-66.
- Mäki, Uskali 1993. Economics with Institutions; Agenda for Methodological Enquiry. In Mäki, Uskali, Gustafsen, Bo and Knudsen, Christian (eds) *Rationality, Institutions and Economic Methodology*, London and New York: Routledge, 3-42.
- Mankiw, N Gregory 1990. A Quick Refresher Course in Macroeconomics. *Journal of Economic Literature* 28: 1645-1660.
- Marshall, A 1928. *Principles of Economics*. London: Macmillan.
- Mayer, Thomas 1992. *Truth versus Precision in Economics*. Aldershot: Edward Elgar.
- McCloughry, Roy 1982. Neutrality and Monetary Equilibrium: A Note on Desai. In Baranzini, M (ed) *Advances in Economic Theory*, New York: St Martins Press, 171-182.
- Menger, C 1892. On the Origin of Money. *Economic Journal* 2: 238-255.
- Menger, C 1982. *Principles of Economics*. New York and London: New York University Press.
- Menger, C 1985. *Investigations into the Method of the Social Sciences with Special Reference to Economics*. New York and London: New York University Press.
- Mill, John Stuart [1844] 1948. On the Definition of Political Economy; and on the Method of Investigation proper to it. In Mill, John Stuart *Essays on Some Unsettled Questions of Political Economy*. London: John W. Parker, 240-264.
- Minsky, Hyman P 1982. *Can "It" Happen Again?* Armonk (NJ): M.E. Sharpe.
- Minsky, Hyman P 1986. *Stabilizing an Unstable Economy*. New Haven: Yale University Press.
- Mishan, E J 1963. Say's Law and Walras' Law Once More. *Quarterly Journal of Economics* 77: 219-246.
- Mohr, P J 1987. The Conflict Approach. In Dornbusch, R, Fischer, S, Mohr, P J and Rogers, C *Macroeconomics*. Johannesburg: Lexicon, 318-321.

- Mongiovi, G 1990. Keynes, Sraffa and Hayek: on the Origins of Chapter 17 of the *General Theory*. *Economie Appliquée* 43: 131-156.
- Moore, Basil J 1988. *Horizontalist and Verticalists: The Macroeconomics of Credit Money*. Cambridge: Cambridge University Press.
- Moore, Basil J 1989. A Simple Model of Bank Intermediation", *Journal of Post Keynesian Economics* 12: 10-28.
- Munkirs, John R 1988. Economic Power: History and Institutions. In Peterson, Wallace C (ed) *Market Power and the Economy*. Boston and Dordrecht: Kluwer Academic Publishers, 27-52.
- Musgrave, A 1981. Unreal Assumptions in Economic Theory: the F-Twist Untwisted. *Kyklos* 34: 377-387.
- Myrdal, Gunnar 1939. *Monetary Equilibrium*, London: Willian Hodge and Co.
- Nell, Edward J 1981. Value and Capital in Marxian Economics. In Bell, D and Kristol, I 1981. *The Crisis in Economic Theory*. New York: Basic Books, 174-200.
- North, D C 1993. Institutions and Economic Performance. In Mäki, Uskali, Gustafsen, Bo and Knudsen, Christian (eds) *Rationality, Institutions and Economic Methodology*, London and New York: Routledge.
- North, D C 1994. Economic Performance Through Time. *American Economic Review* 84: 359-368.
- O'Driscoll, G P 1977. *Economics as a Coordination Problem: The Contributions of Friedrich A Hayek*. Kansas City: Sheed Andrews and McMeel.
- O'Driscoll, G P 1986. Money: Menger's Evolutionary Theory. *History of Political Economy* 18: 601-616.
- Ohlin, Bertil 1937. Some Notes on the Stockholm Theory of Savings and Investment; I and II. *Economic Journal* 47: 53-69 and 221-240.
- Ostroy, Joseph M 1973. The Informational Efficiency of Monetary Exchange. *American Economic Review* 63: 597-610.
- Ostroy, Joseph M and Starr, Ross M 1974. Money and the Decentralisation of Exchange. *Econometrica* 42: 1093-1113.

- Paqué, Karl-Heinz 1990. Pattern Predictions in Economics: Hayek's Methodology of the Social Sciences Revisited. *History of Political Economy* 22: 281-294.
- Patinkin, Don 1965. *Money, Interest and Prices*, second edition. New York and Tokyo: Harper International.
- Patinkin, Don 1982. *Anticipations of the General Theory, and Other Essays on Keynes*. Oxford: Basil Blackwell.
- Patinkin, Don 1989a. Walras' Law. In Eatwell, John, Milgate, Murray and Newman, Peter (eds) 1989 *The New Palgrave: General Equilibrium*, London and Basingstoke: Macmillan, 328-339.
- Patinkin, Don 1989b. Keynes and the Keynesian Cross: a Further Note. *History of Political Economy* 21: 537-544.
- Patinkin, Don 1991. Introduction to Second Edition, Abridged. In Patinkin, Don *Money, Interest and Prices*, second abridged edition. Cambridge: MIT Press, xv-lvi.
- Patinkin, Don and Steiger, Otto 1989. In Search of the 'Veil of Money' and the 'Neutrality of Money': A Note on the Origin of Terms. *Scandinavian Journal of Economics* 9: 131-146.
- Perrott, David L 1982. Changes in Attitude to Limited Liability - the European Experience. In Orhial, Tony (ed) *Limited Liability and the Corporation*. London & Canberra: Croom Helm, 18-121.
- Plaut, Steven E 1982. Return to the 'Gold Standard': Recipe for Depression. *Journal of Post Keynesian Economics* 5: 114-116.
- Popper, Karl 1960. *The Poverty of Historicism*, second edition. London and Henley: Routledge & Kegan Paul.
- Popper, Karl 1966. *The Open Society and its Enemies; Volume 2, Hegel and Marx*, fifth edition. London and New York: Routledge & Kegan Paul.
- Popper, Karl [1967] 1983. The Rationality Principle. In Miller, David (ed) *A Pocket Popper*. Oxford: Fontana Press.
- Popper, Karl [1957] 1986. *The Poverty of Historicism*. London and New York: Ark Paperbacks.

- Prendergast, Christopher 1986. Alfred Schutz and the Austrian School of Economics. *American Journal of Sociology* 92: 1-26.
- Richardson, David R 1987. Asimakopulos on Kalecki and Keynes on Finance, Investment and Saving. *Cambridge Journal of Economics* 10: 191-198.
- Richardson, G B 1956. Demand and Supply Reconsidered. *Oxford Economic Papers* 8: 113-126.
- Richardson, G B 1959. Equilibrium, Expectations and Information. *Economic Journal* 69: 223-237.
- Rizzo, Mario J 1990. Hayek's Four Tendencies toward Equilibrium. *Cultural Dynamics* 3: 12-31.
- Robbins, L [1932] 1984. *An Essay on the Nature and Significance of Economic Science*. London: Macmillan.
- Robertson, D H 1936. Some Notes on Mr. Keynes' General Theory of Employment. *Quarterly Journal of Economics* 51: 168-191.
- Robertson, D H 1937. Alternative Theories of the Rate of Interest II. *Economic Journal* 47: 428-436.
- Robertson, D H 1940. *Essays in Monetary Theory*. London: P.S. King & Staples.
- Robertson, D H 1966. *Essay in Money and Interest*. London: Fontana.
- Robinson, J 1970. Quantity Theories Old and New, A Comment. *Journal of Money, Credit and Banking* 1: 504-512.
- Robinson, J 1985. The Theory of Normal Prices and Reconstruction of Economic Theory. In Feiwel, G R (ed) *Issues in Contemporary Macroeconomics and Distribution*. London: Macmillan, 157-165.
- Robinson, J and Eatwell, J 1973. *An Introduction to Modern Economics*. London: McGraw-Hill.
- Rockwell, L H (ed) 1985. *The Gold Standard: An Austrian Perspective*. Lexington: Lexington Books.
- Rogers C 1985a. The Monetary Control System of the South African Reserve Bank: Monetarist or Post Keynesian? *South African Journal of Economics* 53: 241-247.



- Rogers C 1985b. A Critique of Clower's Dual Decision Hypothesis. *South African Journal of Economics* 53: 111-123.
- Rogers C 1989. *Money, Interest and Capital*. Cambridge: Cambridge University Press.
- Röpke, Wilhelm 1963. *Economics of the Free Society*. Chicago: Henry Regnery Company.
- Rothbard, Murray N 1962. The Case for a 100 Per Cent Gold Dollar. In Yeager, Leland B (ed) *In Search of a Monetary Constitution*. Cambridge: Harvard University Press, 94-136.
- Rothbard, Murray N 1970. *Man, Economy, and State*. Los Angeles: Nash Publishing Company.
- Rutherford, M 1989. What is wrong with the New Institutional Economics (and what is still wrong with the Old). *Review of Political Economy* 1: 299-318.
- Rutherford, M 1996. *Institutions in Economics, The Old and the New Institutionalism*. Cambridge: Cambridge University Press.
- Salerno, Joseph T 1983. Gold Standards: True and False. *Cato Journal* 3: 239-267.
- Salmon, Wesley C 1993. An Encounter with David Hume. In Fetzer, James H (ed) *Foundations of Philosophy of Science: Recent Developments*. New York: Paragon House, 277-298.
- Say J.B. 1803. *Traité d'Economie Politique*. Paris: Deterville.
- Sayer, Andrew 1984. *Method in Social Science; a Realist Approach*. London: Hutchinson.
- Schutz, Alfred 1967. *The Phenomenology of the Social World*. Evanston (Ill): Northwestern University Press.
- Schwartz, Anna J 1982. *Report to the Congress of the Commission on the Role of Gold in Domestic and International Monetary Systems, Volume 1*. Washington, D.C.: Government Printing Office.
- Selgin, George A 1994. The Yield on Money Held Revisited: Lessons for Today. In Boettke, Peter J and Prychitko, David L (ed) *The Market Process: Essays in Contemporary Austrian Economics*. Aldershot: Edward Elgar, 139-155.
- Selgin, George A 1996. *Bank Deregulation & Monetary Order*. London: Routledge.

- Selgin, George A and White, Lawrence H 1994. How would the Invisible Hand handle Money?. *Journal of Economic Literature* 32: 1718-1749.
- Shackle, G L S 1967. *The Years of High Theory*. Cambridge: Cambridge University Press.
- Shackle, G L S 1969. *Decision, Order and Time*. Cambridge: Cambridge University Press.
- Shackle, G L S 1972. *Epistemics and Economics*. Cambridge: Cambridge University Press.
- Shackle, G L S 1973. Marginalism: the Harvest. In Black, R D C, Coats, A W and Goodwin, C D W (eds) *The Marginal Revolution in Economics*. Durham: Duke University Press, 321-336.
- Shackle, G L S 1979. *Imagination and the Nature of Choice*. Edinburgh: Edinburgh University Press.
- Simons, Henry 1948. *Economic Policy for a Free Society*. Chicago: University of Chicago Press.
- Snippe J 1985a. Loanable Funds Theory versus Liquidity Preference Theory. *De Economist* 133: 120-150.
- Snippe J 1985b. On the Integration of Spending and Portfolio Decisions and the Coordination Problem in Macroeconomic Analysis. *Metroeconomica* 37: 293-306.
- Snippe, J 1987a. Monetary Equilibrium versus the Wicksell Connection. *Banca Nazionale del Lavoro Quarterly Review* 161: 197-212.
- Snippe, J 1987b. Intertemporal Coordination and the Economics of Keynes: Comment on Garrison. *History of Political Economy* 19: 329-334.
- Sowell, Thomas 1972. *Say's Law; an Historical Analysis*. Princeton: Princeton University Press.
- Sraffa, P 1932a. Dr Hayek on Money and Capital. *Economic Journal* 42: 42-53.
- Sraffa, P 1932b. A Rejoinder. *Economic Journal* 42: 249-251.
- Stanlake, G F and Grant, S J 1995. *Introductory Economics*, sixth edition. Singapore: Longman.
- Starr, Ross M 1972. The Structure of Exchange in Barter and Monetary Economics. *Quarterly Journal of Economics* 86: 290-302.

- Stewart, IMT 1979. *Reasoning and Method in Economics: An Introduction to Economic Methodology*. New York: McGraw-Hill.
- Streissler, Erich 1969. Hayek on Growth: A Reconsideration of His Early Theoretical Work. In Streissler, Erich (ed) *Roads to Freedom: Essays in Honour of Friedrich A. von Hayek*. London: Routledge and Kegan Paul, 245-285.
- Sweezy, A 1934. The Interpretations of Subjective Value Theory in the Writings of Austrian Economists. *Review of Economic Studies*, 1: 176-1985.
- Terzi, A 1987. The Independence of Finance from Saving: A Flow of Funds Interpretations. *Journal of Post Keynesian Economics* 9: 188-197.
- Tobin, James 1993. Price Flexibility and Output Stability: An Old Keynesian View. *Journal of Economic Perspectives* 7: 45-65.
- Torr, C S W 1984. The Principle of Effective Demand versus Effective Demand Failure. *South African Journal of Economics* 52: 409-412.
- Torr, C S W 1988. *Equilibrium, Expectations and Information*. Oxford: Polity Press.
- Torr, C S W 1992. Commentary on Brian Loasby's 'Market Coordination'. In Caldwell, Bruce J and Boehm, Stephan (eds) *Austrian Economics: Tensions and New Directions*. Boston and Dordrecht: Kluwer, 156-164.
- Trautwein, Hans-Michael 1996. Money, Equilibrium, and the Business Cycle: Hayek's Wicksellian Dichotomy. *History of Political Economy* 28: 27-55.
- Tsiang, S C 1966. Walras' Law, Say's Law and Liquidity Preference. *International Economic Review* 7: 329-345.
- Tsiang S C 1980. Keynes's 'Finance' Demand for Liquidity, Robertson's Loanable Funds Theory, and Friedman's Monetarism. *Quarterly Journal of Economics* 94: 467-491.
- Van Eeghen, P H 1994. Subjectivism, Indeterminacy and the Structure of Economic Analysis. *Review of Political Economy* 6: 153-185.
- Van Eeghen, P H 1996. Towards a Methodology of Tendencies. *Journal of Economic Methodology* 3: 259-282.
- Van Eeghen, P H 1997. The Capitalist Case against the Corporation. *Review of Social Economy* 55: 85-113.

- Vanberg, Victor 1989. Carl Menger's Evolutionary and John R. Commons' Collective Action Approach to Institutions: A Comparison. *Review of Political Economy* 1: 334-360.
- Vaubel, R 1977. Free Currency Competition. *Weltwirtschaftliches Archiv* 37: 435-461.
- Vaubel, R 1984. The Government's Money Monopoly: Externalities or Natural Monopoly? *Kyklos* 37: 27-58.
- Vermaat, A J 1971. De Patinkin-Puzzle. *De Economist* 119: 43-96.
- Visser, H 1971. Neutraal Geld; Een Overzicht. *De Economist* 119: 393-439.
- Weintraub, Sidney 1957. The Micro-foundations of Aggregate Demand and Supply. *Economic Journal* 67: 455-470.
- Weintraub, Sidney 1982. Hicks on *IS-LM*: More Explanation? *Journal of Post Keynesian Economics* 4: 445-452.
- Wells, Paul 1960. Keynes's Aggregate Supply Function: A Suggested Interpretation. *Economic Journal* 70: 536-542.
- Wells, Paul 1983. A Post Keynesian View of Liquidity Preference and the Demand for Money. *Journal of Post Keynesian Economics* 5: 523-536.
- Whalen, Charles J 1988. The Minsky-Simons Connection: A Neglected Thread in the History of Economic Thought. *Journal of Economic Issues* 22: 533-544.
- Whalen, Charles J 1991. Stabilizing the Unstable Economy: More on the Minsky-Simons Connection. *Journal of Economic Issues* 25: 739-763.
- Whately, Richard 1847. *Introductory Lectures on Political Economy*, third edition. London: John W. Parker.
- White, Lawrence 1976. Entrepreneurship, Imagination and the Question of Equilibration. Reprinted in Littlechild, Steven (ed) 1990. *Austrian Economics, Volume III*. Aldershot: Edward Elgar, 87-104.
- White, Lawrence 1984. *Free Banking in Britain: Theory, Experience and Debate, 1800-1845*. New York: Cambridge University Press.
- Wicksell, Knut [1898] 1936. *Interest and Prices*. London: Macmillan.

- Wicksell, Knut [1928] 1950. *Lectures on Political Economy, Volume II: Money*. London: Routledge and Kegan Paul.
- Wray, L. Randall 1988. Profit Expectations and the Investment-Saving Relation. *Journal of Post Keynesian Economics* 11: 131-147.
- Wray, L. Randall 1992. Commercial Banks, the Central Bank, and Endogenous Money. *Journal of Post Keynesian Economics* 14: 297-310.
- Yeager, Leland B 1968. Essential Properties of the Medium of Exchange. *Kyklos* 21: 45-69.
- Yeager, Leland B 1973. The Keynesian Diversion. *Western Economic Journal* 12: 150-163.
- Yeager, Leland B 1983. Stable Money and Free-Market Currencies. *Cato Journal* 3: 305-326.
- Yeager, Leland B 1986. The Significance of Monetary Disequilibrium. *Cato Journal* 6: 369-399.