Keynes, Uncertainty and the Global Economy

THE POST KEYNESIAN ECONOMICS STUDY GROUP

Post Keynesian Econometrics, Microeconomics and the Theory of the Firm and *Keynes, Uncertainty and the Global Economy* are the outcome of a conference held at the University of Leeds in 1996 under the auspices of the Post Keynesian Economics Study Group. They are the fourth and fifth in the series published by Edward Elgar for the Study Group.

The essays in these volumes bear witness to the vitality and importance of Post Keynesian Economics in understanding the workings of the economy, both at the macroeconomic and the microeconomic level. Not only do these chapters demonstrate important shortcomings in the orthodox approach, but they also set out some challenging alternative approaches that promise to lead to a greater understanding of the operation of the market mechanism. The papers make important contributions to issues ranging from the philosophical and methodological foundations of economics to policy and performance.

The Post Keynesian Study Group was established in 1988 with a grant from the Economic and Social Research Council and has flourished ever since. At present (2002), there are four meetings a year hosted by a number of 'old' and 'new' universities throughout Great Britain. These are afternoon sessions at which three or four papers are presented and provide a welcome opportunity for those working in the field to meet and discuss ideas, some of which are more or less complete, others of which are at a more early stage of preparation. Larger conferences, such as the one from which these two volumes are derived, are also held from time to time, including a conference specifically for postgraduates. There are presently over five hundred members who receive the Post Keynesian Study Group electronic newsletter and details of seminars. The Study Group has established a number of international links.

As the present convenor of the Post Keynesian Study Group, I should like to thank Sheila Dow and John Hillard for the not inconsiderable time and effort they have spent in editing the proceedings and making these important papers available to a wider audience.

John McCombie
Downing College, Cambridge, UK

Recent Developments in Post Keynesian Economics
Edited by Philip Arestis and Victoria Chick

Keynes, Knowledge and Uncertainty
Edited by Sheila Dow and John Hillard

Finance, Development and Structural Change
Edited by Philip Arestis and Victoria Chick

Post Keynesian Econometrics, Microeconomics and the Theory of the Firm
Edited by Sheila Dow and John Hillard

Keynes, Uncertainty and the Global Economy
Edited by Sheila Dow and John Hillard

Keynes, Uncertainty and the Global Economy

Beyond Keynes, Volume Two

Edited by

Sheila C. Dow

Professor of Economics, University of Stirling, UK

and

John Hillard

Director of Taught Postgraduate Programmes, Leeds University Business School, UK

IN ASSOCIATION WITH THE POST KEYNESIAN ECONOMICS STUDY GROUP

Edward Elgar
Cheltenham, UK • Northampton, MA, USA

Published by
Edward Elgar Publishing Limited
Glensanda House
Montpellier Parade
Cheltenham
Glos GL50 1UA
UK

Edward Elgar Publishing, Inc.
136 West Street
Suite 202
Northampton
Massachusetts 01060
USA

A catalogue record for this book
is available from the British Library

ISBN 1 85898 797 0

Printed and bound in Great Britain by Biddles Ltd, *www.biddles.co.uk*

Contents

Tables and figures

TABLES

FIGURES

Contributors

Philip Arestis is Professor of Economics, South Bank University, London, UK

Anna Carabelli is Professor of Economics, Università degli Studi del Piemonte Orientale, Italy

Victoria Chick Emeritus is Professor of Economics, University College London, UK

Paul Davidson is J. Fred Holly Chair of Excellence in Political Economy, University of Tennessee, Knoxville, USA

Sheila Dow is Professor of Economics, University of Stirling, UK

Athol Fitzgibbons is Associate Professor of Economics, Griffith University, Australia

Giuseppe Fontana is Lecturer in Economics, University of Leeds, UK

John Hillard is Director of Taught Postgraduate Programmes, Leeds University Business School, UK

Michael C. Howard is Professor of Economics, University of Waterloo, Canada

Jesper Jespersen is Professor of Economics, Roskilde University, Denmark

Serap Kayatekin is Lecturer in Development Economics, University of Leeds, UK

John E. King is Professor of Economics, Department of Economics and Finance, La Trobe University, Australia

Ramesh C. Kumar is Associate Professor of Economics, University of Waterloo, Canada

William Milberg is Associate Professor of Economics, New School University, USA

Piero V. Mini is Associate Professor of Economics, Bryant College, USA

Man-Seop Park is Associate Professor of Economics, Korea University, Seoul, Korea

Malcolm Sawyer is Professor of Economics, University of Leeds, UK

Nina Shapiro is Associate Professor of Economics, Saint Peter's College, USA

Alessandro Vercelli is Professor of Economics, University of Siena, Italy

Preface

It is both a pleasure and a privilege to write the Preface to the volume of the second Leeds conference on Keynesian matters, so ably organized by Sheila Dow and John Hillard. The conference was a wonderful occasion for me especially; I made new friends and renewed old friendships in pleasant surroundings and I heard serious, stimulating and inspiring papers and discussion. The contents of the volume show that the wide-ranging interests, example and inspiration of Keynes himself guided our discussions. Much unfinished business from Keynes's own agenda received attention: the vexed place of imperfect competition in the Keynesian system; the compromises needed to do effective systemic analysis; the roles of knowledge, information and uncertainty in economic analysis; appropriate methodologies; the place for econometric procedures in effective analysis; the usefulness of the insights of Keynes and his followers for current international issues, not least taming speculators and coping with the economic ignorance that underlies Maastricht.

Because it was a gathering of Keynes scholars we were not afraid to learn from the past, from both historical events and scholars now dead. This was not piety but the application of critical intelligence combined with perspective.

I am sure that readers of the volume will get pleasure and knowledge in equal measure from it. It only remains now for me to thank the editors and the contributors for their splendidly cooperative efforts. Please read on:

G.C. Harcourt
Cambridge, UK

Introduction

Sheila C. Dow and John Hillard

The first Keynes, Knowledge and Uncertainty conference was held in Leeds in 1993 under the aegis of the Post Keynesian Economics Study Group. The purpose of that conference was to gather together a distinguished international collection of authors to build on the impressive foundation of Keynes scholarship which had built up over the previous ten years. Not all were themselves Keynes scholars – some brought new insights from new developments in the philosophy of the physical sciences, and from post-modernism and rhetoric studies. The aim was to provide a forum for an exchange of ideas along the lines of taking forward the insights of Keynes, which were now better understood, in the development of methodology, theory and policy for the 1990s and beyond. The proceedings of this conference were published by Edward Elgar in 1995, under the title of *Keynes, Knowledge and Uncertainty*.

The second Keynes, Knowledge and Uncertainty conference took place in Leeds in 1996, again under the aegis of the Post Keynesian Economics Study Group. Its aim was to build on the work of the first conference, taking ideas forward still. This theme is encapsulated in the title for the conference volumes, *Beyond Keynes*. The majority of chapters in the *Keynes, Knowledge and Uncertainty* volume had focused on the methodological implications of Keynes's philosophy, spelling out in particular the implications of adopting a non-dualistic, open-system mode of theorizing. But two chapters in particular (by Skidelsky and Fitzgibbons) reminded us of the ultimate goal, which is to provide useful policy advice. In the present volumes, the emphasis has shifted on from methodology. While some chapters still focus on methodology, they are tied into wider discussions in other chapters about developments in theory, empirical work and policy questions.

Post Keynesian economics is most developed at the macroeconomic level, yet the orthodox agenda has brought to the fore a concern with understanding macroeconomic outcomes in terms of individual behaviour. The theoretical chapters in both volumes deal, in one way or another, with microfoundations. In the first volume, the theoretical chapters focus on specifying the form that microeconomics should take when account is taken of the knowledge requirements of firms in a competitive environment

and the requirements for markets to function. The motivation is realist, in the sense that the microeconomics incorporates those features of behaviour and convention without which markets could not function. This is the parallel, within the theory of the firm, of Post Keynesian macroeconomics, which emphasizes money on the grounds that capitalist economies could not function without it.

Uncertain knowledge raises particular methodological questions about the nature and role of econometrics. All address the role for, and scope of, econometrics, which is controversial from a realist perspective. There is a consensus that econometrics is a useful descriptive tool for identifying stylized facts on which theory may focus (more than a tool for discriminating between theories). But differences of opinion are evident on the relative merits of particular approaches to econometrics, and the extent of its usefulness.

The theoretical chapters in the second volume focus on the relationship between the microeconomic and macroeconomic levels. Again the motivation is realist. Some of the chapters carry forward the analysis of uncertainty and its implications for individual behaviour as it underpins macroeconomic behaviour, building on Keynes's philosophy. Other chapters extend the application further by applying Post Keynesian theory to policy questions, notably in the international arena.

Volume II starts from the ground established in Volume I concerning decision making under uncertainty. The first group of chapters addresses the microfoundations of macroeconomics. *Athol Fitzgibbons* opens by contrasting the rationality/irrationality dual of Walrasian macro models with perfect foresight, on the one hand, with the rational intent under uncertainty of Keynesian economics, on the other. The former entails precise relationships between variables, but the latter addresses the prior question of the judgment required of decision makers in choosing a suitable model for prediction; this judgment is intertwined with value judgments. *Piero Mini* continues this theme, contrasting Keynes's whole man with rationalist man. He too considers Keynes's macroeconomics in terms of microfoundations. Mini argues that Keynes's inability to engage with imperfect competition theory is evidence of his different cast of mind in his value theory; rather than relying on rationality and full knowledge, Keynes incorporated psychology, history and institutions in order to explain behaviour under uncertainty. Mini provides further evidence from a wide range of Keynes's writings, often on practical subjects, belying the charge often made that Keynes lacked microfoundations, or that his microfoundations were neoclassical.

Malcolm Sawyer and *Nina Shapiro* take up the question of Keynes's views on imperfect competition. They argue that, starting from Keynes's focus on uncertainty and the potential for insufficient aggregate demand, it

is inappropriate to consider this issue in an equilibrium framework. It is demonstrated that Keynes's framework colours the analysis of perfect competition, showing how the uncertainty of such a potentially volatile market environment discourages investment and consumer expenditure. The more stable environment of imperfect competition could even support prices at a lower level.

Victoria Chick approaches microfoundations for Keynes through Kalecki's critique of Keynes's theory of investment. Her purpose is to expose the distinction between Walrasian microfoundations which are formally consistent with macroeonomics, via the device of the auctioneer, and alternative microfoundations which necessarily entail compromise. Focusing on Keynes's presumption that firms incorporate expectations about macro effects of investment on the supply price of capital, and yet not the positive macro effect on expected returns of an expansion brought on by investment, Chick offers a carefully reasoned defence of Keynes's choice of compromise. This provides an excellent case study in analysis of the exercise of judgment.

John King approaches the issue of the relationship between Post Keynesian macroeconomics and microeconomics in terms of labour theory. He attributes the lack of attention to labour theory to disagreement on the marginal productivity issue (as we see with investment theory in Victoria Chick's chapter) and to the focus on macro issues. But his chapter draws our attention to a highly suggestive, but neglected, seam of Post Keynesian writing on the subject, on trade union wage policy, company wage policy, wage bargaining, labour supply, the non-union firm, wage differentials, the allocation of labour and economic inequality, as well as the more conventional macro questions. In the process, King sets an agenda for work on building up a distinctive Post Keynesian labour economics.

The second group of chapters offers challenging new ideas on uncertainty and its implications. *Alessandro Vercelli* explores the interaction between rationality and learning. He clarifies the relationship between the two by setting up a classificatory framework in terms of the different modalities of uncertainty and different concepts of rationality and learning, and demonstrating the strict correspondence between them. He argues that only a theory of economic behaviour under 'hard' uncertainty, which assumes 'designing' rationality and allows for time irreversibility, may account satisfactorily for strategic learning and thereby provide a comprehensive account of rationality. This argument is shown to be consistent with the conception of rationality and learning embedded in Keynes's liquidity preference theory.

Most of the chapters in these two volumes are explicitly realist, with a focus on organicism and uncertainty, and some have identified the philo-

sophical foundations with critical realism. *Man-Seop Park* and *Serap Kayatekin* consider alternative philosophical foundations for a realist Post Keynesian analysis in the work of Derrida. They explore the different notions of organic unity used in Keynes studies and their relation to uncertainty. Derrida's philosophy is explained as providing an alternative notion of organic unity and thus an alternative basis for analysing uncertainty and societal interaction. Derrida's perspective is distinguished from other, more extreme, forms of postmodernism; while normally counterposed to realism, Derrida's approach is therefore seen to lead in the same direction.

Also challenging some of the basis of other chapters, this time the focus on uncertainty, *Michael Howard* and *R.C. Kumar* examine the libertarian belief in the voluntary contract allowed by free market forces as providing a preferable alternative to violent conflict. Unlike other chapters which emphasize the destructive effect on neoclassical theory of incorporating uncertainty, it is argued here that it is the possibility of private ('asymmetric') information which most clearly limits the scope of the market and underpins the justification of state intervention in order to discourage violent conflict as an alternative means of achieving ends. Indeed, the authors argue on the basis of rational choice theory that a pure system of voluntary contract is unsustainable, because it destroys those features of society, such as trust, which liberals hold most dear.

Another area in which there is a difference of opinion about the significance of uncertainty is endogenous monetary theory, the subject of *Giuseppe Fontana*'s chapter. Within endogenous money theory there is the accommodationist approach, which sees banks fully accommodating demand for credit, and the structuralist approach, which sees the supply of credit constrained by bank behaviour, incorporating the theory of liquidity preference, and thus uncertainty. Identifying the first approach with money flows and the second with stocks, Fontana uses the monetary circuit framework in an attempt at synthesizing the two.

Anna Carabelli introduces a new slant on our understanding of the philosophical basis for Keynes's theory of speculation, as well as offering a solution to the impasse in which the Bayesian theory of speculation finds itself. Keynes's lecture notes of 1910 reveal a theory of speculation well grounded in his theory of probability, which anticipates what is conventionally understood to be a novel theory of speculation in the *General Theory*. His theory is cognitive, contrasting the knowledge base of speculators with the ignorance of gamblers. It already sets out the distinction between diversity of opinion and consensus opinion, the 'beauty contest' type of characterization of speculative behaviour, and the potential for 'false news' to have real consequences.

In the third group of chapters, we see applications of Post Keynesian

philosophy and theory to pressing policy questions in the international arena. *Jesper Jespersen* considers the Maastricht Treaty as a case study of the relation between economic theory, economic policy and social welfare. The increasing economic openness within Europe in the post-war years accompanied an increase in the welfare state. But the Maastricht Treaty imposed conditions of financial stability on members which have challenged social welfare considerations, in terms of fiscal restraint, unemployment, income distribution and environmental concerns.

Paul Davidson turns his analysis of financial markets under uncertainty to the issue of foreign exchange speculation, and considers public policy measures to limit its damaging effects on economic activity. He argues against the Tobin tax on foreign exchange transactions because it would discourage trade and would be regressive with respect to small portfolio managers, without being able to prevent a large-scale crisis. Instead, he draws attention to the Marshall Plan's beneficial effect both on Europe and on the USA (in contrast to the reparation payments approach of the Versailles Treaty). Building on Keynes's original plan for a Clearing Union, Davidson carefully sets out a blueprint for a global system of governance which would severely limit speculation. *Philip Arestis* and *Malcolm Sawyer*, on the other hand, make the case for the Tobin tax. In contrast to the stabiliszing role for speculation in monetarist models, they point to the capacity for destabilizing speculation to affect 'real fundamentals'. In addition, the revenue raised by the tax could be significant. Further, it is argued that the tax would reduce the potential for crises by reducing the volume of transactions, and by reducing the incidence of serious exchange rate misalignments, which are in many cases the cause of exchange rate crisis.

William Milberg draws attention to Keynes's thinking on trade theory. Not only does this deserve more attention in its own right, but also Milberg shows how the theory of effective demand which Keynes developed in his trade theory presaged the *General Theory*. Keynes argued for tariff protection in the case of unemployment; it was the interest rate, not wage and price adjustment, which would correct a trade imbalance. Since a trade deficit would cause interest rates to rise, curing unemployment required finding some other cure for the trade deficit. Milberg also draws attention to the similar argument made by Marx.

Finally, before launching into these chapters, we would like to express our sincere appreciation for the support given to the conference and the production of these volumes by Edward Elgar Publishing Ltd, and in particular for the patience and understanding of Dymphna Evans.

1. The microeconomic foundations of Keynesian economics

Athol Fitzgibbons

> The adjustment process has not been successfully described as optimising behaviour, [so that it] carries conviction in our profession. This failure, neither surprising nor discreditable in view of the intrinsic difficulties of the task, is the root cause of the chronic crisis in macroeconomics. (Tobin, 1981, 36–7).

I PARADIGMS IN ECONOMICS

Despite the great significance of macroeconomics for employment, inflation, economic growth and other major social objectives, there is no longer a widely accepted theory of the subject. The Keynesian system that regulated Western economies for more than two decades has been discredited, the New Classical economics that destroyed the old Keynesianism is widely believed to be contrary to all experience, and the New Keynesian economics that has risen from the ashes of the old is a thin and meagre doctrine that casts no light on money, capital, trade cycles or deficient demand. Of course, pragmatism rules and macroeconomic policies are often implemented even in the absence of a theory. However, pragmatism without principles means policy without consistency or direction, and it leaves policy makers with no systematic way to evaluate their failures or develop an improved approach.

This intellectual crisis has arisen out of the conflicting demands of theory and the facts. Some form of Keynesian theory is the only way to explain aggregate demand phenomena; but economists have come to realize that Keynesian theory is inconsistent with the fundamental principles of mainstream microeconomics. There has been a strong desire to save the theory; and the old brand of Keynesian economics has become unacceptable partly because it relied on an assumption that markets are persistently irrational. The New Keynesian economics can be regarded as a reductionist attempt to escape the dilemma, by jettisoning any Keynesian assumptions that are inconsistent with standard microeconomics, but of course it concludes by rejecting Keynesian phenomena as well. It is a

dubious method to reject the salient fact to save the theory, and the preferable way is to extend the theory so that it does explain the fact. This is, in the first instance, a microeconomic issue.

II RATIONALITY, UNCERTAINTY AND EXPECTATIONS

Confusion over the meaning of what constitutes 'rational' behaviour has been at the very heart of the macroeconomic crisis, and it is most unfortunate that what Keynes said on the subject is mired in controversy. It is widely agreed that, to some extent at least, he modified his views between writing the *Treatise on Probability* (which analyses rational behaviour at length) and the *General Theory*, and there are also apparently contradictory statements about rational behaviour in the *General Theory* itself. Laying aside what Keynes might have meant, the 'uncertain and irrational' version of Keynesian economics suffers from two crucial defects. First, it assumes that investors will always be deceived by money illusion, and that regardless of the rate of inflation they will follow the 'convention'. The unwavering stupidity of the market, and particularly its commitment to nominal money values, was fundamental to the old Keynesian economics. Second, for reasons that were never explained, the old Keynesianism also attributed rational powers of mind to government policy makers. For macroeconomic policy would be impossible if government policy makers also adopted irrational conventions.

'Uncertain and irrational' Keynesianism is unworkable (as well as being a misinterpretation). It should be replaced by the 'uncertainty and judgment' paradigm that constitutes the central theme of Keynes's *Treatise on Probability*. This alternative Keynesian paradigm locates both market decision makers and policy decision makers in an uncertain context, and attributes to them a rational intent, but fallible powers of judgment. It can formally subsume classical microeconomics into a more general schemata or, at the very least, explain in formal terms the limitations of the classical system. It is superior to the Walrasian paradigm, which implicitly draws an artificial line between the motives of economists as policy makers for the government, and their motives as policy makers in the market. The 'uncertainty and judgment' paradigm can explain why conventions are adopted to guide behaviour in an uncertain world, but it presents these conventions as provisional and for the purposes of convenience, and not as psychotic patterns of social behaviour.

For though many Keynesians regard rationality as a provocative position, most seemingly irrational behaviour arises from the difficulty of

acquiring information and responding to its unquantifiable content. If all decisions could be based on a mathematical calculation, the narrowest form of rational behaviour would dominate the markets, since the greatest fool could hire a rational thinker to make decisions on his behalf. When we speak in a shorthand way of irrational behaviour we do not usually mean a wilful insistence on being foolish, but behaviour arising out of some misconception in a complex and difficult situation. What is usually called irrational behaviour is irrational in effect rather than motive. When there is uncertainty, the best decision will not always be made, but irrational motives should be assumed only when uncertainty is assumed away.

The confusion has arisen because rational behaviour has for long been identified with optimization, which strictly requires full (or fully quantifiable) information. In practice decision makers will not divest themselves of all their powers of thought and reason whenever the slightest imponderables taint their perfect understanding. In reality, decision makers want to promote their values and interests as effectively as possible, *whatever their state of knowledge*. A rational *intent*, the original Stoic idea of self-interest, is still the only relevant one in uncertain situations. In many strategic games there is no such thing as an optimal decision, because there is no uniquely best strategy when the other players are free to generate surprises.

For what essentially generates Keynesian phenomena is not irrational behaviour, but uncertainty; meaning by this not an absolute and total absence of knowledge (which is a metaphysical state that is almost impossible to conceive in an adult human being), but a situation in which a decision has to be made on the basis of vague or partial knowledge. The most important difference between Keynesian and classical theory concerns the state of knowledge, and not the motives of the decision makers who have this knowledge. Non-Keynesian macroeconomics always assumes, explicitly or in effect, full or at least quantifiable knowledge. Because Keynesian theory admits vague and partial knowledge, it cannot assume optimization, and so there is a range of behaviour that is excluded *a priori* by classical theory but is admissible to Keynesians. Everything else is secondary to that distinction.

Consequently, Keynesians should reject all attempts to 'prove' the non-existence of diverse behaviour by shifting between different definitions of rational behaviour. If rationality implies having full information, as in rational economic man, then everyone is irrational all the time, because making decisions without full information is inevitable and part of the human condition. However, if rational behaviour means, less stringently, the intelligent and purposive pursuit of self-interest, then irrational behaviour is probably a special case. Whatever definition is adopted, and as

Table 1.1 indicates, optimization occurs only in the special circumstances of full information. This is the justification for the claim that Keynesian economics constitutes the general case, of which classical economics (and New Keynesian economics) is a subset.

Table 1.1 Rationality and optimization

Type of self-interest	Is rationality the norm?	Is optimization possible?
With full knowledge	No	Yes
With imperfect knowledge	Yes	No

For despite the frequent declarations that optimization theory has no implications, it does impose stringent restrictions on behaviour that do not apply in general. Optimization implies the existence of a uniquely best decision, which in geometrical terms is the point of tangency between an indifference curve and an opportunity line. However, rational motives alone, in the context of uncertain information, cannot ensure the existence of a uniquely best decision; since the opportunity line is an imperfectly defined geometric blur, decisions cannot be fully determined by the data.

III CLASSICAL OPTIMIZATION

Standard microeconomic theory assumes perfect knowledge, or alternatively it assumes quantitative risk, together with the availability of risk insurance. The theory postulates a well defined maximand which is constrained by a perfectly known state of the world, normally a wealth constraint or the budget line. The desire to maximize utility subject to the constraint then leads to a predictable relationship between behaviour and the constraint. If a firm knows all its input costs over time, if future discount rates are known, and if future prices are known, then any decision the firm makes will follow from arithmetic, perhaps after a dollar value has been put on any personal preferences for some of the choices. The rational decision maker can act as a rational economic man because everything is reducible to quantitative terms.

If each decision maker has a *uniquely best* position, then each would also have (what are in principle at least) *determinate and predictable responses* to any change in the underlying parameters. The optimization model implies a predictable relationship between the decision and the constraint. Yet it is well known that the conditions for optimal decision making almost never exist in practice. Each optimizing decision maker would need to have full and exact knowledge about the future prices of all commodities, all inputs

and all assets. However, the only way to obtain this information would be to have a full and exact knowledge of the parameters of the economic system, the mental preferences and constraints faced by every decision maker, over time, plus the ability to solve a general equilibrium system in which the preferences and constraints interacted. Even if such information were available, which is almost unthinkable, the computational problems would be far beyond the range of most, if not all, decision makers. Morgenstern notes that Pareto's small model of 100 persons and 700 commodities required the simultaneous solution of 70 699 basic equations. Yet most market decision makers would need to solve systems that were incomparably more complex if they were to engage in strictly optimal behaviour.

In practice economic decision makers do not attempt to solve general equilibrium systems. They proceed on the basis of epistemic probabilities, which are so called because they are probabilities that are conditional upon a state of knowledge. Epistemic probabilities do not reflect the state of physical nature, they are not necessarily quantifiable, and in many cases they are not relevant to economics. If decision makers were omniscient then epistemic probabilities would all be replaced by certain values, but since no one is omniscient, economic decision making must often respond to scientific, technological, moral and political propositions, which are not susceptible, even in principle, to quantification.

IV THE LIMITS OF 'AS IF' THEORIZING

Classical theory therefore depends on the 'as if' argument, that it would be unreasonable to discard the whole theory of maximization whenever the slightest piece of information was missing. Even when it does not apply strictly, the theory of the consumer might still provide a useful template for investor behaviour. Decision makers can act *as if* they knew the future and were maximizing profits, just as – this example was given by Milton Friedman – professional billiards players can act as if they understand the laws of mechanics. Consequentialism is a philosophic term for 'as if' behaviour, meaning that individuals act as if they understood the full consequences of their actions and decisions, even though they can only do so to an approximation. It is parallel to a notion of statistical robustness, which applies when a wide class of probability models all lead to essentially the same conclusions.

The underlying mental picture, of uniform billiard balls rolling smoothly across a smooth table, was originally proposed by David Hume (1740), in the course of his attempt to replace the ambiguities that infest the processes of practical judgment with an exact and scientific link between actions and

their outcomes. There is nothing wrong with this method, which has been very fruitful, but it is limited in its scope. Consequentialism assumes that an analogy (the resemblance between the situation and a theoretical model) will hold in all situations. It postulates that a class A (a particular maximizing model) which only resembles a class B (reality), will (as Knight noted) continue to best resemble B regardless of any parametric changes:

> It is clear that to live intelligently in our world – that is, to adapt our conduct to future facts – we must use the principle that things similar in some respects will behave similarly in some other respects even when they are very different in still other respects. (Knight, 1921: 206)

Yet an analogy is not an identity, and though consequentialism is plausible when the degree of uncertainty is known to be low, it is always not possible to find a unique analogy between a quantitative theory and every factual situation. It might be sensible for an oil exploration firm to act with confidence as if Darwin's theory of evolution were true; but it does not follow that another firm operating in volatile product and capital markets should act as if classical economics were true, and neglect its need to acquire liquid assets, meaning its speculative demand for money.

But even more importantly, the actual situation may suggest several or many quantitative models. In economic and commercial decision making there is usually no uniquely right model, just as some physical phenomena might be explained by any one of several competing theories. An analogy cannot eradicate the element of indeterminateness in a decision, because the decision maker can only prefer one model to another after an act of judgment. The hardest part of practical decision making is not to solve a mathematical problem, but to choose which model – which maximand and what constraints – will most likely lead to the best decision.

However indispensable the 'as if' method may be, it artificially excludes an element of indeterminacy from economic theory, by ignoring the initial stage of the decision-making process. Decision makers can only 'maximize' after a particular theory has been selected as most analogous to the real situation, and an analogy is not absolute and fixed. Decision making requires two steps, the selection of the model followed by the manipulation of the model. 'Economics', Keynes (CW XIV: 296) said, 'is a science of thinking in terms of models joined to the art of choosing models which are relevant to the contemporary world'; and the same is true of decision making in general. All decision makers, not just economists, need to practise 'vigilant observation'; that is, they need to select the leading features of a situation before they choose which theoretical model will be the most reliable. The same creative powers of judgment that are required of the strategic game player will be required of the creative scientist or the lone mountain

climber, and as many economists have observed they are also required of investors and entrepreneurs. Indeed, the difficulty of deriving a course of action in conditions of partial knowledge is really well known, because it is why many important decisions in life are so difficult to make.

If decision makers were to change their perception of the future, and vigilant observation sometimes suggests that they should do so, they would change their preferred mental model. Thus, in Figure 1.1, an 'as if' decision maker maximizes on the assumption that the budget line is *AB*, though only the oval budget region is known for certain. Since *AB* is only a construct to allow maximization to proceed, the decision maker may subsequently decide that the real budget line is *CD*. The decision is revised even though the situation is unchanged, and though the decision maker consistently pursues an intelligent course of self-interest. The choice of one of these models might be particularly insightful or creative, but neither can be excluded as less rational than the other.

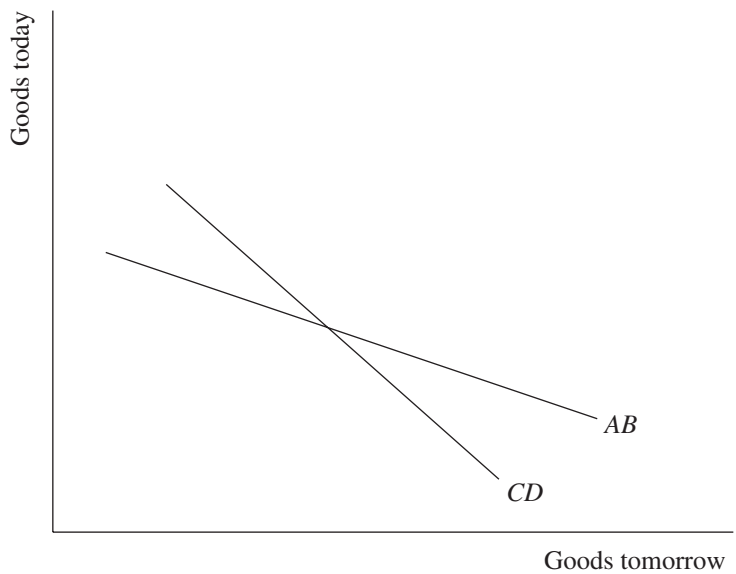


Figure 1.1 Uncertainty and intertemporal transformation

The rationality postulate is not sufficient to ensure unique and determinate decisions. Given rational motives, information might restrict a decision, intelligence might guide it, and new information might lead to the selection of a new and superior theoretical model. Nevertheless, the inevitably subjective element in the choice of the model introduces a degree of indeterminateness into the decision. The presence of unquantifiable probabilities

provides a degree of latitude within which subjective parameters, such as hopes and fears, and guesses and values, can autonomously change economic behaviour. For this reason indeterminate behaviour is often attributed to entrepreneurs, who are reputedly not irrational, but are merely dealers in cloudy information. The entrepreneur seeks to exploit gaps in the information set, but 'the gap filling opportunity set is likely to be non-unique since the costs associated with gap-filling depend on the specific entrepreneur that attempts to take advantage of the opportunity' (Leibenstein, 1968: 78). Hayek recognized indeterminacy; and Knight's concept of moral hazard theorized about the inevitable latitude of action that was enjoyed by an agent, despite any duty to a principal. If only the Chicago School of Economics had understood the profundities of Knight and Hayek, the superficial adventure known as the theory of rational expectations would never have begun.

When there is only partial knowledge and no model will exactly and uniquely explain the facts, the decision maker must select which one from a possible range of models most closely resembles the real situation. This process of decision making requires rational thought, because it is certainly possible to chose inappropriate models, but mathematical logic does not determine which analogy with reality is the best unless there is full knowledge. Analogies will have to be drawn between reality and the theoretical assumptions, and a decision maker may revise the theory altogether if it reaches implausible conclusions.

Any significant economic theory, Friedman (1953) once noted, must be descriptively false in its assumptions; and, as he should have added, any significant theory will also be descriptively false in its predictions, since if the assumptions are imperfect the predictions could hardly be exact. The Ptolemaic theory was better than the Copernican theory in its predictions, but the latter was superior in its assumptions; and mediaeval explorers might have been wise to evaluate both the assumptions and the conclusions, and to compare both with what they knew of reality, before deciding on the merits of either model. For any model will leave open the possibility of error. Model A might represent reality better in some respects and model B in others; and the decision maker will face the same choice as a shopper who wishes to buy an article but cannot find the precise item. Perhaps some choices can be definitely discarded and sometimes one will obviously be the best, but a decision might depend on the purpose of the item, and this may not be clearly defined. Of course, once the model has been chosen, its conclusions can be strictly derived, because a model is simply a logic machine, but even so the process of judgment does not end, since these conclusions might reflect on the reliability of the model, and indicate that it has been corroborated or needs to be reviewed.

The process of judgment would be very inferior to the use of an exact maximizing model if one were available, but everybody relies on their judgment at times because, when there are gaps in the data, it is the most that can be done. One could wish that it were otherwise, but only economic theoreticians want to act as if the wish were true. Rational commuters might wish for an infallible bus timetable, but they do not think that they will arrive home any sooner by pretending that one exists. They will expect the bus to be late when the traffic is bad and there is ice on the road, and then decide accordingly – even though they do not have all the relevant probabilities at their disposal.

It will never be possible to dispense with the element of judgment in economic decision making. In practice, and as Keynesian economists have come to recognize, macroeconomics does not even deal with clear and unambiguous definitions. There are different definitions of money which are either too narrow or too vague. National income adds apples and oranges, and there are thousands of different interest rates on as many different assets that have to be represented by a few indices at most. Unfortunately, perhaps, there is no way to eliminate the artistic element in decision making, and there is rarely a sure way of reaching the right decision.

It might seem hyperbole to describe the inexact process of judgment as rational, because (unlike optimization) there is no demonstrable connection between the facts and the decision, the decision is revocable, and it might turn out to be wrong, or it might be impossible to know whether the decision was wrong. To dramatize his argument that only perfect knowledge is consistent with rational decision making, G.L.S. Shackle once said that no one can pass over a bridge with a broken span. However, the reply is that ignoring the available information because it is incomplete would be self-defeating, and if a decision must be made then part of a bridge can be better than nothing. A commitment to think rationally means that we go as far as the formal logical bridge extends, and then rely on metaphors and analogies to carry us as far as they can. There is no other way, and that is how decisions are made and policy is formed, in both the public and the private sectors.

V HOW UNCERTAINTY AFFECTS DECISIONS

Although unquantifiable probabilities cannot lead to quantitative predictions, they do explain much of what is otherwise inexplicable at the macro level. Macroeconomic theories postulate well-defined relationships between the variables without trying to explain why (a) many macro relations are unpredictable and inconstant; (b) there is a wide diversity of behaviour and

(c) often there is an inadequate response from the market when the objective situation changes. Macroeconomic theories assume away what we need to explain most of all; the essentially imprecise nature of macroeconomic phenomena is abstracted from by theories that then rely on their abstractions. Sometimes exact relationships do hold over long periods of time, even when there is no apparent reason why they should, but at other times they break down in the most spectacular way. They have broken down in the product market (rising Phillips curves), the stock exchange (bubbles and crashes), the money markets (secular and cyclical changes in velocity) and in the markets for foreign exchange. Yet at other times prices have remained constant over long periods of time, despite major changes in the parameters underlying the market.

Intransitivity

Often what we witness is not random market behaviour, but an irregular and erratic lurching that seems to suggest the operation of invisible causes. Lurching is so especially evident in the hyperrational capital markets that it must have a systematic explanation; it arises because unquantifiable probability does not exclude intransitive decision making. In a world of quantitative expectations, intransitive portfolio behaviour would be highly irrational, and it could be assumed that rational asset holders who preferred portfolio X to portfolio Y today would also prefer X tomorrow, unless the objective situation changed. For if the asset holders acted intransitively they could be money-pumped, or have their money systematically extracted, by a knowledgeable arbitrageur, who could sell them X when it was expensive in terms of Y, and sell them Y when it was expensive in terms of X.

However, in a world of unquantifiable probabilities, intransitive behaviour over time can be perfectly rational because, even though they may have informed views, arbitrageurs do not have the perfect information that systematic money-pumping requires. Rational asset holders might sometimes prefer portfolio X to portfolio Y, and at other times prefer Y to X, perhaps making massive shifts between liquidity, debt and fixed investments. Firms might adopt production strategy X instead of strategy Y, and at other times opt for Y rather than X, making significant shifts in output and employment. Intransitive behaviour can be rational whenever there is no unique best choice, or (what is the same thing) whenever it is impossible to insure against a bad decision.

Intransitive decision making need not be coordinated across the market, but it often is. When rational decision makers who realize that the market is in motion grope for some concept of its future level, there will be no

optimal response to adopt. Price movements will be signals about what other decision makers think is the appropriate decision-making model, and since no one can really understand the full situation, a widely held judgment might influence many other decision makers. A decision maker opts for decision X, but might have just as logically have made decision Y. When other decision makers opt for the Y choice, they signal that their judgments are favourable to Y. To move with the herd, following closely or trying to keep just one step ahead, is never an optimal strategy, and sometimes it can lead to disaster. However, if no optimal strategy exists, following the herd is one way of benefiting from pooled judgments and buying asset insurance.

Diversity

In a state of perfect or quantifiable knowledge, asset holders should all hold the same asset portfolio, and even if they had different risk requirements they should differ only in the amount of asset insurance they purchased. Similarly, every new investment should be directed towards the production of the same single commodity, though firms would differ in the amount of profit insurance they buy, and every new worker should cultivate the same career. Yet, in practice, different decision makers make different choices, which is very fortunate because the impacts of exogenous shocks to the economic system are absorbed by portfolio and other reallocations, and change occurs mostly on the margin. Workers, firms and asset owners do not react in the full unison that would occur if they had a common evaluation of the future.

Intransitive lurching is the most spectacular consequence of unquantifiable probability, because it is so blatantly incompatible with what profit-maximizing models would lead us to expect. Diverse behaviour is so obvious and common that it does not seem to require explanation, but it can be understood as part of intransitive decision making, except that it is over space instead of time.

Constancy

However, unquantifiable probabilities can also impose a conservatism on decision making, which causes the economic system to move discontinuously when it moves at all. The decision makers might consistently prefer strategy X to strategy Y, or portfolio X to portfolio Y, even when the underlying situation changes, meaning that they are prepared to change their preference maps rather than their decisions. Asset owners might not respond to shocks, because they know the costs of change but are not sure of the benefits that it might bring. Likewise, firms might retain their price

and wages strategies, or their production and employment strategies, even when the economic environment is drastically changed.

Unquantifiable probabilities can also impart a degree of economic stability, which ought to be as remarkable as follow-the-leader intransitive behaviour. They can lead to changed decisions in constant circumstances, or to constant decisions in changed circumstances, and so they can either stabilize or destabilize the economic system. They can also turn the economy into a cataclysm system – although the economy is more stable than classical theory would suggest, every now and again a cataclysm occurs.

But though unquantifiable probability may make an economic system either more stable or less stable, it always makes it less predictable and coherent. Whereas the single-valued functions of quantitative economic theory ('to each set of prices and income there corresponds a unique set of goods': Samuelson, 1947: 111) link causes and effects, unquantifiable probabilities elasticize the causal link. They subtract from the exactitude of economic theory, which is one reason why so many economic theorists are reluctant to acknowledge them.

VI RADICAL UNCERTAINTY

Unquantifiable information means a new economic paradigm; zero information is simply part of the new paradigm, which is not surprising since there is no discontinuous break between having very little information and having none at all. Nevertheless, it is interesting to consider decision making with zero information, because we sometimes understand the facts better by considering the extremes. As the degree of uncertainty deepens, value judgments tend to outweigh judgments of fact because the former become more reliable. If there is little or no factual information then a rational investor might decide whether it would be better to extend a factory, operate a mine, or relax and collect unearned income. The decision might involve questions about what is the best way of life, and what sort of person it is best to be. Similarly, if a student choosing between a medical course and a law course does not know the discounted value of the flow of future returns from either vocation except in a vague way, the choice may come to depend primarily on whether it would be more interesting to live as a doctor or as a lawyer. Rational decision makers cannot always observe economists' rigorous distinction between facts and values. Judgments about the facts will be accompanied by judgments about values, and decisions will often emerge from this integrated process. Of course the decision maker might have no interest in what may seem to be extraneous psychic considerations, in which case, given these conditions of radical uncertainty,

the decision might as well be made by following conventions, consulting astrologers or tossing coins.

As uncertainty deepens, it may also become more difficult to translate a rational intent into actual rational behaviour. Keynes's argument was that seemingly rational investors would manufacture precise quantitative calculations that had no foundation in fact, compounding their ignorance with pseudo-information. We could add that production managers might make costly switches between processes on the basis of commodity market rumours, students might make glamorous career choices that subsequently leave them stranded, and central bankers might be influenced by theoretical fads. If rationality means a clear mind making the best use of what information there is, then it is always possible to act rationally or otherwise, whatever the state of information might be. The only rule is that, the more uncertain the situation, the less can a commitment to rationality restrict the decision.

VII CONCLUDING COMMENT

Keynes once noted that we live in the transition. Yet, surprising as it might seem, macroeconomic policies with enormous effects upon human lives have typically relied on exact relationships between macroeconomic variables. They have depended on the *precise existence* of a natural rate of interest, a static Phillips curve, infinitesimally thin *IS* and *LM* curves, a unique natural rate of unemployment, a constant velocity of money and a specific non-accelerating rate of inflation. The static Phillips curve was essential to traditional Keynesian economics, because it ensured the existence of a reliable trade-off between inflation and unemployment; and the constancy of the velocity of money was indispensable to the monetarist project to introduce a government of laws and not of men. The history of macroeconomic thought is littered with quantitative theories that have been refuted by events, only to be replaced by other quantitative theories that will be refuted in their turn. What we need at present is not a superior theory, but humility to recognize, in a very systematic way, the limits of economic decision making.

2. Keynes's 'microeconomics': some lessons

Piero V. Mini

> The well-worn paths are easy to follow and lead into good company. Advance along them visibly furthers the accredited work which the science has in hand. Divergence from the paths means tentative work, which is necessarily slow and fragmentary and of uncertain value. (Veblen, [1898]1961: 79)

I REASON AND UNCERTAINTY

In 1933 Keynes observed that 'Albert and the blond beasts make up the world between them. If either cast the other out, life is diminished in its force' (CW XXVIII: 22). Einstein and the Nazis, reason and passion are the warp and the woof of history.

The juxtaposition of reason and passion in the short essay on Einstein is no passing observation of Keynes. It is the theme of the *General Theory* where we read that often 'human decisions affecting the future, whether personal or political or economic, cannot depend on a strict mathematical expectation, since the basis for making such calculations does not exist'. We calculate 'where we can', but where we cannot we are fortunate to be able to depend on 'other motives' – other, that is, than a mathematical calculation of costs and returns. We depend on our 'innate urge to activity', on our 'sanguine temperament', on our 'whim or sentiment or chance', on our sense of 'satisfaction (profit apart)' in doing something, on our 'innate optimism', on the 'pleasure' we derive in outwitting 'gulls' and professionals alike, on the 'nerves and hysterias', on 'our spontaneous urge to action rather than inaction', on our 'animal spirits'. Indeed, Keynes sometimes gives the impression that the little of reason (calculation) that exists in economic decisions is really 'phoney', reason being the servant of the above-named psychological forces: 'Enterprise only pretends to itself to be mainly actuated by the statements in its own prospectus.' One cannot hope to impress bankers by boasting about one's animal spirits and, lo! capital budgeting is born. But the figures in the capital budget reflect our passions, expectations, temperament, hopes and so on. Indeed, 'if the animal spirits

are dimmed and the spontaneous optimism falters, leaving us to depend on nothing but a mathematical expectation, enterprise will fade and die' (GT: 161–3).[1]

Reason in conventional economics is probabilistic Benthamite calculation. Keynes discovered its nemesis: uncertainty, whose pervasive existence he had recognized as an undergraduate at King's. The passions live in the sizeable interstices of uncertainty: if we could calculate we would. The advance of the *General Theory* over the *Treatise on Probability* is this: *Probability* was primarily critical of judgments based on frequency distribution and calculative reason; the man in *Probability* recognized, and was perplexed by, uncertainty caused by the unquantifiable nature of the evidence, the incommensurability of standards, the lack of completeness of evidence and the unexpected chain of repercussions of a decision. And, being reason-bound, he was almost paralysed. The man in the *General Theory*, instead, is a rational *animal*, that is, a being of passions, and these passions enable him to overcome the uncertainty that threatens to paralyse judgment and action.

All of which, quite frankly, is sheer common sense and within the experience of the average man. If we wish to dignify Keynes's view with an intellectual pedigree we can observe that the full man (more than reason) had sprung out in nineteenth-century thought in the writings of Schopenhauer, Kierkegaard, Nietzsche, Freud, Bergson and many others.[2] The full man has always existed in literature and the drama. Even science, normally the citadel of reason, dealt a blow at 'calculation' with the discovery, in Darwin, of man's animal origins. There may be a recognition of evolution on Keynes's part when, in the essay on Ramsey, he speaks of the basis of our beliefs as being 'perhaps given us merely by natural selection' (CW X: 339). History and politics, of course, have always been primarily the work of passions – and Keynes was immersed in both after 1915.

Keynes's attack on reason thus presents no problem for the historian, for the true philosopher or for the common man. But it does present a problem for the economist because Keynes's conception of human nature runs counter to that of the economist. All of economic theory is based on the doings of a *rational* (abstract) being, not of a rational *animal*. The *homo economicus* is the child of the Enlightened philosophers and he is all-reason and all-knowing. He acts in full knowledge of the future and he knows the consequences of his actions. Economic theory is characterized by certainty of conclusions because its agents are assumed to know the future. This is why the generation before Keynes already was finding it easy to adopt the mathematical medium to describe economic behaviour. Economists used fundamentally mechanistic metaphors like force, equilibrium and balance – all sanitized versions of the natural law metaphors used by the Adam

Smith–Ricardo–Senior tradition, and which reflect the trust in reason of Enlightened thought. When Keynes introduced the full man and hence passion and uncertainty, he shifted the metaphorical language toward psychology: propensities, emulation, the herd instinct, conventions, assorted fears and passions, whims, hopes and chance are the conceptual material of the *General Theory*. His system is open, relationships are loose, subject to sudden change, buffeted by events of a social, political or psychological nature which, falling on our uncertainty and lack of confidence, are perhaps given too much weight.

Another difference between economic man and Keynes's full man should be noted: being guided by reason – which is universal – *homo economicus* decides and acts in isolation from his fellow men: in his knowledge, he is autonomous. Keynesian man, being uncertain about the future, relies on the judgment of others. The result of this interdependence is to accentuate instability: a stampede into liquidity can be started by merely listening to unfounded rumours. That a crowd is more than the sum of its members is also no new discovery. *Senatores boni vires, Senatus mala bestia*, said the ancients: 'Each Senator, singly taken, is a good man, but the Senate is an ugly beast.' Why? Because the dynamics of discussion unleashes passions which, when we are alone, are dormant: anyone who has attended faculty meetings knows this. The total is qualitatively different from the sum of its parts. Reason does its work in solitude (as a mathematician does), but most passions are fanned by social interaction.

The *General Theory* and classical economics belong to two different universes of discourse. Acceptance of the one or the other is, at bottom, a matter of taste. Those who are awed by the millions of labour hours invested in erecting a science on Benthamite calculation cannot be expected to gleefully reject it for an alien viewpoint. They will either recast Keynes into rationalism or reject his system as 'nihilistic'. On the other hand, historians, politicians, businessmen, journalists, even laymen will find it easier to accept Keynes's methodology, though not necessarily his conclusions.

Keynes wrote no *Prolegomena* to his *General Theory*. He was a very busy practical man: he did his most abstract work when he was a student at King's, and that work does not deal with economics. He was not an academic philosopher or an academic economist and never gave methodical thought to the method of economics until after writing the *General Theory*. The First World War saw the beginning of Keynes's emancipation from rationalism. The years after 1936, perhaps under the influence of Nazi diplomacy, saw a further leap in the direction of his recognizing the pervasiveness of uncertainty and hence of the passions, good (enterprise) or bad (liquidity preference) that uncertainty produces. The reason why Keynes spoke of recasting the *General Theory* soon after writing it is that

his reflections after 1936 made him realize that the essence of his difference with the classicals was primarily methodological, centring on the role and meaning of uncertainty and of our response to it.

Many authors are familiar with this situation: after writing a book or article they see implications that escaped them before. It is the result of letting one's ideas 'simmer' in the mind. Uncertainty and the passions live mostly in Chapter 12 of the *General Theory* – for which reason they could be excised without doing much harm to the structure. Economists viewed Chapter 12 as the surgeon sees an arm: you can cut it off and the patient will still live. But to Keynes, within a few months of writing his book, Chapter 12 became more like the system of nerves of the human body: something that you cannot eradicate without killing the patient. This is why he returned to the theme of uncertainty in the 1937 article in the *Quarterly Journal of Economics*, in the address to the Eugenics Society (1937) and in his violent diatribe against Tinbergen's work (1938–40). And he touched on the role of rationality in human affairs in his *My Early Beliefs* (CW X). By 1937 he understood that the standpoint of reason was the presupposition of classical thought and that it was alien and inimical to his own. As luck had it, the best days of the standpoint of reason still lay ahead: aided by more powerful mathematical techniques than were available in Keynes's days, it appropriated his new material and kept itself going until our own day.

That Keynes in 1936 did not clearly understand how totally different the metaphysics of his work was compared to that of traditional economics is also evidenced by the fact that in the *General Theory* he actually spoke of bridging the gap between his work and the theory of value! Since value theory is based on rationalistic premises, this is a bit like mixing oil and water, good and evil, virginity and lust. In Chapter 21 of the *General Theory*, Keynes decries the fact that classical monetary theory used concepts like quantity theory of money, velocity of circulation, forced savings, hoarding and so on, abandoning the 'homely but intelligible concepts' of the theory of value. Economists, Keynes alleged, have lived 'sometimes on the one side of the moon and sometimes on the other, without knowing what route or journey connects them'. One of the objects of the *General Theory*, he adds, 'has been to escape from this double life and to bring the theory of prices as a whole back into close contact with the theory of value' (GT: 292–3). This is indeed so: imperfectly aware of the different metaphysical roots of the two worlds, Keynes seems to go out of his way to make use of whatever bits and pieces of classical value theory he can. According to some, he accepted the notion of a perfectly competitive market structure; he certainly accepted the first classical postulate. On and off he used the term 'marginal' and spoke of the mechanical 'logical

theory' of the multiplier. There is even a vague suggestion of equilibrium, and some mathematical manipulations to which, typically, he claimed not to 'attach much value' (ibid.: 305). His theory of inflation uses such microeconomic concepts as homogeneity of resources, marginal costs, assorted elasticities, resource interchangeability and so on (ibid.: 295ff). It would seem that Keynes himself was searching for the micro foundations of his *General Theory*!

The remarkable thing is that, in writings other than the *General Theory*, Keynes totally ignored the whole framework of the theory of value. In what follows we shall try to discover his true attitude towards the theory of value, looking at sources other than the *General Theory*. In particular, we shall try to find out whether, in dealing with problems of micro pricing and the like, he used the conventional rationalistic presuppositions and all that follows from them. But, first, let us consider another set of revealing methodological remarks by Keynes: the ones occasioned by Michal Kalecki's 1941 paper.

II KEYNES AND THE BELOW-CAPACITY THEOREM

Kalecki's paper attempted to extend the *General Theory* beyond the short run. Keynes's original reaction to it was that it was 'high, almost delirious nonsense'. He felt that there were many 'latent and tacit' assumptions, a combination of which might well explain his conclusions. But were the assumptions realistic? Keynes suspected that the whole deductive method was 'carried to ludicrous lengths', as, for instance, in the assumption that 'all firms are always working below capacity', even in the long run (CW XII: 829).

Joan Robinson, to whom Keynes had appealed for an opinion, rose in defence of Kalecki. After attempting to clarify what he might have meant, she says, 'As for under-capacity working – that is part of the usual bag of tricks of Imperfect Competition theory' (ibid.: 830). In his reply, Keynes proclaimed himself 'still innocent enough to be bewildered by the idea' of firms always working below capacity. He suspected that the theorem was the result of 'esoteric abracadabra', and that Kalecki used 'artificial assumptions which have no possible relation to reality or any other merit except that they happen to lead up to a needed result' (ibid.: 831).

Robinson protested at Keynes calling imperfect competition 'an esoteric doctrine'. After providing Keynes with the familiar diagram 'proving' the theorem, she added, 'It may be awful rot – as you have always suspected – but for better or worse it is in all the text books now.' Keynes's subsequent letter ignored Robinson's point about the popularity of the theorem, and

explained that by 'esoteric' he meant using 'a whole contraption of secret knowledge, atmosphere and assumptions, quite unknown to above a half a dozen readers in the *Journal* at the outside' (ibid.: 832).

Meanwhile, Kalecki had been hard at work improving his article and clarifying his assumptions. His labours were only too successful, as Keynes now concluded that his 'complaint' was precisely the opposite of what it had been at the beginning: the conclusions seemed to him 'plain as a pikestaff'! Now that the assumptions had been flushed out in the open, Keynes could not 'discover that the elaborate apparatus of the reference system [model?] leads to any conclusion which is not obvious from the start'! (ibid.: 833). Keynes realized that the conclusions of a system of logic are really its premises in other form: that 'Socrates is mortal' is obvious from the premise 'All men are mortal'. Keynes asks rhetorically: 'Does the article tell you anything you did not know before?'

The exchange, I think, illuminates Keynes's attitude towards the method of economics and of value theory – an addendum to his reaction, three years earlier, to Tinbergen's work. It is evident that Robinson's below-capacity theorem was new to Keynes – eight years after the appearance of *The Economics of Imperfect Competition* for which he had acted as referee for Macmillan (ibid.: 866–8).[3] Keynes was baffled by it because he himself was not familiar with what we may call the 'consensual presuppositions' of the profession, which all boil down to aspects of rational behaviour. As I said in my *Philosophy and Economics* (1974), once the scaffolding of premises, assumptions, axioms and so on has been around for a few years, the scaffolding comes down and theorems will stand up on ideological grounds and on the pragmatic grounds suggested by Veblen in the epigraph to this paper, and nobody will question them. In the *General Theory* itself, Keynes complained that he could not find any written and specific account of many classical theories. Indeed, parts of that book are a piece of 'reconstructive surgery' of classical beliefs that had been 'in the air' for nearly a century, supported by a widely-shared methodological and political ideology. Robinson herself, by the way, accuses economists of accepting superficially appealing theories. When defending her below-capacity theorem against Keynes's allegations, she says, 'Under *perfect competition* any firm which is working at all must be working bang up to capacity even in a deep slump. This is certainly more and not less ridiculous' than the below-capacity theorem (CW XII: 832; original emphasis). Keynes did not pick up on this 'defence' to discredit all of value theory, but an unprejudiced mind may conclude that, between the two, these eminent revolutionaries in a few brief letters managed to cast doubt and ridicule on the whole vast area of the 'economics of the firm'!

Incidentally, Keynes had encountered the below-capacity theorem not

only in 1932, when he wrote to Macmillan about Mrs Robinson's manuscript, but also in 1937, when Bertil Ohlin asked him why he had not made use of the theorem to strengthen his conclusions in the *General Theory*. Keynes replied that

> the reference to imperfect competition is very perplexing. I cannot see how on earth it comes in. Mrs Robinson, I may mention, read my proofs without discovering any connection . . . [I]n general . . . I should have thought there were overwhelming statistics to prove the contrary . . . I have no clear idea what it is you are driving at. (CW XIV: 190)

Keynes's perplexity is very perplexing to today's students of the history of economics. It can be explained by recognizing that Keynes never entered into the point of view, the premises, the metaphysics that produced the well-known mathematical functions of demand, supply, marginal costs and revenues and so on. The whole paraphernalia of modern value theory was 'abracadabra' to him (like Tinbergen's work), for otherwise he would have had no difficulty with the below-capacity theorem. Today's freshmen (a few of whom later become economists) are led slowly, assumption by easy assumption, into supine acceptance of falling demand curves. They do not realize that such curves mean that the buyer and the seller *know* not only the present price–quantity combination but *any* such combinations, from top to bottom. Students accept the clear separation of 'data' from the independent variable, and the presumption of stability of the 'data'. They accept a mechanistic, unidirectional cause and effect relation. If a student shows too much originality and introduces psychological, political or circular relationships – 'irrationalities' – we know how to deal with him![4] Students accept the independence of demand and supply curves from each other, so that a shift in one does not cause a shift in the other. (Today they even accept the independence of *aggregate* demand and aggregate supply.) They accept the shape of the *ATC* curve because they accept the relation between workers and the output of gasoline within a given oil refinery as described by the short-run production function. It is all so overwhelming to them. But can one conceive of *Keynes* being overwhelmed? In his reply to Ohlin he referred to the need for *statistical* evidence to prove the below-capacity theorem, which shifts the test of truth from logical correctness to empirical evidence.

Certain things have meaning only within their own context. For a Marxist, the Crusades, DaVinci and imperialism easily take their place within the metaphysics of the 'economic factor' as a force for change. A person who has a negative image of another person will see evil motives in anything he does. Now, the context within which Keynes's thought operated since 1915 included none of the 'homely' but familiar concepts of

value theory, all of them children of reason, all of them utterly apolitical, non-psychological and non-institutional. Robinson herself probably thought in separate, divided spheres: she implicitly saw the *General Theory* as dealing with life and her own work with reason, which is why she did not call Keynes's attention to her work in imperfect competition when reading the manuscript of the *General Theory*. Indeed, she called the below-capacity theorem 'part of the usual bag of tricks of Imperfect Competition theory'. Can anyone imagine Niels Bohr or Jonas Salk (who dealt with *life*) referring to their work as a bag of tricks? Would Keynes have referred to liquidity preference as a 'trick'? When he confessed to being 'still innocent enough to be bewildered' by the below-capacity theorem he meant to contrast common sense and observation with deductions arrived at by easy logic from deceptively simple assumptions: esoteric abracadabra.

III KEYNES'S 'MICROECONOMICS'

What *is* the purpose of value theory? Being part of the science of economics, microeconomics must aim at explaining reality. Now, Keynes did do much writing on microeconomics and 'industrial organization', as we would call it today. But did he use the traditional Marshallian tools of partial equilibrium in his microeconomic work? Did he share the conventional presuppositions? We shall see that he did not. The farrago of value theory concepts used in the *General Theory* had mostly the tactical purpose of destroying the easy relations of the quantity theory of money.

1. Keynes's first intellectual encounter with the market came in 1907. When he was attached to the India Office, it came to his attention that India's near monopoly in the production of jute (from which sacks are made) was threatened by adulteration as merchants sold wet, inferior jute. Now, an economist under the sway of belief in reason would say that the market would solve the problem automatically: demand for the adulterated product would fall, driving the dishonest merchants out of business. But, looking at things from the standpoint of life, Keynes recognized consumer ignorance and the power of the producers. And so he provided another argument, one that suggests that the roots of his thought lie in modern psychology rather than in the Enlightenment: adulteration, he said, if unchecked, will 'naturally become universal . . . the general level of excellence which is expected will sink until dishonesty is so well known that it becomes honesty again!' (CW XV: 5–11). What Keynes had in mind is a situation all too familiar to us professors: if a few of us lower their standards, students will shun the more demanding teachers who, in self protection,

will lower *their* standards. (Who would call the professors' or the students' behaviour 'irrational'?) In time, a new convention of average exam performance will be established – which itself need not be permanent, either.

In an early statement of the private gain/public good conflict that the rationalistic approach assumes away, Keynes recognized that adulteration while 'to the interest of every individual to practise it' is 'plainly opposed to the interests of the trade as a whole'. Thus it is not surprising that he advocated legislation to protect the buyers of jute.

2. In October 1919 Keynes was invited to attend a private and unofficial conference at Amsterdam called by Dr Visserling, head of the Bank of the Netherlands, and including people who, like Keynes, took a dim view of the European financial situation. In Amsterdam Keynes learned that, although the German economy and her international trade position were precarious, she was actually the recipient of large amounts of foreign exchange: 'foreign speculative purchases of marks [he noted] have been on a quite extraordinary scale', leading, of course, to an appreciation of the mark (CW: XVII: 131).

The very recognition of speculation was possible only to a person with his ear to the ground, as the saying goes. A believer in equilibrium, knowledge and reason would see primarily the trade 'fundamentals': exports, imports, comparative prices and so on. And, in a lecture at Manchester in December 1919, Keynes went further: it is a 'popular delusion', he said, to expect that exchange rates would always swing to par: speculation can be stabilizing or destabilizing: it all depends on how the speculators act. 'If the speculators acted unwisely . . . the movements of the exchanges simply tended to be more violent than otherwise' (ibid.: 175). There is no presumption of rationality here but an implicit opinion (that was to be elaborated in future writings down to the *General Theory* and the Bretton Woods and Loan negotiations) that speculation is often independent of the 'fundamentals' of the economy.

Despite these promising and farsighted observations, though, Keynes staked more than £20 000 on 'rational' behaviour: he thought that the speculators would soon see reason and sell marks. They did not, and Keynes lost a small fortune and, perhaps, some of his self-confidence: with what effect on his remaining trust in a market place ruled by reason can only be guessed.

3. In 1923 Keynes became interested in the market for foreign investments. He estimated that UK savers were sending abroad fully two-thirds of their savings, mostly by making loans to colonial governments and local authorities for the building of harbours, roads, electrical plants and other 'socialised works'. He deemed such investments irrational. The irrationality consisted in this: that the rate of interest received was comparable to that prevailing at home, while the risk of default was much greater. A 1924 loan

of £2 million to Southern Rhodesia, for instance, was made 'more cheaply than the Port of London, and much more cheaply than most of our industrial undertakings at home [have to pay]. The terms of the loan are farcical' (CW XIX: 221, 281–2). England was hardly a 'finished job', Keynes says: roads had to be adapted to the needs of the motor car, homes had to be built, electricity production and lines had to be extended, large sections of the older cities were decrepit and ready for rebuilding.

For Keynes, domestic investments were both economically and socially superior. Not starting with the assumption of rationality, he found that, far from causing an 'optimum resource allocation', the market was wasting resources: 'We are drifting into financing port improvements, housing, electrical developments, etc. abroad at low rates of interest, while forgetting similar projects at home' (ibid.: 224). Keynes evidently did not look at this market with the categories of reason and full knowledge. With them as guide he would not have seen any problem.

4. A recognition of unreason is also evident in the 1926 response of the coal and textile mill operators to the depression caused by the return to gold. They attempted to ride out the depression by what Keynes calls the 'half witted policy' of increasing output. Now, formal value theory cannot even explain the phenomenon of a perfectly competitive industry *raising* output in the face of *falling* demand. The producer in such a market structure is will-less, a puppet of higher forces. When demand and marginal revenues fall, the intersection with marginal costs will occur at a lower price and a *lower* quantity than before. Keynes does not even dream of using value theory to explain the facts of the case. He ridicules the producers' response from the practical point of view that it led to even greater losses. The manufacturers were a crowd of small and 'ignorant' producers, a bit like the stock buyers in the *General Theory*. Common sense suggested that the only way out was for producers to form 'some kind of cartel' internally and, if possible, with German firms to eliminate excess capacity(CW XIX: 535). The metaphysics behind this proposal is that reasonable behaviour is more likely to stem from the conscious, thoughtful action of the few rather than from the free play of market forces, which is the negation of the premises and conclusions of economic theory.

5. To husband its small stock of gold after the 1925 return to pre-war parity with the dollar, the Bank of England had to prevent domestic short-term interest rates from falling below those prevailing in New York. But rising short-term rates pull up long-term ones, too, with deleterious effects on real investment. Keynes suggested 'decoupling' long- from short-term rates. The six largest private banks that dominate the supply of credit, he said, 'acting as a cartel', should have no difficulty in raising short-term rates without affecting the price and supply of long-term credit (CW XX: 224–7).

Keynes's suggestion is in line with the one made to the coal and textile industries. Methodologically, it shows that Keynes thought in terms opposite to those of conventional economics where abstract 'forces' are everything and the producer is nothing. The metaphysics of classical economics is patterned on the responses of inert matter, which presumably 'obeys' forces made up by the physicists. But Keynes's implicit metaphysics is not deterministic: the economy is made up of human beings who are not the slaves of forces but shape their own destiny within a framework of hopes, fears and uncertainty.

6. The 1925 return to gold caused other microeconomic reflections in Keynes, reflections which also owe little to received doctrine. The deflationary forces unleashed by the new policy affect markets at different speeds because some markets have 'fluidity' while others are 'jammed'. On the surface, this appears to be in line with the modern economist's belief in 'interferences' with free markets. But it is not so: Keynes's are not the interferences of the modern economist who thinks in terms of institutional obstacles, like the power of unions, that can, he thinks, be brushed aside. Keynes's interferences are part of the facts of life. Some markets are of type A and they include products used in international trade (wheat, cotton, jute, tin) whose prices adjust speedily in response to deflationary policies. Type B markets are those that use A goods as raw materials (bread, clothing, processed foods), and here prices will fall slightly, depending on the proportion of A goods that they contain. In the labour markets – type C – there is no automatic force bringing wages down other than 'the pressure of unemployment and trade disputes'. Type D markets produce goods and services that use domestic inputs and especially labour: freight, insurance, government services. Here prices are rigid. Markets of type E produce manufactured articles that use inputs produced in A, C and D markets. Whether the prices of these items are rigid or not depends on the proportion of the three inputs that they use. Coal, iron and shipping – traditional UK exports – use mostly the insensitive C and D inputs, so their costs will not fall much. And, in a recognition of the interrelatedness of all this, Keynes observes (as he was to do in the *General Theory*) that the failure of many domestic prices to fall *justifies* the workers' resistance to wage cuts (CW XIX: 427–34). His analysis seems to depend on a mark-up theory of pricing, the most popular and commonsensical theory. There is no mention of marginalist concepts.

7. The Second World War offered Keynes other opportunities to reflect on market relations. In reply to a 1940 propaganda broadcast by Walther Funk about the Nazi 'New Order' for Europe, Keynes agreed with the German that exchange rates should be set 'by agreement' between nations. He saw bilateral agreements as 'a legitimate arrangement greatly in the interest of both parties' once it was cleansed of its Nazi spirit of exploitation (CW

XXV: 26). In a later heated exchange with Dean Acheson (July 1941) he described free trade and free exchange rates as 'the clutch of the dead, or at least moribund, hand' (CW XXIII: 177–8). Once again, he saw *negotiations* as producing results more reasonable than those one can expect from automatic forces.

8. Keynes's plan for a Clearing Union (which was never discussed with the Americans, having been supplanted by their Stabilization Fund) was also in the tradition of distrusting market forces. In 1920 Keynes was uncertain as to whether speculation was stabilizing or destabilizing, but by 1940 he was certain that the speculators would, in case of a trade imbalance, bet against the weak currency, thus accentuating the disequilibrium. In CU he proposed clear rules under which countries with trade surpluses and deficits would revalue or devalue their currencies (CW XXV: *passim*). And he also opposed free capital movements.

9. The war also saw Keynes's renewed interest in international commodities traded in the most free and best organized of all markets – type A markets, in the 1925 terminology. In the ten-year period before 1938 Keynes found that such commodities fluctuated tremendously: rubber by as much as 96 per cent from its minimum to its maximum price; cotton by 42 per cent; lead by 61 per cent; wheat by 70 per cent; and so on. He attributed these fluctuations not to 'interferences' but to the very nature of free markets. These markets, he said, 'abhor the existence of buffer stocks' and are 'inherently opposed to security and stability' (CW XXVII: 131). Keynes saw traders of these commodities in the same light as the stock market professionals: 'Most participants in the [commodity] market [are] more interested in a rapid turnover' than in holding stocks for the long run. As in Chapter 12 of the *General Theory*, an environment of widespread uncertainty leads the market participants to try to guess the psychology of the market ('aping reason proleptically') rather than the real underlying demand/supply prospects of commodities. In line with his beliefs, he proposed lessening price volatility by setting up international cartels of experts for each commodity. They would set a 'reasonable price' productive of stability and justice.

10. Keynes's forays into industry studies were not only caused by occasional events – such as the deflationary policies of the government, Funk's propaganda and so on. From 1923 to 1930 he contributed to, and derived some income from, the *London and Cambridge Economic Service* and other business publications, analysing annually the markets for American cotton, wool, jute, copper, tin, lead, spelter (zinc), rubber, sugar, coffee, tea, petroleum, nitrate and wheat.

Reproduced in volume XII of *The Collected Writings*, these analyses occupy nearly 400 pages. Since Keynes often speculated on commodities,

the analyses helped his speculations and also reflect what he learned from them. His writings on the matter would not be recognized by a modern microtheorist. There are no diagrams. There are abundant, time-bound, factual statistics of output and consumption. Complications like seasonal production and demand are given their due. Keynes's generalizations are from the bottom up, the source of the data being trade publications and private merchants' replies to his inquiries – primitive forms of questionnaire surveys! Inventories are hardly mentioned in value theory, but for Keynes they have 'an immense influence on the course of price changes', to the point of being the 'best index to impending instability of the price' of a commodity (CW XII: 267). Even more original is Keynes's reference to finance as a determinant of the price of the commodity. There is frequently a long interval between production and consumption (especially in the case of crops), and this creates a 'burden' for the financial system. Crops that are produced once a year 'throw a much greater strain [than commodities that are produced continuously, like metals] on the credit and financial system', so that even small 'monetary influences' affect their prices. And, likewise, a significant change in the price of an item may produce a situation in which 'credit is strained to the breaking point and conditions tending towards crisis tend to mature' (CW XII: 257–9). I have never seen matters of finance entering a textbook on value theory and pricing. No matter what Keynes says in the *General Theory* about the separation of the theory of employment and the theory of value, the two coexisted in his analyses, as they do in reality.

In the article from *The Manchester Guardian Commercial* from which I have just quoted, Keynes made some interesting observations about the forward commodity markets, which also show little trust in reason and knowledge. Since commodity prices fluctuate so much, the need arises for somebody to assume the risk. The forward contract market exists precisely to deal with this problem. In most writings on the subject, Keynes notes, the forward market is viewed as being in the hands of professionals bent on bringing about 'a harmony between short-period and long-period demand and supply, through [their] action in stimulating or retarding *in good time* the one or the other' (ibid.: 260; original emphasis). Keynes does not concede any 'equilibrating' function to the professionals. Conventional opinion, he asserts, assumes that professionals are 'better informed on the average than the producers and consumers themselves, which, speaking generally, is rather a dubious proposition'. The commodity speculator is a gambler because the farmer is not. A cotton farmer whose costs are 13d a pound may be willing to sell at a price of 14d even if he thinks that there is a reasonable possibility of the price going to 15d or higher. What makes him enter into this deal is the fear of the price falling below his costs,

coupled with his psychology: he is unwilling to gamble – he is a farmer. To protect himself against the possibility of loss he is willing to sacrifice a reasonable proportion of his potential gain. Keynes estimates that the producer turns over to the speculator between 10 and 20 per cent of the value of the crop, a price which he judges to be 'very high' but perhaps justified by the fact that the speculator makes money only through time, as he often incurs losses.

These observations not only show disregard for the 'homely' concept of equilibrium, but they convert what conventional economics regarded as a 'reasoned' decision on the part of the producers into a sheer 'failure of nerve', a *psychological* characteristic of the farmer. These considerations of 1923 in time were to give rise to the observations of Chapter 12 in the *General Theory* about uncertainty, about the importance of the sanguine temper which once ran business undertakings, and about 'liquidity preference', according to which individuals and institutions, like the farmer, are willing to sacrifice a return for the sake of peace of mind. These concerns are also related to Keynes's old speculations on *Probability*. They are, however, opposed to the purview of classical and neoclassical value theory.

We now understand why Keynes was bewildered by Joan Robinson's below-capacity theorem: he never got into the intellectual 'groove' and point of view that led to it. He never thought in terms of functional relationships between quantities and prices. He used the terms 'supply' and 'demand' as *statistical quantities, as facts fixed in time and space*; that is, in the sense that Roman merchants and mediaeval divines used the terms.

Keynes's analyses are historical, institutional and psychological – and the psychology he relied on was that of the turn of the century, which had not yet become physiology, instinctive reactions and conditioned reflexes. Also there is really no distinction in Keynes's analyses of the market between macroeconomics and microeconomics: the economy as a whole is never in a neutral, stable state. Considerations of finance enter into his analyses of the industry as they enter into his theory of employment. He used the language and terminology of a gifted trade journal writer who *lived* the forces operating in the markets described. He preferred realism and relevance to certainty of theoretical results. The passion and non-rational elements that are present in his macroeconomics also appear in the microeconomics: the desire for money, uncertainty and ignorance are the 'givens', the 'propensities' of the agents of analysis.

Not being awed by 'the market', Keynes did not accept it as the best mechanism for allocating resources. He ignored Robbins's work as he did Robinson's. He had no doubt, in fact, that *his* judgment was superior to that of the market. This is also why twice, in 1924 and 1945, he attacked

Hollywood and its productions (CW XXVIII: 316–7, 372). It is true that in the *General Theory* Keynes asserted that he saw 'no reason to suppose that the existing system seriously misemploys the factors of production which are in use' (GT: 370). But how can one reconcile this pronouncement with the 'somewhat comprehensive socialisation of investment' that he advocated? And how can it be reconciled with his lifelong attack on the 'Treasury view'? Once the state is brought in to invest in steel mills or to rebuild cities or to rein in the speculators, the employment of productive factors is inevitably affected. And when one interferes with the allocation of incomes and wealth (whose 'arbitrary and inequitable distribution' Keynes saw as one of the two 'outstanding faults of the economic society in which we live') one also interferes with the demand for goods, and hence with the allocation of resources.

Keynes's apparent inability to see the interconnection between earnings (or government spending) and resource allocation confirms our point that his thought ran along non-theoretical, non-Walrasian lines. He did not see the economy as a huge puzzle made up of tiny pieces. After all, Keynes once remarked that 'Walras's theory and all others along those lines are little better than nonsense' (Skidelsky, 1992: 615). This chapter shows that he meant what he said and that, in effect, he regarded the whole theoretical approach of value theory as nonsense. As editor of *The Economic Journal*, Moggridge tells us, Keynes in 1923 rejected a paper by Bertil Ohlin with the observation, 'This amounts to nothing and should be refused.' The paper dealt with the factor proportion theorem which was to win Ohlin a Nobel Prize. And in 1928 Keynes rejected a paper by Roy Harrod containing nothing less than the invention of the marginal cost curve (Moggridge, 1992: 210). Robinson had good reason to believe that Keynes thought her work to be 'awful rot'. Indeed, at least the last half of Hahn's judgment, that Keynes 'had no real grasp of formal economic theory (and also disliked it)' (Hahn, 1982: x–xi) must be regarded as an understatement.

IV A KEYNESIAN 'RESEARCH PROGRAMME'

Keynes's microeconomics is at one with his income theory. In both fields his thought remained comparatively at the surface of things, but the 'surface' is much broader than that of classical economics, pre- and post-Keynesian. In his pricing analyses Keynes never reached down to utility, indifference curves, marginalist functions, production functions and so on. On the other hand, he relied on considerations and concepts that are part of our human experience but were (and still are) ignored by orthodox thought: uncertainty and our responses to it; the formation of conventions

and their breakdown; speculation, finance and politics; whim and assorted psychological drives; and, above all, facts and institutions.

The Keynesian method is eclectic and matter-of-fact, and is a challenge to the way economics has been built; that is, by proceeding from reason down, reason being identified with insights (axioms) provided to us by 'introspection', and that, by a happy coincidence, are believed to be of a quantifiable, costs and return nature. Because they followed this road, economists have ignored much of the world. In recent years they have ignored, for instance, that remarkable reshaping of industry brought about by conglomerate mergers. The sums involved in mergers in which a United States company was the target in 1994 averaged $334 billion (*Wall Street Journal* [hereafter *WSJ*], 3 July 1995: A3). The phenomenon has implications for modern macro theory, too: for the money supply, velocity of circulation of money, productivity, stock market behaviour, interest rates, executives' and brokers' salaries, income distribution, employment and so on. But at the confluence of many forces (financial, technological, political and psychological) mergers do not fit into any neat rationalistic scheme (any more than the stock market does), and have been ignored both by value theory and by the world of ISLM. And, indeed, they can be followed and described only by the institutional, free-wheeling approach Keynes brought to his industry studies, eventually leading, perhaps, to some (value-laden) generalizations. Is the phenomenon another 'whirlpool' dragging down enterprise? Is it a case of constructive 'animal spirits', or of the same gone awry?

The interpretation of the *General Theory* that began with G.L.S. Shackle's work and continued with the writings centred on *Probability* is becoming more and more accepted, at least by the methodological 'left'. It depends on the recognition that the *General Theory* rests on a vision of the pervasiveness of uncertainty. By contrast, all the functions of contemporary microeconomics are characterized by certainty. Thus recognizing the value of uncertainty in income theory entails the destruction of all the 'schedules' of value theory, relations becoming tentative and based on statistics, knowledge of institutions and commonsense psychology. Only on these grounds would Keynes find an answer to his 'innocence': do firms methodically produce below capacity? Statistically, too, the size of 'stocks' (inventories) could be viewed as the manifestation of disequilibrium in the markets, once we knew what 'normal' stocks were for a given industry. Equilibrium would cease to be the child of logic and would become a genuine fact – or a figment of the imagination.

To an extent this 'free wheeling' approach already exists, but not in the textbooks. The annual *Economic Report of the President*, written by the three outstanding US economists that make up the Council of Economic

Advisers, contains thorough analyses of the economy. But there are no diagrams; no effort is made to estimate the marginal propensity to consume; there is no aggregate demand/aggregate supply dichotomy. Consumption is spoken of as a statistical value affected by a plethora of forces which are not separated into stable data and independent variables. And the same is true of investment. Many of the relations are tentative, as the authors are not leaning on the crutches of mathematics but are trying to find their way in the thicket of political, sociological and psychological factors. Indeed, compared to the awesome quality of any intermediate textbook on income theory, *The Economic Report of the President* is a mere husk.

Keynes got his ideas about uncertainty largely from personal participation in the financial markets, from introspection, from observation of political life, from discussions with other financial market professionals, and from his 'Moorean', post-1903 critical reflections about the formation of judgment. We can hardly expect economists to stake their salaries and time on the financial markets, but a kind of vicarious, if tentative, knowledge can be gleaned from well-designed questionnaire surveys, from reading the financial press, from psychological and sociological reflections, from genuine introspection. A genuine Keynesian would address the following questions, undeterred by their slippery nature. Is uncertainty pleasurable or painful? Do some people benefit from it? What institutions arise to exploit it? Is the distribution of income affected by it? What steps do those who suffer under it take to alleviate it? Keynes talked about our ignorance of the yield of a copper mine or of the return of a building in the City of London. But over what time horizon does the investor in such undertakings expect a return from his real investments? If buyers of buildings in the City make their computations on the basis of a ten-year return then some of the uncertainty disappears: within the next ten years rents are liable to be better known than over the longer physical life of the asset. Are there accounting devices to defeat uncertainty? How does the tax code deal with it? Lobbyists' contributions to political parties, cartelization of industry, bribes, price fixing and the formation of conglomerates may all be viewed as responses to uncertainty.

Do stock market investors try to 'beat the gun', or was Keynes overly pessimistic on this score? Do the 'gulls', by their ignorance, inject an element of instability into the market? To what extent do investors rely on the judgment of others? How easily does the 'conventional basis of evaluation' break down? Are the 'sins' of Wall Street still greater than those of the London stock market? What is the effect of computer trading? What does and what does not bolster confidence? How do finance ministers and central bankers exploit uncertainty for their own ends? By what process did government deficits become, in the mind of so many people, a modern

bubonic plague, the Fifth Horseman of the Apocalypse? Why did economists fail to defend at least so-called countercyclical fiscal policy (to which they continue to devote chapters in their textbooks) against the idea of a balanced budget? Why do stock prices now usually fall at news of a pick-up in the economy? (Once we believed that stock values depended on profits and profit expectations.) Now, it must be recognized that these questions are not easy to answer and that, to paraphrase Keynes, 'there is not much to be said about them *a priori*'. Research on the sociology of uncertainty, for instance, would take one away from the well-worn paths of arbitrary assumptions and mathematical deductions, and may well be 'slow and fragmentary and of uncertain value'. The contemporary academic scholar is handicapped by a preparation that puts no emphasis on knowledge of institutions, that denigrates classical studies and the imagination, and is a prisoner of an iron division of labour that ignores sociology, history and psychology. It is not simply Keynes's economics that is in opposition to a great deal that occurs in today's economy. Keynes's *method* is also opposed to the way economists are educated.

'Understanding' is, of course, everybody's goal. In most of economics understanding is practically synonymous with exposing the nature, the inner, rational logic of a situation. Indifference curves and revealed preference are tools that advance understanding, in that sense, of consumer behaviour. This kind of understanding is stern and cold. If I told an economist that in the purchase of my last car I was influenced by the figure and smile of the model who advertised it on television, I would not expect much 'understanding'! But I dare say that Keynes would accept my 'irrationality' and perhaps make sympathetic inferences from it.

For Keynes, recognition of uncertainty emerged from *living* a certain reality and *reflecting* about it. As I noted before, we cannot all live in a world of financial speculation or be high civil servants, but we *can* read the papers. Here are interesting pieces of reality that cry out to be integrated into any realistic macroeconomic view: 'The Vigilantes: World Bond Buyers Gain Huge Influence Over US Fiscal Plans' (*WSJ*, 6 November 1992: A1). In other words, they dump Treasury bonds if they disagree with the economic or social policies of the government, causing interest rates to rise. 'Huge Funds Face Review of Practices' (*WSJ*, 28 November 1994: A1) relates how some hedge funds unloaded $2.5 billion of Japanese government bonds causing the yield to rise from 3.70 to 4.30 per cent in one day. 'Fear of Growth: Economic Gains Spook Bond Buyers, but Risk of Inflation is Low' (*WSJ*, 8 November 1993: A1) notes that good employment news is *bad* news for Wall Street. 'Why Clinton Will Cave in on the Budget' relates the president's chagrin at being told by his advisers that the success of his programme and his re-election 'hinges on the Federal Reserve

and a bunch of [expletive] bond traders' (*WSJ*, 28 November 1995: 14).[5] These articles raise interesting questions for analysis, for policy, for political 'science' also. They suggest that our ungraciously named concept, Non-Accelerating Inflation Rate of Unemployment (also known as the 'natural rate', that is, the rate of unemployment which economists believe to be necessary to contain inflation) has plutocratic as much as theoretical reasons. In Keynes's time it was the foreign investors who 'cracked the whip'. In a 'global economy' foreign and domestic investors join hands.

'Incredible Buys: Many Companies Press Analysts to Steer Clear of Negative Ratings. Stock Research is Tainted As Naysayers are Banned, Undermined and Berated. Small Investors in the Dark' (*WSJ*, 19 July 1995: A1). The 'sins' of Wall Street have taken a new turn: advice to sell may cost the analyst his job. The 'gulls' are more numerous than ever. Indeed, they sometimes include great, historical institutions like Barings Bank.

The financial press, of course, keeps us abreast of new forms of investments ('derivatives', 'structured notes', 'collateralized mortgage obligations' and so on) but only after they have caused mischief in the market. The choices open to the investor have widened immeasurably since Keynes's days: the financial part of his *General Theory* is as up-to-date as a model-T Ford. Our lack of 'vigilance' has made it so. It can fairly be said that we do not have the foggiest idea as to what happens to our money when we send it to a stock or bond fund. How much of it finances genuine, real investment and how much gets lost in the buying and reselling of old, existing instruments (whose prices they cause to rise) seems an interesting question, to which, alas, there is no answer. Wall Street and kindred institutions seem to be good institutions for 'laundering' money.

The financial press is also a window on 'microeconomics'. 'Investigators Suspect a Global Conspiracy in Archer–Daniels Case' (*WSJ*, 28 July 1995: A1) is one of many studies of price fixing, towards which the economist's attitude should not be one of stern reproach but of understanding its causes.

Keynes, it is well known, made some sarcastic remarks about income inequalities. After pointing out that some income inequality is desirable partly as (of all reasons) a substitute for sadism, he pointed out that 'it is not necessary for the stimulation of these activities and the satisfaction of these proclivities that the game should be paid for such high stakes. Much lower stakes will serve the purpose equally well, as soon as the players are accustomed to them' (GT: 374). But today we have accustomed the players to precisely the opposite: 'Raking It In – CEO pay is soaring again, thanks to . . . reduced public criticism' (*WSJ*, 12 April 1995) gives figures for executive salaries reaching into the millions of dollars. The article also proves the correctness of Keynes's view: salaries are set by custom rather than by

any esoteric theory, and by their tacit acceptance by the people.[6] 'Salomon's Deep Pockets' (*WSJ*, 28 March 1994: B3) shows salaries of $28 million for a trader employed by the well-known brokerage house, and of seven million dollars for a CEO, excluding stock options. And these salaries are nothing compared to the windfalls following mergers.

Enamoured of 'theory' (that is, with our head in the clouds) we must look at *The Wall Street Journal* for examples of radical thinking. '9 to Nowhere: These Six Growth Jobs are Dull, Dead-end, Sometimes Dangerous' (*WSJ*, 1 December 1994: A1) describes the work of the 221 000 workers in chicken-processing plants, the main industry of the southern states of the United States. They are caught in a 'Dickensian time warp'. The assembly line carries 90 birds per minute to workers who specialize in killing, skinning, gut-pulling, gizzard-cutting, cutting off heads, legs, breasts, bones and so on, all for about $5 an hour, or $10 000 a year. Another growth job is that for 'financial service workers who process donations to charitable organizations but are barred from talking, gazing out windows, or deviating from steep work quotas that are monitored by computers down to the individual key stroke'. Subject to 'Orwellian controls', these workers also earn about $5 an hour. 'Gut-rehab workers' have it comparatively easy. They use pick and shovel to clear abandoned buildings that have been used for years as dumps, dog kennels, junkies' dens and makeshift brothels. They often stumble on corpses. By contrast, one thinks of Keynes's 'Art and the State' (1936), with its proposal to make the decaying older cities of England worthy of the best quarters of London (CW XXVIII: 341–9).

Classical economists used to extol the value of 'introspection' as a source of economic truths, and indeed classical axioms are based on it. But introspection for economists has always been a bit of a fake because it was never conceived as honest, sincere reflection on the experiences of life. Our own experience suggests that we choose a compact disc, a psychiatrist, a car or a cruise without much firm knowledge of the quality of the product or service. Genuine introspection indicates that we are amenable to suggestions and pressures, and that ultimately we make choices in a fog of uncertainty, out of which we are led by conventions, prejudices, temperamental characteristics, whim, chance, assorted lusts and other forces, forces assiduously fanned by powerful institutions. And we often regret our decisions. None of this, however, is material for introspection for the economist: his 'I' is not existential man, but the *homo economicus*, which assumes away the experiences, problems and predicaments of life. Demand and everything else is then based on total and complete knowledge. Strictly speaking, this means that the consumer is a superb engineer, a physician, a lawyer, an architect, a mathematician, a carpenter, a plumber, a car mechanic – all at once. Indeed, one wonders why the economist needs the services of these

specialists if he is such a genius. And we have other personal experiences, too, that ill mix with economics. Many economists, no doubt, are dissatisfied with their salaries from the universities they work at. Disagreement and strife could be greatly reduced if they could estimate the net addition each of them made to the revenues of the college or university: if they could estimate, that is, what economic theory calls the net value of the marginal product. But the idea of making such an estimate has never crossed any economist's mind.

Divorce from life has led to a neglect of many Keynesian questions and of Keynes's approach, and that, in turn, has caused an explosion of ideological thinking. Given that ISLM explains little, the Laffer curve becomes plausible; miraculous results are expected of a cut in capital gains tax; a general tax cut is advocated because it will set off an explosion of work effort; and lower government deficits will reduce interest rates sufficiently to set off an explosion of investment. These expected results rest only on the kind of sentiments that make some people believe in an afterlife.

Keynes's system only partly rests on uncertainty. It also recognizes the power of animal spirits, chance, whim and the like. These are, in fact, the positive response to uncertainty, uncertainty's nemesis, so to speak. If the sociology of uncertainty has made no progress since Keynes, research into animal spirits has not even begun. It can only be based on history and on impressionistic and biographical reports of innovators, investors, entrepreneurs and financiers. The current trend towards deregulation and debureaucratization might be both cause and effect of rekindled animal spirits. (But is there any indication that the animal spirits grew dimmer during the regulatory heydays?) Do animal spirits take 'productive' (entrepreneurial) or 'unproductive' (speculative, culturally noxious) channels? Do the best representatives of animal spirits act as 'role models' to others? That is, might not three or four 'rags to riches' billionaires galvanize a whole population into 'entrepreneurship'? (They seem to galvanize colleges into offering *courses* in entrepreneurship.) How does inflation affect animal spirits? It may be that, like death, inflation concentrates the mind wonderfully – on making money speculatively.

Some of our consumption and much of our accumulation of property is fuelled by animal spirits of assorted types: this concept, like uncertainty, wreaks havoc on consumer theory.

Studies of animal spirits, whim, chance and so on are even more rare than genuine studies of uncertainty. Economists have been able to shunt uncertainty onto the mathematical track, thus bringing it within the realm of deductive reasoning. But animal spirits are too obviously . . . well, nonrational, psychological and almost salacious. They smack of romantic literature. They are, in fact, an economist's twentieth-century answer to the

methodology of the seventeenth century, from which classical economics derives. In Keynes's system uncertainty is defeated by institutional (stock market) reforms and by the positive passions (animal spirits).

Studies of animal spirits would of necessity be historical and biographical; they would use the insights of psychology, sociology and 'intuition' to attain generalizations. They would supplant formal derivations from simple axioms. Tentativeness would take the place of certainty of results; explicitly philosophical (normative) views would penetrate positive economics, replacing the implicit ideologies that economists carry into their work today. The result would be that whatever methodological discipline economics now enjoys would disappear. Even the boundaries between economics, psychology, history and so on would dissolve. Lately, we are told, a broader outlook is entering into some 'imaginative' freshmen teachings: 'Berkeley's Economists Attack Policy Issues With Unusual Gusto' proclaims *The Wall Street Journal*. 'Unlike Some Faculties, they Aren't Just Wrapped Up In Esoteric Theorizing' (*WSJ*, 1 December 1995: A1). Who knows that in one hundred years the same spirit may not seep into graduate work?

V THE MANY LAYERS OF THE *GENERAL THEORY*

The *General Theory*, being addressed to 'fellow economists', is actually a comparatively familiar work, methodologically speaking. After the failure of the *Treatise on Money*, Keynes bent over backwards to use the jargon he picked up as editor of *The Economic Journal*. His tortured definition of unemployment is a case in point. In the 1920s and in testimony to the Macmillan Committee he made no use of any definition of unemployment: statistics (facts) told him when there was unemployment. The second classical postulate is also unnecessary. Indeed, a national production function is an absurdity, much like today's aggregate supply curve. Keynes had a remarkably flexible mind: as long as his fundamental intuitions were accepted (for example, that prosperity depends on spending), he did not care how they were expressed. In the *General Theory* he borrowed much of the classical garb. Despite what he says about wanting 'to raise a dust', the *General Theory* is actually an accommodating work, falling in with the method of classical economics after the *débâcle* of the *Treatise*. It is precisely this accommodating aspect of the book that facilitated the birth of 'Keynesian' economics.

The *General Theory*, like the Troy of archaeologists, is many-layered. Once a layer is exposed, another comes to the surface. The first and most superficial layer is the so-called 'Keynesian cross' of the principles textbooks. A

somewhat deeper layer is the ISLM rendition associated with the name of Hicks, but also advanced by Roy Harrod while the *General Theory* was still in manuscript form (CW XIII: 553). Lurking below this layer is a third one: the fight between uncertainty and animal spirits, or, technically, liquidity preference and enterprise. And there is another layer, as the autobiographical *My Early Beliefs* (CW X) makes clear. This is the layer which sees the *General Theory* as the translation of Keynes's philosophy of life.

In his 1938 essay Keynes links Benthamism to Marxism as the two pernicious world-views of mankind. It was the Benthamite calculus, 'based on an overvaluation of the economic criterion which was destroying the quality of the popular Ideal' (CW X: 445–6, 447). In this attack Keynes returned to certain beliefs that he had expressed in many essays of the 1920s: in 'A Short View of Russia' (CW IX), in 'Clissold' (CW IX) and in 'The Economic Possibilities for Our Grandchildren' (CW IX). In them he attacked the *Zeitgeist* of capitalism, the attitude of mind, the outlook on life that leads people to judge and take action after a comparison of monetary costs and rewards. Does such a calculus precede a decision whether to have a child? Or which course of studies to choose? Do we look at a yacht or a house and see only their monetary value and the income of the owner? Do we see a coastline as 'beach front property'? Do we judge men by their earning ability? Does a cost–benefit analysis precede decisions that should be taken on aesthetic, moral, public health or other grounds? If the answer to these questions is even a qualified yes, we are in the Benthamite tradition, overvaluing 'the economic criterion', and our philosophy is not very different from popular Marxism, the *reductio ad absurdum* of Benthamism (CW X: 446). The overvaluation of the economic criterion puts a premium on some undesirable traits: acquisitiveness, envy, excessive individualism. All of which, at a minimum, restricts the sphere of community, cultural and aesthetic values – that is, of the Moorean ideals.

Now what does this have to do with the *General Theory* and, in particular, with the layer labelled 'uncertainty'? The existence of uncertainty means that cost–benefit calculations are a fraud, 'as phoney as a two dollar bill', as the Americans put it. Uncertainty dilutes the power of 'the economic criterion', showing it not really to guide action. And this naturally opens the door to judgments and actions on the basis of *other* values. That is, if the consequences of our actions are uncertain, we might as well follow our better instincts in deciding what to do. If estimates of the prospective yield of a certain project are not to be trusted, if the 'Treasury view' is self-delusion, then we might as well put up 'parks, squares, and playgrounds . . . lakes, pleasure gardens and boulevards, and every delight which skill and fancy can devise . . . [We might as well build schools] with the dignity of universities, with courts, colonnades and fountains, libraries, galleries,

dining halls, cinemas and theatres'. We might, in other words, decide on public spending on the basis of aesthetic, humanitarian and community-binding values. The *General Theory*, at bottom, is the economic translation of the philosophy of Mooreism which valued 'the good and the beautiful'.

Which leads us to a basic dilemma, both in Keynesian studies and in the effort to extract from Keynes what is valuable for our times. Is a democracy compatible with the state advancing any philosophy, any view of life other than money making? In his address to the 1993 Leeds Conference, Robert Skidelsky chided Post Keynesian economists for being apparently uninterested in solving the unemployment problem of today. 'Policy Keynesianism is moribund,' he asserted; economists study Keynes 'not to find out what governments should do but how economics should be done' (Skidelsky, 1995: 367–73).

We should recognize that an accurate understanding of Keynes's method cannot but lead to an accurate understanding of the economy: there is no dualism of mind and matter in Keynes. But to go from the understanding of the economy to policy actions *is* more complicated. Do we share Keynes's *philosophy*? We should start by agreeing that Keynes was opposed to the dole or any form of excessive welfare. Throughout his life and work he favoured enabling people to make their own living by public works chosen to promote his (Keynes's) social values. Now if 'economic prosperity is excessively dependent on a political and social atmosphere which is congenial to the average businessman', and if the actions of government upset 'the delicate balance of spontaneous optimism' on which investment and production are based (GT: 162), then what? My guess is that Keynes would try to educate public opinion. And if this fails, what is left?

The prosperity that followed the Second World War has often been attributed to Keynesian policies. Maybe so. But these policies stemmed from *force majeure* – in particular, from the need to rebuild vast areas of Europe devastated by the 1939–45 war. It is not an accident that the countries that most needed rebuilding are also the ones that gave us 'miracles': the German miracle, the Japanese miracle, the Italian miracle.

The environment in which today's nation-states operate (and they may already be an anachronism) is much more complex than it was either in the 1930s or in the 1950s–60s. The fortunes of each country are intertwined with those of the rest of the world. No country or collection of countries really controls, or even understands, speculative capital, for instance.

So, at bottom, a rebirth of policy Keynesianism can be advanced only by events. We are currently engaged in testing the truth of the heart of Keynesian theory. If aggregate demand is still important, real wages that have not increased much since the mid-1970s, coupled with increasing income inequalities, should slow down the growth of personal consumption,

on which ultimately business investment depends. The jittery nature of financial markets should leave them prone to collapse at the least confluence of unfavourable circumstances. (A significant tremor occurred, for instance, in the wake of the February 1994 increase in short-term interest rates when there was a 'global lunge for liquidity by money managers'.)[7] The cuts in government spending attendant on deficit paranoia in all industrial nations should set off deflationary forces that the same paranoia will find impossible to combat. In the autumn of 1995 the Federal Reserve announced that it would welcome a recognition by the US Congress of its *de facto* policy: that its task is solely to fight inflation. With fiscal policy dead, with monetary policy dominated by the *idée fixe* of inflation, with financial markets inventing new instruments at a dizzying rate, disaster may not be far away. The body politic of many industrial countries is volatile and splintered, leadership is non-existent, and representative government is primarily representation of business interests[8] which, of all interests, are the most narrow-minded. Then there is the annoying fact that Keynes's own *General Theory* model, as a tool of understanding, is by now as archaic as Galileo's telescope. What happened during the past sixty years is precisely what he foresaw in 1938. In his criticism of Tinbergen he warned against the 'loss of vigilance' that would follow from embracing the econometric approach. His intuition told him that, if economists followed the siren-song of mathematical economics, they would lose touch with institutional developments, with the evolution of ideas and of business and financial practices, with attitudes and 'propensities', on which ultimately the economy depends.

NOTES

1. The publication of Thomas K. Rhymes, *Keynes's Lectures* shows that Keynes in earlier lectures used almost precisely the same words as in the *General Theory* to refer to the psychological forces behind enterprise and stock buying. See Rhymes (1989: 148–54).
2. I surveyed the work of some of these philosophers in relation to Enlightened reason and economics in my 1974 *Philosophy and Economics*.
3. In his letter to Macmillan, Keynes states that his 'confidence' in Mrs Robinson's work is based on the fact that R.F. Kahn had read and criticized her manuscript!
4. I cannot refrain from introducing a personal note to illustrate some institutional means used to prevent straying from the true path. While writing my dissertation in 1964, I made an appreciative reference to Keynes's 1933 anti-free trade article 'National Self-Sufficiency', now in CW XXI: 233–8. I was given to understand that I would not obtain a PhD if I proceeded on this track. In 1969 some classroom methodological observations of mine that eventually found their way into my 1974 book cost me my job at an American university. And in 1994 an article of mine on Keynesian uncertainty drew the comment from a reviewer of a very highly thought of journal that 'to accept it would be like *The Quarterly Journal of Economics* publishing an article by J.K. Galbraith'!
5. See also *WSJ*, 3 May, 1996, A1: 'Stock and bond prices plummeted on news that the nation's economy surged at a 2.8% annual rate in the first quarter' of 1996.

6. See CW XX: 6 ('The Question of High Wages', *The Political Quarterly*, Jan.–March, 1930) where Keynes shows sympathy with the notion that salaries are fixed by 'historical influences as gradually modified by contemporary social and political forces'.
7. *WSJ*, 'Three Months' Tumult in Bonds Lays Bare New Financial Forces', 20 May 1994: 1.
8. See, for instance, *WSJ*, 'The Money Chase – A Day in Washington is Just Another Day to Raise More Dollars. Going from Party to Party, Lobbyists Seek "Access" by Giving to Campaigns' (23 October 1995: A1).

3. Market structure, uncertainty and unemployment

Malcolm Sawyer and Nina Shapiro[1]

I INTRODUCTION

Whilst it is clear that Keynes did not use imperfect competition in his analysis in the *General Theory*, there have been continuing suggestions that he should have done so and/or that his analysis would have been improved by doing so. Keynes, himself, however, did not see any reason to use imperfect competition. This is summarized in his response to Ohlin who had written, 'In this as in some other respects Keynes does not seem to me to have been radical enough in freeing himself from the conventional assumptions. When reading his book one sometimes wonders whether he never discussed imperfect competition with Mrs Robinson'. Keynes replied in some puzzlement to this, when he wrote that he had 'not been able to make out here what you [Ohlin] are driving at. The reference to imperfect competition is very perplexing. I cannot see how on earth it comes in. Mrs. Robinson, I may mention, read my proofs without discovering any connection' (Keynes, CW XIV).[2] In contrast, a number of writers have argued that Keynes's results require imperfect competition. Kaldor (1978), for example, argued that 'it is difficult to conceive how production in general can be limited with unutilized capacity at the disposal of the representative firm as well as unemployed labour – unless conditions of some kind of oligopoly prevail'.

The same view – essentially an echo of Kaldor's – is expressed in Weitzman (1982), where it is contended that the existence of increasing returns with the associated market structure of imperfect competition is the root cause of the unemployment problem. A number of papers in Worswick and Trevithick (1983) see the work of Weitzman as underpinning the analysis of Keynes, while Marris (1997) argues that Keynesian results are 'robust' under imperfect competition only, and Tobin (1993) that perfect competition is the market structure of the classical system, and imperfect competition the 'microeconomic world' of the Keynesian one. However, intensive work by new Keynesians over the past decade or more has led to rather different conclusions, namely that imperfection of the

product market does not generate involuntary unemployment. The general consensus on the effects of the substitution of imperfect competition for perfect competition is well summarized in the following.

> What has imperfect competition added to the macroeconomic interest of the Walrasian model? First, it generates a suboptimally low level of output and employment, which is an apparently pervasive feature of real economies . . . Second, closely associated with low output, imperfectly competitive economies typically generate unemployment. When there is imperfect competition in the labour market, such unemployment is involuntary in the sense that there are individuals who would prefer to work more at the prevailing wages. Even when it is voluntary, as when the labour market is competitive, it is above the Pareto efficient level of unemployment. (Dixon and Rankin, 1995: 58)

Imperfectly competitive economies have more unemployment, but their unemployment is no more 'Keynesian' (involuntary) than the unemployment of perfectly competitive ones.

Our approach to the question of the role of imperfect competition in macroeconomics is rather different from that of the new Keynesians. It is clear that the perceived consequences of an imperfectly competitive industrial structure rather than a perfectly competitive one depend on the overall nature of the 'grand vision' of the workings of the economy within which the comparison is made. Many, if not all, of the comparative analyses identify perfect competition with the general equilibrium of the Walrasian system, and this we specifically do not wish to do, for reasons which will become evident below. In a similar vein, the imperfect competition models of the new Keynesians (and many others as well) draw on comparative static analysis in which mistakes and uncertainty do not arise.

The 'grand vision' with which we work has two related major differences from that which underpins both the Walrasian general equilibrium approach and that of the new Keynesian macroeconomics. The first is that the economy functions within a world of pervasive and genuine uncertainty. This is in sharp contrast to the Walrasian conception, which presumes (and requires) a world of certainty or certainty equivalence, as does the rational expectations assumption of the new Keynesian analysis (this precludes 'false trading' also). We will argue below that uncertainty makes markets volatile, and the extent and nature of the uncertainty that they are subject to depend on their structure. Different market structures have to be viewed in terms of the uncertainty they entail, and that uncertainty is a critical determinant of their macroeconomic outcomes.

The second major difference between our analysis of market structure and the traditional Walrasian (and new Keynesian) one has to do with the role of aggregate demand. While aggregate demand has no importance in the traditional analysis – Say's Law is assumed – it is at the centre of ours.

It views the level of aggregate demand as the major determinant of employment, and the insufficiency of that demand as the root cause of unemployment. In this as well as in the concern with uncertainty, the analysis follows Keynes, with the central concerns joined through an examination of how the aggregate demand is affected by the degree of uncertainty, and how both are influenced by the industrial structure.

The effects on investment will be of special concern, given the importance of expectations and the state of confidence in the determination of investment levels. Investment decisions are particularly difficult to make under conditions of uncertainty and, as is argued below, the uncertainty entailed in perfect competition is too high for those decisions to be effected. Little, if any, investment would be undertaken if competition was as 'perfect' as is traditionally assumed in economics. Comparative analyses of perfect and imperfect competition run up against the problem of which model of imperfect competition to use, for there are numerous models to choose from (and still unresolved issues within theories of imperfect competition). A perhaps less obvious problem, but a no less critical one, is that of how perfect competition should be modelled. In the discussion below we consider a number of approaches to this modelling, and distinguish particularly between the modelling of perfect competition under conditions of certainty or certainty equivalence (as in the Walrasian analysis) and that under conditions of uncertainty (which we take to correspond to Keynes's analysis).

II PRICE FLEXIBILITY AND RIGIDITY

Price rigidity has become the hallmark of the Keynesian system, just as price flexibility has become the distinguishing mark of the Walrasian one. The differences between the two have been reduced to the adjustment speeds of their prices, with the instantaneous price changes of the Walrasian one the reason for the optimality of its outcomes. But price changes are not necessarily equilibrating, and the price changes of Keynes's own system were not equilibrating. They worsened, rather than improved, the performance of the system, for the result of wage 'flexibility' was not output stability or money 'neutrality', but price instability (Keynes, 1936). The price flexibility of the Walrasian system has a special meaning: it involves more than just the variability of prices. Prices are flexible when they change with the 'fundamentals' of the system, tracking its equilibrium. Flexible prices reflect that equilibrium: their levels are determined by its conditions, while 'inflexible' prices are given independently of those conditions. Their levels are 'fixed', and prices can be changeable without being

flexible, as is the case with the mark-up prices of Kalecki, and the full-cost ones of Hall and Hitch.

A 'flexible' price is not, then, a variable price, but an equilibrating one, and the flexibility, or otherwise, of a price has little, if any, meaning outside the equilibrium conditions of the Walrasian system. Price flexibility is definable under those conditions alone and, in the absence of those conditions, price changes are not necessarily beneficial. Price variability can increase market volatility, heightening the uncertainties of their participants, and the perfection of their competition worsens their performance (as it does in Keynes's system).

The notions of flexibility and inflexibility are then to be associated with comparative static exercises in which there is an equilibrium position towards which the market moves (perhaps quickly, perhaps slowly). More significantly, either the equilibrium position is generally assumed to be known to the market participants (as in rational expectations models) or the market participants receive signals as to whether the market price is above or below equilibrium. In either case, price flexibility allows the price to move in the direction of equilibrium. Hayek argued that price is the only information which economic agents require. If the price of a commodity rises (falls), it is not necessary for a trader to know why the price has risen (fallen). 'It does not matter for our purposes . . . which of these two causes [increased demand, reduced supply] has made tin more scarce. All that the user of tin needs to know is that some of the tin they used to consume is now more profitably employed elsewhere, and in consequence they must economize tin' (Hayek, 1945).[3] In effect, in such a world, price movements would have, and would be known to have, some purpose.

We will use the term 'volatility' to signify movements in price that contain a great deal of 'noise', which may or may not be related to shifting positions of equilibria. Indeed, in this world of uncertainty, the notion of equilibrium may have little meaning, and there may be a spectrum of equilibrium positions (for example, ranging from the market day very short period equilibrium through to long period equilibrium) any one of which may change, giving rise to price movements. In competitive markets, whilst some may base buy or sell decisions on the level of prices (whether because they are end users or suppliers of the product or because they are market operators who seek to buy when price is low and sell when price is high), there are others whose buy or sell decisions are based on changes in price, with rising prices stimulating demand and thereby further price rises. The Walrasian analysis can at best only deal with prices being high or low (relative to equilibrium) since it is a comparative static framework, and even then the Walrasian auctioneer adjusts price prior to any trading taking place. In the real world of Keynes, prices are viewed by market participants

not only as high or low, but also as rising or falling (and perhaps viewed in terms of higher order derivatives) and demand and supply (particularly in financial markets) linked with both the level and the rate of change of price.

III KEYNES AND COMPETITION

The analysis of perfect competition has become closely identified with Walrasian general equilibrium, with the prices of perfectly competitive markets viewed as the 'perfectly' flexible ones of that equilibrium conception. But that conception is quite inadequate for any analysis of competition, 'perfect' or otherwise, for it abstracts from the uncertainties that distinguish the process and explain its risks and losses.

In the Walrasian analysis, agents operate under conditions of certainty or certainty equivalence. They know the prices at which they can sell and buy all goods and services, and know when those prices are the 'right' ones – in their equilibrium configuration. Prices are in equilibrium when the 'auction' closes (trade commences when, and only when, the prices traders face are the right ones) and since trade occurs at the equilibrium prices only, the 'fundamentals' of the system are tracked in its prices. Any change in price is a change in its equilibrium level, and any change in the equilibrium conditions of the system is expressed in its prices. Price changes convey changes in those conditions, and changes in those conditions are the only changes they convey. Their meaning is easily decipherable and, while the auction that changes the prices of the system might be 'noisy', traders need not worry about the noises of its price 'calls'. Those notional prices have no effect on their fortunes; they neither change their trade gains nor subject them to losses.

But markets are not always in equilibrium – their equilibration is a process – and the price changes that occur when they are not in equilibrium, the changes that supposedly 'equilibrate' them, are not 'notional' either. The profits and losses entailed in those price changes are real. The price falls of markets in excess supply impoverish their sellers just as the price rises of excess demand ones enrich theirs, and when the prices of markets are not preadjusted, by the Walrasian auctioneer or another such pricing agent (like a planning board or price administration), their levels will not necessarily be the right ones. Prices and their movements will have to be interpreted, and 'rational' action will require more than just knowledge of prices.

The 'false' trades of the neo-Walrasian system entail the uncertainties of Keynes's, and when prices are uncertain and their changes 'noisy,' any trader can find himself in the 'wrong' market at the 'wrong' time. Losses are

possible in the case of all transactors – the expectations of any of them can be disappointed, and the investment decisions wrong – and the fact that the excess demands of the system 'sum to zero' at all levels of its prices will not help those whose prices fall below their costs. These producers will suffer losses regardless of the validity (or otherwise) of Walras Law.

Competition has its losers as well as its winners and, as is emphasized in Keynes (1926), its losers are not necessarily responsible for their losses. They might have lost out through no fault of their own; their losses could have been outside their control. They might not have known the 'tastes' of consumers, or the products and product models that would maximize their satisfaction. They might have 'betted' on the wrong ones, or invested their resources before the 'best' ones were developed. Their losses would have been avoidable, and bankruptcy 'just', only if they could have known what the market required, and while the laissez-faire of the 'classical' theory assumes that they could have known this, that 'foreknowledge' of conditions and requirements is not, in fact, possible (Keynes, 1926: 32).

The 'incompetent' and 'inefficient' are not the only ones that suffer losses. The 'hard working' and 'able' suffer them also, for 'businessmen play a mixed game of skill and chance' (Keynes, 1936), and the results of their struggle depend as much on chance and circumstance as they do on talent and effort. There is an element of 'lucky gambling' in the profit of every winner, and risk of loss in all ventures. That risk is a central feature of competition – its rivalry would have little meaning without the possibility of losses – and, while the Walrasian conception of competition eliminates its risks, Keynes's highlights them. The importance of those risks was the central message of his analysis, and the uncertainty of markets rather than the 'imperfections' the reason for the unemployment of his system.

IV THE INFLUENCE OF MARKET STRUCTURE ON THE DEGREE OF VOLATILITY

Whilst most comparisons between the macroeconomics of different market structures have been undertaken within an equilibrium framework, we would argue that this is at best a very partial comparison when there is endemic uncertainty. The prevalence of uncertainty calls into doubt the usefulness of the equilibrium approach, and specifically that latter approach cannot encompass an analysis of price volatility which we would view as a feature of a number of markets and also linked with uncertainty.

Markets are unpredictable to the extent that they are variable, and their variability increases with their competition. The more competitive the market for the product, the more variable the sales and profits of the firms

that supply it. Competition shifts those sales and profits as well as reducing the amount that any particular firm can make on the product, and when the competition is technological, it alters the product as well as its price, changing the requirements of its production and those of its market. A central point here is that, if industries were perfectly competitive, with their products homogeneous and producible by anyone, their conditions would be so variable, and profit uncertain, that no-one would be willing to invest in them (Richardson, 1960).

Perfectly competitive industries are too open for investment, the risk of loss is too high. With all firms capable of supplying the industry product, and none better at its production or sale than any other, any firm can enter the industry at any time, and any number of firms could enter at any one time. Investment in the industry cannot be based on the assumption of any given or limited number of industry competitors, and, while it might be possible to make a profit on the investment in the short run, when the industry entry is costless, and knowledge of the industry conditions complete, the short run is very short indeed.

Investment under perfect competition would be a pure gamble, with the profit won by those that happened to make the 'right' investment at the 'right' time. The profit of the speculator would be possible, but not that of the innovator or industrialist.[4] Their investments would not be profitable, for firms could not make a profit on a product long enough to recover the costs of a capacity expansion or product development, and, without the possibility of making a profit on such investments, few would undertake them. They would not be 'rational', and speculation ('the activity of forecasting the psychology of the market') would dominate enterprise ('the activity of forecasting the prospective yield of assets over their whole life') (Keynes, 1936: 158).

For investment in products to be profitable, their markets have to be imperfect, particularly with respect to the conditions of entry and exit. The industry competition has to be limited, with product differentiation protecting the sales of firms, and special knowledge or skill giving them a competitive advantage in the production or development of their products. That 'imperfection' of competition is needed for investment: markets would not otherwise be safe enough for it. Their 'frictions' and 'restrictions' are what protects the investments in their products.

Investment will be higher under imperfect competition than under perfect competition, and it will also be less variable, for the revenue of the firms that undertake it will be more secure. The markets of monopolistic firms are protected and their credit good; they do not have the financial 'fragility' of a perfectly competitive firm. Their profits are not only larger than those of their perfectly competitive counterparts, they are also more

certain, and, since they have the liquidity needed to withstand demand 'shocks', the security for a long run view, they need not cut investment when demand falls off. Their investment can be acyclical, with its level based on market and technological developments rather than short-run demand changes (Eichner 1976).[5]

With the revenue of firms more certain under imperfect competition, so will be the income of their employees. They will have greater job security and, with their income more secure, they will be able to spend a greater amount of it. The necessity of providing for the future will be less – that saving would be quite high under the uncertainties of perfect competition – and, in so far as the saving out of income rises with the risk of job loss and fear of that loss, the greater security of income under imperfect competition will reduce the saving propensity, with beneficial effects on the level of consumer demand (and thereby on the profitability of investment).

V UNCERTAINTY, INVESTMENT AND SAVINGS

In the approach that we adopt here, the significance of industrial structure arises through a number of different routes, and it may not be possible to give an unambiguous answer to the question of the effect of industrial structure on the level of economic activity. Industrial structure is seen to affect the distribution of income and profitability, the nature of competition and the degree of uncertainty, with consequent effects on aggregate demand and the level of economic activity.

If we adopt a Kalecki/Steindl view,[6] then savings is a function of the level and the distribution of income (between wages and profits) and investment a function of profitability and the level of economic activity. The equilibrium condition would then be

$$s_w(uc)W + s_P(uc)P = I(P,u,uc), \tag{3.1}$$

where W is wages, P profits and u capacity utilization. We also include the term uc (for uncertainty) in both the savings and the investment functions to emphasize the role of uncertainty, as we will discuss the impact of industrial structure on uncertainty (and thereby on savings and investment). Industrial structure is usually seen to cause a shift in the distribution of income (and the Kaleckian tradition would see the degree of monopoly raising profit share) and in effect a move along the relationship described by equation (3.1).

It may seem trite to say that we live in an uncertain world (though can we be certain that the world is uncertain?), though such uncertainty is not

recognized in the Walrasian and related approaches. We start from the perspective that the institutional arrangements (including market structure) can modify or exacerbate the degree of uncertainty. In the discussion above it is argued that the volatility (and thereby unpredictability) of price was a factor exacerbating uncertainty. A degree of market power comes with imperfect competition, and also firms set their own prices, often held constant for some significant period of time. Uncertainty over price is (for firms) somewhat diminished and, of particular significance, uncertainty over prices well into the future may be reduced (under imperfect competition relative to perfect competition).

The degree of (price) uncertainty will tend to depress investment for the fairly obvious reason of the difficulties of calculation and decision making as well as any risk aversion. In so far as firms under imperfect competition have a degree of market power and control over their prices, the uncertainty that they face (especially relevant for investment decisions) is less than would be faced by firms under perfect competition. In that respect, then, imperfect competition is beneficial (as compared with perfect competition) as far as investment (and thereby aggregate demand) is concerned.

We would also expect the degree of uncertainty about the future and insecurity to lead to a higher level of savings (for any given level and distribution of income); again the basic reasoning is straightforward and, indeed, well known. Here again we find that, in so far as imperfect competition reduces the degree of uncertainty, it would be supportive of lower savings and hence of higher levels of aggregate demand.

In so far as imperfect competition involves higher profit margins (on average) than perfect competition, the effect of imperfect competition on aggregate demand in terms of equation (3.1) is ambiguous. A shift from wages to profits depresses consumer expenditure, so that the higher investment of imperfect competition may come at the cost of consumption. Yet the real wage is not necessarily lower under imperfect competition, for the profit margin depends on the pricing practices of firms, and these need not be the short-run, profit maximization ones assumed in economics. Monopolistic firms can price for the future; long-run growth considerations can determine their prices. Entry-pre-empting or market-penetrating prices can be set (Shapiro, 1995), and when the pricing framework of monopolistic firms is that long-run one, the profit margins of imperfect competition need not be higher, and, indeed, may even be lower, than the profit margins of perfect competition.

In this section we have sought to make two basic points. First, imperfectly competitive market structures are likely to entail a lower degree of uncertainty and price volatility as compared with perfectly competitive structures, and consequently imperfect competition is likely to generate

higher investment and lower savings, and hence an overall higher level of aggregate demand (as compared with perfect competition). Second, we have questioned whether prices will necessarily be higher (and hence real wages lower) under imperfect competition as compared with perfect competition.

VI CONCLUSIONS

The essential argument of this chapter is that Keynes's analysis in *The General Theory* related to an economy experiencing pervasive uncertainty. It would follow that any discussion of whether Keynes should have used imperfect competition rather than perfect competition as the market structure and the more general question of whether Keynes's results rely upon or would have been strengthened by the assumption of imperfect competition cannot be adequately undertaken in an equilibrium framework.

NOTES

1. Some of the ideas expressed in this chapter have been previously discussed in Shapiro (1997) and Sawyer (1995). Versions of it have been presented at the Keynes, Knowledge and Uncertainty conference, University of Leeds, March 1996; Royal Economic Society, Swansea, April 1996.
2. For further discussion of Keynes's attitude to imperfect competition, see Sardoni (1992), Sawyer (1992a), (largely reprinted as Sawyer, 1995, ch. 7).
3. For further discussion, see Sawyer (1992b).
4. The impossibility of innovation under perfect competition is the central theme of the Schumpeterian theory (Schumpeter, 1942).
5. Keynes also notes the stabilizing effects of monopoly (see the discussion of the investment practices of public utilities in Chapter 12 of the *General Theory*).
6. This is not strictly a view of Kalecki, since his analysis of investment was always in a dynamic context. The equation in the text owes more to Steindl (1979), though it has been incorporated into a number of models with the epithet 'Kaleckian'.

4. Keynes's theory of investment and necessary compromise

Victoria Chick[1]

I INTRODUCTION

The central point of this chapter is that consistency between a theory of decision making (microeconomics) and the overall outcome of decisions (macroeconomics) cannot, in general, be achieved. Some 'slippage', some compromise of internal consistency, is bound to arise. In both Keynesian economics and the economics of Keynes, the problem of consistency has been debated at length, in the 'search for microfoundations', and most argue that consistency is lacking. I wish to argue that perfect consistency is not something one can reasonably expect: some compromise of internal consistency is bound to arise, for individual actions have unexpected consequences. Faced with this incompatibility, one must make decisions between the desirability of impeccably logical microfoundations and the logic of the whole. Sacrifices must be made; I have called them necessary compromises. But the choice need not be random or merely expedient; one can give good reasons.

The difficulty – impossibility, even – of moving from microeconomics to the macro level is the basis of several criticisms of Keynes's (1936) theory of investment. These criticisms have distinguished parentage (Kalecki, 1936; Sraffa, 1926) and were developed by Robinson (1964b) and Asimakopulos (1971). They have recently been rehearsed again by Sardoni (1996),[2] who adds some new twists of his own. I shall argue that most of these criticisms can be upheld, from a microeconomic point of view, but that it does not necessarily follow that Keynes's theory of investment should be scrapped. It will be shown that Keynes's theory of investment fits the objective of his macroeconomic theory, and that to 'correct' the theory of investment to rid it of the criticisms would have unfortunate consequences for the macro theory.

The Walrasian system appears to be one in which microeconomic decisions are consistent with macroeconomic outcomes. But that system too makes compromises, in the adoption of the representative agent (Vercelli,

1991) and in departing from any pretence of realism. These Walrasian compromises are rejected by Post Keynesians, yet we seem incapable of recognizing that our own theory also inevitably entails compromises, especially in the linking of microeconomics and macroeconomics. In the economists' scheme of theory appraisal, the criterion of internal consistency is so strong as to prevent us from facing the necessity of compromise at all, even though we know that internal consistency is only obtainable in closed systems and ours is open. Still less are we prepared to discuss which compromise(s) ought to be made. As Heinz Kurz put it in conversation, we are unwilling to lose our virginity.

The chapter tries to identify the compromises involved in Keynes's macroeconomics, with particular reference to the theory of investment. There is no claim that these explanations were in Keynes's mind; this is a rational reconstruction. Nor is it my purpose to say that Keynes's way is necessarily best. There may be better theories of investment – in other words, there may be compromises which we might prefer – but I shall suggest that the compromises Keynes made were actually quite well chosen.

Kalecki (1936), in his review of the *General Theory*, was perhaps the first to point to deficiencies in Keynes's theory of investment. Kalecki made four criticisms:

1. Keynes's theory of investment confuses the investment decision and investment activity;
2. the marginal efficiency formulation includes, in the supply price of capital, a factor which can only be known *ex post*, yet *mec* purports to be an *ex ante* demand for investment function;
3. given that the entrepreneur cannot know the constraints of rising supply price, there is no convincing limit to the volume of intended investment, which necessarily refers to the level of the individual firm;
4. Keynes took no account of the effects on investment of the increases in income, prices and profit which a rise in investment will stimulate.

Having accepted all these criticisms, Sardoni feels at a loss to explain the downward slope of what he calls the investment demand function. He proposes a solution based on imperfect competition. I shall discuss these points in turn, devoting a section to each.

II DECISION AND ACTION

Kalecki is correct to say that Keynes's theory of investment treats both the investment decision and investment activity, but it is not clear that these are

confused or conflated. The process of giving micro foundations to macro variables demands discussion of the determinants of the decision and a presumption that the decision is feasible; it can be carried out. (This does not mean that the result of implementing the decision will be what the agent expects.) The source of Kalecki's criticism may stem from his method: his macro theory rests on the relations between observables, in contrast to Keynes's 'method of expectations'. This contrast might suggest that different methods of theorizing are appropriate to decision and accomplished action. My interpretation is that Keynes's theory of investment was grounded in the factors which informed both the investment decision and external possibilities (supply constraints). If developing the theory of actual investment from the decision process was intentional, the charge of 'confusion' is surely not appropriate. Questions central to this chapter are raised by this criticism: (a) what is the relationship between macroeconomic variables and decentralized, individual decisions, and (b) what can the entrepreneur reasonably be expected to know at the time of taking his decisions? This second point relates to Kalecki's second criticism.

III *EX ANTE* AND *EX POST*

Kalecki argued that Keynes's construction put together in one theory the elements of *ex ante* decision and *ex post* results. This point was taken up by Joan Robinson and Asimakopulos, who both emphasized that, in substituting the supply price of capital for the market price, Keynes introduced a factor which could only be known when all the demands on the capital goods industries were known, that is, when the aggregate level of investment was determined. Thus, if an individual entrepreneur is to know the supply price applicable to his project, he will have to know the intentions of other entrepreneurs in his industry and the effect on supply of all requests for these goods. The critics argue that it is therefore illegitimate to bring supply price into the *ex ante* decision, as Keynes does, and the theory has no 'proper micro foundations'. Note that 'proper micro foundations' are implicitly being defined by Walrasian criteria, namely that the macro variable should be explained by the sum of micro decisions. The charge that Keynes's theory of investment does not meet Walrasian criteria is correct. But what follows? There are two obvious alternatives: continue to use this 'flawed theory' of investment, or scrap the theory and find something better.

The critics have portrayed Keynes as simply muddled. My belief, by contrast, is that Keynes knew what he was doing: he makes quite a fuss about using supply price rather than market price (GT: 135). This brings us to a third alternative: consider the benefit to the macro theory of this 'fudge'

between micro decision and *ex post*, macro fact. Then, perhaps, a theory for which there are no 'proper micro foundations', where some element is entered into a decision which no entrepreneur can be expected to know, may be acceptable. If we are to build a macroeconomics without the device of the Walrasian auctioneer, some compromise is absolutely necessary and inescapable. Let me try to make the case that the compromise made by Keynes has certain advantages.

To get closer to his intentions we must first strip out something which has thoroughly confused the issue: the function $I = I(r)$, or, for Post Keynesians, who remember the role of uncertainty, $I = I(r, mec)$. This function is usually interpreted as a demand-for-investment curve. Keynes, by contrast, identifies the *mec* function as the demand for investment. The function $I = I(r, mec)$ is a locus of points traced along the *mec* curve by different hypothetical interest rates: it tells us what the level of actual investment would be for a given state of expectations but different interest rates. This function does not appear in the *General Theory*; it was invented by Hicks (1937), for maximum comparability with the classical theory of investment. Hicks omitted *mec*, that is, *he omitted the demand for investment*; hence the substitution in that role by the new function in post Hicksian economics. (The omission of *mec* and the resulting substitution also paved the way for the neo-Ricardian idea that 'Keynes's investment demand function'[3] owed its downward slope to the marginal productivity of capital, precisely because of the function's similarity to its classical counterpart. This interpretation was expressly denied by Keynes (GT: 137–41).)

It is part of Kalecki's criticism that Keynes offers only an *ex post* value of investment. This is true; the intersection of *mec* with the rate of interest as determined by liquidity preference gives the amount of investment which will actually take place: not only investment demanded but, because the supply price is incorporated, also willingly supplied. The question now is whether this is something to criticize, or a useful strategy.

Keynes did not develop a functional relation between investment and the rate of interest; he showed no interest in such a relation. He used only the point estimate (which he calls, somewhat confusingly, the 'inducement to invest' – ibid.: 137) given by the intersection of r and *mec*: this is the amount of investment to be added to the consumption function to get aggregate demand, $D(N) = C(N) + I$, where I, in that context, is exogenous and therefore responsible for changes in the level of demand. We may substitute $I(r, mec)$ for I in the aggregate demand function, if we feel we need reminding how I is determined in general terms, but doing so runs the risk of suggesting that the rate of interest is simultaneously determined by investment and monetary factors (as in *IS–LM*), whereas in the *General Theory* it is determined by monetary factors alone in a recursive system.

The incorporation of supply price into the *mec* has at least one advantage to be set against the undoubted disadvantage emphasized by Kalecki: if capital goods producers estimate investment demand correctly, and the producers of wage goods also estimate their demand correctly, the point of effective demand is an equilibrium observation. Using (the existing) market price rather than the supply price appropriate to the new level of investment demand could easily produce a result in which investment demand could not or would not be met in full by suppliers; the level of investment demand would only be consistent with the aggregate supply curve if the level of investment was consistent with it in the first place and never changed from this unique equilibrium level; that is, if the existing and future prices were the same. Such a construction would have been a disaster for the kind of theory Keynes was building: a theory which gave results both in and out of equilibrium in which variations in the level of investment were the driving force of change in the system as a whole. The trade-off is clear: accept a slightly unconvincing mix of *ex post* and *ex ante* in the theory of investment or return to Equilibrium Theory (Chick and Caserta, 1996), which gives results in equilibrium only.

Now we might ask why the same protection is not afforded to consumption. Producers estimate demand and develop a strategy of production and a reservation price, but consumption decisions are taken in a completely *ex ante* framework. I think this difference is related to the frequency and small size, and therefore considerable predictability, of consumption purchases, in contrast to the volatile, large and less predictable investment expenditures. The consumption function is a stable element in Keynes's theory and is therefore comparatively predictable by producers. Consumption would be far less likely to come up against supply constraints.

Some would emphasize that many investment goods are produced to contract rather than for the market, and in these cases the inclusion of supply constraints applies even at the micro level. However true this is in some industries, it would be unwise to adopt this characterization in aggregate, for if both consumption and investment are highly predictable, we are either back to Equilibrium Theory (if government is excluded) or in the position of mainstream macroeconomists (and even some neo-Keynesians) of giving government the role of the disruptive, unpredictable element.

IV THE SLOPE OF *MEC*

Then there is the vexed question of the downward slope of the *mec*. It follows from Kalecki's second criticism that it would also be illegitimate to appeal to the upward slope of the supply curve of capital goods (arising

from diminishing returns, which Keynes accepted) to establish a limit to the amount of investment which firms would be rational to undertake, because this can only be known *ex post*. This point is reinforced by Sraffa's (1926) criticism of diminishing returns in general. Kalecki goes on to argue that, if market price is substituted for supply price, nothing in Keynes's theory would stop firms from wishing to invest *ad infinitum* as long as *mec* exceeds *r*.

As is well known, Kalecki proposed the 'principle of increasing risk', a rising price of the supply of finance, as an alternative means of establishing a limit to investment. This solution has the advantage that banks will look at the volume of investment proposed by an individual firm; there is no micro–macro problem, but it is still true that a problem might arise from investment demand being frustrated by a supply constraint, as outlined above. Of course there is nothing to stop our adopting Kalecki's suggestion in addition to rising supply price of capital goods, if thought appropriate.

Sardoni (1996: 94–6) remarks that the sequential multiplier as originally used by Kahn (1931) could solve the problem in the following way: the investment decision would typically be implemented over a period of time, during which the supply price is revealed as market price. This is a possible solution, which at least avoids the danger of Equilibrium Theory, but its effect would be to make aggregate demand stable only for one production period: long-period expectations might be stable but supply price is not, so investment would be changing continuously. As we know (Chick, 1983: 22), a production period cannot give any indication of equilibrium in a theory which allows – as the *General Theory* indisputably does – variations in demand: more information is necessary to determine whether (short-period) expectations are met by more than pure accident. Equilibrium is reserved for the short period, which encompasses a number of production periods. If the sequential-adjustment solution were to be adopted, aggregate demand would be subject to constant revision and it would be impossible to discuss the properties of equilibrium. (The demonstration of the possibility of underemployment equilibrium was an important strategic element in deposing the notion of the self-righting economy, and it still is important. This I think lay behind Keynes's adoption of the static method even for a theory as dynamic as his really is.)

Sardoni concurs with Kalecki (and with Capponi, 1992)[4] in throwing the entire burden of securing a downward slope to *mec* onto rising supply price:

> It is not legitimate to assume that single entrepreneurs are able to foresee the effect of collective investment decisions on prices: the effect of the price rise will manifest itself only after time has elapsed, and *only then* does the investment process stop. (Sardoni, 1996: 102; original emphasis)

Sardoni further concurs with Kalecki that there is no limit to the demand for investment by the individual firm in pure competition (the market form which Keynes assumes) if $mec > r$. A limit is necessary; otherwise there can be no unemployment equilibrium. It must follow from their logic that imperfect competition is not only more realistic but is a *necessary* assumption for the validity of Keynes's analysis. Keynes would dispute this (see below).

The crucial assertion is that diminishing returns in the capital goods industries are *solely* responsible for the downward slope of the *mec* function. Kalecki and Sardoni deny the influence of falling expected yield as a contributory factor. Sardoni (1996: 96–7) quotes the following passage from Keynes but gives no credence to demand limitation as a source, along with rising supply price, of the downward slope of *mec*:

> If there is an increased investment in any given type of capital during any period of time, the marginal efficiency of that type of capital will diminish as the investment in it is increased, partly because the prospective yield will fall as the supply of that type of capital is increased, and partly because, as a rule, pressure on the facilities for producing that type of capital will cause its supply price to increase; the second of these factors being usually the more important in producing equilibrium in the short run, but the longer the period in view the more does the first factor take its place. (GT: 136)

In Chapters 11 and 17 of the *General Theory*, Keynes stresses the falling expected yield on any one type of capital as it accumulates. This has two sources. In Chapter 17, he emphasized capital saturation, a limit to the profitability of investment which was related to the exhaustion of demand for capital. (Recall that his theory abstracts from technical progress. Once the composition of output changes, nothing systematic can be said about the effect on *mec* of rising capacity.) I think we can also infer that he accepts diminishing marginal utility for specific consumption goods. As the capacity to produce a given product increases, the supply price will fall (this is a long-period property, of course) and, to counteract the fall in prices which would follow from this, demand would have to rise. Now investment causes income to rise, but consumption will rise less, and for a given set of products diminishing marginal utility will be especially effective, making demand compensation less and less likely as productive capacity expands.

V CURRENT OUTCOMES AND LONG-TERM EXPECTATIONS

Sardoni rejects demand saturation as a source of falling yield; indeed, he argues the opposite, namely that Keynes ignored the stimulating rise in

profit which an increase in investment brings about. In this he agrees with Kalecki and Kahn. He quotes a passage from Kalecki's review and comments: 'The point here is similar to the one made by Kahn in 1931 – the increase in aggregate demand brings about an increase in aggregate profits and this, in turn, affects expectations and investment decisions in a positive way' (Sardoni, 1996: 99). Sardoni argues that 'Keynes can be criticized for being "selective": while he took into consideration the negative effect on expected yields of a lower degree of scarcity of capital, he ignored the positive effect on expectations produced by higher prices and profits' (ibid.: 102).

If the effects of investment in its role as a component of demand were to be taken into account, the relation between investment and yield would be positive, not negative. In support of this criticism, Sardoni cites Kahn's article as a place where this positive feedback is explored and wonders why Keynes appeared to take no account of it. He also cites an exchange between Keynes and Kalecki concerning Kalecki's suggested influence of current prices on long-term expectations. To Sardoni this exchange shows that Keynes 'failed to understand Kalecki's point adequately as well as he had failed to pick up the positive relation between profits and investment outlined by Kahn' (ibid.: 8). By contrast, I interpret Keynes as understanding, but rejecting Kalecki's suggestion, a position for which I shall now make a case.

As is well known, Keynes did not develop a full-blown theory of long-period expectations. He made suggestions as to the factors which might influence them:

> The considerations upon which expectations of prospective yields are based are partly existing facts which we can assume to be known more or less for certain, and partly future events which can only be forecasted with more or less confidence. Amongst the first may be mentioned the existing stock of various types of capital-assets and of capital-assets in general and the strength of the existing consumers' demand for goods which require for their efficient production a relatively larger assistance from capital. Amongst the latter are future changes in the type and quantity of the stock of capital-assets and in the tastes of the consumer, the strength of effective demand from time to time during the life of the investment under consideration, and the changes in the wage-unit in terms of money which may occur during its life. (GT: 127)

There are three references to demand in that passage:

1. the strength of the existing consumers' demand for goods which require for their efficient production a relatively larger assistance from capital,
2. the tastes of the consumer, and

3. the strength of effective demand from time to time during the life of the investment under consideration.

Only the first of these is thought by Keynes to be partly based on existing facts. The others relate to a future for which the present is of unknown reliability as a guide.

We shall come back to the first element in another connection, but in connection with forecasting demand, let us remind ourselves of what we learned from Kregel's famous article (1973): that Keynes imposed a separation between short-period realizations and long-period expectations. This is why the multiplier relies, after the initial investment, only on induced consumption. Production rises to meet the new consumption, but long-period expectations, and thus investment plans, are unaffected. In other words there is no accelerator in the *General Theory*.[5] Its omission is what Kalecki and Sardoni are complaining about.

What might explain this omission? One possibility is that a rigid separation between long-term expectations and short-period outcomes is simply a convenient device to 'cut up time' into manageable proportions. But there could be more to it than mere convenience. Suppose Keynes had done it Kalecki's way. We know from Samuelson (1939) that multiplier/accelerator interaction is a bit of a mess; there is no guarantee of convergence. Convergence is less likely the stronger is the accelerator in comparison to the multiplier. And if the connection between short-period outcomes and long-period expectations is very strong, as in Harrod (1939), we get a knife edge of stability bordered by divergence. Since Keynes was already worried that his theory suggested more instability than was generally experienced in practice, I find the omission of an accelerator quite explicable.

The matter of falling or rising yield is of course a macroeconomic argument. The second element in Kalecki's and Sardoni's rejection of falling yield is microeconomic: they deny the existence of a limit to profitable investment in the case of the small firm. Sardoni (1996: 94) appeals to Sraffa at this point: the ability of a firm 'to expand productive capacity in the long period is limited by demand. Had Keynes followed Sraffa here, he could have provided a more convincing explanation as to why aggregate investment is not necessarily pushed to its full employment level'. Both Sardoni and Kalecki argue that, if $mec > r$, there is an infinite inducement to invest, from the perspective of the individual firm – and after all, that is where the decisions are made.

In denying the existence of a limit to profitable investment in small firms, they reject the argument which is perhaps the central point of the *General Theory*: that a limit to sales exists *even for small firms*. Now the association of the small firm with unlimited potential sales is of long standing, but the

General Theory has been around for sixty years too – not when Kalecki was writing, so he is excused – and one ought to be able to rely on Post Keynesians, if no-one else, to have grasped the significance of the following:

> the demand schedules for particular industries can only be constructed on some fixed assumption as to the nature of the demand and supply schedules of other industries and as to the amount of the aggregate effective demand. It is invalid, therefore, to transfer the argument [from a single industry] to industry as a whole unless we also transfer our assumption that the aggregate effective demand is fixed. (GT: 259)

Nor is it valid to transfer an argument about demand from a single firm to the industry level. Try adding the horizontal demand curves of all the small firms in an industry; do you get the downward-sloping demand curve? Of course not. The market (or industry) demand curve limits demand not only for the industry but also for the firm – by how much depends on what assumptions you make about market share. Thus, while an individual producer or entrepreneur may believe that demand is infinite because his firm is so small, we the economists know that it is not; and we also know that, if they acted on the basis that demand is unlimited, they would soon discover otherwise (see GT: 261, where Keynes goes through just such a thought-experiment).

The idea that demand is unlimited for small firms comes from Equilibrium Economics, where the amount of demand facing each firm is just exactly what each firm is willing to supply at the equilibrium price (Chick, 1992; Tamborini, 1995). If demand limitation does not play a role in the investment decision, what do we make of the three roles Keynes specifies for it in the passage quoted above? What do we think goes into the formation of expected future yields, the *Q*s of Chapter 11? Surely *Q* stands for quasi-rent, profits. How can you make profit without demand for the output which the capital will produce?

In an economic theory where disequilibrium and therefore uncertainty is possible (such as the *General Theory*) the small firm is just like the imperfectly competitive firm: it must estimate the demand it will face, and this is based on an estimate of aggregate demand, how that will affect its own industry, how its competitors will behave and what that implies for its own demand. Clearly, no firm can *know* all that. Such knowledge is unattainable in the real world. But rational behaviour under uncertainty demands that each entrepreneur *take a view* on all that in determining both short-period and long-period expectations.

Addressing this question, Rotheim (1995) argues that a theory in which these things are acted upon, even if they cannot be fully known, is more than mere necessary compromise with watertight logical systems; it has a

sound philosophical status. He argues that such theories are necessary if we are to keep the faith with true uncertainty and the concept of macroeconomics as Keynes conceived it, which is organic rather than atomistic. The *Treatise on Probability* (Keynes, 1921) spells out how we might act when we realize we have less than full knowledge. In the case of the future, we cannot know, but we still must act. Organicism recognizes that the whole is more than the sum of the parts. Decentralized decision-making presents problems for macroeconomics for which there are no neat solutions outside of neoclassical economics, where neatness is bought at the cost of irrelevance. There is a choice: accept messy solutions, necessary compromises; or become a neoclassical economist, keep one's virginity. It is no good 'rebuking the lines for not keeping straight' and simultaneously averring that one lives in a universe where the axiom of parallels does not apply.

Sardoni is arguing up from the individual small firm, which vitiates the entire argument of the *General Theory*, namely, that it is only legitimate to argue about demand from the top down. That is what macroeconomics is about and what demonstrates that demand limitation is central to a monetary, production economy. This proposition is not dependent on imperfect competition; it holds for small firms too. If we have not learned that, I do not see how we can claim to be Post Keynesians.

VI DEMAND LIMITATION AND MARKET FORMS

Yet many follow Kalecki in advocating the introduction of imperfect competition, believing this to be the only way to limit demand. Sardoni sees a limit on demand for output as the only check on the amount of investment which firms will wish to undertake when $mec > r$ and is thus necessary to produce a downward-sloping 'investment demand curve'.[6] Sardoni accepts the proposal made by Pasinetti (1974), Chick (1983) and Davidson (1994) that the downward slope of the *mec* is given by ranking investment projects by their *mec*s, but he accepts it as an explanation only for the macro level, not micro, on the grounds that size of the investment project cannot be defined at the micro level for the small firm when $mec > r$.

As a corollary of the proposition that small firms are not demand-constrained, we have answered this objection already. But Sardoni does raise a difficult point: what determines the size of the investment project being considered in the first place? In terms of pure statics, we have an answer from Marshall, which is what the first statement about demand in the quotation from Keynes above is concerned with: current demand indicates whether 'for efficient production a relatively larger assistance from

capital would be required'. That is, would it be more efficient to expand capacity by, as it were, moving from the short-period cost curve to somewhere on the long-period cost curve? (Think of Viner's 1931 diagram.) Whether this move is worthwhile depends on the current level of demand continuing or rising, on the projected cost saving and the cost of the expansion. This construction gives a maximum volume of investment: that required to move from the present position to the capital which will give minimum costs. This, however, is based on full knowledge of possibilities – on the 'book of blueprints'. Can entrepreneurs reasonably be expected to know the book of blueprints?

Keynes's answer was more dynamic than this, but the answer becomes less definite as a result. He not only assumed that future demand, both in aggregate and for specific products, was unknown (his second and third points above), but he also paid substantial attention to the fact that any investment made now would have to compete with later, more advanced equipment during its productive life. Under these circumstances the question of how the entrepreneur conceives the 'project' whose marginal efficiency is to be evaluated is left quite unresolved. This is a question which demand limitation will not solve entirely. One can better understand the macroeconomist who relies on a bit of handwaving and an appeal to animal spirits at this point.

VII CONCLUSION

Presumably, as Post Keynesians, we have resisted the depredations of the Barroites and still tell our students that the rationale for macroeconomics rests on the fallacy of composition – that we cannot argue direct from the sum of microeconomic decisions to macroeconomic outcomes – and throw them the bone of the paradox of thrift to chew on. We know, full well, that the only way to get perfect coherence between microeconomic decisions and macroeconomic outcomes is to adopt the Walrasian compromise of the representative agent, and accept that all markets are cleared through the agency of the 'auctioneer', a central, all-knowing authority. Post Keynesians argue that this is a departure from the actual conditions of decision-making so radical as to render the theory useless. Having disallowed the auctioneer, we must find some way round the inevitable slippage between individual decisions and macroeconomic results. In other words, macroeconomics inevitably involves compromise with what can be known. The compromise one chooses deserves a defence; Keynes's theory of investment is a compromise which favours his macroeconomics, allowing him to determine the properties of equilibrium in his system while giving a result

for disequilibrium also. The alternatives posed by the criticisms of Kalecki and others would either force the macroeconomics to be Equilibrium Theory or to be incapable of discussing equilibrium at all. It is for the reader to judge whether my defence is convincing.

NOTES

1. The author would like to thank Anna Carabelli, Geoff Harcourt, Jesper Jespersen, John King, Claudio Sardoni, Jan Toporowski and Alessandro Vercelli for their helpful comments, without implicating them in the result.
2. There is another paper in the same volume, by Gary Mongiovi, which is also critical, but on grounds which I think Post Keynesians have put behind them (the idea that the marginal efficiency of capital is based on a neoclassical theory of distribution, that is, the marginal product of capital). Mongiovi's paper does not raise the issues on which I concentrate here, and is well answered by Davidson in the same volume.
3. Thus Sardoni (1996: 192):

   > The downward sloping investment demand function based on the notion of a decreasing marginal efficiency of capital cannot be regarded as acceptable . . . This issue is important because the existence of a downward sloping investment demand schedule is a necessary condition for the existence of an underemployment equilibrium.

   The second sentence is, of course, correct if applied to the marginal efficiency of capital schedule, and it is also the case that a downward-sloping marginal efficiency of capital schedule will give a downward-sloping investment demand function if the supply of funds is perfectly elastic at a given interest rate, but, as will be seen in the text below, that is not my point.
4. I only discovered this most interesting article when the present chapter was nearing its final version; I should have liked to work it into the argument rather more.
5. For the relationship between the accelerator and expectations, see Chick (1983: 289–91).
6. As we have seen, his concern should be for the *mec*.

5. Some elements of a Post Keynesian labour economics

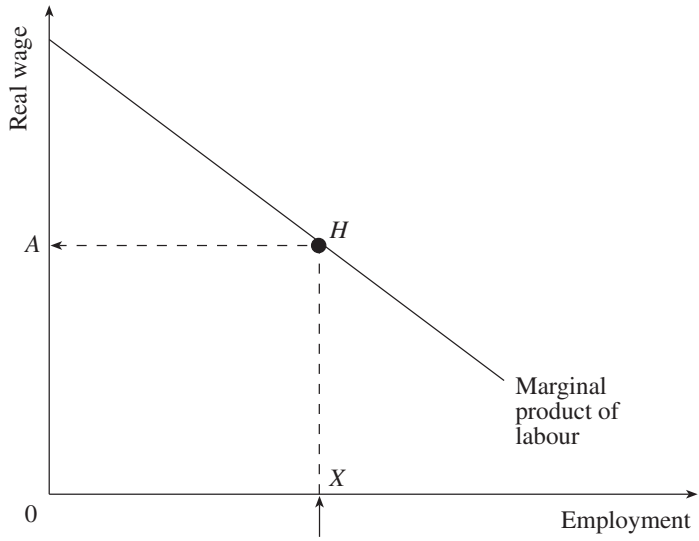
John E. King[1]

I INTRODUCTION

When, some years ago, I tried (unsuccessfully) to articulate a Post Keynesian labour economics, I attributed my failure to the neglect of this branch of economics by Post Keynesian theorists, who had for the most part left criticism of neoclassical labour theory to radical political economists and institutionalists (King, 1990: 2–4, 236; cf. Sawyer, in King, 1995: 147–8). This is certainly an important part of the story, but I should have realized then (what is obvious now) that there are two further serious difficulties.

The first is posed by the existence of a major division within the Post Keynesian ranks on the question of marginal productivity. This is associated with, but by no means identical to, the cleavage between 'Fundamentalist Keynesians' and Kaleckians, which in this context reduces to acceptance or rejection of Marshallian 'microfoundations'.[2] The correspondence is not complete, as, while many Kaleckians will have no truck with marginalism, others are prepared to allow the marginal product of labour some limited role in wage and employment determination in the short period (Rothschild, 1954; Riach, in King, 1995: 117–18; Riach, 1995). The consensus on basic principles which characterizes neoclassical labour economics is simply lacking among Post Keynesians.

If anything, the second problem is even more serious. The raw material of labour economics is predominantly 'micro', while Post Keynesian theory is essentially macroeconomic. There are whole areas of applied microeconomics (the environment; transport; welfare economics more generally) about which Post Keynesians have little or nothing to say, and labour is just one of them. More than that: Post Keynesians claim that several important issues which *appear* to be within the province of the labour economist are not, in fact, primarily labour market questions at all. Thus the level of employment depends on the state of aggregate demand, whether or not a marginal productivity relationship is acknowledged, as Figure 5.1 (adapted from Riach, 1995, Figure 8.1: 165) makes exceedingly clear.

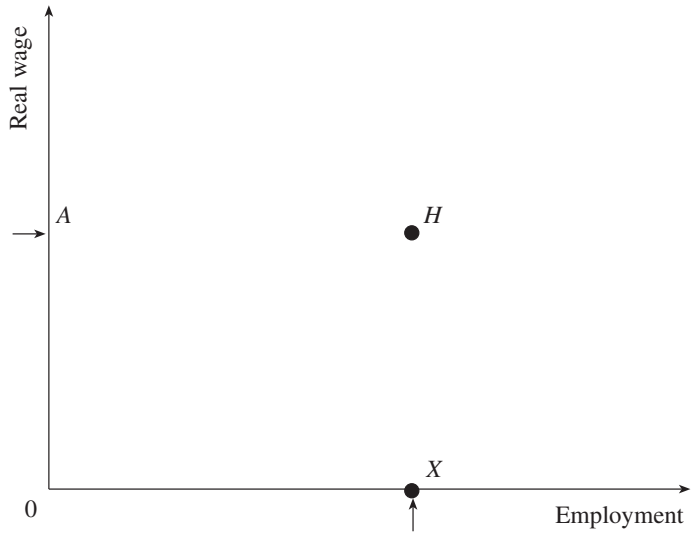


Source: adapted from Riach (1995).

Figure 5.1 Point of arrival on quantity axis, determined from without

Subject to some rather minor qualifications concerning the supply of labour, the same holds for unemployment. Even the real wage depends primarily on the level of employment and on the degree of monopoly in the product market; marginal productivity is either eliminated from the analysis, as in Figure 5.2 (adapted from Riach, 1995, Figure 8.2: 167) or confined to a purely subsidiary role. As the least Kaleckian of all Post Keynesians once put it, 'The marginal product curve is not the demand curve for labor and Lucas's labor supply function is not the supply curve for labor in the real world.'[3] No wonder the *General Theory* says so little about the labour market: almost all the action takes place elsewhere.[4]

Nonetheless, Post Keynesians have not been entirely silent on labour issues. The first five chapters of Joan Robinson's *Essays in the Theory of Employment*, for example, are devoted to the meaning of full employment, labour mobility, remedies for unemployment, disguised unemployment, and employment theory in the long run (Robinson, 1937: 1–100; cf. King, 1996). Sidney Weintraub wrote extensively (if repetitively) on the determinants of money wages, and his commitment to wages policy led him inexorably into the theory of wage differentials and the allocation of labour between industries (see especially Weintraub, 1963: 111–230). Kurt Rothschild is of course a labour economist of great distinction, and the



Source: adapted from Riach (1995).

Figure 5.2 Real wage, determined from without

author of an excellent introductory text on 'the theory of wages' (Rothschild, 1954, 1993). Even Alfred Eichner, whom surely no-one remembers as a labour economist, spent much of his early career in the area and published a thoughtful and incisive essay setting out a non-neoclassical approach to the subject (Eichner, 1979).

Most of this literature, however, has gone very largely unrecognized. In many Post Keynesian texts, for example, explicit consideration of labour questions tends to be confined to the mandatory analysis of wage inflation models (see, for example, Arestis, 1992). Thus this chapter is an exercise in intellectual recovery. My aim is to establish what has been written by Post Keynesians on the labour market, to explore its limitations, and to speculate on what (if anything) might distinguish a Post Keynesian labour economics from alternative, orthodox and unorthodox, ideas.

II SOME MICROECONOMIC ISSUES

We can begin with the case of a single, corporate employer with a labour force that is at least partly unionized. What can be said about trade union wage policy in relation to an individual firm, from a Post Keynesian perspective? How might the wages policy of the company be analysed? Can anything

useful be said about the outcomes of the bargaining process? How is the behaviour of union and employer constrained by individuals' labour supply decisions, and indeed vice versa? Are wage and employment levels significantly different if (as was increasingly the case in the 1990s) the firm is entirely non-union?

Trade Union Wage Policy

Controversy over the wage policy of trade unions began half a century ago with Dunlop's (1944) model of wage-bill maximization; the subsequent proliferation of alternative maximands and competing versions of the underlying neoclassical model is surveyed by Booth (1995). Presumably, all Post Keynesians would concur in their rejection of this approach,[5] on the grounds first specified by the neo-institutionalist Arthur M. Ross (1953). In the first place, unions are not individuals but complex organizations, and therefore cannot be supposed to have a single utility function (even if the general validity of orthodox consumer theory is admitted). Second, it is quite unrealistic to suppose that unions have perfect knowledge of the appropriate budget constraint, since this would require them to know the position and elasticity of the firm's marginal revenue productivity function or, in more sophisticated formulations, its average revenue productivity function, or even – in the state-of-the-art model of McDonald and Solow (1981) – its isoprofit map. Given the existence of uncertainty in the product market, it is unlikely that the company itself has precise knowledge of these relationships; it is even less plausible that it would willingly share the information with a bargaining 'partner'.

Keynes took what might later have been described as a 'satisficing' or 'bounded rationality' line on this problem, and in doing so may well have influenced Ross. The *General Theory*'s emphasis on *relative* wages as the principal focus of union attention (CW VII: 264) fits well with the institutionalist stress on 'pattern bargaining', based on 'coercive comparisons'.[6] This, however, leaves some important questions to be answered. Comparisons with whom? Who sets the pattern? Who, and under what circumstances, breaks it? Clearly, we have here the beginnings of a theory, but not by any means the theory itself.

There is one other crucial lacuna in Post Keynesian writing on trade union wage policy, which can for convenience be mentioned here even though it means straying onto macroeconomic terrain. It is taken as axiomatic that unions bargain only for money wages; real wages are then determined by firms' price policies, which are outside union control. (See Rotheim, 1991, for an example of what is an almost unanimous assertion.) The theoretical significance of this apparently innocuous statement should

not be underestimated. According to Paul Davidson, it is what makes possible the use of money in economic transactions (Davidson, 1972: 231–41). For George Shackle, it is what renders Say's Law false.[7]

But *why* is it so? There are undoubtedly good reasons why employers should resist indexation, and refuse to negotiate cost-of-living escalator agreements. This does not, however, explain why unions do not press the point more forcibly than they generally seem to do.[8] Why does it normally take double-digit inflation to put real wages explicitly on the union agenda? How can the 'money wage bargaining' axiom be made consistent with the 'real wage resistance' models which are frequently adopted by Post Keynesian inflation theorists? (for example, Arestis 1992: 164–9). What stops wage bargaining, under 'normal' circumstances, from rapidly pushing the capitalist economy over Joan Robinson's inflationary precipice (cf. Robinson, 1937: 17)?

The only detailed discussion of this question that I have been able to find is by the industrial relations theorist, Daniel Mitchell. After examining and rejecting New Keynesian explanations based on implicit contracts, menu costs and the like, Mitchell reaches an institutionalist conclusion: money is a standard, and it is difficult to switch standards (Mitchell, 1993: 21–3). With the best will in the world, I cannot see this as anything more than a restatement of the original problem.

Company Wage Policy

The neoclassical firm maximizes profits, which requires it to equate the net marginal revenue productivity of labour with marginal labour cost. This does not, however, suffice to establish a negative relationship between the wage rate and the level of employment. Wages and employment may be unrelated or, in some circumstances, positively related *in a neoclassical model* if (a) the company enjoys monopsony power, and *a fortiori* if it is a discriminating monopsonist (Robinson, 1933: ch. 25);[9] or (b) the marginal revenue product function has a vertical discontinuity, as is implied by the existence of a kinked product demand curve (Sweezy, 1939: 570); or (c) the principle of cost minimization is violated, possibly owing to the presence of X-inefficiency (Leibenstein, 1987).[10]

Now monopsony is pervasive (Card and Krueger: 1995: ch. 11; Manning, 1995), oligopoly is the most common product market form, and evidence of X-inefficiency abounds (Hodgson, 1982). Occam's Razor might then be held to entail that no distinct non-neoclassical theory of company wage policy is necessary to reconcile Post Keynesian macroeconomics with the behaviour of the firm.

A Fundamentalist Keynesian, who is happy enough with Marshallian

microeconomics, might be content to leave it at that. Several possibilities have been raised in the (broadly) Kaleckian literature for integrating labour into a non-Marshallian theory of the firm:

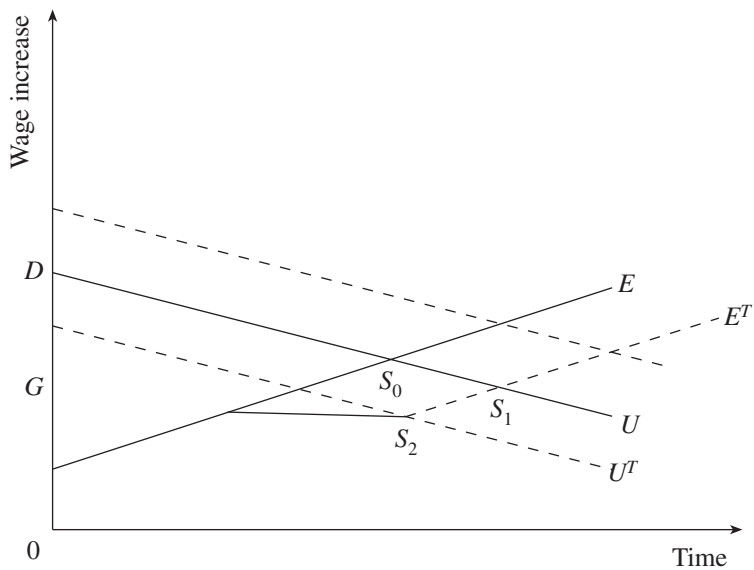
a. fixed input coefficients, so that employment of 'direct' or production labour varies proportionally with output, more or less independently of the wage and the corresponding marginal cost of labour;[11] employment of 'indirect' or overhead labour is invariant with respect to both output and (over a very wide range) the wage rate (Lavoie, 1992b: 225–30);
b. a theory of company wage policy derived from Kaleckian mark-up pricing procedures, via the process elaborated by Steindl: '[Consider a] manufacturer who is faced with an "attainable" price in foreign markets and who starts marking down the cost of labour and the wage. He might proceed as follows: he calculates a gross margin on his selling-price (the mark-down), deducts this and his material costs from it and arrives at permissible labour cost; on the basis of a given productivity he then obtains a "demand price" of labour – the permissible wage' (Steindl, 1987 [1990]: 309–10). On Steindl's analysis, the money wage, no less than the real wage, is determined primarily by conditions in the product market;[12]
c. a tendency towards collusion between companies which operate in closely related labour markets, suppressing wage competition in the same way (and for the same obvious reasons) that price competition tends to disappear from product markets. This may be associated with resort to various forms of non-wage competition, which do for the labour market what selling costs and product differentiation achieve in the market for the product (Rothschild, 1942–3);
d. a variety of other considerations specified by Eichner (1979), including recognition of the firm as a complex organization with multifarious goals which cannot be reduced to short-period or long-period profit maximization; acceptance of the fact that production is a team activity, so that individual marginal products are irrelevant; an acknowledgment that skills are partly formed 'on the job', in the process of production, which destroys the neoclassical independence of revenue and cost functions; and the claim that labour markets seldom clear, because in the absence of slavery there can be neither forward markets nor the 'speculative interest' which in other markets sometimes prevents spot prices deviating persistently from long-run equilibrium values.

As was the case with trade union wage policy, these are interesting ideas with a Post Keynesian flavour, but in no sense do they constitute a coherent alternative theory.

Wage Bargaining

'Contract without competition is indeterminate': thus Edgeworth (1881: 20). Given the goals (policies) of union and a company, what determines the eventual outcome? Rothschild's survey of the literature on bargaining theory concluded, with considerable analytical pessimism, that 'it remains to be seen whether a conclusive theory of modern wage determination and wage bargaining can be constructed along these in the last resort traditional lines, or whether a different approach would be more fruitful' (Rothschild, 1957: 286). It would be difficult to sustain an argument that much progress has been made in the intervening forty-five years. One of the few explicit attempts by a Post Keynesian to prove Edgeworth wrong can be found in the well-known article by Wallich and Weintraub (1971) advocating a tax-based incomes policy. Their model is taken directly from Hicks's (highly neoclassical) *Theory of Wages* (1932): as shown in Figure 5.3, the inflation tax works first by stiffening 'employer resistance' and thereby, in the longer term, moderating 'union demands'.[13]

In Figure 5.3, *E* is the 'employer settlement curve' and *U* the 'union settlement curve'; these are linearized equivalents of Hicks's original 'employer's concession curve' and 'union resistance curve' (Hicks, 1932:



Source: adapted from Wallich and Weintraub (1971).

Figure 5.3 Effects of a tax-based incomes policy

143). *OD* is the original union demand, and *OG* the prescribed or 'guidepost' wage increase. The imposition of an 'inflation tax' on above-guidepost increases renders the employer willing to endure a longer strike before offering an increase in excess of *OG*. The employer settlement curve thus shifts to E^T, and if the union does not change its bargaining strategy then a settlement will be reached at S_1, after a longer strike (but producing a lower settlement) than the outcome in the absence of an incomes policy. If the union takes account of the firm's reduced ability – or willingness – to pay, its curve may shift downwards, for example to U^T. In this case a settlement occurs at S_2, with a strike equal in duration to that in the no-policy situation but with the guideline respected.

The case against Hicks's model is familiar, and overwhelming. If the *E* and *U* functions are *ex post*, they explain very little. If they are *ex ante*, they assume that each party has perfect information concerning the intentions of the other party, which is patently unrealistic and poses the question why strikes should ever occur, if the terms of the eventual settlement are known in advance and could be agreed on (without loss of wages or profits) in advance. Similar objectives apply to algebraic formulations like that of the erstwhile Australian Post Keynesian, Ron Hieser (1970).[14] Evidently, Post Keynesians have not been able to solve the bargaining problem, which is not to say that neoclassical economists have done any better: the canonical McDonald–Solow model, for example, traces out the contract curve but does not pretend to explain where on the curve the 'efficient bargain' will eventually be struck, while a recent survey of game theory is equally pessimistic on this score (Hargreaves Heap and Varoufakis, 1995: ch. 4).

Individual Labour Supply

This is territory largely unexplored by Post Keynesians. Radical-Marxians and (some) institutionalist critics of neoclassical theory deny the axiom of worker sovereignty on the grounds that it is even less relevant to a capitalist economy than the notion of consumer sovereignty from which it is derived. In the first place, preferences are not exogenous to 'the economy', but are endogenously determined, and this is nowhere more apparent than in the area of labour supply. Individual tastes are both unconsciously conditioned by social norms (which they in turn help to reinforce)[15] and through involvement in the labour market, and also consciously moulded by employers. To the extent that workers *do* behave like rational economic men, it is because the capitalist firm has made them so (Rebitzer, 1993); if they succeed, 'divide and rule' policies *produce* calculating individual utility maximizers.[16] In the second place, individuals are not free to choose between an infinite number of combinations of income and leisure, subject only to a continuous linear

(or, with overtime premia, linear-segment) budget constraint. The enforcement of a standard working day (and week, and year), together with the frequent resort to compulsory overtime and the occasional use of compulsory short-time working, means that workers normally face 'take-it-or-leave-it' job offers. As illustrated, uncontroversially, in the two panels of Figure 5.4, their budget constraint shrinks to a pair of points.

This is indeed a severe restriction on individual optimization, and it is only very partially offset by the increasing availability – to put it euphemistically – of part-time and casual employment. To a limited degree, these 'more flexible' forms of working arrangements do increase the individual's choice with respect to the number of hours, days or weeks of labour to be supplied. For the significant proportion of part-timers who would prefer full-time work, and casuals who would like to be permanent, they represent instead a further, non-neoclassical constraint on the maximization of utility. Unemployment, of course, is the ultimate restriction: only New Classical zealots believe that 'all leisure–no income' is invariably a (rational) *choice*.

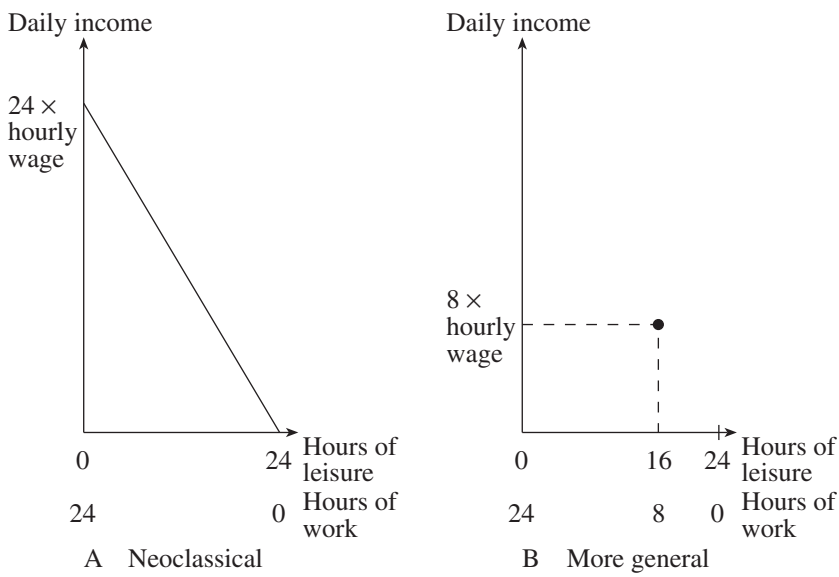


Figure 5.4 Neoclassical and more general budget constraints

Most of this is admitted (albeit a little shamefacedly) by neoclassical labour economists. What might a Post Keynesian add to it, other than to emphasize the de-emphasis on individual decision taking as a significant factor affecting the behaviour of large companies (and, for that matter,

unions)? Post Keynesian consumer theory is still in its infancy. Marc Lavoie has proposed its (re)construction on the basis of lexicographic preference orderings and the giving of priority to income effects over substitution effects (Lavoie, 1992b: ch. 2). He suggests that the supply of labour depends on the individual's customary consumption level and on his or her wage level relative to that of others. There is no reason to anticipate an upward-sloping labour supply curve, either for individuals or for the labour force as a whole. Lavoie concludes that:

> Once we realize that the aggregate supply curve of labour may take just about any shape, depending in part on the expectations regarding relative standards of living, and that to a large extent the exact shape of the supply curve of labour does not affect the analysis of the labour market . . . we might as well simplify this part of the analysis and assume that the supply curve of labour is vertical in the short run. (Ibid.: 224)

Feminists would be quite right to object that all of this misses the main point. Labour power is itself a produced input, which would not exist without the performance of vast amounts of unpaid work inside the household, the great bulk of it by women. Domestic labour is only now beginning to be taken seriously by Post Keynesians, with Arestis and Paliginis (1995) justifiably criticizing heterodox theorists, as a whole, for being 'gender blind'. A Post Keynesian economics of the household sector is still a long way off.

The Non-union Firm

Again, there is no specifically Post Keynesian theory of industrial relations: nothing, in particular, to explain why some firms attempt to become (or remain) non-union, and why they succeed (or fail). If Freeman and Medoff are to be believed, unions (a) push up wages, and also reduce productivity by imposing restrictions on the cost-minimizing use of labour; but also (b) provide management with more accurate information ('collective voice') on the tastes of the workforce, allowing the firm to design compensation packages which better fit the workers' preferences, thereby improving morale and increasing productivity. The evidence suggests that (a) outweighs (b), so that unions reduce profits. A profit-maximizing firm will thus, in general, be rationally anti-union (Freeman and Medoff, 1984).

This is essentially a neoclassical argument, as is the 'efficiency wage' approach to the relationship between productivity and the wage rate, of which (b) is one component.[17] Which is not to say that a Post Keynesian might not adopt it, on the grounds that the devil should not get away with all the best tunes. This raises some interesting questions. How, for example,

might a company interested above all in *secure* profits (Rothschild, 1947) design its industrial relations and wages policies? Does a union-bashing sweatshop reduce its exposure to uncertainty, or increase it? What is the rationale for de-unionizing by raising wages, as large Australian mining companies have recently done? Neither efficiency wage models nor the 'human resource management' literature which is parasitic on them has been subject to any systematic Post Keynesian scrutiny.[18] It seems long overdue.

III WAGE DIFFERENTIALS, THE ALLOCATION OF LABOUR AND ECONOMIC INEQUALITY

The supply of labour is a multidimensional problem. Most Post Keynesians would agree with Marc Lavoie that the wage-elasticity of labour supply functions can safely be assumed to be zero at the two extremes; that is, for individuals and for the aggregate workforce. Neoclassicals, however, would retort that this is entirely consistent with the existence of conventional, upward-sloping labour supply curves for individual firms, occupations and industries. Thus changes in wages may play no significant role in the *allocation of time*, while wage flexibility is crucial to the efficient *allocation of workers between jobs*. If this neoclassical position is correct, there are important policy implications: controls over wage movements will amputate the invisible hand and generate enormous allocative inefficiency.

The mature response of Sidney Weintraub to this charge was to accept it and to advocate a market-oriented or 'tax-based' incomes policy. Earlier on he had refused to take it quite so seriously. In 1963 he published the results of an empirical study of changes in the inter-industry wage structure in the United States in the 1950s. This revealed increases in money wages which ranged from 30.6 per cent in agriculture to 89.2 per cent in communications and public utilities, but with little or no relationship between wage increases and changes in employment.[19] Manufacturing had enjoyed the second-largest wage rise of Weintraub's ten sectors (89.2 per cent, against an average increase of 71.4 per cent), but experienced a relative decline in employment. Weintraub concluded that union power had been a major influence on wage changes, permitting well-organized workers to appropriate productivity gains in their industries, and to share in the monopoly rents which accrued to big business (Weintraub, 1963: 150). He argued that changes in wage differentials were, however, largely irrelevant to the allocation of labour: 'It might well be inferred that the evidence supports the hypothesis that labor gravitates to those industries where job opportunities abound, and that the past disproportionate pay increases were substantially

devoid of any allocative function typically attached to relative wage changes' (ibid.: 130). This conclusion was reinforced by the macroeconomic circumstances of the 1950s, at least in the United States: 'It is specious to argue that without the wage disproportionalities the various sectors would have been unable to acquire appropriate labor staffs; unemployment prevailed through practically all of the period, so that staffs could have been recruited' (ibid.: 150).

Weintraub made no attempt to derive unorthodox theoretical generalizations from these findings. Indeed, there are strong neoclassical undertones to his argument, not least where trade unions are concerned. His analysis of unions is squarely in the 'labour monopoly' mould (Freeman and Medoff, 1984: 6–7), as can be seen when he discusses

> discriminating wage levels whereby labor of commensurate ability receives discrepant rates of pay. Clearly, this could not occur in fully competitive labor markets; it exists, among other reasons, because of the monopoly limitation tactics of labor unions, whereby those who would like to qualify as members and receive the higher rates of pay are precluded from doing so. (Weintraub, 1963: 201)

Had he been more familiar with previous neo-institutionalist research, Weintraub would have known that the 'law of one price' is a myth when applied to 'fully competitive' (that is, non-union) labour markets. It operates, if at all, only as a result of union pressure (see, for example, Reynolds, 1951). Weintraub would also have found it more difficult to sustain his dogmatic rejection of sectoral productivity growth as a criterion for wage increases in individual sectors (Weintraub, 1963: 139), which is in any case not consistent with the rationale of a tax-based incomes policy.[20]

Abandoning most of this neoclassical baggage, Adrian Wood (1978) was later to distinguish 'anomic' and 'normative' pressures on wage differentials within the firm. Custom, and notions of fairness, give rise to wage norms which are often remarkably resistant to change. Even when they are overwhelmed by external market forces – for example, by acute scarcities of workers in particular occupations – the resulting anomic structure of relative wages may 'calcify' to produce a new, stable system of wage norms. Thus relative wages are not primarily determined by neoclassical mechanisms, and have little or nothing to do with the allocation of labour.

These arguments have proved very attractive to Post Keynesians (for example, Seccareccia, 1991; Lavoie, 1992b: 217–18), but they can be extended from the enterprise to the wider society only with considerable difficulty. Although very long periods of stability in wage differentials have indeed been identified (Phelps Brown, 1977: 68–9), they belong to the past – increasingly to the distant past. Weintraub's study, already cited, testifies

to the very substantial dispersion in money wage increases between sectors in the United States in the 1950s. Similar evidence was provided for the United Kingdom, twenty years on, by Lawson *et al.* (1982).[21] It implies either that normative influences have been swamped by anomic factors[22] or that social norms were themselves changing rapidly in the post-war period. The latter possibility suggests the need for an explanation of such normative changes, which no Post Keynesian theorist has been able to provide.

More recently, overwhelming evidence has accumulated of a very sharp increase in wage inequality in many advanced capitalist economies, which is often expressed in terms of a 'law of the shrinking middle': an increase in the number of well-paid jobs, a much greater increase in the relative quantity of badly paid jobs, and a contraction in the proportion of jobs in between (King *et al.*, 1992).[23] This very powerful, pernicious and indisputably anomic development has not been satisfactorily explained, by Post Keynesians[24] or by others, although its consequences are profound. Very controversially, Adrian Wood (1994) has attributed much of the growth in inequality in the North to the rapid expansion of manufactured imports from the South, which has fatally undermined the labour market position of less skilled workers in all advanced capitalist economies. Despite his impressive Post Keynesian credentials, Wood's macroeconomics are now resolutely neoclassical (Singh, 1995) and his policy proposals – in effect, training, training and more training – rest on an implicit assumption of a perfect market in human capital. It seems likely that dual and segmented labour market theories will be involved in any successful account of the growth of wage inequality, but this is yet to be convincingly achieved. In any case, labour market dualism is an institutionalist and/or radical conception, with no specifically Post Keynesian connotations, and I suspect it can quite easily be reclaimed by neoclassical labour economics (cf. Stiglitz, 1987: 7–11).

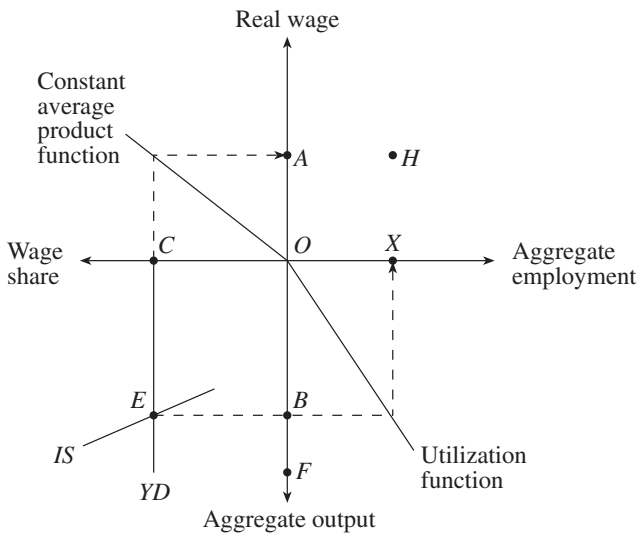
IV THE MACROECONOMICS OF LABOUR

As I suggested in the introduction, Post Keynesians have concentrated on macroeconomic matters, and it is on their treatment of those matters that they will be judged. Their contribution has been quite distinctive. Purely for the sake of convenience, this section is divided into three parts, dealing respectively with the determination of real variables, the determination of the rates of wage and price inflation, and the influence of macroeconomic policy. No analytical significance should be read into this: Post Keynesians are more dismissive than most of the classical dichotomy. It is just that it is easier to consider problems one at a time.

Real Variables

Peter Riach has presented a convenient summary of the determinants of the real wage, aggregate employment, aggregate output and the wage share. The central macroeconomic relationships are set out in the south-west quadrant of Figure 5.5, which is a slightly more complicated version of his Figure 8.4 (Riach, 1995: 170). Here the *YD* function illustrates the proposition that the share of wages is invariant with respect to total output.[25] The *IS* function depicts savings–investment equilibria which correspond to various combinations of output and the wage share; it may slope either way, depending on the relative sensitivity of savings and investment to changes in shares. The intersection of *YD* and *IS*, at point *E*, gives the equilibrium level of output (*OB*), which falls short of the full employment level (*OF*). The utilization function in the south-east quadrant is drawn on the assumption of a constant average product of labour, and is therefore linear up to full employment.[26] This determines aggregate employment at *OX*; it is 'the point of arrival on the quantity axis' already shown in Figure 5.1 above, but this time for the economy as a whole.

The north-west quadrant maps from the wage share into the real wage, on the same assumption of a constant average product of labour. The real wage is 'determined from without' as in the microeconomic situation shown



Source: adapted from Riach (1995).

Figure 5.5 A macroeconomic model

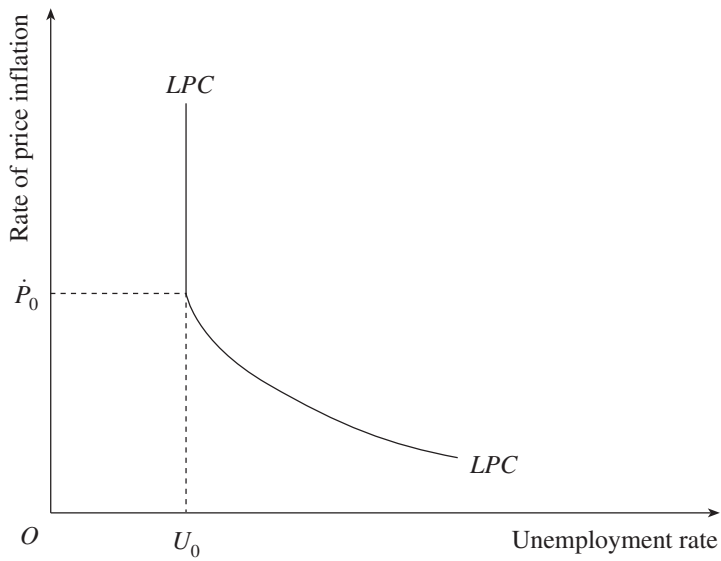
in Figure 5.2; it is equal to OA, where $OC = OA/OB < 1$. In the north-east quadrant the point H depicts the real wage–employment combination corresponding to a macroeconomic equilibrium at E; no causal relationship between real wages and employment is implied. In fact, comparative static analysis can be used to demonstrate that an increase in real wages – resulting, for example, from a decline in the degree of monopoly – may either increase or decrease employment, depending on the slope of the *IS* function (ibid: 171–3, Figures 8.5 and 8.6). Note again that full employment is neither attained nor attainable by reductions in real wages. Given *YD*, it could be achieved only through an outward shift in *IS*, perhaps resulting from expansionary fiscal or monetary policy.

All this may strike the fastidious Post Keynesian reader as unduly deterministic, or as unjustifiably reliant on the (unstated) assumption that we inhabit an ergodic universe. Riach himself offers hostages to fortune when he describes his *IS* function as the product of – yes, you guessed right! – 'an approach analogous to the simultaneous determination of income and interest in Hicks's *IS–LM* model' (ibid: 167). But it is surely no *more* deterministic than (for example) the 'hydraulic Keynesian' equations in Kalecki (1954: chs 3–5). I think Riach is justified in claiming descent from Keynes, Kalecki and Weintraub, and in concluding that, in (his) Post Keynesian analysis, 'unlike the neoclassical approach, there is no dogmatic position on the consequences for employment of higher real wages' (Riach, 1995: 169, 173).[27]

Money Wages

The Post Keynesian literature on wage inflation is vast. I shall confine my discussion very largely to a summary of the various models proposed by Arestis (1992: ch. 7), who provides a very useful synthesis. He sees the aggregate money wage level as the outcome of a bargaining process, involving two levels of conflict: the first is over the income shares of labour and capital, and the second over the relative wages of different groups of workers.[28] Arestis's first wage equation has three components: (i) a term expressing workers' desire to maintain the existing real wage; (ii) a 'target real wage' term, reflecting their aspiration to higher real wages; and (iii) a wage relativity term (ibid., equation 7.1: 166). He then extends the model to include three additional terms, each seen as a significant determinant of labour's bargaining power relative to capital: (iv) the rate of change in the unemployment rate, as an indicator of the state of the labour market; (v) expected profitability, representing firms' ability to pay; and (vi) real unemployment benefits, measuring the degree to which wage income is replaced by social benefits during unemployment and thus reflecting the expected cost of losing one's job if wage demands are pushed too hard (ibid., equation 7.2: 168).

In common with most Post Keynesians, Arestis has little sympathy for the Phillips curve, and no time at all for the neoclassical argument that there must in the long run be a stable vertical relationship between wage inflation and unemployment at the non-accelerating-inflation-rate level of unemployment, or NAIRU. John Cornwall considers these issues at considerable length in his *Economic Breakdown and Recovery* (1994). He argues that the long-run relationship will be downward-sloping at all but very low unemployment rates. In Figure 5.6, for example, the Phillips curve becomes vertical only when unemployment falls to OU_0, at the 'threshold' inflation rate of OP_0.[29] This, Cornwall maintains, does not entail the existence of money illusion; there is no need to assume 'worker fooling', as neoclassical theorists claim (Cornwall, 1994: 162).



Source: adapted from Cornwall (1994)

Figure 5.6 The long-run variable coefficient Phillips curve

The comparative statics of the model can be used to illustrate the consequences of increased import prices; growth in workers' real wage aspirations; the breakdown of an existing incomes policy; a productivity slowdown; and a reduction in the threshold level of inflation at which workers begin to take price increases seriously. In each case the Phillips curve shifts outwards, without altering in shape (ibid.: 162–6).

Macroeconomic Policy and Unemployment

It is hardly necessary to say that Post Keynesians reject the 'old classical', 'Bastard Keynesian' and 'New Keynesian' argument that unemployment is due to the existence of a real wage above the equilibrium or 'market-clearing' level owing to trade union or government interference in the operation of the free market for labour. They also dismiss the 'New Classical' notion that unemployment is the (voluntary) result of intertemporal income–leisure choices by individual workers. As was demonstrated above, neither claim is supported by micro foundations; and neither has any macro foundation whatsoever. A Post Keynesian theory of unemployment would instead start from the proposition that in aggregate the level of employment depends on the level of output, which is itself determined by aggregate demand and therefore heavily influenced by macroeconomic policy. Unemployment is simply the difference between the level of employment and the aggregate supply of labour, which may – as explained earlier – safely be regarded as invariant in the short run with respect to the real wage, but variable with respect to the number of job opportunities.[30] Neoclassical theory may have something to contribute to the analysis of the *order* of the unemployment queue, but it is powerless to explain its *length*.

At a slightly deeper level, Post Keynesians argue that unemployment has a social function, which is more or less consciously and deliberately exploited by those responsible for the macroeconomic policies of capitalist states. Arestis suggests that the role of unemployment is to reconcile the various claims on the social product, and thus to regulate conflict over the distribution of income (Arestis, 1992: 168–9). This brings to mind Kalecki's (1943) famous statement about the need for unemployment to preserve discipline at the workplace. From a slightly different perspective, Cornwall sees unemployment as the principal check on wage inflation, and interprets the sharp rise in unemployment since 1973 as a consequence of the breakdown of its previously stable relationship with inflation (Cornwall, 1994: ch. 9). Somewhat controversially, he argues that

> it would be difficult to maintain that this rise in unemployment can be traced to a shift in political power to the right. Notwithstanding the advent of Thatcherism and Reaganism, if anything political power has not shifted markedly, comparing the periods before and after the breakdown. The main responsibility for the intertemporal decline in employment must be attributed to the rise in the inflation costs of any employment policy almost everywhere. (Cornwall, 1994: 194)

Kurt Rothschild's (1994) account of the end of 'Austro-Keynesianism', for example, is quite different. But these are questions of emphasis.[31] Almost all Post Keynesian writers agree about remedies: without a return

to centralized and synchronized wage bargaining, and the replacement of adversarial by cooperative industrial relations, a return to full employment is impossible. As Joan Robinson implied, back in 1937, incomes policy remains the key to eliminating mass unemployment (Robinson, 1937: 24–8; cf. Cornwall, 1994: pt III).

V CONCLUSION

There is now a coherent and extensive radical labour economics based on a rather unstable compound of Marxian political economy and neoclassical methodological individualism; it covers a very wide range of theoretical, empirical and policy questions (Rebitzer, 1993; Reich, 1995). Institutional economists also have a great deal to say on many of these issues, especially at the microeconomic or 'sub-micro' (shopfloor) levels. Neither school, however, has been very successful in extending its analysis of labour questions to macroeconomic theory, on which Post Keynesians have concentrated their attention.

I would be the last to worry about this on methodological grounds: a lack of 'microfoundations' is not something that anyone needs to apologize for. But the labour market *is* an underdeveloped area for Post Keynesian economics, with a marginal product – if I may be permitted to use the term – which is in all probability significantly higher than that of research time devoted to pricing behaviour or endogeneity of the money supply. One ever-present danger (some might regard it as an opportunity) is the appropriation of ostensibly heretical ideas by more enterprising spirits from the neoclassical mainstream.[32] Such was the fate of a large part of Alfred Eichner's projected 'anthropogenic' labour economics, with its stress on human development, career paths, teamwork and long-term affiliations between workers and companies (Eichner, 1979). These concepts are today the very stuff of more advanced orthodox analysis (see, for example, McConnell and Brue, 1992: ch. 7).

Eichner also focused on the political and social context of wage and employment decisions, the role of conflict, the absence of market clearing, and the macroeconomic determinants of micro behaviour. All of these will presumably, one day, constitute foundations of a Post Keynesian labour economics that cannot easily be captured by the mainstream. For the moment, however, I must conclude on a negative note. I have no answer to the question that I posed at the beginning of this chapter: I simply do not know how a Post Keynesian labour economics will differ from other unorthodox approaches to the labour market, from which it will clearly have to draw very heavily.

NOTES

1. I gratefully acknowledge comments from Peter Riach, and from several participants at the Leeds conference, especially Diane Elson, Mike Howard, Will Milberg and Malcolm Sawyer; the usual disclaimer applies.
2. I use this term with great reluctance, though it is (unfortunately) rather common in the Post Keynesian literature. Since at least equal weight should be assigned to the 'macro-foundations' of microeconomics (Kriesler, 1996), 'micro correlates' would be a more appropriate term.
3. This is the title of Paul Davidson's (1983) paper.
4. As Peter Riach has forcefully reminded me.
5. Though it must be said that Joan Robinson came very close to anticipating the neoclassical view, even to the extent of formulating a 'median voter' model of trade union policy (Robinson, 1937: 3–4).
6. It was, however, explicitly rejected by Robinson (1937: 2).
7. On a more fundamental level, the institution of wage-payment in the form of

> general purchasing power rather than in the form of defined baskets of goods has the consequence that neither the earner knows what he will be able to buy nor the employer what he will be able, for a given price, to sell. By contrast, if wages and other incomes were paid in baskets of goods, all products would be automatically sold to their collaborating producers, and lack of knowledge would play no part; general overproduction (and even overproduction of particular goods) would indeed be impossible, and Say's Law would hold true. (Shackle, 1967: 138, cited by Ford, 1994: 472)

8. As a matter of fact, cost-of-living clauses featured in agreements covering some millions of British workers between 1918 and the 1960s, while the *scala mobile* linked wages to retail prices in Italy for many years, down to the early 1990s. The *product* price escalators which applied to some parts of the coal and steel industries before 1939 pose rather different analytical questions (Clegg *et al.*, 1964: 18–19, 202–5, 349–50).
9. This was one of the few parts of the *Economics of Imperfect Competition* that she did not subsequently repudiate (Robinson, 1969).
10. The case for regarding X-efficiency theory as compatible with neoclassical economics is made by Stigler (1976).
11. In his famous controversy with Fritz Machlup over the neoclassical theory of labour demand, Richard Lester had employment varying 'simply and directly' with product demand (Lester, 1946: 82).
12. An algebraic formulation of a similar principle is provided by Sawyer (1988: 54–5). The Kaleckian mark-up principle gives $p=(1+k)AVC$, where p is product price, k is the fixed percentage mark-up, and AVC is average variable cost. Now AVC is the sum of unit labour cost and unit material cost, and can be written as

$$AVC = w\left[\frac{L}{Q}\right] + f\left[\frac{M}{Q}\right],$$

where w is the money wage, L the quantity of labour employed, and Q is total output; f is the price of raw materials and M the quantity used. Substitution yields:

$$\frac{W}{P} = \frac{1}{(1+k)} \cdot \frac{Q}{L} - \frac{f}{P} \cdot \frac{M}{L},$$

with the real wage a function of the mark-up, the average product of labour, raw material usage, and the ratio of raw material prices to manufacturing prices.

13. A similar position, which hints at the desirability of tightening legal restrictions on the right to strike, can be found in Riach (1976).
14. His Post Keynesian credentials are apparent from Hieser (1952, 1954).
15. Rothschild (1989) demonstrated that, up to the early 1980s at least, Catholicism and labour force participation by married women were negatively correlated in Europe. Presumably, there was also some significant reverse correlation, with *Kinder* and *Küche* strengthening women's commitment to *Kirche*, and vice versa.
16. On a trekking holiday in Nepal in September 1995 I discovered empirical support for this hypothesis: the expedition *Nike* (foreman of the porters) chose seven men each from five separate villages to make up a crew of 35, in order to reduce the possibility of strikes for higher wages.
17. But Stiglitz (1987) blithely abandons the law of supply and demand, the law of one price and the first theorem of neoclassical welfare economics (efficiency can be rigidly separated from equity) in pursuit of efficiency wages.
18. See, however, Drago (1989–90), Parrinello (1995) and – much more critically – Sawyer (1996b).
19. This confirmed the analysis of Reddaway for the UK, which Weintraub cites, and is consistent also with De Wolff's (1965) study of the OECD countries as a whole.
20. See also Weintraub's scepticism concerning the prevalence of monopsony (Weintraub, 1963: 204), and his Chicagoite attack on minimum wage legislation for damaging the interests of the low-paid (ibid.: 201), where he comes perilously close to affirming his support for Director's Law.
21. They also note that stability in the inter-industry wage structure is predicted by neoclassical no less than by (Post) Keynesian theory, albeit on the different grounds that wage differentials between industries depend largely on the skill mix, which is not normally subject to rapid change (Lawson *et al.*, 1982: 227).
22. See, however, Wood (1978: 175–9).
23. The shape of the frequency distribution of jobs is changing from a diamond to an hourglass (I owe this analogy to Tom Bramble).
24. See Danziger and Gottschalk (1988–9) for a frank admission of defeat.
25. Either because the ratio of the marginal product to the average product of labour is constant over the cycle, or because cyclical fluctuations in the degree of monopoly (if any) are offset by fluctuations in the price of raw materials relative to the wage (Kalecki, 1954: ch. 2).
26. Riach's Figure 8.4 has the utilization function becoming horizontal at the full employment level of output, with the paradoxical implication that employment might be increased indefinitely, for no gain in output.
27. A similar conclusion was drawn by Rothschild (1954: 132–5) and Weintraub (1956). See also Davidson (1994: ch. 11).
28. The latter implies that normative agreement is rarely complete. In fact, and contrary to the beliefs of many institutionalists, norms are as often a source of conflict as of social integration. (I owe this point to Mike Howard.)
29. OU_0 thus represents Joan Robinson's inflationary 'precipice' (Robinson, 1937: 17).
30. Hence the existence of significant 'hidden unemployment' and the often observed procyclical fluctuations in labour force participation rates.
31. Post Keynesians also disagree in their interpretation of hysteresis, which Arestis sees as providing an explanation of unemployment persistence, while Cornwall treats it as accounting for the persistence of inflation (Arestis, 1992: 169–75; Cornwall, 1994: 171–2).
32. The French word for this is *récuperation*, a term in common use in the 1970s to denote the recapture of the revolutionary ideas of May 1968 in the service of a modernized capitalism.

6. Uncertainty, rationality and learning: a Keynesian perspective

Alessandro Vercelli

I INTRODUCTION

Human rationality is at the same time condition and consequence of learning, since learning is based on rationality and rationality is implemented through learning. Therefore whatever conception of rationality is proved to be unable to explain the aims and characteristics of the learning process should be considered as suspect. This is the case with 'substantive rationality', which is still the prevailing conception of rationality in economic theory. Substantive rationality implies that a rational agent never makes systematic mistakes, not only *ex ante* but also *ex post* (Vercelli, 1991). This has the uncomfortable implication that a rational agent has no economic incentives to avoid systematic mistakes: strategic learning, which aims to avoid systematic mistakes in order to discover a strategy more profitable than that adopted so far, would be deprived of any economic value and would become unintelligible. This makes also altogether unintelligible, at least from the economic point of view, the genesis and foundations of substantive rationality. It seems therefore inescapable to conclude that substantive rationality cannot be justified in empirical terms under its own assumptions, and therefore cannot be accepted unless we believe in some sort of pre-established harmony between individual decisions and economic reality.

It is controversial whether 'Bayesian rationality', that is the conception of rationality underlying Bayesian decision theory, succeeds in overcoming the limitations of substantive rationality. I will argue in this chapter that Bayesian rationality itself is unable to analyse in a satisfactory way the economic role and implications of genuine strategic learning and of the feedback between learning and rationality.

It is possible to work out more general conceptions of rationality and show that there is a strict correspondence between different notions of rationality and learning, modalities of uncertainty, and assumptions on the degree of time irreversibility of the consequences of economic decisions.

This conceptual framework suggests that a thorough analysis of strategic learning requires the assumption that the decision maker has to face 'hard' uncertainty and that the consequences of her actions are to some extent irreversible. As for the rationality concept, a purely adaptive form of strategic learning is consistent with procedural rationality, introduced by Simon and somewhat developed in the last decades by a growing literature. However, in order to study the highest form of strategic learning, which will here be called 'creative', a broader concept of rationality is required, which will be called 'designing'.

The structure of the chapter is as follows. In the second section the nature of the feedback between rationality and learning is briefly spelled out. In the third section a classification of the main modalities of uncertainty and of the principal approaches to decision theory under uncertainty is introduced. The feedback between rationality and learning is then analysed in reference to the principal conceptions of rationality adopted in economic theory: substantive rationality (section IV), and Bayesian rationality (section V). In section VI the limitations of substantive and Bayesian rationality are further analysed in relation to time irreversibility. In section VII two broader conceptions of rationality are discussed: procedural and creative rationality. In section VIII the correspondences between different conceptions of rationality and learning, modalities of uncertainty, and degrees of time irreversibility are synthesized in a synoptic table, and it is argued that the most general and satisfactory point of view assumes hard uncertainty, creative rationality, strategic learning and a certain degree of time irreversibility. In section IX it is shown, with special reference to liquidity preference theory, that the most general approach to the feedback between rationality and learning is substantially consistent with Keynes's own point of view.

II RATIONALITY AND LEARNING

In this chapter rationality is considered in the limited sense of *behavioural* rationality of the economic agent. We have to distinguish two basic aspects of behavioural rationality: *cognitive* rationality which may be defined as the ability to avoid, or at least to minimize, the cognitive systematic mistakes made in the description and explanation of a certain set of phenomena, and consequently to reduce the predictive systematic mistakes about their future behaviour; and *pragmatic* rationality, which may be defined as the ability to reach a certain target avoiding systematic mistakes of a pragmatic nature. There is a clear correlation between cognitive, predictive and pragmatic systematic mistakes. The degree of approximation to the target (as

defined by the objective function of the decision maker) crucially depends on the precision of predictions which depends on the degree of accuracy of the description of the relevant phenomena and on the depth of understanding of their determinant factors. In order to simplify the analysis, I will assume that the relationship between cognitive, predictive and pragmatic systematic mistakes is monotonic. Therefore the reduction of cognitive systematic mistakes implies the reduction of the pragmatic systematic mistakes. There is thus a pragmatic incentive to reduce the cognitive systematic mistakes (this assumption is very strong, but it is routinely assumed, though only implicitly, in economic theory). This is realized through *structural* learning which therefore assures the implementation of rationality. Without structural learning, the genesis, permanence and development of cognitive and pragmatic rationality would be unintelligible.

In order to clarify further the nexus between learning and rationality, I define as optimal decision strategy ${}_ts_{t+h}$, chosen by the decision maker (DM) at time t given the information set Ω_t in reference to the time horizon h, the sequence of actions from time t to time $t+h$ which maximizes the expected utility[1] of the DM. In addition I define as ${}_t\Omega_{t+n}$ the 'information flow' affecting the 'stock of knowledge', that is, the information set, in the time spell going from t to $t+n$, so that $\Omega_t|_t\Omega_{t+n}=\Omega_{t+n}$. For the sake of simplicity, I will assume in this chapter that no loss of information is possible (for a memory failure or a breakdown in the systems of information storage, and so on) so that the flow of information cannot be negative. Therefore:

$$\Omega_t \subseteq t\Omega_{t+n}, \tag{6.1}$$

that is, the stock of information, or information set, cannot shrink throughout time. On the basis of these premises, it is possible to say that, whenever

$$\Omega_t \subset \Omega_{t+n}, \tag{6.2}$$

that is, the information set at the beginning of the period turns out to be a proper subset of the information set at the end of the period, there has been effective learning in the relevant period.

The definition of learning given by (6.2) is very weak and is only meant to provide the lowest common factor to different meanings of learning. For our purposes it is important to distinguish between *mnemonic* learning, whenever the growth of knowledge is restricted to the updating of the information set without modifying the parameters of the model upon which the decision is based, and *structural* learning, whenever the parameters or the specification of the model are also revised.

Mnemonic learning may have a trivial economic value, because, for

example, it helps to forecast the future values of the relevant variables (as in the Granger causality literature: see, for example, Vercelli, 1992), but by definition its strategic value is nil, since any decision strategy, in the usual form of a contingent plan, depends only on the values of the parameters and the specification of the model. Therefore mnemonic learning has no strategic value by itself, although no doubt it may be a necessary condition of strategic learning. Only structural learning may authorize a change in the decision strategy and therefore may have a strategic economic value. From now on I will call strategic learning any process of learning involving 'structural learning' and which is thus potentially relevant from the strategic point of view.

As was hinted at before, learning may have a strategic economic value because it permits the exploitation of new information in order to substitute a more profitable strategy for the existing strategy.[2] In slightly more formal terms, it is possible that, in the light of the new, larger, information set induced by strategic learning, at time $t+n$ a new strategy is discovered whose expected value $v({}_{t+n}s_{t+h}\,|\,\Omega_{t+n})$ is higher than that of the old strategy, chosen at time t, recalculated in the light of the new information set: $v({}_{t}s_{t+h}|\Omega_{t+n})$. Therefore the value of strategic learning from t to $t+n$, ${}_{t}VL_{t+n}$, as assessed at time $t+n$, may be defined as the difference between the value of the optimal strategy at time $t+n$, in the light of the new enlarged information set, and the value of the optimal strategy chosen at time t and reassessed at time $t+n$:

$$ {}_{t}VL_{t+n} = v({}_{t+n}s_{t+h}\,|\,\Omega_{t+n}) - v({}_{t}s_{t+h}\,|\,\Omega_{t+n}) \geq 0. \tag{6.3} $$

Generally speaking, this value is not negative because the larger information set may offer new opportunities which were non-existent or unclear before. However, in order to calculate the net value of strategic learning, it is necessary to take into account the costs c_l associated with learning (such as for the acquisition of new information on the market). Therefore the net value of strategic learning VL', neglecting the subscripts for simplicity, may be defined in the following way:

$$ VL' = VL - c_l. \tag{6.4} $$

A positive net value of strategic learning, in an uncertain and open world, is a sufficient economic motivation for implementing it. However, in order to justify a change in strategy, we have to take into account also the transition costs c_i (such as the transaction costs) associated with it. Generally speaking, the new optimal strategy will be implemented only when

$$ VL' > c_i. \tag{6.5} $$

The reason for distinguishing (6.4) from (6.5) depends on the fact that, by assumption, the outcome of strategic learning has been defined as a permanent acquisition while the transition costs are contingent; therefore, when (6.5) is not currently satisfied, it cannot be excluded that a fall in the transition costs will justify a change in strategy in the future.[3]

It is important to emphasize that structural learning implies the possibility of systematic mistakes *ex post* (not necessarily *ex ante*, whenever the existing information is efficiently utilized). In the absence of systematic mistakes *ex post*, learning would be deprived of any strategic value and would become meaningless.

III MODALITIES OF UNCERTAINTY

Strategic learning is obviously meaningless if perfect foresight is assumed. The feedback between rationality and strategic learning presents different aspects and implications with different modalities of uncertainty. Therefore we have now to classify the main modalities of uncertainty and spell out in some detail their implications for the problem analysed in this chapter. Let us start from the received view. Orthodox decision theory distinguishes between *risk*, which refers to 'roulette wheel' problems, when the relevant probability distributions are 'known', and *uncertainty*, which refers to 'horse race' problems, when the relevant probability distributions are 'unknown'.

The objectivist decision theory put forward by von Neumann and Morgenstern (1944) is considered perfectly fit for 'roulette wheel problems', while the subjectivist (or Bayesian) theory suggested by de Finetti (1937) and Savage (1954) is considered perfectly fit for dealing with 'horse race' problems. This dichotomy is unacceptable, for a host of reasons (Vercelli, 1995, 1999a). For our purposes it is important to stress that these two classical theories are far from being able to cover in an exhaustive way all kinds of uncertain situations. Contrary to first appearances, they share a few crucial presuppositions. First, they apply only to a 'closed world' in the sense that they are based on a complete list of possible states and consequences, and the eventuality of 'unforeseen contingencies' is completely ruled out. Second, the possible actions considered are only the simplest conceivable, being conceptualized as functions from states to consequences (Ghirardato, 1994). Third, the above theories are applicable only to stationary processes which have persisted long enough to be known by the decision maker in their systematic probabilistic structure (Lucas, 1986). To sum up, the classic decision theories are applicable only to what may be called a *familiar world*, that is, to a world characterized by the three attributes specified above. This

explains the strong analogies in the formal structure of the two theories. In particular, both assume that it is possible to represent the decision maker's beliefs in terms of a unique and additive probability distribution. In the rest of this chapter I will call this sort of uncertainty 'soft'. However, real-world uncertainty very often cannot be expressed in such a way. Even when it is possible to represent the DM's beliefs in terms of probabilities, often this is possible in terms of a non-additive prior, or of multiple priors (that is, of probability intervals). In the rest of this chapter I will call this kind of uncertainty 'hard'.

In recent years rigorous decision theories which are able to cope with hard uncertainty have been put forward. They assume more general measures of uncertainty such as non-additive probabilities (Schmeidler, 1982; Gilboa, 1987), multiple probabilities (Ellsberg, 1961; Gärdenfors and Sahlin, 1982; Gilboa and Schmeidler, 1989), fuzzy measures (Zadeh, 1965; Ponsard, 1986), and so on (see Vercelli, 1999a, for a more detailed analysis).

The theories of decision under hard uncertainty have in common that the description of the states and the consequences of a decision problem is admitted to be incomplete, so that the theory can be applied to an unfamiliar world characterized by unforeseen (and sometimes unforeseeable) contingencies, non-stationary (or non-ergodic) processes, and complex actions characterized by simple correspondences between states and consequences. For our purposes it is important to stress that soft uncertainty theories cannot account for the existence of systematic mistakes, and cannot therefore analyse the process of strategic learning. In order to go deeper into the analysis of the feedback between rationality and learning in the light of the principal competing approaches to decision theory under uncertainty, we have to recognize that the underlying conception of rationality is generally not made fully explicit in these theories. They just limit themselves to stating the decision criterion adopted on the common presupposition that a rational agent should in any case maximize her objective function in the light of one of these theories. It is therefore possible to associate with each of the decision theories considered above its own decision criterion.

The criterion of utility maximization (Max U) routinely adopted in conditions of certainty is translated into the criterion of expected utility maximization (Max EU) in the Morgestern–von Neumann decision theory, and into the criterion of subjective expected utility maximization (Max SEU) in Bayesian decision theory. Before we consider the decision criteria for hard uncertainty, remember that the most popular criterion in the case of complete ignorance is the precautionary criterion of the maximin that suggests the choice of the option which has the most acceptable of the worst consequences. The principal decision criterion for situations characterized

by hard uncertainty is the maximization of the Choquet[4] expected utility (Max CEU) which turns out to be a compromise between the criterion used in conditions of soft uncertainty (Max EU or SEU) and the criterion used in conditions of complete ignorance (maximin). It may be proved that the higher the degree of hard uncertainty the more the CEU criterion resembles the maximin criterion, while the lower the degree of hard uncertainty the more this criterion resembles the (subjective or objective) criterion of expected utility maximization (Vercelli, 1999a). Of course, in the case of hard uncertainty, it is doubtful whether the decision criterion should seek the maximization of the objective function or just a satisfactory result (according to, for example, the criterion of satisficing suggested by Simon) and whether the objective function should be expressed in utilitarian terms or according to a more general criterion. In any case, the meaning and implications of the use of these, and other, decision criteria differ according to the conception of rationality postulated by the theory; therefore we have now to consider them separately.

IV SUBSTANTIVE RATIONALITY AND LEARNING

I am now in a position to show that the prevailing conception of economic rationality – substantive rationality – implies that structural learning cannot have any strategic value. This conclusion clearly emerges from the analysis of the hypotheses concerning expectations adopted in most economic models: perfect foresight or rational expectations.

In the case of perfect foresight, it is obvious that learning cannot have any economic value because there is nothing to learn which could be useful in order to discover a better strategy. In the case of rational expectations, by definition, the economic agent does not make systematic mistakes, either *ex ante* or *ex post*. Systematic *ex ante* mistakes are excluded by the assumption that the agent makes an optimal forecast conditional to the information set. *Ex post* mistakes are by definition non-systematic, since they are neither correlated nor autocorrelated, nor do they show any bias (see, for example, Begg, 1982), as is implied by the assumption that the subjective probability distribution coincides with the 'objective' probability distribution. This point may be further clarified with reference to the literature which tried to give dynamic foundations to the hypothesis of rational expectations as a stable equilibrium of a learning process. We may distinguish two basic streams. The first is the study of E-stability (expectational stability) on the basis of contributions by Lucas (1978, section 6), DeCanio (1979) and Evans (1983), which ultimately (see Evans and Honkapohja, 1990) refer to the following differential equation:

$$d\Theta/d\tau = T(\Theta) - \Theta, \tag{6.6}$$

which describes a stylized process of learning which occurs in 'notional' time τ, inducing the progressive reduction in the gap between the perceived dynamics Θ and the effective dynamics $T(\Theta)$, which is a function of perceived dynamics because of the well-known autoreferentiality of the process of expectations formation. The dynamics of perceptions and expectations is a function of the systematic *ex post* mistakes defined by $T(\Theta) - \Theta$. Actual learning implies a process of convergence towards the rational expectations equilibrium. Notice that, as soon as this equilibrium is effectively reached, the systematic mistakes vanish and the process of strategic learning stops.

The second stream is the study of the learning rules in real time based on the contributions by Bray (1982), Bray and Savin (1986), Fourgeaud *et al.* (1986), Marcet and Sargent (1989a, 1989b) and Woodford (1990). Learning rules are expressed in terms of approximation algorithms (in particular recursive least squares, and recursive ARMA estimations). Also in this case, the learning process may be expressed through a dynamic equation which is a function of the systematic *ex post* mistakes. For instance, the seminal model by Bray (1982) may be expressed by the following stochastic approximation algorithm:

$$\beta_t = \beta_{t-1} + (1/t)[p_{t-1} - \beta_{t-1}] \tag{6.7}$$

where p_t is the effective price at time t and β_t is the expectation of p_{t+1} which is equal by hypothesis to the average of realized prices. Also in this case, the dynamics of expectations depends exclusively on the *ex post* systematic mistakes, which are expressed in equation (6.7) by the term inside square brackets (that is, by the deviation of the last observation from the average of past values). Marcet and Sargent (1989a) proved that the limiting behaviour of β can be analysed by the following differential equation:

$$(d/dt)\beta = a + (b-1)\beta \tag{6.8}$$

which is stable for $b < 1$. The right-hand side of the differential equation can be redefined by the difference $T(\beta) - \beta$, where $T(\beta) = a + b(\beta)$, which expresses the *ex post* systematic mistake in expectations (see Sargent, 1993, p.88, n.2). Also in this case, the dynamic process of learning stops only if the systematic mistakes *ex post* are fully corrected; that is, as soon as the rational expectations equilibrium is reached. The rational expectations hypothesis implies that the economic agent is not allowed to make systematic mistakes *ex post*: therefore strategic learning is inconceivable in any

theory or model based upon the rational expectations hypothesis, and if it were conceivable it would be deprived of any economic value. On the contrary, the process of convergence towards rational expectations equilibrium, which can be correctly considered as a process of strategic learning, implies that, while the DM is learning, she is not allowed to form her expectations on the basis of the rational expectations hypothesis. Therefore, whether the learning process converges or not towards a rational expectations equilibrium, this literature cannot be legitimately used to give plausibility to the hypothesis of rational expectations, since what is proved is above all the inconsistency between rational expectations and strategic learning. The only kind of learning really consistent with rational expectations is the trivial process, which I called 'mnemonic learning', consisting in the updating of the realizations of the relevant stochastic variables, which by hypothesis does not affect the parameters of the stochastic processes involved.

V BAYESIAN RATIONALITY AND LEARNING

Bayesian rationality is, at first sight, completely different from substantive rationality as there is no claim whatsoever of a correspondence between subjective representations and objective characteristics of reality.[5] As is well-known, Bayesian decision theory conceives of rationality in purely subjective (or personalistic) terms as consistency of the DM's behaviour based on the coherence of her preferences and beliefs. I am not going to discuss here the plausibility of this approach from the positive point of view but only from the normative point of view.

The normative strength of Bayesian theory is generally considered very compelling. No doubt, static incoherence cannot be considered an acceptable characteristic of a rational DM. However, the same opinion is generally entertained also with reference to intertemporal coherence. If this opinion were true, the superiority of Bayesian decision theory over conceivable alternatives would be firmly established, since it has been proved that the requirement of dynamic coherence implies the axioms of Bayesian theory (Epstein and Le Breton, 1993). In particular, it has been proved that the Bayesian view of learning, that is the conditioning of the priors to new information according to the well-known Bayes rule, is the only one consistent with intertemporal coherence. If we could establish that Bayesian conditioning were able to represent structural learning, the search for a self-consistent notion of rationality could stop here. The trouble is that in my view genuine structural learning implies intertemporal incoherence. A better theory about the world, or a structural change in the world, is likely

to change DM's optimal decision strategy, thus introducing an unavoidable, and 'rational', dynamical inconsistency.

Intertemporal inconsistency is reasonably excluded by Bayesian theory only because neither the priors, nor the structure of reality as reflected by the set of feasible actions, are assumed to change. In other words, the hidden but crucial assumption that the world is closed prevents a Bayesian analysis of genuine structural learning and of its implications. I have to explain now what I mean by '*genuine* structural learning'. Bayesian theory, as distinct from substantive rationality theories, does not exclude any sort of systematic mistake and therefore of structural learning. The application of the Bayes rule to new information allows, indeed often implies, a correction of the structural parameters of the model. But this process of structural learning is confined to improving the adaptation to a given closed and unchangeable world. This sort of structural learning is in a sense already implicit, from the very beginning, in the assumptions of the theory, since the priors and the description of the option set are given, and the optimal strategy 'reveals' itself conditional to the flow of information according to Bayes's rule. But no genuine novelty, or structural change, is allowed to appear in the DM's beliefs and preferences. Therefore genuine structural learning, which I am going to call '*creative learning*', is excluded.

VI TIME AND IRREVERSIBILITY

The Von Neumann–Morgenstern and Savage theories of decision making under uncertainty are both 'timeless', and their scope of application is not easily extended to a genuine process of learning which implies an intertemporal choice setting, since in this case many of their crucial assumptions and conclusions become implausible. For example, in order to violate the 'sure-thing principle' and the 'compound lottery axiom', each of which is necessary for a rigorous use of the expected utility approach (see Machina and Schmeidler, 1992: 748, 756; Segal, 1987: 177), it is sufficient to assume non-instantaneous learning in the sense that some delay may occur between the time a choice is made and the time the uncertainty is actually resolved.

Unfortunately, 'formal choice theory has not dealt well at all with models of dynamic choice beyond the standard "dynamic choice equals static choice of a strategy"' (Kreps, 1988: 190). The standard approach is unable, by definition, to take into account the influence that a certain choice may have on the future 'states of nature' (which is forbidden by the Savage definition of states of nature[6]), on future uncertainty (which would

imply the analysis of 'endogenous uncertainty', while only exogenous uncertainty is considered)[7] and future choice sets (to analyse intertemporal flexibility preference which cannot even be defined in the standard approach[8]).

The intertemporal analysis of decisions under uncertainty introduces a new dimension of the utmost importance for economic analysis: the degree of irreversibility which characterizes the consequences of sequential decisions. It is irreversibility which makes uncertainty such an important issue in many fields of economics. Any kind of uncertainty, even soft uncertainty, implies unavoidable *ex post* mistakes even for the most rational decision maker. If these mistakes were easily remedied (promptly and at a low cost) the value of a normative theory of decision under uncertainty would be quite limited. Irreversibility implies that the consequences of mistakes have a much higher value that may be virtually boundless (in the case of catastrophes). Unfortunately, while irreversibility greatly increases the practical importance of a normative decision theory under uncertainty, it also prevents the use of standard theories: neither objectivist theories nor subjectivist theories may be satisfactorily applied to irreversible events.

It is generally agreed that the objectivist decision theories apply only to stationary processes with stable frequencies. This is not very often the case in many fields of economics which are characterized by irreversible structural changes. What is worse, it may be proved that, whenever decision makers believe that the economic system might be non-stationary, their behaviour would become non-stationary even assuming that the exogenous environment is in fact stationary (Kurz, 1991b: 10). Stationarity is therefore not a very plausible assumption for the analysis of economic decisions that have to face structural change and irreversibility.

The limitations of Bayesian theory are less clear as it claims to be applicable to any kind of uncertain process. But this claim is not really convincing. The main representatives of Bayesian theory admit that this approach may be applied only to *exchangeable* events, that is, events the temporal order of occurrence of which does not affect the relevant probabilities. Events characterizing the realizations of an irreversible stochastic process cannot have the property of exchangeability[9] because irreversibility implies, by definition, that the order of the events is not random. Even the attempts to apply Bayesian theory to learning are not fully convincing. As was rightly observed by Kurz (1993: 10), 'the idea that a decision maker will set out to use information in order to learn something about probabilities is intrinsically alien to Savage's vision: preferences are the primitives and probabilities emerge only as consequences'. The models of Bayesian learning developed subsequently by Bayesian statistics do not go beyond trivial

conditioning, via the Bayes rule, of the information-free prior. In addition, Bayesian learning involves unsolved problems of convergence and consistency even when observations are assumed to be i.i.d. or exchangeable (a good survey of these problems appears in Diaconis and Freedman, 1986). These basic conceptual problems are not solved by the recent attempt by Gilboa and Schmeidler (1993) to extend Bayesian learning to the case of non-additive probabilities. Notwithstanding these efforts, it should be recognized that 'Bayesian theory applies only to "closed universe" problems, i.e. to problems in which all potential surprises can be discounted in advance' (Binmore, 1986: 43).

A different way of seeing the same point may be based on the understanding that in the standard theories of decision under uncertainty the value of strategic learning, involving genuine or 'creative' learning, is nil. In fact, as was established before, the value of strategic learning is necessarily zero whenever complete irreversibility is postulated; the Bayesian postulate of the 'sure thing' which implies dynamic coherence (Epstein and Le Breton, 1993) also implies strict irreversibility of the strategy chosen conditional upon future information. This, as it were, 'axiomatic' irreversibility implies that strategic learning is without value also in Bayesian theory.

VII PROCEDURAL AND DESIGNING RATIONALITY

As is well known, in opposition to the received substantive notion of economic rationality, H.Simon suggested a different notion, rooted in psychology and cognitive science rather than in economics, which he called 'procedural rationality'. Is this notion of rationality able to account for strategic learning? In principle, yes, because nothing prevents its application to an open world where phenomena are likely to be to some extent irreversible. However, this notion has been generally applied in economics only to a closed world. Therefore, also in this case, structural learning is generally limited to the adaptation to a given environment. This point may be clarified by considering the nexus between procedural and substantive rationality.

The standard problem analysed by substantive rationality is the choice of the optimum decision in a given and closed environment which is generally identified with the equilibrium of the model describing the decision problem. As we have seen, substantive rationality, if taken seriously, cannot consider whether and how the dynamics of the model outside equilibrium converges to the optimal equilibrium. In other words, structural learning triggered by the *ex post* awareness of having made some systematic mistakes

is not considered, and cannot be properly considered in economic terms, because its value is zero. The usual, adaptive, version of procedural rationality tackles the same problem in a complementary, and in principle more general, way. The focus falls, not on the optimum equilibrium, considered as unknowable (or too expensive to be discovered) because of the well-known bounds of rationality rightly stressed by Simon himself and other supporters of procedural rationality, but on the process of learning itself and on its reasonable stopping point, defined as 'satisficing'. A satisficing solution of the decision problem in principle does not coincide with the optimal solution (or equilibrium) and therefore involves residual systematic mistakes which are sufficiently small to be acceptable. This approach is able to study in a fruitful way the feedback between rationality and strategic learning in a closed world. However, this approach must be extended to the case of an open world which may change in an unforeseeable way and where the environment of the decision problem may be modified by the decision maker.

I call this kind of rationality 'creative' rationality because in this case the DM is not seen just as an option taker but also as an option maker (Vercelli, 1991: ch. 5). Similarly to adaptive rationality, creative rationality may be studied exclusively from the point of view of the optimal or equilibrium structure, which is in this case different from the existing one, or it may be studied also from the point of view of the structural transition to configurations considered better than the existing one. Creative rationality may therefore be distinguished in 'utopian rationality', when only the optimal configuration is considered, or 'designing' rationality whenever also the transition processes are considered. We have to conclude that only designing rationality is fully consistent with structural learning and applies in a satisfactory way in an open non-stationary world.

VIII SUMMARY AND GLIMPSES BEYOND

I am now in a position to summarize the results obtained so far. I argued that we have to distinguish different concepts of rationality and learning, different modalities of uncertainty, different degrees of time reversibility, and that there are strict correspondences between the above concepts, modalities and degrees. These correspondences are summarized in a synoptic table (Table 6.1).

Reading down the table, the degree of generality increases. According to the point of view here advocated, designing rationality is the most comprehensive and satisfactory conception of rationality because it encompasses as special cases utopian rationality, when creative rationality is studied

Table 6.1 A summary of correspondences

Rationality	Learning	Uncertainty	Time
Substantive	Updating	Soft (roulette)	Reversible (stationarity)
Bayesian	Conditioning	Soft (horse race)	Reversible (exchangeability)
Procedural	*Adaptive* structural learning	Hard	Irreversible (path-dependence)
Designing	*Creative* structural learning	Hard	Irreversible (evolution)

exclusively from the point of view of the optimal equilibrium structure, as well as adaptive rationality, when the environment is considered as given; in addition, it is applicable in cases of hard uncertainty as well as in the limiting case of soft uncertainty, and whatever degree of irreversibility is exhibited. Of course, whenever the decision problem is characterized by full reversibility or irreversibility and uncertainty is soft, it is possible to use Bayesian theory (or, for roulette-wheel problems, the Morgenstern–von Neumann theory) but their use becomes intelligible and justified only within the broader framework of designing rationality, structural learning, hard uncertainty and time irreversibility.

It is important to emphasize that the correspondences summarized in the table are compelling from the conceptual and methodological point of view. For example, genuine structural learning implies a certain degree of irreversibility and non-stationarity, so that it cannot be analysed within the traditional decision theories under (soft) uncertainty. This must be kept well in mind because, reading down the table, the awareness of the complexity of the object analysed increases, making more and more difficult the application of rigorous methods and sophisticated formal language. We have to resist the temptation to which many economists often succumb of applying to complex phenomena powerful formal approaches that are fit only for simple phenomena. In order to study consistently complex phenomena we have to develop, diligently but patiently, specific methods. For example, the recent advances in decision theory under hard uncertainty offer new opportunities for a rigorous analysis of structural learning and creative rationality in an open and evolutionary environment.

IX A CASE STUDY: LIQUIDITY PREFERENCE THEORY

The most comprehensive point of view on rationality and learning emerging from the arguments developed in this chapter is substantially consistent with Keynes's own point of view. The ultimate motivation declared by Keynes for his writing *The General Theory* was a radical structural reform of individualistic market capitalism in order to avoid its complete breakdown; in order to do so he felt that he had to introduce a radical change in economic theory and, consequently, in economic policy.[10] This is no doubt an example of deliberate use of designing rationality. However, does Keynes really attribute to economic agents, within his macroeconomic theory, the same superior notion of rationality? To some extent, yes. This is particularly clear in his analysis of liquidity preference.

In order to argue for this thesis I have first to show that Keynes's theory of liquidity preference can be taken seriously only by assuming hard uncertainty, some degree of irreversibility and a positive value for strategic learning. This does not emerge from the traditional interpretation codified by the 'neoclassical synthesis'. Liquidity preference has been traditionally interpreted, following Modigliani (1944) and Tobin (1958), as rational behaviour towards 'risk' ('soft uncertainty' in our terminology), but it has long been noticed that such an interpretation is quite misleading (Shackle, 1952; Hicks, 1974; Minsky, 1976; Chick, 1983; Jones and Ostroy, 1984; Vercelli, 1991, 1999b). According to Keynes's own theory, the DM, whether risk-averse or not, is aware of her ignorance, that is of the inability to express her beliefs in terms of a fully reliable, unique and additive probability distribution which captures all the systematic factors determining the prospective returns of financial activities, and knows that she may learn in the future about some of these factors. By holding the most liquid asset, money, she can fully exploit future strategic learning and buy profitable financial assets as soon as the increased 'weight of argument' (see Runde, 1990, 1994a; Vercelli, 2000, 2001) will justify this choice. Liquidity preference is therefore seen by Keynes as the expression of rational behaviour under uncertainty (hard uncertainty) rather than under risk (soft uncertainty). This also explains why a change in the rate of interest of one or more activities does not necessarily modify the speculative demand for money: these changes might affect the perception of uncertainty in such a way as to offset their virtual influence (inertia of investors). In particular, the attempt by the monetary authorities to reduce the interest rate through open market operations might induce an adverse upward shift of liquidity preference which frustrates the effort (the so-called 'liquidity trap').

The traditional interpretation of liquidity preference as behaviour

towards risk is unable to account for the Keynesian point of view, in particular for the following reasons:

a. it is unable to provide a clear and sound rationale for the Keynesian distinction between precautionary demand and speculative demand for liquidity and in fact substantially reduces the second to the first;
b. liquidity preference is made to depend exclusively on risk aversion and is therefore fully independent of perceived (hard) uncertainty;
c. this approach is unable to explain the crucial Keynesian propositions (such as the dependence on perceived uncertainty, the inertia of investor's behaviour and the liquidity trap), unless a completely *ad hoc* shape is assumed for the liquidity preference curve (speculative demand for money) which is considered flat beyond a certain threshold.

The recent developments of decision theory under hard uncertainty vindicate Keynes's own version of liquidity theory for the following reasons:

1. The precautionary demand for liquidity, occurring only when, and to the extent that, the decision maker is risk-averse (or hard uncertainty-averse), must be distinguished sharply from the speculative demand for liquidity, occurring in intertemporal decision problems characterized by hard uncertainty and the opportunity of structural learning before the subsequent decisions have to be made.
2. The DM is aware that she ignores the characteristics of systematic factors which are relevant for the intertemporal decision problem she is facing, and that she could learn more about them in the future. In recent decision theories under hard uncertainty, the DM's awareness of hard uncertainty is reflected by the degree of non-additivity of her prior or the degree of dispersion of multiple, somewhat unreliable, priors which may be taken as a measure of the degree of perceived uncertainty (see, for example, Gilboa, 1987; Gilboa and Schmeidler, 1989). As perceived uncertainty increases, so does liquidity preference in the Keynesian sense. The concentration of beliefs determined by conventional behaviour under hard uncertainty determines discontinuous shifts in perceived uncertainty which produce discontinuous shifts in the liquidity preference schedule.
3. The inertia often exhibited by investors in the face of changes in the price of one or more financial activities is explained as a natural property of decision theory under hard uncertainty without resort to any *ad hoc* assumption (see, for example, Simonsen and Werlang, 1991; Dow and Werlang, 1992a, 1992b). The liquidity trap may also be explained without adding *ad hoc* assumptions. A change in policy of the monetary authorities may increase the degree of perceived uncertainty so that

> any attempt at reducing the rate of interest could be offset by an increase in liquidity preference.

I may conclude that the recent advances in decision theory under hard uncertainty confirm the soundness of Keynes's theory of liquidity preference and at the same time clarify its crucial dependence on hard uncertainty, the intertemporal irreversibility of most investment options (because of the illiquidity of all the assets with the sole exception of money) and a positive value of strategic learning. What are the implications for rationality? In the light of the discussion developed in the previous sections of this chapter, it is possible to say that Keynes's theory of liquidity preference is inconsistent with substantive rationality which is unable to attribute any economic value to strategic learning. In particular, Keynes's theory appears to be fully inconsistent with the hypothesis of rational expectations which excludes the very existence of systematic mistakes. In addition, Bayesian rationality also appears to be inconsistent with Keynesian rationality, not only because the concept of systematic mistakes, and therefore that of strategic learning as here conceived, is meaningless within a Bayesian conceptual framework, but also because in any case the 'sure thing' axiom excludes a positive value for strategic learning.

It is unclear which notion of rationality Keynes attributes to decision makers. If we take seriously the claim advanced by Keynes himself that his theory applies to the case of perfect competition, and we take it in the usual sense, this would exclude in such a case creative rationality and would associate strategic learning only with procedural rationality: perfect competition implies that the economic agents are completely deprived of discretional power and therefore, by definition, that they are unable to 'create' new options. This may explain why Keynes de-emphasized creative rationality in *The General Theory* notwithstanding that his fundamental postulates (open world, hard uncertainty, positive value of strategic learning) naturally imply it. However, Keynes does not always succeed in confining himself to perfect competition, so that creative rationality emerges here and there. To limit myself to the case study of liquidity preference theory, financial innovation is sometimes evoked as a means of circumventing existing constraints (these few and sparse hints have been developed in a Keynesian spirit by Minsky: see, for example, Minsky, 1976). Financial innovation may alter the set of options in order to establish a more favourable environment for the innovators who behave according to a simple principle of designing rationality. In any case, creative rationality underlies the Keynesian policy suggestions. For example, the 'euthanasia of rentier' is conceived as a means to reduce the devastating effects of too high interest rates on the process of accumulation of capital. Structural interventions of

this kind in interest rate setting would change the set of possible states by creating new equilibrium options characterized by a lower interest rate and a higher rate of accumulation consistent with full employment. It is therefore an example of creative rationality. However, the crucial role of creative rationality in the economic process may be better understood from a Schumpeterian point of view. Unfortunately, Schumpeter did not understand the deep link between the creative rationality of innovative entrepreneurs and hard uncertainty. This gives a further reason for working in the direction of a synthesis between the Keynesian and the Schumpeterian points of view (see Vercelli, 1991, 1996).

NOTES

1. What I am going to say in this chapter is not confined to a utilitarian point of view. However, in order to keep in touch with classical decision theory and clarify where it is necessary to part company with it, I will adopt as far as possible its approach and terminology.
2. This definition of strategic learning intends to 'capture' its economic motivations and not to exclude further, and perhaps more important, motivations.
3. This observation could be made more rigorous by introducing the concept of option value (see Basili and Vercelli, 1998), by making assumptions about the probability of different time evolutions of the relevant costs. However, these complications are not necessary for our purposes, at least at this stage of the argument.
4. This criterion is so called because most formal decision theories under hard uncertainty are expressed in terms of 'capacities', a generalization of probabilities suggested by the French mathematician G. Choquet (1955). He also suggested a new kind of integral which is essential for actually calculating the expected value of utility when capacities are involved (see Schmeidler, 1986, 1989).
5. Indeed, this phrasing would be considered meaningless within a purist Bayesian theory. From the strictly 'operationalist' point of view of de Finetti, the word 'objective' is considered unintelligible unless it is understood as synonymous with 'intersubjective'.
6. According to Savage, the states of nature describe the evolution of the environment and are independent of the actions of the agents.
7. See Kurz (1974).
8. See Kreps (1988).
9. Exchangeable events are events that occur in a random sequence, such that the order of their occurrence does not affect the probabilities we are interested in. The most profound Bayesian theorists recognize that this is the fundamental notion on which Bayesian theory rests. According to Kyburg and Smokler (1964: 12) 'until this notion was introduced by de Finetti in 1931, the subjectivist theory of probability remained pretty much of a philosophical curiosity . . . [W]ith the introduction of the concept of . . . exchangeability . . . a way was discovered to connect the notion of subjective probability with the classical procedures of statistical inference' (see also Kreps, 1988: 159). This is the case because it justifies from a subjectivist point of view the usual assumption of statistical induction that the samples are 'independent and identically distributed with unknown distribution function'. Notice that it may be shown that the conditions for exchangeability are practically the same as those for ergodicity.
10. He also claimed, tongue-in-cheek, to wake up every morning with the same open-minded attitude of a little child, an attitude hardly consistent with the hypothesis of a closed world where the highest virtue is intertemporal coherence.

7. Organicism, uncertainty and 'societal interactionism': a Derridean perspective

Man-Seop Park and Serap Kayatekin

Everything is what it is, and not another thing. (G.E. Moore)

The outside ⋊ the inside (J. Derrida)

I INTRODUCTION

An increasing number of authors have recently argued that Keynes's conception of economics as a 'moral science' is based on his conception that the (economic) universe is an organic complex, as contrasted with a plain sum of what Keynes called 'legal atoms' (Brown-Collier, 1985; Carabelli, 1985, Lawson, 1985; Winslow, 1986, 1989). Part of the significance of this recent discussion is, as is argued by Hamouda and Smithin (1988), Rotheim (1988, 1995) and Winslow (1989), among others, that the notion of the universe as an organic unity provides strong support for the notion of fundamental uncertainty, which is a crucial notion for many Post Keynesian economists (for example, Davidson, 1978, 1996b; Lawson, 1985, 1994b). There are some (notably, Coddington, 1983) who consider fundamental uncertainty as implying nihilism for economic theorizing; however, according to those authors mentioned above, the notion of fundamental uncertainty is fully compatible with economic analysis once the (economic) universe is considered as organically interdependent.

This chapter notes two particular features arising from this recent discussion. First, there are a variety of interpretations of precisely what kind of notion of organic unity Keynes holds. Davis (1989/90, 1994) is of the opinion that Keynes's notion is the same as that of Moore as advanced in *Principia Ethica* (but its application is restricted in the case of Keynes). In contrast, Rotheim (1989/90, 1995) maintains that Keynes's notion is similar to the Hegelian one, which Moore criticized as logically inconsistent in his 'The Refutation of Realism' and *Principia Ethica*. In addition, Winslow (1989)

argues that Keynes's early criticism of induction and the consequent problematic of fundamental uncertainty are answered by his later accommodation of Whitehead's notion of organicism. Second, while the first two authors differ on this matter, they converge to an opinion that the interdependence *between* individuals (non-organic for Davis, organic for Rotheim) is supported by what Lawson (1985, 1987, 1994b) calls 'societal interactionism'.

Independently of these two features of the recent discussion, but not remotely from it, there has been a discussion of uncertainty (but not organicism) from a 'postmodern' perspective; this is a third feature of which this chapter takes note. Amariglio and Ruccio (1995), while recognizing the destabilizing effect of uncertainty for modernist economics, conceive uncertainty to be a discursive phenomenon (in a narrow sense to be discussed below); that is, to exist only as a (mere) *mental* construction by the economist or by economic agents.

The junction of these three features constitutes the starting point of the chapter. In relation to the first feature, three different notions of organicism which have been ascribed to Keynes will be identified and then criticized. With respect to the Moorean notion, Davis (1994) has already offered this kind of criticism from the perspective of the later Wittgenstein and Austin (the ordinary language school). We shall instead take the perspective of Jacques Derrida, a philosopher who is often regarded as one of the doyens of 'postmodernism'.[1] The choice of this author, who is not so familiar to economists,[2] derives not only from the fact that his philosophy provides a powerful criticism of the philosophical reasoning which constitutes the basis of all the three notions of organicism that have been attributed to Keynes, but also from our confrontation with the second and third features mentioned above. In relation to the third feature, Amariglio and Ruccio's 'postmodern' (and arguably Derridean) perspective with its exclusive emphasis on the 'constructive' aspect of uncertainty seems to us to lead to a well-known charge of 'anything goes'. We shall argue that a proper understanding and development of Derrida's philosophy should be distanced from its widely received '(de)constructivist' reading.

In relation to the second feature, we shall argue that a modern variation of realism applied to the social sciences called 'critical realism', on which Lawson's 'societal interactionism' is based, is not the only productive philosophical ground for the discussion of organicism and uncertainty in particular (and for Post Keynesian economics in general).[3] A perspective deriving from Derrida's philosophy, so often considered sharply opposed to realism of any sort, can provide a radically new and (probably more) solid philosophical ground which the notion of organicism and uncertainty in particular (and Post Keynesian economics in general) can appropriate.

The next section will thus summarize different notions of organic unity

(Moorean, Hegelian and Whiteheadian) and their relation to uncertainty which have been related to Keynes and Post Keynesian economics. Section III will introduce Derrida's philosophy, first in criticizing the notions of organicism attributed to Keynes and then presenting an alternative notion of organic unity which will lead to the Post Keynesian notions of fundamental uncertainty and of 'societal interactionism'. This will allow us to compare our notion of uncertainty with Amariglio and Ruccio's 'post-modern' notion. Section IV suggests some new directions of research which can be opened up by adopting the Derridean perspective which we propose.

II ORGANICISM IN KEYNES: DIFFERENT INTERPRETATIONS

Moore's Realist Notion of Organic Unity

Moore's treatment of organic unity (organic wholes) underpins his project of defending realism against the then-dominant neo-Hegelianism (Bradley, Bosanquet and MacTaggart) and the objectivity of intrinsic values. Moore was moving towards logical atomism which was to be fully developed by Russell, the early Whitehead and the early Wittgenstein. He contrasts, among others,[4] two notions of organic unity. One is the notion of organic unity which has been entertained by the neo-Hegelians. According to this notion, 'just as the whole would not be what it is but for the existence of its parts, so the parts would not be what they are but for the existence of the whole' (Moore, 1903: 33). This notion points to the *logical* dependence between the whole and its parts, where the very *identity* of the parts requires the whole they constitute; when an entity forms a part of an organic whole, it possesses predicates which it would otherwise not possess. Moore argues, however, that this notion is logically inconsistent. Here, while a part is originally identified as being distinct from the whole, that is, as being a mere part of that whole, the whole is in turn included as part of that part since the whole enters into the defining properties of that part.

> When we think of the part *itself*, we mean just *that which* we assert, in this case, to *have* the predicate that it is part of the whole; and the mere assertion that *it* is a part of the whole involves that it should itself be distinct from that which we assert of it. Otherwise we contradict ourselves since we assert that, not it, but something else – namely it together with that which we assert of it – has the predicate which we assert of it. (Moore, 1903: 33, original emphasis)

That is, in this notion the identity of a part is not the same in itself and as part of the whole, since as part of the whole it has different constitutive

properties from itself. This implies, Moore argues, 'the self-contradictory belief that one and the same thing may be two different things, and that only in one of its forms is it truly what it is' (1903: 35).

This Hegelian notion arises, Moore continues, from a confusion with a different notion of organic unity. According to this notion, which Moore considers valid, an organic whole 'has an intrinsic value different in amount from the sum of the values of its parts' (1903: 36); the intrinsic value of a whole cannot be reduced to the values of its parts; the value of a whole *emerges* as a different intrinsic value from the sum of the values of its parts. This notion of organic unity is especially characteristic of an artistic work and, indeed, of the 'goodness' of a thing which is composed of parts: it can explain, for example, how a thing which is composed partly of bad parts and partly of good parts could itself be good, even if the simple sum of their intrinsic value would imply a bad whole. Thus Moore takes this notion of organic wholes as a cornerstone of his ethics and aesthetics.

For our later discussion, it is important to note two characteristics of this Moorean notion of organic unity. First, 'the part of a valuable whole retains exactly the same value when it is, as when it is not, a part of that whole' (1903: 30). That is, the intrinsic value of a thing is not affected by becoming a part of a whole; the *identity* of a part is established on its own and regardless of which whole it belongs to. Second, as a corollary, the intrinsic value of a thing, whether a part or a whole, can only be determined by what Moore calls the 'method of isolation', which consists in 'considering what value we should attach to [a thing], if it existed in absolute isolation, stripped of all its usual accompaniments' (1903: 91).

Keynes's Notion(s) of Organic Unity: Moorean, Hegelian or Whiteheadian?

It is agreed by various authors (Davis, 1994; O'Donnell, 1989; Carabelli, 1988) that Keynes's philosophy in his early Cambridge period was decisively influenced by Moore, especially by his *Principia Ethica*. However, as is typical of the exegesis of Keynes, interpretations of Keynes's notion of organic unity even in this early period have been characterized by wide diversity. No agreement has been reached on whether Keynes's philosophy, especially connected to the notion of organic unity and its applicability, changed over his career. Furthermore, more directly related to our discussion, no settlement has been made on what kind of notion(s) of organic unity Keynes had.

We start with the thesis proposed by Bateman (1989), Davis (1989, 1989/90, 1994) and O'Donnell (1989). They are of the opinion that Keynes adhered to the Moorean notion of organicism throughout his career; as

O'Donnell (1989: 128) notes, Keynes described himself in 1938 as 'always an advocate of a principle of organic unity through time, which still seems to me only sensible' (CW X: 436). The only modification Keynes made was the restriction of the area of its applicability. In two of his Apostles papers ('Miscellanea Ethica' and 'A Theory of Beauty'), Keynes rejects Moore's argument that the principle of organic unity applies to the universe as a whole, since 'we never have the opportunity of direct inspection' of the universe itself and therefore Moore's argument implies an impossibility of 'tell[ing] what kinds of action increase the goodness of the Universe as a whole'. Keynes's alternative is to restrict the scope of the predicate 'good' to the mental states which objects in the world produce (whereas, for Moore, 'good' is a predicate of objects themselves); this implies for Keynes that the scope of the principle of organic unity be restricted to 'each individual's momentary state of mind': 'In so far as a state of mind has parts, to this extent I admit the principle of organic unities: it is the excellence of the state as a whole with which we are concerned. But beyond each individual the organic principle cannot reach'.[5]

In other words, Keynes is organicist for the separate individual but atomist for the universe whose atomic elements are individuals. Through such a restriction, Keynes is criticizing Moore's ethical objectivism and is advancing an ethical subjectivism.[6] Restricted to individual minds, however, the notion of organic unity remains the same as Moore's: 'The goodness of a whole is not the sum of the goodness of its parts, nor is the value of a group of individuals necessarily the same as the sum of their values taken severally.' This notion and its restricted applicability continue to take a central place in Keynes's discussion of related topics in *A Treatise of Probability*, his biography of Edgeworth and his critique of Tinbergen. Even in *The General Theory*, an autonomous rational individual, internally organic but externally atomistic, plays a central role. For example, for Keynes (Davis argues), workers are concerned solely with private marginal disutility of employment and there is no indication that this private reasoning is counteracted by a general social or moral influence; also the instability of long-term expectations, arising from mass psychology, enters into the picture only after an individual's rational calculation of the marginal efficiency of his/her own capital collapses.

In contrast to this interpretation, various authors (Carabelli, 1988, 1991; Rotheim, 1988, 1989/90, 1992, 1995; Winslow, 1986, 1989) put forward a thesis that, true though it may be that Keynes's Apostles papers show his tendency towards atomistic reasoning for the relationships between individuals, he moved significantly to a different notion of organicism as his economic thinking matured, even as early as in *A Treatise on Probability*. According to these authors' interpretation(s) of Keynes's position in ques-

tion, the notion of organic unity they assign to Keynes's mature thinking seems to be more Hegelian (in its generic sense) than Moorean. Thus Rotheim explicitly asserts, 'This view of an organic system that is consistent with Moorean doctrine is not what Keynes had in mind when considering the social science' and he continues to describe Keynes's notion as referring to 'the process by which parts and wholes interacted and redefined each other in the course of those interactions' (1989/90: 318–19), which is essentially the notion of organic wholes which Moore attributed to the neo-Hegelians of his time.

Thus, for Rotheim, Keynes's theory of the determination of aggregate output and employment on the basis of the determination of money wages, not real wages, embodies precisely such an interrelation between the whole and its parts – an aggregate supply curve of labour would not exist independently of an aggregate demand curve for labour, and vice versa; and also, when output is not fixed at the full-employment level but changes, the return to capital of an investor is not determined until other firms have changed their productive capacity: the level of output and the return to capital are simultaneously determined.

Winslow also understands the notion of organicism as 'the assumption that relations between ultimate real entities are internal rather than external'; on this notion, the essential characteristics of an ultimate entity, 'those which make it the particular thing that it is, are the outcome of its relations with other entities' (1989: 1173–4). This notion of organic unity, for Winslow, is borrowed from the later Whitehead (that is, not as the collaborator of Russell in *Principia Mathematica*, but as a metaphysics philosopher in *Process and Reality*).[7] For Whitehead, actual entities do not possess permanent identity; they are always in the process of becoming, internally absorbing the impact of other actual entities; nothing in the world is unrelated; the elements of actual entities are related ('prehended') to each other and these entities are also always related ('prehended') to other entities. As far as this aspect of organicism is concerned, one may say Whitehead's notion of organic unity is Hegelian in its generic sense. It is important, however, to note an aspect of Whitehead's metaphysics, which will be discussed in Section III. For Whitehead, a thing in its *actuality* is formed in the process of creativity. For the unfolding of actual entities into being, however, he relies on the notion of 'eternal objects'; these are those which retain their identity independently of the flux of things, that is, things in their *possibility*.

Organicism, Uncertainty and 'Societal Interactionism'

This discussion of organic unity in the work of Keynes forms, for some writers (Hamouda and Smithin, 1988; Rotheim, 1988, 1995; Winslow,

1989), the philosophical backdrop to the Post Keynesian notion of fundamental uncertainty. The starting point of argument is Keynes's distinction between atomic and organic characters of natural law in *A Treatise on Probability*. There, in much-quoted passages, Keynes argues that induction, through which probability is calculated, is justified only on the assumption that 'The system of the material universe must consist . . . of bodies which we may term . . . *legal atoms*, such that each of them exercise its own separate, independent, and invariable effect' (TP: 276); however,

> there might well be quite different laws for wholes of different degrees of complexity, and laws of connection between complexes which could not be stated in terms of laws connecting individual parts. In this case natural law would be organic and not, as it is generally supposed, atomic. If every configuration of the universe were subject to a separate and independent law, or if very small differences between bodies – in their shape or size, for instance, – led to their obeying quite different laws, prediction would be impossible and the inductive method useless. (TP: 277)

If economic or, in general, social relations are organic, then the method of induction cannot be used in calculating probability; this situation where 'the probability relation itself is unknown, or more importantly, is numerically indeterminate in the literal sense that there is no basis upon which it could be determined' (Lawson, 1985: 915) is precisely the situation where fundamental uncertainty prevails. Under this situation of fundamental uncertainty, 'rational' economic behaviour must be based on the knowledge that is available. Now the available knowledge is in part acquired through the participation by individuals in society on the one hand, and, on the other, by the social practices (conventions, institutions) which continuously reproduce knowledge. Thus we now have a case for 'societal interactionism' in which 'Individual actions and social practices each presuppose each other' (Lawson, 1985: 920). In the words of Bhaskar, whose ideas Lawson borrows heavily,

> Society is both the ever-present *condition* (material cause) and the continually reproduced *outcome* of human agency. And praxis is both work, that is, conscious *production*, and (normally unconscious) *reproduction* of the conditions of production, that is society. One could refer to the former as the *duality of structure*, and the latter as the *duality of praxis*. (Bhaskar, 1989b: 34–5, original emphasis)

Despite differences in the interpretations of organicism in Keynes, the participants in the debate converge to a thesis that Keynes's adoption of the principle of organic unity leads to 'societal interactionism' in the sense Lawson puts forward. Thus, for Rotheim,

> Under organic conditions, rational inferences are less likely because there may not be a set of immutable premises which can be learned about with experimentation. Experience does not give us a better knowledge of those unique premises because the nature of those premises is not necessarily independent of the acts of knowing them . . . We come to know things not through prior knowledge of 'atoms' but through our interacting with reality . . . This, of course, is what Lawson means by the term interactionist realism. (1988: 87)

And for Davis:

> Keynes predicated an atomism of individuals upon the organic unity of the individual mind, and thus repudiated an organicism of minds on the basis of the autonomy of the individual mind . . . [N]one of this precludes Keynes adopting some form of non-organic interdependence between individuals . . . on the order of a 'societal interactionism' (Lawson), that might be captured by principles or laws that could be said to operate solely at the level of the whole. (1989: 1163)

One can easily see that the attribution of different notions of organicism to Keynes by these two authors informs their further difference in the understanding of 'societal interactionism' in the work of Lawson. We do not wish to pursue this aspect further, but just to draw the reader's attention to the fact that Lawson's notion of societal interactionism is part of 'critical realism' (for example, Lawson, 1994b), which in turn draws on a modern variant of realism: 'transcendental realism' as applied to the natural realm and 'critical naturalism' as applied to the social realm (Bhaskar, 1978, 1989b).[8] As we shall argue in the next section, a similar kind of 'societal interactionism' as that which Lawson proposes – and which both Rotheim and Davis attribute to Keynes – can be derived from Derrida's philosophy, which is grounded on a basis very different from transcendental realism. The purpose of such a derivation is to argue that (critical) realism is not the only productive philosophical ground that Post Keynesianism can appropriate; rather, Derrida's philosophy, usually considered as opposed to realism, can also provide such a philosophical ground, more radical in its implications, once stripped of many misunderstandings surrounding it.[9]

III A DERRIDEAN PERSPECTIVE

The Logic of Supplementarity

According to Derrida,[10] the dominant intellectual tradition in the West is the 'metaphysics of presence', that is the philosophy based on the assumption that 'to be' is 'to be present', or moreover, 'to be present to the mind'. First, there exists a human mind, whose experiences mirror things in a

natural way; secondly, within the mind is reason or thought where the meaning or truth of things appears; thirdly, reason manifests itself in an immediate and natural way, in the form of language. The metaphysics of presence is based on the logic of identity (Lechte, 1994: 106), which has the following features: the law of identity: 'Whatever is, is'; the law of contradiction: 'Nothing can both be and not be'; the law of excluded middle: 'Everything must either be or not be'.

These 'laws' of thought together secure a self-sufficient reality which is simple (free of contradiction), homogeneous (of the same substance) and present to itself (without any mediation). It is on the basis of these 'laws' that Western thought has been tied to a series of transcendental reality: *eidos* (form), *arkhē* (origin), *telos* (end), *energeia* (actuality, activity), *ousia* (being, substance), *alētheia* (truth), and so on. Derrida's philosophy is, if one dare summarize it in a few words, a questioning of the logic of identity. Hence one finds numerous cases where Derrida says that an entity is neither this nor not-this; rather, the meaning of an entity or a word requires both the 'this' and the 'not-this' of that entity or that word.

For Derrida, there cannot be a self-identical entity. Derrida (1974) makes this point forcefully in terms of a dilemma which faces Rousseau's philosophy of education. Rousseau argues that Nature is self-sufficient – simple, pure, innocent and graceful – so that it does not have to be supplemented by something exterior to it. However, at the same time, he presents education as a system which 'supplements' Nature in order to reconstitute Nature in the most natural way possible; here, Nature requires something alien ('the other') in order to complete its naturalness: 'The supplement [pedagogy] comes *naturally* to put itself in Nature's place. The supplement is the image and the representation of Nature. The image is neither in nor out of Nature. The supplement is therefore equally dangerous for Reason, the natural health of Reason' (1974: 149, original emphasis). This is but an example of the 'logic of supplementarity', which is applicable generally. The word 'supplement' has two meanings: as a mere optional feature which may be added as a surplus, and as that which is necessary to fill up some existing lack, some gap in the order of things. *Every* entity requires supplements to be 'full'. The logic of supplementarity is what Derrida proposes as contrasted with the logic of identity which has been *the* basis of Western philosophy.

The logic of supplementarity is a further (critical) development of the Saussurean linguistics. According to Saussure, language (*langue*) is composed of signifiers and signifieds, without anything to do with referents. Referents enter only at the level of actual utterances (*parole*). Signifieds are like holes in a net, 'defined not by their positive contents but negatively by their relations with the other terms of the system', defined by their

boundaries but empty in themselves. That is, the meaning of a word is defined in differentiation from other words. Now for Derrida, this differentiation is in the sense of *deferral* as well as *difference* (Derrida coins a term, *différance*, to connote both of these two senses). The meaning of a word exists not only in virtue of its difference from other meanings but also in virtue of the deferral of some other meaning.[11] *Différance*, Derrida insists, is neither a concept nor a word; that is, unlike a concept, it has no positive (definite) content; but also, differently from Saussure's linguistics where the meaning of a word is purely relational, without containing any positive content, it is not completely aloof from reality. (See further the subsection on uncertainty below.) The unavoidable gap between a meaning of a word and other meanings of that word, between an entity and its 'other' – arising from the deferral between the meanings – is always tainted, the one being always marked by some 'trace' of the other (and vice versa). A 'trace' is not a self-sufficient thing, but an *absence* relative to something else – like a track which can be construed as that which is taken away from the ordinary state of a forest (see Harland, 1987). Derrida (1982) argues that his notion of *différance* is to deal with the traditional dilemma in Western philosophy regarding the necessity of representing time (succession) in terms of space (simultaneity). *Différance* represents both at the same time. This implies that words acquire meaning only through their participation in an *historical* network of differences and deferrals in relation to others.

The notion of *différance* leads to the problematization of the very concept of an 'origin', a point of beginning from which all the rest would follow, or a 'centre', a point of attraction which would hold all the rest in order. A forceful argument for this is provided by Derrida's notion of 'arche-writing'. For Derrida, as for Freud, the unconscious mind underlies the conscious mind, and the unconscious mind exists in the form of 'arche-writing', 'inscriptions' made upon the matter of the brain. Derrida (1978a) provides a fascinating interpretation of Freud whose use of the Mystic Writing Pad as a metaphor for the unconscious proves to be a fertile ground for the notion of arche-writing crucial to Derrida's discourse of writing.[12]

The Mystic Writing Pad is a toy comprising three layers: a transparent sheet of celluloid on top of a layer of grease-proof-like paper which is placed on a waxed base. Pressure on the top layer of celluloid causes the darkness of the wax base to reveal itself as writing. The writing can then be removed by lifting the paper from the wax base. However, the wax base still retains the initial trace, just like the unconscious which, owing to a 'force' excited in the perceptual circuits of the brain, comprises 'pathways' or 'traces'. The base here is analogous to the unconscious mind and the paper and the celluloid to the perception–consciousness system: the former

retains what it does not perceive alongside the latter which transmits what it does not retain.[13] Writing is not produced merely as a result of the pressure exerted downwards on the celluloid, but owing to the wax base revealing itself upwards. The main point this argument drives at is the problematization of any notion of the 'origin' (of writing, hence archewriting) which is simple, homogeneous and self-identified. Derrida argues this point forcefully in a complicated but informative paragraph:

> From the beginning, in the 'present' of their first impression, they [traces] are constituted by the double force of repetition and erasure, legibility and illegibility. A two-handed machine, a multiplicity of agencies or origins – is this not the original relation to the other and the original temporality of writing, its 'primary' complication: an originary spacing, deferring, and erasure of the simple origin, and polemics on the very threshold of what we persist in calling perception? The stage of dreams, 'which follow old facilitations', was a stage of writing. But this is because 'perception', the first relation of life to its other, the origin of life, had always already prepared representation. We must be several in order to write, and even to 'perceive'. The simple structure of maintenance and manuscription, like every intuition of an origin, is a myth, a 'fiction' as 'theoretical' as the idea of the primary process. (Derrida, 1978a: 226)

Even the 'origin', as the 'primary' beginning, is complicated, marked by the traces of the 'other'. All experiences are *delayed* effects; even the experiences which seem most immediate are not a direct reflection of the outside physical world but a deferred effect coming from the contact with what has already been inscribed in the memory. Thus there is an unavoidable gap between perception and the presence (in space) of the things themselves. Likewise, there is an unavoidable lag between perception and the present (in time) of our experience. The present of perception is always, in a sense, in the past.

Organicism: Criticism and a Radical Alternative

Now one can directly see how Derrida's critique of the 'metaphysics of presence' has devastating implications for the Moorean notion of organic wholes. As we have emphasized in the previous section, for Moore, a part must have an identity on its own, independently of any of its relations with other parts of a whole or even with the whole it belongs to. Also the evaluation of the intrinsic value of an entity must proceed through the method of isolation, which presupposes the establishment of the identity of that entity on a self-sufficient basis. However, a self-sufficient identity of an entity is precisely what Derrida finds in the metaphysics of presence and of which he provides a destructive criticism. The method of isolation cannot work because an entity cannot be identified on its own but only by virtue

of traces of its 'others'. An entity is neither simply present to itself (in space) nor simultaneously present with itself (in time):

> The play of differences supposes, in effect, syntheses and referrals which forbid at any moment, or in any sense, that a simple element be present in and of itself, referring to itself. Whether in the order of spoken or written discourse, no element can function as a sign without referring to another element which itself is not simply present. This interweaving results in each 'element' – phoneme or grapheme – being constituted on the basis of the trace with it of the other elements of the chain or system . . . *Différance* is the systematic play of differences, of the traces of differences, of the spacing by means of which elements are related to each other. (Derrida, 1981b: 26–7, original emphasis omitted)

The Moorean charge of logical inconsistency of the neo-Hegelian notion of organicism is based on the logic of identity and therefore loses its critical power in Derrida's philosophy.

To the same extent, both the Hegelian and the Whiteheadian notions of organicism are also subject to criticism from the Derridean perspective. For, in Derrida, it is also the very concept of a *whole*, not only that of a part, that is questioned and radicalized. The 'interweaving' of elements, or a 'text' as a 'textile', which the above quote argues for, clearly points towards a notion of organic relations. But this notion is radical in the sense that it subverts all attempts at a totalization. For Derrida (1978b), the conception of (impossibility of) totalization is different from the classical one which is the impossibility of totalization due to the infiniteness of a field which cannot be grasped by a finite discourse. What that impossibility means for Derrida is (non)totalization due to the nature of field.

> This field is in effect that of play, that is to say, a field of infinite substitutions only because it is finite, that is to say, because instead of being an inexhaustible field, as in the classical hypothesis, instead of being too large, there is something missing from it: a center which arrests and grounds the play of substitutions. One could say . . . that this movement of play, permitted by the lack or absence of a center or origin, is the movement of supplementarity. One cannot determine the center and exhaust totalization because the sign which replaces the center, which supplements it, taking the center's place in its absence – this sign is added, occurs as a surplus, as a supplement. (Derrida, 1978b: 289)

The traditional concept of a whole presupposes the existence of a 'centre' which totalizes; that is, the existence of a self-sufficient entity (an ultimate signified, a transcendental reality) which constitutes the basis of an order among the parts of that whole. The logic of supplementarity and *différance* questions this very concept of a totalizing centre. The Hegelian notion of organicism, to which Rotheim adheres, is thus criticized as far as that notion indicates a self-unfolding of Absolute Idea, an example of a

transcendental totalizing entity. A similar criticism applies to the Whiteheadian notion of organicism, which Winslow proposes as the one Keynes eventually adopted. We have noted above that Whitehead needed a concept of 'eternal objects' for the unfolding of actual entities into being.[14] Eternal objects, like the Platonic *eidos*, are those which retain their identity independently of the flux of things; that is, which are things in their possibility. Eternal objects are uncreated and timeless. An actual event is a combination of various eternal objects in a particular pattern. Further, Whitehead introduces the concept of God, who grasps conceptually all the (infinite) possibilities that constitute the realm of eternal objects. It is God that mediates between the eternal objects and the actual events, by presenting (but not imposing) the possibilities as 'lures of what might be'. It is clear now that Whitehead's notion of eternal objects or God is an example of a transcendental entity, acting as an origin or a centre which is self-present and self-sufficient. It requires only a moment's thought to see how this can be subject to Derrida's criticism of the metaphysics of presence and the logic of identity.

For Derrida, 'full speech', in which there would be no differences and deferrals in contrast with 'writing' which is characterized precisely by those[15] – that is, the Moorean self-identical parts, the Hegelian Absolute Idea or the Whiteheadian 'eternal objects' and God – does not exist. Owing to deferrals and traces inescapable in signification, no single element in a relation can ever claim an absolute privilege, as a centre, since each relies upon others from which it differs. There can be no absolute hierarchy. Everything is 'intertextual'. And this 'textuality' of everything is the notion of organicism which we find in Derrida.

Uncertainty and the Material Character of Discourse

Once the identity of an entity is conceived in the Derridean way, identity originates in multiple (perhaps infinite) sources and it is precisely this aspect of identity that gives identity its *fluidity*. We are now going to argue that this relational and precarious character of identity can give rise to the notion of fundamental uncertainty (and 'societal interactionism'); that is, we are going to discuss a Derridean social theory.[16]

The logic of supplementarity and *différance* and the consequent problematization of the concept of an origin or a centre imply that, whenever one looks for the positive content of the signified, what one finds is absence and emptiness (in the sense of 'traces' discussed above). The signified, as an entity which identifies itself as itself, has been a terminus where meaning finally settles. Without a self-identified signified, the process of signification is perpetual; meaning is perpetually unfulfilled. In Derrida's terms, language

is in the state of 'dissemination': the state of endless loss and spillage, the state of being endlessly unbalanced and out of equilibrium.

Laclau and Mouffe (1985) argue that this overflow of meanings, the multiplication of signifieds, is the source of *contingency* at the social level. We have seen above how, for Derrida, no totality is complete. This indicates, for Laclau and Mouffe, that 'society' as a sutured and self-defined totality, as a universally fixed system of differences (and therefore identities), cannot exist. However, if an ultimate fixity of meaning is not possible, nonetheless there *must* be partial fixations (Laclau and Mouffe, 1985: 112ff). For, in order for the very flow of differences to be possible, there must be *a* meaning;[17] a discourse 'incapable of generating any fixity of meaning is the discourse of the psychotic'. Such a provisional fixation in the field of dissemination, the 'limitation of the productivity of the signifying chain', is necessary for establishing the positions which make predictions possible.[18] At the social level, the practice of 'articulation' establishes relations among entities such that the identity of these entities is established (and modified) as a result of that practice. The structured totality resulting from the articulatory practice is called *discourse*. It is important to understand, following Foucault (1972), that a discourse is formed through certain *regularity* existing in the dispersion of signifieds, a regularity which helps to form an ensemble of differential positions in the endless state of dissemination. Thus one can say, 'necessity only exists as a partial effort to limit contingency' (Laclau and Mouffe, 1985: 114). Every entity in a particular discourse settles in its relation with the remaining other entities. The 'society' is such a particular discourse, with its structure of articulated relations.

But this settling of relations cannot be entirely fulfilled, because the identities (the signifieds) of entities are, as Derrida argues, in the state of dissemination, without a centre to hold them together universally and timelessly: '"discourse" as a system of differential entities . . . only exists as a partial limitation of a "surplus of meaning" which subverts it. Being inherent in every discursive situation, this "surplus" is the necessary terrain for the constitution of every social practice' (Laclau and Mouffe, 1985: 111). At the social level, 'neither a total interiority nor a total exteriority is possible'. A total interiority is not possible since a fixed system of differences produced by a discourse is constantly subverted by the multiplication of signifieds from inside (and from outside); a total exteriority is not possible either, because, to be totally external to each other, the entities must be totally internal, that is, self-present, to themselves.

It is this constant subversion, arising from the constant overflow of meanings, that indicates the inherent existence and emergence of *contingency* – that is, *uncertainty* – at the social level. This is because society is a

result of a provisional fixation of elements in the field of constant dissemination. From the inside of this provisional fixation, and also from the outside of this local boundary, will constantly flow the 'surplus' of meanings. The containment of this surplus within a particular discourse (that is, a particular order of an economy) cannot be absolute; if it could, it would constitute an absolute totality, an absolute 'centre'. The society, as a local (in space and in time) fixation in the state of dissemination, is inherently impregnated with 'undecidables' and indeterminacies. Uncertainty which arises this way takes the form that Rotheim (1995) refers to as 'ontological' or Davidson (1996b) as 'nonergodic'. Under this form of uncertainty, one cannot completely know the (economic) world, but *not* because one does not have sufficient mental capacity to apprehend the world or because the world, existing out there in its immutability, is 'uncertain' in itself.[19] Rather, it is because the world is to be *transmuted*. Seen from the Derridean perspective, the society (and the economy) cannot be immutable, since it is formed through a discursive practice which is in its turn constantly subverted from within (and from without).

Our 'Derridean' conception of uncertainty should not be assimilated to another 'postmodern' (arguably 'Derridean') conception of uncertainty by Amariglio and Ruccio (1995). They conceive uncertainty to be a discursive phenomenon in its narrow sense: to exist only in discourse in the form of a literal text, as a *mental* construction by the economist or by economic agents. For Amariglio and Ruccio, this understanding has three implications (1995: 343–5). Firstly, uncertainty is a multiple notion: uncertainty acquires different meanings in different discourses and it exists only literally, that is, makes sense in some discourses and not in others. Secondly, the discourses which argue for the existence and experience of uncertainty cannot ensure its existence as a truth. Thirdly, uncertainty is neither subjective as the Austrian school conceives nor objective as the Post Keynesian school insists: not subjective because this would require the existence of the consciousness of individuals by which the individuals are able to attach different degrees of confidence and beliefs to the states of world; not objective because this would imply the existence of an independent reality 'out there' waiting to be 'known'; and it is precisely the notion of the self-sufficient individual and, according to Amariglio and Ruccio, the notion of a world existing externally, that postmodernism refutes and rejects.

The difference between their position and ours seems to arise from different understandings of 'discourse'. For Amariglio and Ruccio, 'discourse' is a result of a subjective, mental act (by the economist or by economic agents), in a stronger sense than in the classical idealism of Berkeley, Kant or Hegel. Such an understanding of discourse makes them belong to what Bhaskar calls 'superidealism', represented by, for example, Hindess and

Hirst (1977) and the American 'deconstructivist' literary critics:[20] 'Objects in discourse do not exist. The entities discourse refers to are constituted in it and by it' (Hindess and Hirst, 1977: 20). Our understanding of discourse is different from this, as is Laclau and Mouffe's (1985: 107–10). It is agreed that every object is constituted as an object of discourse. But this is entirely independent of the existence or otherwise of an external world. It is one thing to deny that objects exist externally to thought, and another altogether to deny that they could constitute themselves as objects outside any discourse.

Also, in contrast to the *mental* character of discourse which Amariglio and Ruccio seem to hold exclusively, every discursive structure has the *material* character, as is implied by the theory of speech acts or Wittgenstein's language game: language is accompanied by *performances* and *actions*. Textual discourses (in the literal sense) reflect prevailing social–economic–cultural circumstances, but at the same time take a critical reflexive standing upon these circumstances and are *institutionalized* as part of the customs, the norms and the culture they inhabit. Once the material character of discourse is accepted, the objective world is considered as a relational structure as much as a literal 'text' is. Thus, in Derrida, a 'text' should be taken, not in the narrow sense of a bound book, but in a wider sense of any entity which is constituted as a relational structure. '[T]he practice of articulation, as fixation/dislocation of a system of differences, cannot consist of purely linguistic phenomena; but must instead pierce the entire material density of the multifarious institutions, rituals and practices through which a discursive formation is structured' (Laclau and Mouffe, 1985: 109).

The material character of discourse helps to avoid two pitfalls into which Amariglio and Ruccio's position is very liable to fall. One of the pitfalls is that they have to presuppose (implicitly) a transcendental subject (the economist or an economic agent) who is involved in the *formation* of a discourse, whereas they, in line with the general tenet of postmodernism, reject the concept of a self-sufficient subject *within* a discourse. The material character of discourse does not require a subject, because, following Foucault (1972), a discourse is formed through *regularity* in the dispersion of the meanings. It is rather 'subject positions' (relationally established) than a subject (existing transcendentally) that are involved in a discursive formation. Another pitfall of Amariglio and Ruccio's notion is its implication of an infinite textual 'freeplay', 'anything goes', completely aloof from the reality (see, especially, their first and second implications of the discursive character of uncertainty; 1995: 344). Contrary to the understanding of these authors, who seem to follow the popularized understanding offered by 'deconstructivist' literary critics,[21] 'deconstruction' does not imply an

infinite 'freeplay'. Derrida denies neither that there exists a world 'out there' nor that language can engage with that world in various ways; what he does deny is a *reified* concept of reference which prevents productive exchange between the world and the text (Norris, 1987: ch. 6). Derrida's theory of language has often been interpreted as the 'suspension' of the referent, as if there were nothing outside of language. Derrida himself has reacted to these interpretations with scorn, referring to them as 'stupidities':

> I never cease to be surprised by critics who see my work as a declaration that there is nothing beyond language, that we are imprisoned in language . . . Every week I receive critical commentaries and studies on deconstruction which operate on the assumption that what they call 'post-structuralism' amounts to saying that there is nothing beyond language, that we are submerged in words – and other stupidities of that sort. (Derrida, 1984: 123)

He argues that distancing oneself from the traditional notions of the referent does not mean that there is nothing beyond language. The agenda of deconstruction, he adds, is to problematize that relation of reference and show that it is much more complex than traditional theories believe it to be. Deconstruction therefore always calls into question the relation between language and that which is 'outside' language.

> [Deconstruction] asks whether our term 'reference' is entirely adequate for designating the 'other'. The other, which is beyond language and which summons language, is perhaps not a 'referent' in the normal sense which linguists have attached to this term. But to distance oneself thus from the habitual structure of reference, to challenge or complicate our common assumptions about it, does not amount to saying that there is nothing beyond language. (Derrida, 1984: 123–4)

For Derrida, the reality reveals itself to us only through the traces it receives.[22] When the material character of a discourse, that is the relation between language and the other of language, is properly understood and accepted, the widely-received attribution of infinite freeplay to Derrida – which has been turned into the notion of absolute contingency and the pure 'constructivist' character of a discourse by the 'superidealists' – proves to have been ill-conceived.[23]

'Societal Interactionism'

It now requires only a step to see how a social theory deriving from Derrida's philosophy, as is presented above, can explain a picture of society in which 'Individual actions and social practices each presuppose each other'; that is, societal interactionism (Lawson, 1985: 920).

Whether in rationalism or in empiricism, the concept of subject takes centre stage in discussion: subject is a completely autonomous, self-sufficient individual, and thus acts as an originary totality: subject is a unified and unifying essence. Derrida's logic of supplementarity and *différance* shows that the identity of an individual is not self-sufficient, being established through the 'traces' of others. One has, not a subject as a self-sufficient entity, but a 'subject position' which is relationally established. Thus what is relevant for an economy is not a capitalist or a worker whose identity is given independently of each other, as a separate living organism, but a capitalist-position or a worker-position whose identity is established only in relation to each other. Thus identity of an individual in a society cannot be immutable but is subject to constant changes in accordance with the individual's relations with the rest of the world (as a discourse).

However, as much as identity is not fixed, it is not completely fluid. Once one rejects the concept of a subject as a totalizing centre, there will be dispersion, the overflow of meanings. The infinite flow of differences is articulated and turned into a discourse. As has been argued above, this formation of discourse is possible through certain regularity existing in the state of dissemination (and thus it does not require a transcendental subject but a 'subject position'). We have also emphasized the material character of discourse, the embodiment of discourse as part of institutions, norms, rituals, conventions and so forth (namely, as a social structure). It is in this social practice of articulation *and* through the material character of discourse that the fluidity of identities (individuals) is limited and a structure of social relations is established, albeit provisionally. This articulation of the state of dissemination as a discourse cannot but be local (in space and in time), because articulation is but a provisional fixation/dislocation of meanings. As much as an individual cannot be completely identical with him/herself, the social structure, too, cannot be completely identical with itself. The endless overflow of meaning constantly subverts the existing partial fixation. As Laclau and Mouffe summarize:

> The practice of articulation . . . consists in the construction of nodal points which partially fix meaning, and the partial character of this fixation proceeds from the openness of the social, a result, in its turn, of the constant overflowing of every discourse by the infinitude of the field of discursivity. (1985: 113)

If one compares this quotation with Bhaskar's passage (on the duality of structure and of *praxis*) which we have quoted in the previous section, one will clearly see how close the views expressed by them are to each other.[24] The world, as a discourse (with its material character), is 'open' in the sense that there is a constant subversion of a pre-established order of relations from both the inside and the outside of that discourse. It is in this sense that

individuals (as 'social positions') and the society (social practices as a structure) presuppose each other.

IV CONCLUSION: NOT A CLOSURE BUT AN OPENING

In this chapter we have tried to introduce a Derridean perspective into the Post Keynesian discussion of organicism, uncertainty and 'societal interactionism'. Derrida's general critique of the logic of identity (as self-presence) implies a strong criticism of the various notions of organicism which have been attributed to Keynes. In its place we have proposed, in line with Derrida, a more radical notion of organicism where there is no centre which would hold entities in a totalizing manner and, thus, where there is a constant overflow of meanings. This, with an emphasis on the material character of a 'discourse', has further led us to a Post Keynesian notion of fundamental uncertainty at the ontological level and also the notion of 'societal interactionism'.

But the Derridean perspective would not be limited to the topics dealt with in the present chapter. In the course of discussion, we have hinted at some themes but have not pursued them further. Two themes among others seem to be particularly interesting. First, the questioning of a self-sufficient individual, the critique of subject, has a direct implication for the very concept of 'economic man'. Criticism from a Derridean perspective would be much stronger than other criticisms in terms of, for example, the Simonian concept of bounded rationality (rather, this latter would also be subject to the Derridean criticism).[25] Secondly, Derrida's philosophy has been appropriated by literary critics for their 'deconstructivist' reading of texts, emphasizing the aspect of infinite 'freeplay'. As is explicitly acknowledged, McCloskey's 'rhetoric of economics' (1985, 1994) – the most widely known stream of postmodernism in economics – was strongly influenced by the writings of 'deconstructivist' literary critics and the neopragmatism of Rorty. Precisely for that matter, McCloskey has been accused of implicitly encouraging, self-denial notwithstanding, the position of 'anything goes', the lack of criticism (Sofianou, 1995; Stettler, 1995). Our emphasis of the material character of discourse would indicate a rather different line of development of the 'rhetoric of economics'.

We believe that some versions (Derridean in our case) of the postmodern wave can play a positive role in unsettling the self-confidence of established economic discourse. Postmodernism can be subversive, for instance, through resorting to the strategy of deconstruction (in accordance with our understanding) of central concepts such as rationality, the market, human

nature and equilibrium. We should be aware, however, that in this enterprise of subversion, our capacity as academics is limited, for the power of a discourse goes beyond the boundaries of the academia as well, as in the ancient Greek saying, μηδεν αγαν ('not too much of any one thing').

NOTES

1. However, as will be made clear in the course of discussion, Derrida's position should be sharply distinguished from the widespread reception of 'postmodernism', in which it is assimilated to the American 'deconstructivist' literary criticism or Rortian neopragmatism. Indeed, our discussion of Amariglio and Ruccio's 'postmodern' notion of uncertainty aims precisely to counteract this tendency.
2. Thus the present chapter will serve, beyond the discussion of the three specific features mentioned above, as a general introduction to economists (if not to economics to a full extent yet, but see section IV below) of the philosophical arguments of postmodernism and especially the Derridean perspective. In economics, there has seldom been any substantial discussion of Derrida's philosophy, or indeed, any philosophical ground(s) for postmodernism. This is in contrast to the number of efforts on the part of economic methodologists to explicate various positions of the philosophy of science (in particular, Karl Popper, Imre Lakatos and Thomas Kuhn). This tendency is again clearly visible in a collection of essays (Backhouse, 1994) which deal explicitly with 'philosophical perspectives on economics': there are discussions on Kuhn and Lakatos, on a modern variant of realism (Bhaskar's 'transcendental realism' and 'critical realism') and on Peirce's 'pragmaticism', but no discussion on either poststructuralism or Rortian neopragmatism which are more directly connected to the recent 'rhetoric of economics' discourses (McCloskey, 1985, 1994; Klamer *et al.*, 1988). (Peirce's 'pragmaticism' should be distinguished from Dewey's and James's 'pragmatism' and has some similarity to Derrida's philosophy; however, no such connection is suggested in the collection.) Compare this tendency in economics with the recent philosophically oriented discussions of postmodernism as related to sociology (Dickens and Fontana, 1994). Exceptions to this tendency in economics are Resnick and Wolff (1987), who make good use of Althusser, Amariglio (1988), who introduces Michel Foucault, and Davis (1990), who discusses Richard Rorty. (The first two pioneered, along with the well-known McCloskey and Klamer, the efforts to introduce postmodernist thought into economics.)
3. Lawson (1994b) argues for critical realism as a foundation of Post Keynesian economics and its links with other traditions (classical economists and Marx).
4. Moore considers a third notion according to which 'the continued existence of one [part] is a necessary condition for the continued existence of other [parts]; while the continued existence of the latter is also a necessary condition for the continued existence of the former' (Moore, 1903: 31). An example Moore takes is the relationship among the parts of living organisms; the relation between a whole and its parts is one of 'mutual causal dependence on one another' (1903: 32). Moore considers this notion to be meaningful and valid, but does not find it useful to his ethics and aesthetics.
5. All quotes from Keynes in this paragraph, which we reproduce from Davis (1989, 1994), are from his unpublished 'Miscellanea Ethica'. It should be noted here that Keynes does not explain what precisely is the constitution of the individual mind.
6. Keynes's subjectivism, however, does not fall into ethical relativism, since he refers to what an individual '*ought* to think and feel', the abstraction of this common element across individuals hinging upon the existence of an 'approximate uniformity of human organs' (this idea is developed to a fuller extent, Davis says, in 'My Early Beliefs', where Keynes criticizes his early beliefs which underestimated 'customary morals, conventions and traditional wisdom').

7. Indeed, the purpose of Winslow is to demonstrate that Whitehead's idea of internal relations being formed in a nested hierarchy – which is proposed as his answer to Keynes's criticism of induction – makes fundamental uncertainty compatible with economic analysis. In the nested hierarchy of internal relations, the more general layers are more stable (hence, susceptible to being treated as given) than the more specific ones. Two implications follow from this. First, fewer factors can be taken as given as one wants to forecast further into the future of events. Second, in a given context, relevant factors are limited to a finite portion of the 'extensive continuum' implied by internal relations. For Keynes, these two implications take the forms of restricting fundamental uncertainty to long-run expectations and of creating psychological structures which contain fundamental uncertainty.
8. The present authors have a feeling that underlying Lawson's 'societal interactionism' (or, more precisely, Bhaskar's 'critical realism') is a notion of organic unity which is different from both of the notions that Rotheim and Davis have in mind. But the working out of this theme would be a task of another full-length chapter.
9. This chapter does not wish to discuss the possible antagonism or agreement between the perspective of critical realism and the Derridean perspective, a topic which is well beyond the limit of the present chapter (but see notes 19 and 23). Such an attempt has been made by Bhaskar himself (Bhaskar, 1993).
10. Derrida's writings are notorious for their difficulty. There are an immense number of expositions of Derrida; we have consulted, among others, the following books, as well as numerous papers scattered around edited books and journals: Harland (1987), Norris (1987), Dews (1987), Johnson (1993) and Gasché (1986). Derrida's main writings were published mainly in two periods: in 1967, *L'écriture et la différence*, *De la grammatologie* and *La voix et le phénomène*; in 1972, *La dissémination*, *Marges de la philosophie* and *Positions* (our reference to Derrida's works is in accordance with their English translations).
11. Derrida (1981a) takes the example of a Greek word 'pharmakon (φαρμακον)' which has the meaning of 'poison' as well as 'remedy'. These two meanings are in opposition to each other, but also the meaning of 'remedy' is a deferral of the meaning of 'poison'. An interesting interpretation of *différance* is given by Habermas (1990), who draws parallels between Jewish mystical tradition and Derrida's philosophy. Gershom Scholem has argued that the first letter of the Hebrew alphabets, a consonant *aleph*, represents only the position the larynx takes when a word begins with a vowel. Hence, the *aleph* may be interpreted as the source of all articulate sound; it is 'preparation' for all audible language, but on its own has no specific meaning. Also the first commandment in the Torah begins with the *aleph*, which is the only part of the commandments that the Hebrews are considered to have really heard – it is 'preparation' for all that follows.

    > The *aleph* . . . is akin to the soundless '*a*' of *différance*, discriminated only in writing, for in the indeterminacy of this fragile and ambiguous sign is concentrated the entire wealth of the promise. (Habermas, 1990: 183)

12. Harland's (1987) interpretation of this point is revealing. This section borrows heavily from his work.
13. 'The becoming-visible which alternates with the disappearance of what is written would be flickering-up (*Aufleuchten*) and passing-away (*Vergehen*) of consciousness in the process of perception' (Derrida, 1978: 225).
14. In the following exposition of Whitehead's notion of eternal objects, we have closely followed Stumpf (1994).
15. It has usually been believed that the content of one's mental activity is immediately present in the case of speech whereas written words are 'dead' letters which are absent in that activity. Derrida's 'grammatology' (theory of writing) questions this immediacy of speech, arguing that what characterizes written words also characterizes all meaningful activity.
16. Derrida himself does not provide any social theory, but we shall partly base our discussion on Laclau and Mouffe (1985), who have turned Derrida's philosophy, which is often

considered apolitical, into an interesting social theory. These authors also base their argument on Althusser's notion of 'overdetermination' (without its ultimate implication of economic determinism). Once 'overdetermination' is understood as the symbolic character (that is, the plurality of meanings) of social relations, not merely as their multiple causality, Althusser's position gets closer to Derrida's. For an application of Althusser to economics, see Resnick and Wolff (1987).

17. It is 'impossible to justify a point of departure absolutely. *Wherever we are*: in a text where we already believe ourselves to be' (Derrida, 1974: 162).
18. In this partial fixation, then, there are privileged discursive points, which Laclau and Mouffe call *nodal points* by analogy with Lacan's concept of *points de capiton*. One can see a similarity which these notions bear to that of *entry points* of Resnick and Wolff (1987), who base their arguments on Althusser's notion of overdetermination.
19. In Whitehead's metaphysics, God is the mediator between eternal objects (the possibilities) and actual events (the actualities). In this mediation God presents, not imposes, the possibilities as nothing but 'lures of what might be'. Actual selection from these (infinite) possibilities and therefore the actuality is not pre-given (Stumpf, 1994: 444–5), and it is in this sense that one can think of an immutable but 'uncertain' world. At this point, one might suspect how close this part of Whitehead's metaphysics is to Bhaskar's transcendental realism, as applied to the natural realm. This is because, in the latter, structures (as causal powers), analogously to Whitehead's eternal objects, are transcendental (irreducible to actual events and existing independently of their identification) and actual events are a result of the circumstantial combination of these structures. Critical realism, as applied to the social realm, has certain subtle but significant changes from transcendental realism. (See note 24.)
20. Bhaskar (1993: 148), in line with the widely- (but ill-)received understanding, considers Derrida's philosophy to be closer to 'superidealism'.
21. And, indeed, as Rorty (1982, 1989) endorses as Derrida's main contribution.
22. We note in the quotation above that, although Derrida is responding to criticisms of his alleged denial of the existence of reality, he also shies away from the use of that term. This, we believe, is in part due to his struggle with the categories of traditional Western philosophy. The reader is also reminded of the analogy of the Mystic Writing Pad discussed above.
23. Consequently, the criticism of pan-contingency as implying nihilism (for example, Sofianou, 1995) loses its force in the case of Derrida.
24. This may not be surprising because Bhaskar's critical realism, as applied to the social realm, is very much influenced by Marxist and (post)structuralist writings (this influence, though critically taken, is most clear in his recent book; see Bhaskar, 1993). It is in his attempt to establish a strong connection between transcendental realism (as applied to the natural realm) and critical realism that the present authors feel some tension arises. See note 19, above.
25. Hargreaves Heap (1989, 1993) criticizes the existing notions of economic rationality and advances an alternative ('expressive rationality') from the perspective of Rorty's neo-pragmatism.

8. Classical liberalism in an environment of rational choice involving commitment and security as well as greed

M.C. Howard and R.C. Kumar[1]

I INTRODUCTION

This chapter examines the liberal theory of voluntary contract and violent conflict. Section II provides an outline of the theory, followed by five sections that subject it to criticism. The standard of evaluation throughout is rational choice analysis, and four deficiencies are emphasized: private information, bounded rationality, indivisibilities and the absence of other Debreuvian characteristics in goods. In section VIII we conclude by discussing some of the implications of our results.

II LIBERALISM ON VOLUNTARY EXCHANGE AND VIOLENT CONFLICT

From the very beginning, liberalism has celebrated voluntary contract on the grounds that violent predacity necessarily involves deadweight losses, while mutual gains can result from specialization joined to exchange.[2] Coupled with claims justifying very specific forms of egalitarianism, these arguments have affirmed the efficiency and justice of free market relations organized on capitalist lines. Social contract theories of political authority have also been similarly founded, and even a 'withering away' of centralized states has been entertained as feasible by some liberals, thereby allowing markets to organize human activities comprehensively.[3]

Recent results in game theory can be woven together in support of these positions. We might sketch the liberal case in the following way. Imagine a set of agents, each of whom has preferences representable by a continuous utility function that is defined over the same divisible commodities. All agents face the choice of either using their power to appropriate resources

forcibly (the military option) or, instead, agreeing upon a distribution with others (the contract option). Since fighting absorbs resources and according to the liberal perspective may reasonably be assumed to contribute nothing positive to anyone's welfare, the former option must involve lower total consumption than the latter.[4] Moreover, all parties could be even better off if they participated in a division of labour and then exchanged products. Specialization increases productivity, which allows the sharing of larger outputs. Consequently, there will always exist mutually preferred settlements, which constitute Nash equilibria,[5] and strategies of 'tit for tat' could realize them.[6] In the event that agreements extend to competitive rules of interaction, the two basic theorems of welfare economics apply: equilibria are Pareto-efficient, and every efficient allocation is realizable as an equilibrium.[7] However, the Coase theorem shows that efficiency does not require competitive markets; only clearly specified powers over property and the ability to trade are needed.[8] Of course, the corresponding distribution of income and wealth may be inequitable, but liberal principles of justice could be utilized to resolve this problem. Rawls provides one formulation,[9] Nozick another,[10] and each might be employed to legitimate the imposition of particular resource entitlements in the event that reason failed to convince all agents of their appropriateness.

We are unaware of any theorists of liberalism who have put together an argument in exactly this game-theoretic form. It is an ideal-type formulation, but it is neither fanciful nor perverse. Every element has a long lineage in liberal thought. An early version can be found in Adam Smith's account of the transition from feudalism to capitalism, and of the conditions under which the 'invisible hand' will operate most effectively.[11] Subsequently, many other liberals have provided analogous arguments,[12] and our construction is but a particular species of a much larger genus.

In all versions, there are two obvious problems. Violent conflict has been widespread throughout human history, and the spontaneous emergence of market economies has proved the exception rather than the rule. However, liberals have sought to explain both phenomena. They have pointed out that in circumstances where those with authority to declare hostilities receive the benefits from doing so, and are different people from those who bear the costs, the military option may be rationally chosen by the holders of power. Liberals have also maintained that the persistence of irrationalities in the form of pre-Enlightenment prejudices can underpin militarism, and the maintenance of ascriptive statuses that inhibit commercialization.[13] Hence liberalism has generally been committed to representative government and humanistic education, which, it is argued, will ensure that the advantages of voluntary contract are recognized generally in practice.

In the following five sections we use rational choice theory to evaluate all

of these arguments about voluntary contract. While it may be admitted that liberalism has become more persuasive as the means of violence have increased in destructive power, democracy has been extended and the success of market economies in generating prosperity has become evident,[14] the criticisms, it seems to us, are still rather severe. Thus our position is broadly supportive of Post Keynesianism. Keynes attacked the belief that coordination was achievable primarily through market exchange in national economies, and argued persuasively that supranational institutions were necessary for the orderly conduct of relations between states. It has been a hallmark of the Post Keynesians to maintain that he did not go nearly far enough, and that a 'generalization of the *General Theory*' is required. What we say below may be interpreted in this vein, and in the conclusion (section VIII) we discuss some of the implications of our analysis.

III UNCERTAINTY, ASYMMETRIC INFORMATION AND INCOMPLETE CONTRACTING

A response of Post Keynesians to the liberal arguments of the preceding section might be an appeal to the complications posed by radical uncertainty. The lack of precise calculability of the differential returns received from exercising the contract option, relative to the military option, could be thought to preclude altogether the possibility of rational choice.[15] Strictly speaking, then, rather than being wrong, the liberal argument becomes vacuous because its presuppositions do not hold. However, this would not be the strongest line of criticism. Whatever the truth embodied in the claim that the world is one of radical uncertainty, the logic of the liberal argument as we have presented it is not undermined. This is so for three reasons.

First, the liberal case rests on the belief that the military option necessarily involves deadweight losses, whereas contracts do not. Thus it would never be exercised in contexts where agents were apprised of this fact, even if they could not calculate the magnitude of losses. Second, none of the results referred to in section II repudiate the existence of some form of uncertainty. Although expected utility theory is widely employed by liberal theorists, its deficiencies are known, and other hypotheses have been formulated that could be used to restate the claims discussed in section I.[16] Third, modern contract theory proves that, even if all relevant information existed (in the sense that *all* agents *taken together* possess knowledge of the true probability distribution of all contingencies) contracting might not result, while it would do so if every agent had symmetrically imperfect information. In other words, the liberal case is flawed even if there is no

radical uncertainty, and it might actually be strengthened if radical uncertainty were present.

The real weakness of liberalism lies in a failure to appreciate the dramatic consequences that can flow from 'private information'. Agents may lack either the incentive or the capability to reveal the information that they possess. In a market economy, for instance, high-risk individuals desirous of insurance normally do have an incentive to withhold the true facts about the likelihood of those contingencies for which they seek protection. Since insurers are aware of the resulting 'adverse selection' among their potential contracting partners, they may be unwilling to make agreements and, if they do so, those agreements that they accept will be Pareto-inefficient because of their partial ignorance about the distribution of risks. Likewise, in contexts where violent conflict is possible, an agent may well have an incentive to conceal information as to the force that can be mustered, or the strategy in which it will be employed. As a consequence, voluntary contracting can fail, because the parties cannot find an exchange that each simultaneously believes is preferable relative to the alternatives of accepting the status quo, initiating unilateral action, or fighting it out.[17]

Both these examples relate to problems of pre-contractual asymmetric information: the true information exists, but is withheld from one of the parties because the possessor lacks the incentive to make it public (and, even if there were an incentive to reveal it, agents with the true information could lack the ability to make their information credible). Thus the contract option need not materialize, even though all parties could be made better off under some form of agreement. Post-contractual informational asymmetries will cause similar problems if they are anticipated before agreements are made. The possibility of 'moral hazard', in which the opportunistic actions of one agent cannot be observed by others, so that the latter cannot be sure that all the obligations of the former will be met, may again altogether preclude particular forms of insurance contract, and the types of agreement that are feasible will be Pareto-inefficient because of this informational deficiency. Likewise, where violent conflict is possible, an inability to commit themselves to the terms of any (otherwise acceptable) settlement by any party may be sufficient to ensure that it is never successfully concluded. Once more those involved face the limited choice of accepting the status quo, initiating unilateral actions, or fighting to bring about change.[18]

All of these considerations are applicable also to understanding why market systems cannot always emerge in the spontaneous fashion that Smith and Hayek believed to be typical.[19] Even if market institutions promise unambiguous increases in total outputs, and thereby constitute a potential Pareto improvement, powerful groups in pre-market societies

may block their implementation because the new arrangements prevent them from capturing incomes of at least equal value to those received in the productively inferior system.[20] Nor may it be possible for a bargain to be struck, whereby the losers are compensated by side-payments for agreeing to the change. Once the transition to a market system is achieved, those who suffer distributionally may also lose out in political power, so they cannot be sure that the bargain will be respected and may therefore not agree to enter into it. Exactly the same considerations apply to any proposed transition from authoritarian rule to democracy[21] or, indeed, to any structural change that involves an alteration of the 'rules of the game'. It follows that Marx's idea of 'contradictions', which result in coercively imposed transformations via revolution, is perfectly in accord with the results of rational choice theory because a peacefully negotiated contract may not be possible.

The absence of complete, publicly available information on the characteristics and actions of potential contractors ensures that transaction costs will arise whenever agreements are contemplated. Typically, resources are required to elicit information, undertake negotiations, monitor performance, protect stakes and enforce the compact in the face of opportunistic behaviour.[22] This means that the contract option is in the same space as the military option; both can be resource-absorbing. Hence there can no longer be an *a priori* assumption that the latter will never be preferred by those rational agents who receive the benefits and also bear the costs of conflict. This is true *a fortiori* the more variable is the military option, and the less flexible is the contract option.

This also has some bearing upon the liberal theory of war that hinges on a separation between the costs and benefits of exercising the military option. The existence of transaction costs ensures that there can never be a perfectly representative government. If states, or segments of state bureaucracies and other influential groups, have private information, and the costs of monitoring and controlling behaviour are large, there will be a free-rider problem that inhibits both optimal constraint by the public and internal state cohesion.[23] This appears to have been of crucial significance in the onset of hostilities in 1914.[24] More generally, there will always be room for some degree of state autonomy, or discretion by powerful interest groups, and, therefore, according to liberal theory itself, an ineradicable basis for violent conflict. Using terminology that Smithians might appreciate, we could say that the possibility of war is a necessary consequence of the division of labour and, *ceteris paribus*, it will be more severe 'the greater the extent of the state's jurisdiction'.

Furthermore, if wars occur, it is unlikely that they will be fought on liberal lines. Market contracts often have to be very detailed, specifying

obligations and remunerations over a wide variety of future circumstances. And the more detailed they are, the higher the transaction costs in time and resources. Not surprisingly, free markets have usually been considered unsuitable for organizing activities in times of war (and other emergencies), when the range and depth of possible contingencies increase massively. The greater risks dramatically raise both the length of the period required freely to negotiate contracts and the resources used in doing so. As a result, centralized coercive authority, bureaucratic administration, and resource allocation through command have been extensively employed in the preparation for war and the fighting of wars.[25]

This does not imply that reciprocal agreements cease altogether, only that they become more implicit and collectivist compared to the liberal conception of contracts. This is evidenced by the fact that in modern wars the conscription of individuals into the military, the requisitioning of assets, large increases in taxation and restraint on the use of bargaining power by labour in conditions of full employment have been accompanied by a vast growth in governmental responsibilities for citizens' well-being: the rationing of necessities, support for families of combatants, and extensions of social programmes. So much so, in fact, that it is no exaggeration to say that many elements of welfare states have their origin in war.[26] And one of the factors underlying the intensity of the great conflicts of the twentieth century is that protagonists on both sides were highly successful in formulating such non-liberal 'bargains' for mass mobilization, so that the commitments of belligerents were long sustained even in the face of immense carnage.

IV BOUNDED RATIONALITY AND IDENTITY

Liberal theorists have never been as secure in coping with any of the commitments that flow from cultural identities as they are in analysing the efficiency properties of voluntary exchange between asocial individuals. They have generally taken the idea of a monologic self as exogenously given, and have been hostile to what they regard as non-universalistic affiliations.[27] These views prompted the reactionary French philosopher Joseph de Maistre to remark that, while he had 'seen Frenchmen, Italians, Russians, and so on . . . as for *man*, I have never come across him'.[28] Since our evaluation of liberalism is one based on rational choice theory, we, too, are limited in what can be said about the formation of groups, precisely because memberships and the values that are associated with groups are often not overtly chosen (rationally or otherwise).[29] However, when joined to issues similar to those raised in the preceding section, rational choice theory is not

comprehensively impotent. Irrespective of the solidarities which actually form between people, commitments do contain a kernel of rationality that reflects the complexities of cognition and the insecurities that arise in a world of scarcity.

The argument of section III required only that some information be private, not that full-blooded optimization be impossible. But it is more accurate to describe most contexts of decision as allowing only bounded rationality.[30] Reality is infinitely complex, both intensively and extensively, so that knowledge must be constructed in the form of a system of abstractions. In addition, holding to a specific paradigm potentially generates far more data than can be processed by the human intelligence, so that much has to be discarded by following particular procedures of selection.[31] Thus rationality is bounded in both perspective and processing.[32] At the same time, because the world is one in which resources are scarce relative to human needs and there are scale economies in many activities, there are great benefits to be derived from living socially, and the requirement of being able to communicate with others ensures that perspectives become shared, or cultural. Irrespective of what these perspectives happen to be, since they always involve a particular specification of differences between objects and events, distinct groupings of people will develop, and, no doubt, their cultures will reflect the varied environments in which they are located. 'In-group' and 'out-group' distinctions emerge in this way. When associated with the imperatives of individual self-esteem, as is required for both survival and rationality (as some liberals have correctly realized), and the threats necessarily posed to the security of the self by alternative *Weltanschauungen*, own-group favouritism becomes integral to 'personhood'.[33] Moreover, whenever conflicts of material interest between groups arise, and especially when out-group domination threatens the autonomy of others, the existential values that are imperilled mean that these discriminatory orientations are likely to become malevolent. Culturally constructed identities, then, easily become hostile to each other and it is arbitrary to regard this as reflecting a lack of enlightenment, as liberals have tended to do.

All this is consistent with the logic of bounded rationality in a world of scarcity. As it happens, it is also in conformity with recent psychological research on group loyalties.[34] So far as liberalism is concerned, however, great problems arise. Jointly beneficial contracts are certainly not precluded, but they are made much more difficult to achieve because absolute improvements may matter less than gains *relative* to other groups. The scope for violent conflict is thereby widened and, when it breaks out, it can engender mutual recriminations that are fatal to repacification.[35]

Clearly, then, the cultural quality of human life poses difficulties for the

liberal theory of contract. But it also points to a more general problem. Identities are constituted by constellations of complementary features, and may be regarded as but one example of the more general phenomenon of indivisibilities. In the following three sections we use rational choice theory to explore other forms of indivisibility and argue that, like identity, each case has dire consequences for liberal theory.

V PEASANTS AND THE PERIPHERY

Indivisibilities of all types constitute a problem for voluntary contracting, because they can inhibit the adjustments in consumption and production required to reach a *quid pro quo*. Thus the theorems referred to in section II generally exclude indivisibilities by assuming that commodities, issues and strategies are all perfectly divisible; that the preferences of all agents exhibit continuity; and that technologies are representable as convex sets. Otherwise equilibria of voluntary exchange might not exist, and some other basis for the coordination of activities would have to be found.[36]

The commercialization of economic relationships in England provides an instructive historical example. Between the sixteenth and nineteenth centuries, enclosures deprived peasants of their customary rights to the commons and other resources,[37] and thereby forced a market dependence upon agricultural producers, resulting in a large expansion of wage–labour relationships. Described by Barrington Moore as 'massive violence exercised by the upper classes against the lower',[38] enclosures can be explained in various ways, including a clash of identities referred to in the preceding section. However, at least two other indivisibilities may also have been involved, and these by themselves are sufficient to explain the conflict. First, the preferences of English peasants probably exhibited a lexicographic structure with respect to their traditional access to land and natural resources, which limited the substitutability required for mutually beneficial bargains.[39] And, secondly, peasant resistance to entering the market as specialized wage labourers is likely to have reflected intense risk aversion in a context where living standards were low and developed insurance facilities non-existent.[40] In either case, respecting the property rights of the peasantry would have implied that the realization of economies of scale, arising from new technologies and the reorganization of farming along capitalist lines, would have been constrained, and total outputs would have been reduced.

Colonialism can be understood in similar terms. Voluntary exchange between the core and the periphery was limited by the non-commercial organization of economic life outside Europe. Again, this could be

explained in terms of the lexicographic preferences and the risk aversion of peoples in the periphery, as well as by their particular cultural identities. In such circumstances, exercising the military option proved to be a prerequisite for opening up the contract option, which was essential to the realization of economies of scale in core countries. Rather than being alternatives, force and exchange were instead joined together sequentially: violence was the means by which a world market was created in a manner analogous to the way that force was employed to expand internal markets by eliminating the domestic peasantry.

Liberal economists tend to assume that production is efficiently organized everywhere, and they explain the potential for trade in terms of diverse resource endowments that can generate mutually beneficial differences in comparative advantage. In neither of the cases outlined above was this true. *Total* outputs could be significantly increased only by reorganizing economies on capitalist lines, redistributing the ownership of assets, changing technology, and *then* trading. Rather than involving deadweight losses, a coercively imposed restructuring was essential to overcome the inferior productivity locked into the status quo. Accepting the limited contractual possibilities of the prevailing situation would have meant that value maximization was unachievable.[41]

Contemporary observers justified enclosures and colonization as civilizing measures necessary to eliminate the slothful, indolent and immoral life styles of the victims.[42] Not only does this evidence the intolerance that can characterize liberalism, but it also illustrates how liberals have tended to equate Reason with those processes of rationalization and disciplining analysed by Max Weber and Michel Foucault.[43] In other words, instrumental rationality was joined to substantive rationality, or, put alternatively, a means–end calculus was attached to a value rationality. Thus liberalism itself has exhibited precisely those indivisibilities characteristic of other identities, which generally operate to inhibit the voluntary contracting that according to liberal doctrine is the royal road of progress.

On the whole, Adam Smith is less guilty of the above charge than many liberals who have taken his work to be foundational. Nonetheless, there is a dimension to his ideas that incorporates the same quality, and can inspire similar dispositions. Not only does Smith employ the logic of rational choice to justify commercial society and explain its emergence, but he also maintains that it is joined to a universal human propensity to 'truck, barter and exchange'. Those who refuse to trade can thereby be made to appear as less than human (as liberals have frequently described them).[44] A propensity for contracting also implicitly incorporates another form of indivisibility. It makes little sense in terms of the understanding of rationality typical of economists because it implies that ends and means are inherently

joined together. In the case of Smith, the goals of agents become inseparable from the type of transaction technology employed to realize them. And, no doubt, if his theory of moral sentiments had been an accurate characterization of those peasants and 'primitives' discussed above, the contribution of violence to the creation of market relationships may have been unnecessary. But the broader point remains; the existence of other forms of the type of indivisibility exemplified by such a propensity could easily have provided a basis for alternative brutalities.

VI THE FUSION OF ENDS AND MEANS

Militarism is the classic example of a fusion of means and ends. Von Moltke expressed the sentiment succinctly when he stated, 'War is an element of the world order established by God. It fosters the noblest virtues of man: courage and self-denial, obedience to duty and the spirit of sacrifice; the soldier gives his life. Without war the world would stagnate and sink into materialism.'[45] In the twentieth century, these ideals have come to be associated with fascism and Nazism, and are generally regarded as expressions of extreme irrationalism. Judged by the explicit values of liberalism this may be correct, but the indivisibility of means and ends is not incompatible with rationality. As already indicated, economists do not usually find a place for it in their depiction of optimization, but this is because they conceptualize their problems in terms of well-behaved utility functions, where there is invariably a wide choice of means in the achievement of ends. This form of rational choice analysis has proved to be a powerful apparatus, but it does not define even instrumental rationality, let alone rationality conceived more broadly.[46]

Any 'taste' for the military option obviously undermines the claims of liberal theory as to the general superiority of contract. Perhaps less obviously, these claims are also brought into question by any decision structure where means and ends are fused together. As with other forms of indivisibility, the complementarity of elements inhibits the substitutability that underpins the potential superiority of contract. Bargains involve exchanging resources, and are assured of being mutually beneficial only if objectives can be achieved in a variety of ways. Shrinking the methods through which goals can be realized reduces the likelihood that contracts will be chosen.

Albert Hirschman has argued cogently that such fusions characterize a broad class of political actions, where participation in particular activities designed to achieve a goal are integral to the satisfaction experienced.[47] Moreover, he maintains that they are ineradicable, because this form of

political activity is endogenously generated in a cyclical pattern as development in market economies interacts with the frustrations of boundedly rational individuals. Revolutionary movements and campaigns for radical reform are two examples, and the violent conflicts they can generate may not result only from the goals pursued. It is the amalgamation of ideals with specific practices that helps preclude contractual solutions to conflicts between opponents.

These two types of politics also point to another set of indivisibilities that also bodes ill for liberalism. Rational choice theorists in economics and political science have examined various forms of constitutional politics, where contracts analogous to those of the market are the principal mode of coordination.[48] But the struggles involved in the above two examples of political action are of a different type, in which the rule of law is not binding and, indeed, becomes an issue of contention. This takes us into the realm of political realism.

VII SECURITY AND POWER

Rational choice theory has long exhibited a dual personality in the social sciences. On the one hand, economists have used it in ways that broadly support liberal positions. On the other hand, political realists concerned with inter-state relations have concluded that violent conflict is akin to the curse of Adam. There are at least four explanations for these differences, and each has a bearing upon theories of contract.

First, and most obviously, economists have usually presumed that conditions of law and order prevail as an institutional given. And, typically, the system of rules has been assumed to be one which facilitates voluntary contracts. Clearly, analysts of international relations cannot follow this procedure and, indeed, they tend to favour the other extreme, presupposing a condition of anarchy where no outside executor is present, so any agreements must be self-enforcing balances of power. The recent revival of game theory has reduced the size of the divide, but the dichotomous orientations of the two disciplines remain because of the different subject areas studied.

Second, many realists are also structuralists who claim that the scope for rational choice is severely circumscribed by the anarchic nature of inter-state relations. The logic of the international system is seen to impose itself upon its component parts in such a way that the divergent interests of states can easily result in war.[49] Since mainstream economists favour methodological individualism, they repudiate all forms of structural determination,[50] and therefore find it difficult to accept the holistic terms of reference proposed by the structural realists.

Third, whether structuralist or classical in approach, the hallmark of all realism is the assumption that any agency is confined to 'perfect states', where foreign policy is held to be the object of unified decision and completely insulated from domestic politics. Thus states become 'unit actors', prosecuting relatively unambiguous national interests. Again, the fixation of economists upon methodological individualism would be in tension with this perspective. But, more importantly, standard forms of microeconomic analysis of 'perfect consumers' and 'perfect firms' suggest a subversive question about the nature of 'perfect states' that realists have never answered satisfactorily. Since foreign policy (whether or not it is segregated from internal politics) cannot be separated from national resources, exactly what is assumed about a state's ability to mobilize them? Or, put alternatively, how omnipotent are states in relation to marshalling the resources of their own territories?[51] Furthermore, as we have already seen in section III, the development of the new institutional economics, focusing on the pervasiveness of transaction costs, has introduced another dimension into these queries: mobilizing people and productive capacity involves costs and can never be attained with complete effectiveness. This is an especially relevant consideration for the history of warfare, given that state building was largely a matter of extending and deepening surveillance and administrative capacities, and nowhere has either been perfected absolutely.[52]

While these three differences in approach provide part of the answer as to why economists and realists have arrived at dissimilar conclusions regarding the use of the contract option and the military option, a fourth more fundamental reason, in our view, pertains to the 'goods' analysed. Economists, especially liberal economists, have concentrated attention on Debreuvian commodities, which are well-defined divisible entities that can be fully privatized, and are distinguished only by physical specification, location, date of delivery and the contingencies under which they become available.[53] By contrast, realists in political analysis have been overwhelmingly concerned with security and power, which are very different types of phenomena.

Not only does security have attributes akin to Samuelson's conception of public goods and Hirsch's notion of positional goods;[54] realists imply that states focus upon it in a lexicographic fashion similar to the way in which people protect their core identities (outlined in section IV above). Apart from alcoholics, other addicts and neurotics, neoclassical economists argue that it makes very little sense to view people as adopting such rigid orientations to the consumption of Debreuvian goods.[55] But in the case of states operating in a Hobbesian environment, it is eminently sensible to view security as an issue that will not be traded off against other commodities, at least below a certain level.[56] This rigidity introduces a feature into international relations which, while not wholly prejudicial to

contractual relationships, makes them depend on balances of power that are always susceptible to breakdowns inducing violent conflict.

Power itself is an 'entity' on which political theorists have shed various shades of light, while at the same time failing to provide a basis for rational choice modelling that is simultaneously general, tractable and precise.[57] So far as the analysis of liberalism is concerned, three characteristics are worth stressing: power is an aggregate; it is indivisibly related to overall productive capacity; and it possesses prominent zero-sum features. All of these qualities operate to restrict the range of mutually acceptable contracts compared to a world of Debreuvian commodities. Power is an emergent property of a set of characteristics and assets where there is no clear and agreed-upon procedure of aggregation.[58] Its 'size' or 'level' may be only in the eye of the beholder, but since the view of others is of equal relevance and they may perceive something very different, contracts to balance powers are difficult to negotiate. This is made even less manageable by the fact that power is intimately related to another aggregate, that is, general productive capability, so that the adjustments required for balancing may prove exceedingly costly to engineer.[59] The zero-sum dimension introduces the importance of maximizing *relative* gains, which further complicates the problem of achieving mutually beneficial agreements.

VIII SOME CONCLUSIONS

As may easily be deduced from the preceding five sections, the analysis of instrumental rationality leads to no certitudes about cooperation and conflict. To identify rational choice theory with support for liberalism, or any other world-view, as many critics of orthodox economics including some Post Keynesians have done, is naive. What actually occurs depends mainly on the motivations and contexts of decisions; rationality implies only that action runs along the lines of least cost. However, in focusing on greed, fear and commitment, we have concentrated attention on factors that are as universal as trans-historical forces ever become, and in each case serious problems exist for coordinating human activity through voluntary contracts.

The optimism of liberals has been achieved by ignoring, or suppressing, those considerations that inhibit agreements, or by arguing that whatever disruptive forces exist can be contained by representative government and encouraging enlightened beliefs. For the most part, this orientation has been taken over by neoclassical economic theory (albeit, usually, without the qualifications). It has proved spectacularly successful in reproducing indoctrination,[60] and proselytisers of cruder versions of the same message have played an important role in the recent resurgence of liberal thought.[61]

Nevertheless, the very rigour with which neoclassical economists construct their theories reveals the glitches to anyone who makes the effort to look at all closely.[62] And, in the light of these deficiencies, those who wish to employ rational choice theory to help expand the range of voluntary agreements will have to come to terms with a set of contradictions, which strongly point to their being achievable only in ways that are not classically liberal.

The problems appear to be least in relation to the issues discussed in sections V and VI. The peasantry, the periphery and the nobility have been virtually eradicated in the twentieth century, and the threats posed by both fascism and Stalinism have been defeated.[63] Modern liberals, therefore, might willingly admit the colossal violence to which their predecessors have contributed, but argue that the circumstances which made this inevitable have largely passed, so only minor renovations and some house cleaning is required today for the liberal project to culminate universally. And there are liberals, notably Francis Fukuyama, who have sought to defend such an 'end of history' thesis.[64]

Nevertheless, the two historical processes referred to in section V do point to a continuing problem of maintaining and expanding market contracting. Today's liberals tend to present the issue as one of broadening choice and increasing efficiency, neglecting to emphasize the concurrent disciplining effect of market relations. But, at least since the *Wealth of Nations*, which includes Smith's derogatory remarks about the rent-seeking activities of merchants and manufacturers and the demoralizing effects of the technical division of labour, it has been recognized that concerns for security and stability underpin the myriad of protectionist movements seeking insulation from market dependence.[65] This means that competitive regulation has to be continually reaffirmed and reinforced, and any kind of thoroughgoing democratization must be viewed suspiciously (as it often has been by leading liberals).[66] Marx's treatment of primitive accumulation thus appears to have a more enduring significance than he himself believed. As well as being applicable to the origins of capitalism, the concept (if not the terminology) might be usefully extended to cover the recurrence of policies seeking to enhance 'flexibilities' within well-established capitalist systems.[67] Rather obviously, serious conflicts are necessarily part of the process, and even those who may benefit often seem apprehensive in the face of the more authoritarian and repressive qualities which state authorities must exhibit to carry it through.[68]

Other imperatives of 'primitive accumulation' are clear in the 'emerging markets' of the former Eastern bloc. One peculiarity of the process here lies in the fact that working classes are relatively well developed, and it is the classes of property owners which are undergoing formation. 'Structural

adjustment' and 'shock therapy' is the rubric under which discussion usually takes place, because many economists claim that Soviet-type modes of production are not easily marketized in graduated steps; a sequence of partial reforms can exacerbate inefficiencies rather than alleviate them. But what is maturing is not a 'bourgeois capitalism' operating through wage labour and servicing impersonal markets under a 'rule of law'. Political capitalisms in which officials use state offices to generate income directly, a feudal or mafia capitalism which exchanges protection for dues and mercantile networks of unequal exchange are becoming dominant.[69] For the most part, maximizing behaviour is taking extreme predatory forms, indicating that certain types of 'contracting' are inimical to the efficiency of markets and the effectiveness of political authority.

An equally serious problem for liberalism is posed by the argument of section III on the effects of private information. It is suggestive of the positive contributions which modern surveillance technologies can make to increasing contracting possibilities as classical liberals understand them, and this runs completely counter to their defence of privacy and national sovereignty. While the former is pivotal to the whole of liberal thought, the latter is an ideal of lesser significance. Indeed, liberals could claim that it is no ideal at all, and that individual rights must take priority. This is not a position which has been generally characteristic of liberalism[70] (and for a good reason, which we shall treat shortly). But the experience of total war in the twentieth century has brought about a more favourable disposition towards supranational institutions.

Of course, the terminal point of supranationality is a single political authority with worldwide jurisdiction. So unlikely is the prospect of even approximating such a structure under present conditions that we are somewhat embarrassed even to mention the matter. It is, nonetheless, interesting to probe what the consequences might be if it did eventuate. Any such exercise is especially speculative, but there is good ground for believing that a world government would prove incompatible with the liberal project. This is so for two reasons. First, the rivalry inherent in the European state system as it emerged in the early modern period was an important factor in encouraging commercialization and limiting despotic power. Both contributed to *raison d'État*, by increasing economic efficiency and enhancing infrastructural power.[71] Consequently, any supranational authority carries ominous implications for liberal values, both economic and political, precisely because state rivalry is eroded. Second, a trend currently intensifying the force of market discipline is the deregulation of relations between nationally concentrated capitalisms. This could be eliminated by supranational power. Moreover, if democratic institutions were strengthened, so that authoritarian potentialities were constrained, movements seeking protection from

market forces could be much more effective. Social democrats might view this with favour, but it would be a disaster for liberals of a classical persuasion: cooperation could increase, but it would not be organized by the market, and would be condemned on the criteria of individual freedom and Paretian efficiency.[72]

Accordingly, liberals have often preferred to stick with national states, and balances of power between them, rather than support moves towards wider jurisdictions of authority. This also carries the advantage of dovetailing with what political realism, discussed in section VII, regards as feasible. However, contemplating the logic of balance-of-power theory in present circumstances is decidedly unpleasant. It implies the widespread proliferation of nuclear and biological weapons and, most certainly, large arsenals under the control of Berlin and Tokyo.[73] And all this in a world where it is still generally accepted by international relations theorists that war, rather than contract, remains a principal means of equilibration in power differentials between states.

Balance-of-power considerations are also relevant in relation to the internal structure of any established political authority. Group identities are impossible to eliminate for the reasons outlined in section IV, but the structure of groups and their relations with one another do appear to be highly variable. Large, organized collectivities can facilitate representative government by providing checks and balances to centralized power and to each other, while simultaneously allowing a high level of mutual monitoring that is essential for both democracy and efficiency.[74] The atomic individualism favoured by liberals fails on both counts: the positive transaction costs referred to in section III imply that neither the incentives nor the capabilities for supervising the exercise of power by others, or constraining it when abused, are of high order.

In contexts where organized interest groups are powerful in this dual sense, the scope for mutually beneficial agreements can be expanded if the central authorities retain a wide range of capabilities for implementing social bargains. Without the capacity to provide redistributions of income, wealth and prestige, and to marshall resources for the provision of collective goods, the possibility for cooperation is reduced by the prominence that indivisibilities may attain. Locking political power into constitutions that produce minimal states can prove quite disastrous, and makes sense only if the strength of groups in civil society is limited in the way liberals favour.

The recent revival of liberalism has occurred with a diagnosis of some pathologies in the societies that it seeks to perfect. Hence the hysteria about the importance of stable families, homogenous cultures founded on traditional values, the centrality of church and community, and the need to reinvigorate trust and *noblesse oblige*.[75] But, as conservatives and radicals have

repeatedly pointed out, it is precisely the unfettered sway of market forces that contributes to the undermining of these institutions.[76] This is, perhaps, the greatest of all the contradictions of liberalism, and underpins the present turn to pre-Enlightenment irrationalism: conclusive evidence, maybe, that classical liberalism has proved utopian.

NOTES

1. We are grateful to Richard Bodell, James Brox, Tiina Brox, Stig Förster, John King, Karin MacHardy and participants at the Keynes, Knowledge and Uncertainty Conference of 1996 in Leeds, UK, for comments on earlier drafts of this article.
2. See, for example, Gabriel (1994), Goodwin (1991), Koopmans (1957), Levy (1989), Newman (1965), Rosecrance (1986), Silberner (1972) and Smith (1776).
3. Friedman (1989) and Rothbard (1973) provide two statements of this libertarian position.
4. See, for example, Fearon (1995) and Morrow (1985).
5. For an introduction to Nash equilibria, see Hargreaves Heap and Varoufakis (1995). Kreps (1990) provides a more formal treatment. Mann (1993) seems to misunderstand this type of argument. He claims that the military option has frequently been rationally chosen because the victors have often gained. However, rational choice theory requires much more for an action to be designated as rational; namely, that it is generative of *maximal* gain. The liberal argument is precisely that voluntary contract can always outperform violent conflict because it can avoid the deadweight losses associated with fighting.
6. See Axelrod (1984).
7. Mas-Colell *et al.* (1995: 549–58).
8. Coase (1960). Coase's argument assumes that property rights are enforced by a modern state. However, his results are open to being generalized by substituting 'powers' for 'rights' in the sense of Cohen (1978). In this case, though, mutually acceptable bargains might be classified as inefficient because investments designed to increase bargaining strength could be construed as unproductive. This problem may also occur when a state does guarantee property rights, but it would be much less severe. We return to this issue below.
9. Rawls (1971).
10. Nozick (1974).
11. Smith (1776: bk III, especially ch. IV) and McNally (1988). Smith does not use the term 'capitalism', but Meek (1973) argues convincingly that his conception of 'commercial society' is capitalist.
12. See the references in note 2 and Arblaster (1984), Backhouse (1985), Blaug (1985), Barry (1981), Gray (1995) and Stigler (1965).
13. See, for example, Silberner (1972) and Smith (1776: bk III). Support for these arguments can be found in Doyle (1986), Förster (1995), Fukuyama (1992), Goodwin (1991), Hirschman (1982a), Mayer (1981), McNally (1993), Moore (1966), Schumpeter (1955) and Trotsky (1971).
14. See Angell (1911), Levy (1989), Maddison (1991) and Porter (1994).
15. See King (1995), p. 4.
16. See Machina (1989).
17. The problem here is sometimes referred to as one of 'hidden characteristics' of the commodity to be traded; see Milgrom and Roberts (1992) and Rees (1989). Fearon (1995) discusses the matter in the context of war between states.
18. Post-contractual informational asymmetries are sometimes referred to as the problem of 'hidden actions'. See the references in note 17. Together, or alone, both pre- and post-contractual asymmetries in information imply that Hayek's claim that market prices are

informatically efficient is defective. See Stiglitz (1994) for a full discussion of this question. The ideas of 'rational expectations' and 'consistently aligned beliefs', so beloved by new classical macroeconomists and game theorists, must also be viewed with suspicion, since the 'trial and error' interactions through which agents learn the underlying generating structure may prove to be impossible, or highly ineffective in eliciting the requisite information.

19. Smith (1776) and Hayek (1988).
20. See Brenner (1986) and also Aston and Philpin (1985).
21. See Przeworski (1991).
22. North (1990) provides an overview of transactions costs.
23. This argument is unconnected with the impossibility theorem of Arrow (1951).
24. See Förster (1995), Mann (1993: ch. 21) and Nye (1993: 67–8).
25. Also see Milgrom and Roberts (1992: ch. 4).
26. See Porter (1994) and Skocpol (1992).
27. See, for example, Sampson (1993).
28. Quoted by Walton (1995: 26). On the whole, paleo-conservatives and reactionaries have been quite astute in exposing the absurdities of the liberal conception of the self. For example, see Scruton (1984).
29. Olson (1965) is the classic rational choice analysis of group formation for those cases where membership is chosen.
30. See Simon (1957).
31. See Heiner (1983).
32. This has been used to undermine the distinction between positive and normative statements, as well as the idea that there can be a *neutral* rule of law. Since valuation can only attach to entities within the frame of reference, it can be argued that the partiality of any conceptualization and selection of information disables any divide between fact and value that claims to be universal. See Fish (1994).
33. This has been used to undermine the theory of rights associated with classical liberalism, which is based on a conception of human nature associated with an autonomous individual agent devoid of social properties.
34. See Mercer (1995). See also Parkin (1979).
35. See Axelrod (1984).
36. See Howard (1979: ch. 2). A more formal treatment can be found in Arrow and Hahn (1971) and Luenberger (1995).
37. See McNally (1993), Perelman (1984) and Tiger (1977).
38. Moore (1966: 29).
39. The traditional neoclassical definition of lexicographic preferences may be illustrated as follows. Suppose there are two commodities over which choice is exercised. If different commodity bundles are ranked solely by the relative size of one element, irrespective of the size of the other element, and in the case of a tie the relative size of the second element alone determines the ranking, preferences are said to be lexicographic. In the case of more than two commodities, the same principle can be applied sequentially. See, for example, Malinvaud (1985: 19–20). In modern society a heroin addict might be described as having lexicographic preferences. Faced with any choice, the addict prefers the option containing more heroin, irrespective of the other commodities available in each case. As a consequence, mutually beneficial trading between addicts may not be possible. Each might have what another wants (heroin), but is unwilling to swap it for what others are willing to offer (something that is not heroin). Lavoie (1992: 67–72, 78–85) discusses other preference structures that have been classified as lexicographic. Also see Drakopoulos (1992).
40. See Brenner (1986).
41. In this connection it is instructive to read Marx's description of such processes. 'These methods . . . all employ the power of the state, the concentrated and organised force of society . . . Force is . . . itself an economic power' (Marx, 1867: 751).
42. See Arblaster (1984), Kanth (1986), Perelman (1984), Polanyi (1944), McNally (1993) and Torgovnick (1990).

43. Foucault (1979) and Weber (1983). Neoclassical economists might characterize the changes as those of reducing time preference and risk aversion; see Raeff (1983). Liberals are not alone in their support for rationalization. Marx's remarks on the peasantry representing 'barbarism in the midst of civilisation', and the 'idiocy of rural life', were not isolated examples of ill-will; see Howard and King (1985: ch. 14) and Howard and King (1989: ch. 7).
44. This was made easier to do because of Smith's depiction of progress in terms of a 'four stages' theory of development in which commercial society is represented as the final 'natural order'. On this, see Meek (1971, 1976).
45. Quoted in Silberner (1972: 176).
46. See, for example, Hargreaves Heap (1989).
47. Hirshman (1982b).
48. See, for example, Banks and Hanushek (1995), Bonner (1986) and Ordeshook (1986).
49. Waltz (1979) is the classic text of structural realism.
50. However, neoclassical economists have not been successful in eliminating systemic properties from their explanations; see Rizvi (1994).
51. The Soviet Union provides a good illustration of the problem. Authoritarian it surely was, but policy makers found it difficult to access the information of the people, including state functionaries. Nor could they allow much trade in goods and services. When glasnost and perestroika were tried, collapse began.
52. See Giddens (1987) and Mann (1988).
53. Debreu (1959).
54. Hirsch (1976) and Samuelson (1954).
55. As we have seen in section IV above, this may be disputed. Also see Drakopoulos (1992) and Lavoie (1992: 67–72, 78–85).
56. Even Adam Smith accepted that security took precedence over prosperity, and as Joseph Nye states: 'Survival comes first' (Nye, 1993: 41).
57. See, for example, Cartwright and Warner (1976), Dahl (1984), Lukes (1974), Mann (1986, 1988, 1993), Morriss (1987) and Wrong (1979).
58. Even in the case of Debreuvian commodities, the assumptions required for non-distorting aggregation are very restrictive; see Bliss (1975).
59. This is stressed by Gilpin (1981) and Kennedy (1989). See also Friedman and Lebard (1991).
60. See Klamer and Colander (1990).
61. See, for example, Friedman and Friedman (1980) and Wanniski (1989). Krugman (1994b) also provides a useful commentary.
62. Prominent neoclassical theorists such as Kenneth Arrow, Frank Hahn, Paul Krugman, Robert Solow and Joseph Stiglitz have all emphasized this. See, for example, Arrow (1974), Arrow and Hahn (1971), Hahn (1982), Hahn and Solow (1995), Krugman (1991) and Stiglitz (1994).
63. See Harris (1987), Hobsbawm (1995), Mayer (1981), and Warren (1980).
64. While we do not agree with Fukuyama (1992), his thesis has frequently been vulgarized. By the 'end of history' he does not mean that 'events' no longer occur, or even that all forms of crises will vanish. What he does claim is the impossibility of sustaining any attempt to go beyond capitalism and liberal democracy. This is similar to the thesis of Adam Smith, which he expressed by calling commercial society 'natural'. Fukuyama affirms liberal democracy, while Smith did not.
65. See Marshall (1992), Olson (1982), Polanyi (1944) and Thompson (1966).
66. See Hirschman (1991), Mueller (1989) and Usher (1981).
67. By the term 'primitive accumulation' Marx refers to those coercive processes which established capitalist class relations in Europe. He emphasized the expropriation of peasants through enclosures, state legislation which forced the dispossessed into the labour market and out of crime and vagrancy, and activities which swelled mercantile and usurers' profits, including piracy, colonization and the slave trade, and led to accumulation of monetary wealth which could be used to purchase both the means of production and wage labour. He added a criticism of contrary views, which is still of

relevance in assessing the Smithian ideas of modern economists: 'The primitive accumulation . . . is supposed to be explained when it is told as an anecdote of the past . . . there were two sorts of people; one, the diligent intelligent, and, above all, frugal elite; the other, lazy rascals spending their substance, and more, in riotous living . . . Thus it came to pass that the former sort accumulated wealth, and the latter sort had at last nothing to sell but their own skins . . . Such insipid childishness is everyday preached to us in defence of property . . . In actual history it is notorious that conquest, enslavement, robbery, murder, briefly force, play the great part!' Marx (1867: 713–14).

68. See, for example, Gamble (1994) and Hutton (1996).
69. See Handelman (1995). This explains why some proponents of structural adjustment and shock therapy lobby Western governments for another Marshall Aid package. The purpose in extending such support would not simply be to soften the 'transitional burdens', but also to provide resources through which power holders could be bribed and disciplined into constructing appropriate types of state authority. The original version of Marshall Aid had much the same rationale; see Armstrong *et al.* (1984).
70. See Anderson (1991), Gellner (1983), Hobsbawm (1990) and Silberner (1972).
71. See Hall (1986), Kennedy (1989), Mann (1988), Rosenberg and Birdzell (1986), Skocpol (1979) and Tilly (1992).
72. See, for example, Bull (1977: 252–3) and Keohane (1986: 110).
73. See Mearsheimer (1990).
74. See Olson (1982) on encompassing organizations, and also Hirschman (1970), Olson (1993) and Przeworski (1991).
75. See, for example, D'Souza (1991, 1995), Fukuyama (1995), Kristol (1983) and Will (1983, 1986, 1992).
76. See, for example, Bell (1978), Gray (1993), Hirsch (1976), Hobsbawm (1995) and Polanyi (1944).

9. Some notes on the monetary debate within the Post Keynesian school

Giuseppe Fontana

I INTRODUCTION

Marc Lavoie has recently highlighted some of the most contentious aspects of Post Keynesian monetary theory. He argues that 'the concept of an endogenous supply of credit-money has now been widely accepted among non-orthodox economists in general and post-Keynesian economists in particular. What money or credit endogeneity exactly means, however, has been a source of controversy' (Lavoie, 1995: 1).[1]

The source of the controversy concerns the interest elasticity of the supply function and the dependence of that function on the demand function. In other words the debate is centred on two features of the money supply process. The first feature is the degree of dependence of the central bank's supply of reserves and commercial banks' supply of credit on the commercial banks' demand for reserves and agents' demand for credit, respectively. Secondly, and related to the first point, what degree of discretion do the central bank and commercial banks have in the choice of the interest rate level at which to offer reserves and credit, respectively? In the literature different answers to these arguments are usually summarized in terms of the slope of the credit supply function.[2]

This chapter attempts to provide an insight into the monetary debate within the Post Keynesian school, and then set up a framework, the monetary circuit, that encompasses the main arguments advanced in that literature. A monetary circuit is employed which describes a sequential economy, to reconcile the different views on money. This framework provides a way of combining the roles of money as purchasing power (money flow) and as a store of wealth (money stock) within a single model.

II THE ACCOMMODATIONIST APPROACH VERSUS THE STRUCTURALIST APPROACH

Pollin (1991) has argued that, as the endogenous money approach has developed, differences have emerged and now it is appropriate to argue that there are 'two distinct theories of money supply endogeneity' within the Post Keynesian school, namely the accommodationist and the structuralist analysis. Both views share the conception that money is mainly bank credit and its supply is demand-determined. Nevertheless, they differ in the specification of that relationship.

The accommodationist approach (for example, Moore, 1988; Lavoie, 1992) assumes an infinite interest elasticity of the credit supply: in the Cartesian diagram, a horizontal line at the going rate of interest represents the credit supply function. In what follows, Moore's (1988) model is taken as representative of the horizontalist position. First of all, Moore distinguishes his approach from the neoclassical view of the money process. He rejects the loanable funds theory: 'The creation of additional bank money does not require the use of additional resources. Credit money, unlike other reproducible commodities, is therefore not characterised by a production function relation or a rising supply price' (Moore, 1988: 298).

Neoclassical scholars utilize the idea of a production function to explain the supply of (commodity) money. Savings are the real resources of the banking system and the final output is the flow of money to the deficits' units. In other words, paraphrasing the famous example of Cannan (1921), the cloakroom attendant requires people to entrust him with the commodities necessary for his activity before starting his lending activity.[3]

By contrast, accommodationists argue that the production function concept is misleading. Rather, the economic process is described by the following sequence of events.

1. Firms demand loans from the banking system to start the production process.
2. The banking system evaluates the credit-worthiness of the borrower and then decides whether or not to give credit. The decision is a yes/no type, and the interest charged does not play any role. In other words, in the production period considered, once firms are accepted as credit-worthy, they are able to borrow any amount of credit that they need at the price determined by the banking system.
3. The banking system must back the credit supply with a certain amount of reserves.[4] With respect to this aim, the banking system has the choice to resort to the central bank (and to incur the so-called 'frown' costs[5]) or go to the market to recoup some of the liquidity put into the

income-generating process, for example by liabilities management practices.

4. The central bank, in accordance with its own role as the lender of last resort, must accommodate the demand for reserves from the banking system. Failure to do this can lead to financial crises. Of course, the central bank sets the price of the service but, given this, there is no quantity constraint.

Thus the price constraint of deficit units has its correspondence in the price constraint of the banking system. In the same way, no quantity constraints exist for commercial banks or deficit units. In the short run the banking system determines the interest rates as a mark-up on the discount rate, taking into consideration the alternative source of finance, such as liabilities management.

In summary, the accommodationist approach has challenged orthodox monetary macroeconomics by arguing for the essential role of bank lending in the process of money supply. Today most economists consider the analysis of the market for bank loans and liability management essential for a description of a monetary economy. Moore and his followers have offered a coherent picture of how the existence of credit money alters the structure and inner workings of economic systems. Nevertheless, increasingly economists 'are unhappy' (Arestis and Howells, 1996: 549) with the accommodationist approach and propose new ideas for the debate in monetary theory.

Nowadays some Post-Keynesian economists, called structuralists (for example, Minsky, 1982; Arestis, 1988; Dow, 1996; Wray, 1990),[6] whilst accepting the fact that credit supply is determined by the demand of entrepreneurs rather than by independent decisions of the central bank, contest the accommodationist analysis.[7] They maintain that liquidity preference is a key feature of the firms' behaviour, as it is for the other macroeconomic groups. In contrast to the horizontal credit supply advanced by Moore and others, structuralists argue for an upward-sloping curve because they disregard the short-run interest rate as an *absolute* policy instrument of the central bank. The central bank could vary interest rate in response to changes in economic variables, such as the general level of prices or exchange rate. Furthermore, interest rate is not an exogenous variable because it may change in response to swings in the financial markets. It is the complex interaction between the forces of the monetary authorities and the financial markets that settles both short-run and long-run interest rates.

Commercial banks do not make a yes/no decision. To offer a loan is a portfolio choice, and thus the credit supply is determined in terms of both quantity and price decisions. Further, the central bank operates under a set of constraints that limits its ability to pursue accommodative reserves

policy. In the same way, liabilities management practices, despite having increased the degree of autonomy of the banking system from the rigid policy of the central bank, have not released the banking system from the quantity constraint that they have in their lending activity.

Usually, structuralists propose two mechanisms that can explain the upward-sloping money supply curve.[8] The first mechanism, advanced by Pollin (1991), is based on the degree of accommodation of the central bank. The second mechanism, that linked to Wray (1990), disregards the behaviour of the central bank and focuses attention on the liquidity preference function of economic agents. In particular, this argument can be subdivided into two views depending on whether attention is focused on the portfolio liquidity of banks or their customers.

The first mechanism is linked to the behaviour and the reaction function of the central bank.[9] It is assumed that the central bank has different aims to realize and this affects its potential for accommodating any reserves demand at the target base rate. However, this argument can be disputed in terms of the time period considered. Lavoie maintains that

> to describe the money supply curve as a flat curve does not imply that central banks forever peg the base interest rate. It simply means that there are no natural forces in the economy, meaning no supply and demand market mechanism, that should compel interest rates to rise when activity rises. (Lavoie, 1995: 5)

The central bank does not peg the base rates (long-run behaviour); instead it manages them pro-cyclically (short-run behaviour).[10] Therefore this means that central banks are free from any market mechanism when determining the level of interest on reserves.

In 1983, Kaldor proposed some arguments that can be used to harmonize the different views:

> Diagrammatically, the difference in the presentation of the supply and demand for money is that in the original version (with M exogenous) the supply of money is represented by a vertical line, in the new version by a horizontal line or a set of horizontal lines, representing different stances of monetary policy. (Kaldor, 1983: 22, note)

With this in mind, the upward-sloping money supply curve is just a special case of the horizontalist approach. Different long-term money supplies could be drawn as a result of a set of temporally different money supplies, of money demand and the reaction function of the central bank. Then the interest rate can be determined as a mark-up approach on the base rate i determined by the central bank according to the following function (Mussella and Panico, 1993: 58):

$$i = i_0 + \eta(M - M^*) \quad \text{with } \eta > 0,$$

where i_0 represents the constant part of the base rate. M and M^* are respectively the demand-determined stock of money and the target of the central bank. When the demand for money exceeds the monetary aggregate target M^*, the central bank increases the base rate (the 'leaning against the wind' case). Then the long-term money supply, based on a feedback rule from the central bank, will be upward-sloping (the M curve in Figure 9.1). In the same way, when money demand falls below the target level, the central bank reduces the base rate.

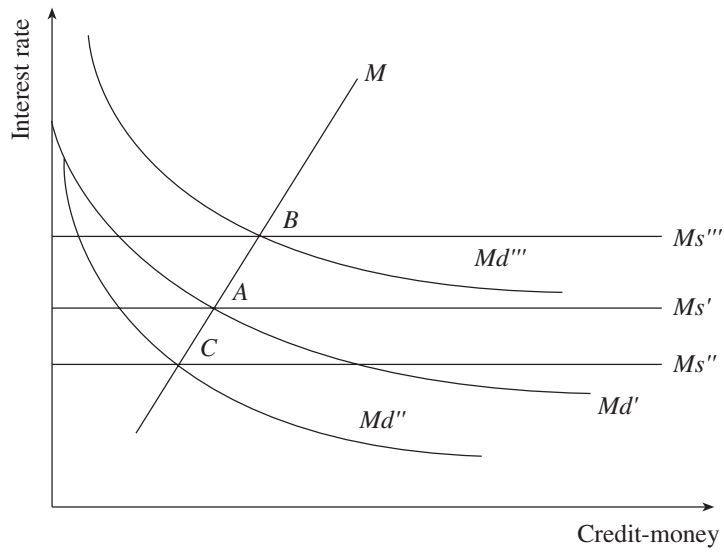


Figure 9.1 The long-term money supply

It should be noted that this picture describes only one of many possible states of the world. In other words, in spite of the efforts of the central bank to manage monetary aggregates, the long-run money supply is determined by continuous changes in the demand for money. The result is that, in rigorous terms, there exists no such long-term money supply, at least in the usual interpretation. For instance, Moore has argued as follows:

> The short-run money supply function is horizontal at a level *governed* by the central bank's minimum lending rate . . . If a central bank's policy goal were to target the rate of growth of some particular monetary aggregate, interest rates would rise whenever income and the money stock increased. One could then envisage some *longer-term 'money supply function'* upward-sloping with respect to interest rates . . . Even with such a policy regime in force the short-run money supply function would always be horizontal. The long-run money

> supply function is in general strictly *undefined*, since it is not independent of credit and money demand forces. (Moore, 1988: 265; emphasis added)

According to Wray, when a bank experiences a rapid growth of its balance sheet it will be forced to increase the price of the loans, that is the rate of interest, because it has more difficulty in finding reserves. In his words,

> no bank can long afford to grow at a rate greatly in excess of the growth rates of other banks because it will be punished by higher average costs of issuing liabilities due to reliance on wholesale funds and to higher interest rates required on liabilities if it is thought to be risky due to rapid growth. (Wray, 1995: 277)

Therefore, except in the 'special case' when all banks grow at the same rate, the rate of growth of a bank's balance sheet together with the market conditions in wholesale markets and in retail markets determine the interest rate paid by bank customers on deposits.

The second mechanism to explain the upward-sloping money supply curve assumes that, even though the central bank can accommodate the reserves demand, the general principle of liquidity preference undermines the beliefs maintained by the horizontalist approach. In particular, the argument is presented in terms of the pressure of liquidity preference on banks and its customers, that is households and firms:

> liquidity preference of *both* banks and borrowers plays a fundamental role in determining the *price* and *quantity* of credit. Given a state of liquidity preference, expansion of balance sheets, leveraging of capital and reserves, and exceeding prudent margins of safety can occur only at rising interest rates. (Wray, 1995: 278)

What is relevant is not the base rate but the interest rate charged by banks on loans. The change in liquidity preference affects banks or their customers. Thus, Wray maintains that 'horizontalism can only offer a "black box" theory of money and interest rates, while the Keynesian liquidity preference approach is rich in institutional detail' (Wray, 1995: 273). In particular, Wray focuses the analysis on the change of short-term interest rates due to shifts in the liquidity preference of banks. According to him, when banks make loans they check their level of liquidity – however it is measured – and then they decide the quantity and the price of the credit supply:

> The money supply curve is not horizontal at a given rate of interest because banks face uncertainty. Banks are concerned with the ratio of loans to safe assets such as government bonds plus reserves, and with the ratio of loans to equity . . . The money supply curve is not horizontal even if all created deposits return to the banking system, because banks must be concerned with increasing leverage

> ratios. Even where additional loans can be made which are no more risky than loans which have been made previously, banks may require higher interest rates to compensate for riskier leverage ratios. (Wray, 1990: 179)

These conclusions seem to conflict with what Moore assumes to be the normal situation in bank lending.

> Providing bank reserves and bank capital are replenished pari passu *as their balance sheets expand*, as ordinarily occurs in the real world due in part to central bank accommodation, *banks experience no increase in lenders' risk*. They therefore do not require greater compensation to induce them to expand their loans and assets. (Moore, 1995: 265; emphasis added)

In the next section the monetary circuit is used as a general framework to analyse the conflict between Moore and Wray. Both authors assume the simple case that firms recoup all initial liquidity injected into the market, but they disagree over the new finance process of commercial banks.

Moving to the second case, it is the borrower's liquidity preference position that is brought into focus. It is argued that the assessment of borrower risk by bank managers is based on the principle of a structure of interest rates in order to reflect different risk premiums.[11] Thus, when the single borrower increases the demand for credit, the assessed risk systematically increases such that they can only get loans at an increasing interest rate. For instance, banks evaluate loans equal to 50 per cent and to 150 per cent of a borrower net worth differently. The interest rate on loans rises as the debt to equity ratio of the customer rises. In terms of Hewitson's graph (1995: 296), see Figure 9.2.

Here, some points must be addressed. First of all, banks contract loans at different prices for different customers. There is a spread of interest rates according to the risk of the customer. No one can deny the banking practice of rating companies. In this case there is a different price of access to credit. Firms with higher gearing ratios have to pay more to borrow money from the banking system.[12] Nevertheless, once banks arrange credit lines, the firm can borrow up to negotiated limits at the constant interest rate. In terms of Figure 9.2, each point on the liquidity preference line (LP) represents different firms at the same time. Thus Figure 9.2 is the picture of the lending conditions of the banking system at a specific time. Therefore Hewitson's notes (1995: 296) that the diagram assumes implicitly that 'the debt to equity ratio rises functionally with increased lending' have to be correctly interpreted *only* in terms of initial credit conditions imposed by the banking system.

The figure does not have any meaning in terms of temporal analysis, that is, when a firm increases its debt-to-equity ratio, moving from (t) to ($t+1$).

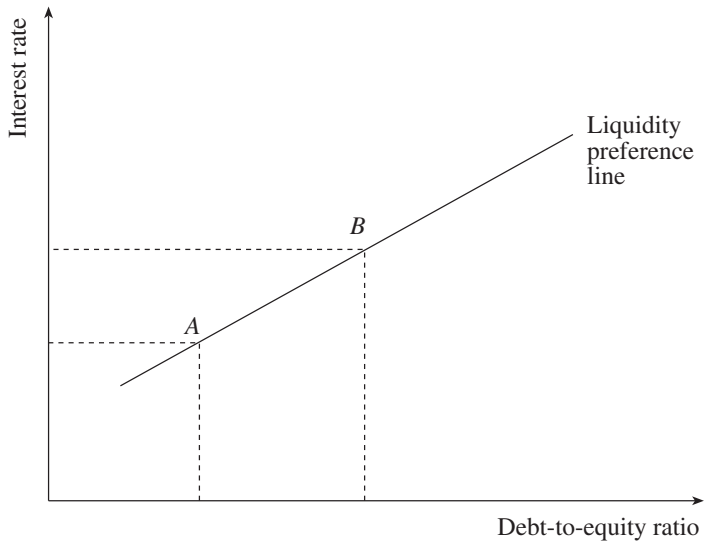


Figure 9.2 The liquidity preference line

As it is, the Cartesian diagram in Figure 9.2 does not have a time variable on either axis. It would be different if on the vertical axis time was substituted for the interest rate, and it was assumed that higher debt-to-equity ratios correspond to higher interest rates. However, since there is nothing to support that assumption, nothing can be drawn for the single firm at different points in time. The future is uncertain, so a firm does not know whether it will recoup all the liquidity that it has injected in the income-generating process. Should the firm be unable to repay the money borrowed from the bank, the debt-to-equity ratio increases over time. The argument is even more difficult to defend at macroeconomic level. It could be assumed that all firms increase their gearing ratio as economic activity increases. However, that is a special picture of the economy, namely business cycles *à la* Minsky (the financial fragility hypothesis). If this is the case, the domain of validity of the above figure is restricted to that picture of the world, and it cannot pretend to have general application.

What, then, does liquidity preference mean to Wray, and how does it affect the economic process? Liquidity preference concerns portfolio choices; it equalizes different assets through a price system. As Wray explains, 'The basic Keynesian proposition is that liquidity preference generates a price system for liabilities and assets through its effect on demand prices' (Wray, 1995: 278). When the liquidity preference rises, there is an excess supply in the bond market, that is the asset prices decrease: 'illiquid

assets find homes' (ibid.: 278). Therefore production is reduced. In terms of the credit market, when liquidity preference is high, borrowers reduce their spending activity (lower animal spirits) and banks cannot force loans, 'which is equivalent to saying that interest rates have risen' (ibid.: 270). By contrast, when liquidity preference is low, in the capital market asset buyers prevail; that is, prices increase and interest rates decrease, investment expands and economic expansion takes its path. In the same way, in the credit market when liquidity preference is low, the demand for loans increases and bank balance sheets expand. Thus 'money and spending are *endogenously* linked through *liquidity preference*' (ibid.: 279).

III THE MONETARY CIRCUIT

A useful framework for analysing similarities and differences between accommodationist and structuralist approaches is the monetary circuit developed by French and Italian economists in the 1970s (for example, Graziani, 1996; Parguez, 1975).[13] The monetary circuit can be presented as 'a simplified schematism, designed to elucidate the essence of what is happening, but one which is, in fact, substantially representative of real life' (Keynes, CW XIV: 219). It provides the opportunity for a full understanding of money as both a source of wealth and a means of final settlements of transactions.

A circuit is defined as a discrete period out of a succession of periods. Economic agents are grouped according to three specialized functions: production (firms), work consumption (households) and credit (the banking system, which includes the central bank).[14] The monetary circuit offers a way of modelling different stages of production process; it describes a sequential economy (Graziani, 1989; Messori and Tamborini, 1993; Dalziel, 1995; Moore, 1996). Three features are peculiar to such an economy:

a. there are only spot markets which open for a finite time in each discrete period; therefore the lack of futures markets means that all agents face the constraint that at the end of each period their overall plans for net financial allocations (NFAs) must be consistent with the realized net real allocations (NRAs);[15]
b. agents need a store of value in order to transfer purchasing power from one discrete period to another;
c. the financial constraint of agents at the end of a discrete period shapes the finance process of following periods.

The circuit is made up of five phases (Table 9.1; Messori, 1985: 211).

Table 9.1 The basic model of a monetary circuit

1st phase	2nd phase	3rd phase	4th phase	5th phase
Firms take production decisions; banks open credit lines to firms Determination of the price and quantity of credit supplied Income-expenditure decision made by firms	Firms transfer bank deposit to households in return for their labour services Households make portfolio decisions	Production takes place	Firms sell goods Households allocate bank deposits between consumption goods and overall savings	Firms regulate their credit contract with banks Households make portfolio decisions

In the first phase, firms take production decisions. Since their time profile is such that the purchase of factors must be made before the sales of products, firms must negotiate – out of their retained profits – with the banking system for the amount of credit and the rate of interest charged to realize their decision about the quantity and the composition of production.[16]

At this stage it is worth noting the essential role played by transactions in the labour market and the intimate link between the labour market and the credit market. Any change in production costs, mainly money wages, influences the credit requirements of firms and possibly the credit policy of the banking system. The price of the supply of credit is determined at this phase (that is, the short-run interest rate, as distinct from the long-run interest rate, which is determined in the financial market). Banks set the short-run interest rates as a mark-up on the base interest rate established by the central bank.[17]

At the end of the first phase the banking system provides firms with the necessary amount of bank deposits. In return, firms offer IOUs to the banking system. That is to say that the exchange is between highly illiquid securities, namely IOUs, against very liquid securities, that is bank deposits (Moore, 1988).

In the second phase, firms use bank deposits in order to buy inputs for production. In the real sector it is assumed that firms take the decisions concerning the number of workers to hire, the level of production and the subdivision of production between consumption goods and capital goods.

Production takes place in the third phase. At this stage the distinction between historical and logical time is again relevant. The production process takes time, and this explains the need for negotiations and contracts between the different groups in the other phases. In the same way, the absence of future markets for all contingencies, where forward contracts for goods cannot be sold in advance, explains the role of bank finance for the working of a monetary economy.

In the last two phases firms sell the result of production and regulate their relationship with the banking system. Here a key feature of the sequential analysis is that the timing of the transactions gives relevance to the crucial difference between 'those agents whose disbursements keep pace with receipts [households] and those whose disbursements run ahead of receipts [firms]' (Messori and Tamborini, 1993: 3). The former (surplus units), when spending savings in the financial market, lend money as a form of disbursement. That is, except in the case where savings are kept in liquid form, households lend money to firms by buying their securities. By contrast, the latter (deficit units), typically must borrow in advance means of payment in order to begin their current activity.

In the fourth phase, households allocate bank deposits between consumption goods and overall savings. Finally, in the fifth phase, they assign

savings between securities and money hoarding. Within the overall budget constraint, households enjoy total independence in the allocation of their income in the goods market, financial market and deposit market. Nevertheless, that decision is an essential one in the determination of increases in the money stock. As long as consumers spend all their income on the goods market and financial market, firms get back the liquidity – Graziani's 'final finance' – introduced through the credit supply of the banking system. Firms will be able to repay debts to the banking system, with the result that all money initially created is destroyed (efflux–reflux mechanism).

However, the possibility cannot be dismissed that consumers can decide to keep part of their income in liquid form, namely in bank deposits, so that firms will not be able to relay the initial debt to banks.[18] The rationale for that choice is clear. Households deliberately choose precautionary behaviour because they know that, since the future is uncertain, they may make mistakes. At the same time, their available resources are binding with respect to some allocations; for instance, loans are personal and non-marketable assets. Therefore it is perfectly reasonable to assume that households express a demand for liquidity.

Should firms have problems in getting back their initial liquidity, the banking system could renew credit to firms so that they can carry on production.[19] Banks compensate firms for the increase in the liquidity preference of households.

IV MONEY AS PURCHASING POWER AND MONEY AS STOCK OF WEALTH

If 'money is what money does' then monetary theory is a theory of the functions of money (Hicks, 1967: chs 1–3; Graziani, 1996). Money as purchasing power is a flow variable, while money as a store of wealth is a stock variable. The problem, which resounds from the debate in the Post-Keynesian school, is how to reconcile both of these functions.[20] For instance, how is the flow of credit created, distributed and used by economic agents? Is the liquidity preference of agents relevant for the amount of outstanding credit? The monetary circuit is a useful framework to investigate these issues. In the following it is proposed as 'a simplified schematism' to illustrate Moore and Wray's controversy on the slope of the money supply curve. The debate is on the events which close the monetary circuit.

Moore argues that ordinarily, during an economic expansion, bank risk, that is lender risk, does not increase. Thus, at the beginning of a new

monetary circuit, firms have the possibility of starting new rounds of production on the same conditions as in the past period. Nevertheless, to support his argument Moore maintains that ordinarily the following succession of events are fulfilled. First, bank reserves are replenished as banks' balance sheets expand; that is, the central bank accommodates the lending activity by an increase in the supply of reserves.[21] Second, banks' capital is replenished as the balance sheets of banks expand; that is, firms pay back debts to banks, so that the initial liquidity returns to the banking system and the circuit is closed without losses, 'sans fuites', as French economists like to say.

Given that the marginal cost of the liquidity of the banking system is constant during all the monetary circuit, Moore argues that banks do not increase the price of loans at the beginning of the next monetary circuit. By contrast, Wray objects that, during an economic expansion, the risk of the banking system is constant; that is, both the ratio of safe assets to total assets of banks is stable over time and bank reserves increase *pari passu* with bank assets. The latter point has been already discussed. With respect to the first point, Wray argues that the change in bank assets and bank liabilities can be expressed in terms of their demand, d_A and d_L, and their prices, r_A and r_L, the interest rates charged on assets and liabilities:

$$\Delta A = f(r_A, d_A)$$
$$\Delta L = g(r_L, d_L).$$

Since the hypothesis of endogenous money implies that, at least for the first recipients, the demand for loans is equal to the demand for deposits $d_A = d_L$, assets and liabilities grow at the same rate if and only if the interest rate on assets is equal to the interest rate on liabilities. Then Wray concludes that this result eliminates the necessary condition of bank lending, that is $r_A > r_L$. In other words, Wray contests the following sequence of events:[22]

$$\partial(\text{loans}) = \partial(\text{deposits}) = \partial(\text{equity}) = \partial(\text{reserves}).$$

However, it should be stressed that, in order to get Wray's result, the banks' assets function and banks' liabilities function must be equivalent. That is, if and only if $f = g$, then

$$d_A = d_L \;\&\; \Delta A = \Delta L \Rightarrow r_A = r_L.$$

Furthermore, banks are profit-seeking firms which prosper through their lending activity. At the time they make loans (first phase of the monetary circuit) the ratio of loans to safe assets increases; that is, banks have a

higher level of illiquidity. It was Minsky's position that 'banks reduce the capital–asset ratio during expansion' (Wray, 1995: 275). That is to say that *during* the monetary circuit banks have higher loans-to-asset ratios and *only at the end* of the circuit do banks want to restore their initial liquidity. Then, in a perfectly competitive credit market, assuming that the base rate of the central bank does not increase, the interest rate on assets is equal to the interest rate on liabilities, and banks receive a price for their services. Therefore the relevance of the differential between r_A and r_L is not essential to the working of the system.

In most of the accommodationists' writings, money has been analysed as purchasing power that gives strength to the four macro sectors considered, namely, banks, firms, households and the central bank, to carry on their business. Nevertheless, if that principle is seriously pursued then 'money, while still being a necessary element in a monetary economy, would no longer be an observable variable' (Graziani, 1996: 143). In this case, banks, firms and households will ask for credit only at the moment they need it: at the moment that the payment is due. For instance, entrepreneurs do not have any necessity to hold cash,[23] because it can be obtained at any moment without additional costs. In the same way, households will spend their money income as soon as they get the payment for their services from firms; indeed, there is no reason to have 'useless' idle balances. Hence, even in the case analysed of a sequential economy, all results can be described in terms of an instantaneous process. Yet, as soon as uncertainty is regarded as a fundamental component of the real world, money once again becomes an essential as well as observable variable. In Graziani's words, 'In a monetary economy, pending debts are no longer contradictory to equilibrium. They are in fact part and parcel of the economic mechanism' (Graziani, 1996: 144).

In a world of uncertainty, a store of wealth is important because it gives agents the necessary flexibility to make economic decisions in the light of an unpredictable future. Hence money stock (inter-period money) represents 'pending debts' of firms to the banking system. Money flow (intra-period money) affects that amount through the income-generating process (that is, it influences incomes and relative prices in the system). Needless to say, what is separated in this analysis in reality is not: money is both a flow and a stock.

The complex nature of money is also important to illustrate the financial constraint that agents face in their activities. This crucial feature of a monetary economy follows from the assumption of the time sequence. The financial constraint in a monetary economy means that 'the increase in actual activity' must be consistent with 'the increase in planned activity' (Keynes, CW XIV: 220): in terms of the monetary circuit, this implies that (first phase) agents' financial plans, which produce NFAs, have to match, at

the end of the circuit, realized outputs of agents, that is NRAs. This result is a natural one if it is assumed that money is demanded to finance planned transactions as well as to carry on purchasing power from one circuit to another. A problem in the literature is that this old truth is left behind in most propositions in monetary theory.

Money is not merely wanted for its services as an asset to hold after all transactions are settled; rather, money is demanded to finance agents' plans so that transactions are carried out. Looking only at the amount of money at the *end* of a circuit misses the relevant role that money has played *during* the circuit. In a monetary economy where time and uncertainty are essential, there is a practical minimum requirement of finance for realizing agents' plans in each circuit. Another way of stating the same result is to say that money is the starting and end point of each monetary circuit.

V CONCLUSION

This chapter has provided some insights into the monetary debate within the Post Keynesian school. The accommodationist approach and the structuralist approach share the conception that money is mainly bank credit and its supply is demand-determined. Nevertheless, they differ in the specification of that relationship.

The accommodationist approach assumes that the interest elasticity of the credit supply function is infinite. Nowadays, this approach is considered very restrictive because it fails to investigate the complex interaction between monetary authorities and financial markets in the money supply process. Nevertheless, it is maintained that the accommodationist approach has challenged neoclassical monetary macroeconomics arguing for the essential role of bank lending in explaining how money is created.

In contrast, structuralists challenge the accommodationists' notion that the central bank and commercial banks are price setters and quantity takers. Liquidity is a key feature of firms' behaviour. It is the same for the other macroeconomic groups. Liquidity preference of households and banks, as well as that of firms, must be taken into account because the existence of money modifies the behavioural functions of all agents in the economic system. Hence structuralists argue for an upward-sloping money supply curve.

Finally, it has been argued that the current dispute between accommodationists and structuralists is in part a reflection of the intrinsic difficulty in reconciling both the purchasing power (money flow) and store of wealth (money stock) roles of money in modern capitalist economies. A framework – the monetary circuit – was set up to investigate these issues. This

provided an explanation of the way money is created and introduced in the economic process and how monetary flows and agents' liquidity preference affect the working of a monetary economy. The extant Post Keynesian literature views these aspects in isolation. By contrast, the monetary circuit suggests a way of overcoming this by allowing a more holistic approach.

NOTES

1. Note that, where it is not otherwise specified, the italics in the quotations are original.
2. Here, it is assumed that the money supply process is better described – given the self-evident explanation of the term – by reference to the credit supply.
3. In this case profit was the reward for the sacrifice of the lender of making free real resources for entrepreneurs (Graziani, 1996).
4. At this point, it does not matter if it is for precautionary or legal motives.
5. That is, when commercial banks are forced to borrow reserves from the central bank, the non-accommodating behaviour of the latter is expressed in terms of increasing cost of borrowing (Lavoie, 1995; Mussella and Panico, 1993).
6. It is more difficult to classify Paul Davidson's contributions to monetary theory. In a debate with Milton Friedman (1972), Davidson asserted that money supply can increase by 'the portfolio change process' and 'the income-generating process'. Despite the fact that he continued to assert that only in the latter case do we have an endogenous change in the money supply, he subsequently has declared that 'as far as I am concerned, there has never been anything in Post Keynesian monetary theory which required a fully accommodating system . . . [and also I] neither accepted nor denied the "extreme form" of endogenous money, namely a "full accommodation" at a given interest rate' (Davidson, 1989: 489–90).
7. Other distinctions within the Post-Keynesian school have appeared recently. Hewitson (1995) discriminates between the mark-up approach and the liquidity preference approach. This distinction overlaps slightly that of Pollin (1991), and overall does not provide relevant arguments to supplant it. Therefore, throughout the chapter the distinction between the accommodationist and structuralist positions is maintained.
8. In the discussion that follows, we adhere to Lavoie's introduction to the structuralist position (Lavoie, 1995).
9. For the latter term we adopt Moore's definition: 'How and how much interest rates are adjusted in response to changes in economic conditions, is termed the "central bank's reaction function", and defines the shape of the money supply relationship in the short run' (Moore, 1991: 406).
10. Moore highlights that 'pegging denotes targeting interest rates at an *unchanged level over time*. Ordinarily, central banks do not "peg" interest rates. Rather, they continually "manage" (change) them pro-cyclically' (Moore, 1995: 263).
11. Dow and Dow (1989: 154) stress also the role of 'the subjective assessment of risk by bank managers'. In that case, 'bankers' perceptions of risk, and their confidence in these perceptions' are relevant. These elements call for a greater investigation of the role of uncertainty in economic analysis.
12. For instance, Dow (1996) has argued that particular classes of borrowers, especially small firms, can have systematic credit rationing: 'It is in the nature of small firms, particularly, the more innovative ones, that the maximum amount of relevant information which could in principle be collected is still too low to attach great weight to any prediction of credit-worthiness'. See also Chick (1992).
13. One of the first attempts to provide coverage of this theory in English is Graziani (1989). Nowadays, an excellent collection of essays on the main arguments advanced by 'circuitistes' has been edited by Deleplace and Nell (1996). Contributors to this large volume

explore and compare the common features of the Circuitist and Post-Keynesian schools. In the subsequent description of the monetary circuit, Graziani (1989) is followed.

14. The absence of the public sector does not undermine the main results of the analysis (Graziani, 1989). At this stage it is also important to note that the traditional picture of exogenous money 'created by governments through open market operations and by governments' deficits . . . has the unfortunate consequence of identifying money creation with the unfunded government deficit, which was translated over into a link between the money supply and the public sector borrowing requirement' (Sawyer, 1985). In other words, if the flow of money is linked *exclusively* to the government deficit then the state is obliged to neglect its fiscal policy in order to accommodate the money demand. Tobin (1982) also seems aware of that danger.
15. It should be stressed that the absence of futures markets is a structural characteristic of a monetary production economy. As Davidson argued, 'economic decisions are made in the light of an unalterable past while moving towards a persidious future' (1972: xii).
16. From the point of view of all firms together, the only inputs to buy are labour services; that is, financial needs of firms are equal to the wage bill. Nevertheless, Godley and Cripps (1981) propose an alternative measure of the liquidity of firms: since labour services are used by firms to produce goods, financial needs of firms can be measured at any single moment by the amount of goods produced and not sold. The difference between the two measures is that in the first case the credit demand of firms is investigated independently from the credit supply of the banking system, while in the second case only real debts of firms are taken into account (Graziani, 1994: 77).
17. For the sake of argument, at this stage it is assumed that the interest rate is a uniform price on loans, that is the mark-up is constant for *all kind* of customers. A closer approximation to the reality of relationships between borrowers and the banking system is examined in section IV. Further, a more complex analysis should take into account that 'costs are the starting point for the setting of prices, but subject to a variety of modifications' (Sawyer, 1996: 58). For instance, the mark-up may vary according to the degree of competition in the market as well as the state of the demand (Arestis and Howells, 1996; Sawyer, 1996).
18. Another way to express the same phenomenon is to say that the stock of money (savings) in an economy represents the debts of firms towards banks (the purchasing power of the economy as a whole).
19. Of course, as soon as firms realize that they have wrongly anticipated the effective demand of consumers, they will change the composition of the production or reduce the level of production.
20. Following Keynes (1973, vol. XIV: 208), it could be argued that confusion has arisen between credit in the sense of 'finance' and credit in the sense of 'saving'.
21. Here it is relevant to recall Lavoie's argument (1995: 18) that the horizontalist approach is aware of the importance of the degree of liquidity pressure. Eichner (1986) also maintains that the increase of interest rates over time is caused by fluctuations in the degree of liquidity pressure of banks due to the non-accommodating behaviour of the central bank. In terms of the ratio of loans to deposits, Eichner argues for a decrease of deposits because, given the tight policy of the central bank, the banking system is forced to reduce its secondary reserves to acquire primary ones in order to back its lending activity. By contrast, Dow and Dow (1989) argue that Eichner's findings can be interpreted in terms of banks' more illiquid balance sheets due to an increase of bank lending.
22. In correct terms, this sequence can be discussed only at a macroeconomic level, since the first equality (as Moore has shown) is not necessarily verified at a microeconomic level.
23. Keynes (1936, ch. 15: 196).

10. Speculation and reasonableness: a non-Bayesian theory of rationality

Anna Carabelli[1]

I INTRODUCTION

In the recent discussion on financial markets two main currents have crossed. One revives Keynes's discussion on speculation and liquidity preference and the connection between these concepts and uncertainty and probability in *A Treatise on Probability* (TP). The other derives from Bayesian theory and focuses on situations which generate paradoxes and anomalies of rational behaviour in financial markets considered 'efficient', namely situations which give rise to situations of uncertainty *à la* Keynes, Knight and Shackle.

The first current analyses the rationality or irrationality of speculative behaviour and liquidity preference and the role of conventions in financial markets. In various ways this opposes the explanation of financial markets as efficient markets and reconnects with Victoria Chick's idea that Keynes's liquidity and speculation find no place in Keynesian theory or in Tobin who, in Chick's view, reduces uncertainty to calculable risk (Chick, 1983: 214–16). These studies are also linked to a Post Keynesian view of uncertainty based upon non-measurable probabilities.

Many authors have recently analysed Keynes's contribution to the analysis of financial markets – often in a critical manner. These include Cottrell, Davis, Lawlor, Mini, Pratten, Runde and Winslow and are all connected to the discussion of the role and relevance of TP in the interpretation of Keynes's method in economics. They raise two main questions pertinent to this paper: in the *General Theory*, is Keynes adopting a subjectivist Bayesian probability or a logical probability in line with the TP? Secondly, is he defending a notion of rationality – and, if so, of what type – or does he hold a hypothesis of irrationality of behaviour in financial markets?

This reference to the different approaches to probability as one of the keys to understanding the contrast between the different theories of the working of the financial market leads us to the second current on financial markets mentioned above.

The second current reaches similar conclusions to those of Keynes's followers, although the starting point, Bayesian theory, is different. These contributions start from the efficient markets hypothesis but stress anomalies in financial markets: the excessive reaction or volatility of prices, the anomaly of the price–yields relation, the apparent irrationality of certain speculative behaviour, such as imitative behaviour. These anomalies are analysed in the works of Shiller (1981, 1989), De Bondt and Thaler (1985), and in Dow and Werlang (1992a, 1992b) on the volatility of market prices; of Orléan (1989) on imitative behaviour in speculative markets; of Epstein and Wang (1994) on uncertainty connected with subjective probabilities which are vague, imprecise or unknown. This uncertainty gives rise to equilibria in financial markets which are indeterminate or to the existence of a continuum of equilibria for each given set of fundamentals. Epstein and Wang, in particular, maintain that uncertainty leaves the determination of the specific processes of equilibrium to Keynes's 'animal spirits'. In their view, uncertainty justifies the excessive volatility of financial markets.

II AMBIGUITY AND BAYESIAN THEORY

I have said that these contributions have transferred to financial markets some of the recent critiques of Bayesian theory of individual and market behaviour. How has this happened?

Since the 1960s, Bayesian theory has been subjected to both internal and external critiques that have brought substantial revisions of its original formulation. Critics have stressed the paradoxes and anomalies which violate the Bayesian rule of the revision of probability with new information. Some paradoxes have emerged from the well known studies of Kahneman and Tversky (1973) and Kahneman *et al.* (1982), the result of empirical investigations and experimental psychology applied to the actual behaviour of individuals. They show that, in violation of Bayes's rule, most individuals actually 'react in an excessive way' to new and unexpected or dramatic events. Observation of such behaviour, transferred to financial markets, tends to explain why this excessive reaction may influence the price of financial activities in an anomalous manner in comparison to the correct reaction to new information which should be the revision of probabilities according to Bayes's rule. In their actual behaviour, individuals seem to violate this rule.

Arrow (1982), referring to the excessive volatility of the prices of financial activities and to what is now known as the price–yields anomaly, notes that Kahneman and Tversky's work 'typifies very precisely the excessive reaction to current information which seems to characterize all the securities and

future markets'. Some of the conclusions reached in these empirical investigations were transferred to the analysis of behaviour in financial markets and have contributed to the development of *ad hoc* hypotheses in 'behavioural finance'.

Internal critiques of Bayesian theory have also been raised. In 1961, Ellsberg showed that, in cases where the ordering postulate is violated, individuals do not violate the axioms as a result of internal inconsistency. They violate these axioms as a result of information uncertainty, regarding 'the nature of one's information concerning the relative likelihood of events' (Ellsberg, 1961: 657). This is similar to situations where one cannot order preferences among various alternatives. In these situations the decision is consequently indeterminate. Ellsberg redefined the notion of uncertainty distinguishing between processes or events which are ambiguous (unique events, or Shackle's surprise) and processes or events which are unambiguous. Only the latter are determined (game of chance). Ellsberg spoke of ambiguity of the relative information. He justified this ambiguity with many motives: lack of evidence, parts of the evidence which are in mutual conflict, evidence which is in general unreliable. In his view, individuals seem to prefer situations which are less ambiguous (he spoke of 'ambiguity avoidance'); they seem to prefer situations where there is a large amount of absolute knowledge or where probabilities (Bayesian, let us recall) are known rather than situations where probabilities are unknown, vague or imprecise.

In 1963, Ellsberg stressed again that the abandonment of total order was essential to any true understanding of the uncertainty of the environment; in his opinion this is justified by the fact that agents do not in general have unidimensional distributions of probability: 'the set of probability distributions compatible with (not excluded by) all our definite probability judgments at a given moment typically contains more than one member' (Ellsberg, 1963: 338, n.5). Let us also recall that Allais (1953), in his criticism of Bayesian theory, suggested maintaining total order but extending the form of the measure of Bayesian probabilities from point values to distributions of probabilities. He suggested considering 'distributions of distributions'.

As a result of these criticisms, the hypothesis of partial order has been slowly substituted for that of total order (of von Neumann–Morgenstern and Savage). So the axioms of the Bayesian decision theory were redefined, adopting utility theory without the total order hypothesis (completeness) which Robert Aumann developed in 1962. The probability axioms were then modified to consider this new and weaker hypothesis (Good, 1962; Kyburg, 1992). In 1940, Koopman had already axiomatized intuitive probabilities where the additive condition is not necessary. By the introduction of non-additive probabilities, Bayes's rule was modified into a new rule, now known as Dempster–Shafer's rule (Dempster, 1968; Shafer, 1976).

The difficulties in assigning precise ('sharp') numerical probabilities led Gärdenfors and Sahlin (1982) to speak of unreliable subjective probabilities and Levi (1974) of indeterminate probabilities. In the latter work, Levi also suggested that beliefs could be represented by convex sets of probability distributions rather than by a unique distribution of probability.

The critical developments did not stop here. In 1986, Levi showed how the problems of so-called 'strict Bayesianism' derive from the failure or the non-capability to accept the indeterminacy of orders. In his view, even partial order appears too restrictive, as what he calls the intransitivity of multidimensional comparisons may arise. The latter are what Keynes in TP, in *A Treatise on Money* (TM) and the *General Theory* (GT) calls the problem of the comparisons of complex magnitudes (see Carabelli, 1992, 1994, 1995). According to Levi, it is no longer necessary to assume that the individual who takes a decision has preferences over the entire set of events, nor that he/she has knowledge of the whole set of consequences of all the possible actions. In Levi's view, it is perfectly reasonable for the individual to reach a decision which is validly grounded on his/her conceptual abilities and on the access to the information concerning the alternatives, though the decision may be suboptimal or, at the most, wrong without being judged irrational in itself. This approach by Levi tends to invalidate the Bayesian theory of expected utility since its necessary conditions of 'connectedness and transitivity' are no longer valid (Levi, 1986).

Other recent critical developments stress the need to consider non-linear subjective probabilities (Brady and Lee, 1989); others suggest considering ambiguous beliefs with subadditive probabilities (Gilboa, 1987); others again take into account intervals of probability instead of point probabilities. In particular, Einhorn and Hogarth (1985, 1986) have analysed the role of ambiguity in probabilistic inference and in human decision processes.

Recently, some authors have drawn attention to the way Ellsberg's paradox throws light on the actual process of human decision making, focusing on a criterion similar to the concept of the 'weight of argument' used by Keynes, in TP (TP: 77–85). In particular, McCann (1994) and Runde (1994a, 1994b) note how the example used by Ellsberg also appears in Keynes's discussion of 'weight' in TP (TP: 82). Keynes maintained that it is not legitimate in general to represent the individual's beliefs by a unique set of real numbers. In addition to probability, a new criterion is also to be considered, namely the 'weight of argument'. Keynes thought that one has to pay attention to the weight of argument even in cases where beliefs can be measured by probabilities representable by a set of real numbers. Let us recall that Keynes had serious doubts on the measurability of probability (TP: 21–43).

Today the situation within Bayesian theory is highly varied: situations

characterized by probabilities with partial ordering; non-additive probabilities; intervals of probability; situations of ambiguity of the information *à la* Ellsberg; elements of arbitrariness, judgments characterized by 'vacillation', 'indecision', 'surprise'; indeterminacy represented by notions of 'unreliable', vague and imprecise probabilities. Ian Dobbs (1991) puts forward 'A Bayesian approach to decision-making under ambiguity'. Others, as we have seen, suggest taking into account the incompleteness of the orders of preference and considering the agents' beliefs as not measurable by a set of 'unique real numbers'. They propose the consideration of other criteria which come into the effective probable judgment. Curley and Yates (1989: 398), for instance, argue that, in addition to Bayesian probability, the absolute amount of information (namely Keynes's 'weight of argument') must also be taken into account. To them, the impact of uncertainty and ambiguity on the consequences of action can be represented by a measure of qualitative probabilities, while the 'uncertainty of ambiguity' appears inconsistent even with qualitative probabilities. In the case of the 'uncertainty of ambiguity', they refer explicitly to the role of Keynes's 'weight of argument'.

Other authors are even more radical. They suggest abandoning Bayesian theory *tout court* and embracing a non-Pascalian logical theory of argument and inductive inference, also connected with Keynes's 'weight of argument'. The main thinker in this trend is Cohen (1989). The Pascalian view of probability represented by the Bayesian theory ought, according to Cohen, to be replaced by a non-Pascalian vision represented by probabilities which he calls 'Baconian' probabilities. These probabilities do not follow some of the Bayesian principles.

The notions of ambiguity and vagueness thus become synonymous with uncertainty as distinct from risk. In these writings uncertainty is represented by situations where the information is too imprecise to be adequately represented by Bayesian subjective probabilities, even if they are qualitative. Uncertainty represents situations where one has also to consider the 'weight of argument'. In some of these recent works, the anomalous situations are explicitly reconnected to Keynes's approach to uncertainty, or to Knight's or Shackle's 'potential surprise', as in Dow and Werlang (1992a) and in Epstein and Wang (1994). This is why we find a strong link between the two recent currents of thought on financial markets noticed at the start of the chapter.

At this point it should be clear why the Bayesian notion of rationality seems inadequate to take into account the uncertain, ambiguous and vague aspects which characterize real financial markets. Very little remains after the dismantling of the original notion of rationality in Bayesian theory. The original notion of Bayesian rationality in itself was inadequate to

explain the actual working of financial markets as it was based on a notion of rationality defined as the internal coherence of the individual. Today, as the Bayesian theory is gradually divested of meaning and filled with paradoxes and anomalies, its notion of rationality appears even less enlightening. If all is paradoxical or anomalous, one wonders whether we are using a wrong or inadequate lens to focus on what interests us. The same can be said of some of the conclusions reached by the authors of the first current in their interpretation of Keynes's contribution to financial markets. Almost nothing remains if one concludes that everything is uncertain and irrational. If this is the case, one has nothing to say about decision making.

On the contrary, my stance in this chapter is positive. Instead of continuing to break up the notion of Bayesian rationality as coherence, searching for new paradoxes and anomalies, why not try to apply a different notion of rationality as our theoretical starting point? Instead of considering human behaviour as a violation of Bayesian rationality or as *ad hoc* behaviour justified only *ex post* by 'behavioural finance', why not seek an alternative theoretical framework within which to re-read these 'paradoxical' financial behaviours? On the one hand, such an approach would avoid the presence of too many paradoxes and, on the other, it would transcend the lack of a unitarian theoretical vision which marks behavioural finance. The latter, in fact, often advances quite sensible arguments but it lacks any theoretical framework as a reference point.

The apparent 'paradoxes' of human behaviour can be analysed using criteria other than those of the Bayesian theory and may be retraced to a notion of rationality different from that of coherence or of 'reformed' coherence taking into account the various paradoxes. I will argue, therefore, for a notion of rationality in which the notion of ambiguity feels at ease.

In financial markets the Bayesian notion of rationality as *coherence* and as a mere empirical *success* of prevision – if it exists (and it would permit us if skilled or lucky to make money) – does not appear adequate for an analysis of actual financial phenomena. What we need instead is a notion of rationality which is in some way justified *a priori*, albeit very feebly: to have at least *some reasons* at the base of our reasonings. Such reasons ought to be valued to a certain extent in an objective way or based upon principles which people can agree. Reasons which are 'somewhat objective', however, are, in the end, subjective in origin and vary from individual to individual. Reasons are always partial because our knowledge is always limited. Yet reasons can be used to persuade and to make economic policy.

This rationality is actually only *a priori* reasonableness. But it can provide a guide to action, and if it does not lead to *successful* action in financial markets, at least it can promote an understanding of what is actually hap-

pening in them, what agents can reasonably do to face the future or what those responsible for the working of these markets should do. This reasonableness will not make us rich, although Keynes – because it was Keynes who proposed this approach to rationality in his writings – became rich playing financial markets.[2] What is of interest here is Keynes's view that the individual can be considered rational without being forced into a rationality as internal coherence with all its paradoxes and anomalies. The rationality of an agent's decision can be considered simply that of having some grounds, some reasons, some evidence in favour of a solution in his/her mind while arguing in a non-demonstrative way. Some situations may be indeterminate, ambiguous, imprecise, but they are not irrational for these reasons. As seen above, Ellsberg's paradox is nowadays justified *ex post* by taking into account Keynes's weight of argument, that is, by using reasons different from those suggested by a strict Bayesian rationality.

I wish to contribute to this debate by taking a step back. Let us go back to Keynes in 1910, but do so without abandoning the focus on problems of uncertainty and ambiguity. I will investigate the analysis of speculation which Keynes put forward in 1910 while preparing his lectures on financial markets. We will see how the point now reached in the analysis of financial markets is quite simply Keynes's starting point. After the critical revisions of Bayesian theory and of the theory of efficient markets, we are where Keynes was in 1910. It is sad to admit that we are almost a century late. In his analysis of financial markets, Keynes from the outset took a different route from that of Bayesian theory and of efficient markets. From the very first he trod paths paved with uncertainty, ambiguity and imprecision plus arbitrary and indeterminate elements. He advanced an analysis of financial markets that was extremely realistic: inefficiency, excessive volatility of market prices, behaviour explained by panic, 'short termism' and 'apparent' opinions which cohabit quite reasonably with 'real' opinions in the mind of the same speculator. At the basis of this analysis we find (his logical) probabilities with partial orders; non-additive probabilities; non-comparable, multidimensional probabilities. We also find situations of total incommensurability and non-ordinability of probabilities – though these situations are often endowed with practical escapes, such as conventions. We also find all the paradoxes and anomalies which fill modern financial analysis.

Keynes presents an analysis of *effective but reasonable* human behaviour where, in addition to (non-Bayesian) probability, the 'weight of argument' and 'moral risk' are also considered. This analysis of speculative behaviour is based on Keynes's early analysis of TP. Let us recall that Keynes worked on TP from 1907 to 1921. In 1910, his early versions of TP were well present in his mind as he was still working on induction.

In considering Keynes's early writing we will find new continuities in his thought but also new problems in the interpretation of his analysis of speculation. We will discover that what we are used to considering as original elements in the GT were already present in 1910; that Keynes's early and juvenile approach to speculation has specific and explicit connections with his own discussion in TP (1907–1921) and that, notwithstanding Ramsey's criticism of his logical view of probability, he re-expounded it in GT in almost the same terms as in 1910. The novelties of Chapter 12 of GT are not true novelties: the conventions explicitly appear in Keynes's analysis well before 1936 and, for example, are already there in 1924. In addition the role of caprice in solving indeterminate or ambiguous situations is already present in the 1907 versions of TP and, finally, the 'beauty contest' situation was so common to Keynes that it was told to his students in 1910 in a synthetic description of 'panic in the stock exchange'.

I know that this step back to 1910 will not settle the recent polemics on Keynes's approach to probability, but at least it might throw some light on his early approach to speculation and on his contribution to what is reasonable.

III THE 1910 LECTURES ON SPECULATION

In the manuscript notes for the preparation of his lectures on the stock exchange (MSS, UA/6/3, Notebook, 8 Lectures on Company Finance and Stock Exchange, Lent Term 1910), Keynes examines the nature of speculation. The theoretical influences on his juvenile vision of speculation are various. Marshall's *Evidence to the Royal Commission on the values of gold and silver* (1887, 1888) and *Evidence to the Committee Appointed to Inquire into the Indian Currency* (1898) are obviously important sources. Marshall is the author to whom Keynes owes much. In his 1910–13 lectures on money, Keynes recognizes his debt to Marshall to the point of declaring that everything he holds on money comes from Marshall (Keynes's Early Lectures, CW XII: ch. 5).

In the 1910 notes on speculation, however, there are no explicit references to Marshall; the author most quoted by Keynes is Emery. Other authors are Layton, Duguid and Davis. In my analysis of Keynes's view of speculation in 1910, besides the content of Keynes's argument, I will pay attention to his approach, that is, his method. As will soon be clear, Keynes certainly borrowed many ideas from other authors, but these are always filtered using his personal method. It is this method which is peculiar to Keynes and which is relevant to the analysis of his view of speculation.

In his discussion of speculation, Keynes distinguishes three main situations on the basis of the nature of risk (Keynes MSS; UA/6/3). He speaks of risk as calculable or incalculable but he does not use the term 'uncertainty' here even though the term is present in various passages of the authors considered (for example, in Emery). Keynes distinguishes between the following:

1. situations where risk is not calculable. The example advanced is insurance against political events at an insurance company ('some political insurances at Lloyd's');
2. situations where risk is more or less calculable. These situations are further distinguished in two subcases. In the first subcase (2a), risk is 'not averaged'. The example given is that of the roulette at Monte Carlo. In the second subcase (2b), risk is instead 'averaged'. The example is life or fire insurance;
3. speculation. We are interested in this third case. Keynes defines it as when the knowledge or the judgment of the speculator is superior to that of the market.

(1) and (2a) are considered by Keynes as situations comparable to 'gambling'. (2b) is a situation explained by insurance. Situation (3) is described only negatively, as not identical to 'taking risk'. It is a situation different from (1) and (2a): that is, different from 'gambling'. The distinction between speculation and gambling is fundamental to Keynes's analysis of financial markets and is a constant and recurrent theme in his thought.

Let us see what, in his view, is 'the essential characteristic' which distinguishes speculation from gambling. It is *knowledge*. Further, speculation depends on knowledge which is *different* from that of the market; more precisely, it depends on knowledge *superior* to that of the market. Keynes notes:

> the essential characteristic of speculation is, it seems to me, the possession of superior knowledge. (Keynes MSS 1910, UA/6/3: 93)
>
> where the speculator's knowledge or judgement is superior to that of the market. (93)
>
> I shall regard the possession of superior knowledge as the vital distinction between the speculator and the gambler. (98)

In Keynes's analysis of speculation we note, first, the central role of knowledge. Secondly, knowledge or judgment is both that of the individual speculator and that of the market. The individual is considered a subject imbued with knowledge, but the market is also considered in the

same way – an aggregate imbued with (an aggregate not a sum) knowledge. Thirdly, the 'gambler' is for Keynes an ignorant individual: his knowledge is actually lacking or 'insufficient'. Gambling is associated with situations where risk is intrinsically not calculable or, if calculable, not averaged. Fourthly, a behaviour is considered either speculation or gambling, rational or not, according to the knowledge upon which it is actually based.

Therefore the rationality of given behaviour (and the valuation or judgment we can make of it as rational) cannot be absolute but is relative, as it depends on the knowledge the individual or the market has in a specific situation; in fact, the quality and amount of knowledge vary as the degree of knowledge and cognitive circumstances vary. Furthermore, the fact that the rationality of behaviour finally depends on specific cognitive conditions implies that rationality itself is, for Keynes, in some way relative to the subjectivity of the individual speculator, of the group of speculators or of the aggregate market. To Keynes, the two entities – the individual and the market – are two autonomous concepts. The individual and the market (an aggregate concept) are considered as two coexistent conceptual entities, not reducible one to the other. Market behaviour, in particular, is not reducible to individual behaviour.

Keynes recognizes in subjectivity and in psychology the ultimate roots of individual and market behaviour. But, with his distinction between speculation and gambling, he intends to separate what is reasonable from what is not. The criterion is neither rationality as coherence (that is, Bayesian) nor rationality as mere empirical success in forecasting. To him, gambling is never reasonable, while speculation may be. He often uses the term 'sound' for speculation. This term stands for logically justified behaviour, *a priori* valid or valid from a logical point of view: that which can be judged objectively rational or plausible by an external (rational) observer.

The main distinction between speculation and gambling is based upon knowledge and not upon other motives. It is therefore a cognitive distinction, not a moral or ethical one. Keynes is in strong disagreement with Emery on this point: 'To make the distinction between speculation and gambling one of knowledge, rather than of intent and purpose, is, I am convinced, the correct course' (Keynes MSS 1910, UA/6/3: 97). Moreover, for Keynes the risk of speculation is not the 'actual' future yield, but the degree of probability of the yields we expect: the probability of speculation. This concept of probability is a logical one. And in line with that affirmed in TP (1907–21), probability depends on the degree of knowledge.[3] Therefore we can say that, in his reasoning on speculation, Keynes starts from risk, then moves to knowledge and finally reaches his own logical probability. The risk–speculation–knowledge circle is closed by his own notion of logical probability. Let us now consider the whole passage thus far analysed:

> the essential characteristic of speculation is, it seems to me, the possession of superior knowledge. We do not mean by the risk of an investment its actual future yield – we mean the degree of probability of the yield we expect. The probability depends upon the degree of knowledge. In a sense, therefore it is subjective. What would be gambling for one man would be sound speculation for another (instance from betting). (Keynes MSS 1910, UA/6/3: 93)[4]

One point should be clarified. In the above passage we can see how Keynes declares that speculative behaviour aims at forecasting expected yields. This latter behaviour is commonly identified by him in GT as 'enterprise'. This seems to show a change in Keynes's attitude, but this is incorrect. In other passages from the 1910 notes, he calls this behaviour more properly, and in line with GT, 'investment'. The speculator has a short-term view ('who buys to sell again soon'; 'within a relatively short period' (ibid.: 100), while investment has a long-term view and aims at forecasting expected yields.

Apart from this, what should be noted is that, for Keynes, the speculator is in any case an 'intelligent' investor who, similar to the long-term investor, tries *reasonably* to forecast the future from present known data: 'If we regard speculation as a reasoned attempt to gauge the future from present known data, it may be said to form the basis of all intelligent investment' (ibid.: 95). Short-term speculation is considered rational as well as intelligent long-term investment. From the point of view of rationality, the short-term speculator and the long-term investor find themselves on the opposite side to the gambler.

However, the speculator is distinguished from the investor by other characteristics. Keynes refers to the speculator's ability to forecast the future, his skill in forecasting the (short-term) changes in prices or values. In the notes Keynes never refers to the speculator's ability to forecast expected yields: 'a good working definition: Speculation consists in the use of superior skill in forecasting changes of value to take advantage of them by buying and selling' (ibid.: 100). The speculator's skill in forecasting the future is seen by Keynes in contrast to the market's skill. In the notes there is an explicit reference to skill in forecasting the future on the part of the market as a whole. So there exists for Keynes, as he writes, an 'ordinary power of forecasting the future'. This skill is often also described by him as that 'of the market' (ibid.: 93) and sometimes as that of the majority of the market agents ('the generality think') (ibid.: 100).

In general, the speculator is portrayed by Keynes as imbued with 'superior skill', with a 'power superior to the ordinary', that is with powers superior to those of the market or of the majority of the market agents: 'But it is better, I think, to regard the speculator as a person who endeavours to make a profit by means of a power of forecasting the future superior to the

ordinary' (ibid.: 95). This definition is the same found in GT in 1936: '(iii) the speculative-motive, i.e. the object of securing profit from knowing better than the market what the future will bring forth' (GT: 170).

I have noted above how, in some passages of the 1910 notes, speculation has a connotation not limited to the short-term, though the latter tends to be prevalent. What is interesting is that Keynes defines the speculator in the same way as the long-term investor when the latter tries rationally to form expectations different from those of the majority of the agents. In other words, the long-term investor, analogous to the speculator, forms expectations which are different from those of market. In this case the investor holds reasons to believe that the yields will be different from those expected by the majority of the market. In this case, Keynes calls this long-term investment 'behaviour speculation'. In these 1910 notes he also anticipates what in TM and in GT is the contrast between the 'diversity of opinion' and 'consensus opinion'. In 1910 he writes:

> When, however, we are considering philosophically the true nature of speculation, we must admit that the investor who buys stocks with the full intention of holding it, because he has reason to believe that its future yield will be higher than the generality think, is equally with him, who buys to sell again soon, a speculator. (Keynes MSS 1910, UA/6/3: 100)

As we will see, there is also the anticipation of the GT theme that speculators tend to anticipate average opinion. Further, in the 1910 notes Keynes analyses the economic functions of speculation by stressing his contrast with Emery's view. Some functions of speculation appear to Keynes positive and he shares Emery's views; others, which Emery finds positive, are judged negatively by him. But even when he shares Emery's views on what is positive in speculation, he thinks this not valid in general.

We will now consider in detail which of the functions of speculation are, for Emery, positive and why Keynes shares them. The presence of speculation is useful to secure accurate information. Keynes agrees with Emery that 'when we find speculation we find the best perfected facilities for securing accurate information'. This is obvious since, for Keynes, the success (note, the success – not the rationality) of speculation depends on the 'accuracy of his estimate'. Secondly, every amount of knowledge relative to future events is a vantage both for the public and for the individual. This view is shared by Keynes and it is easy to see why. It is in line with his own approach in TP: knowledge plays a central role. An increase of knowledge may increase the probability. This is also one of the main reasons for Keynes's battle throughout his career in favour of a reduction of uncertainty in financial markets. Once the causes of uncertainty have been ascertained as a lack of knowledge, the remedies can be proposed.

As to the elements of disagreement with Emery, Keynes does not agree with him that speculation has a stabilizing role. He agrees with Emery's statement that, in the stock exchange, 'events are anticipated and exert their influence before they arrive . . . Wall Street discounts everything'. He cynically points out that the stock exchange even discounts death. But he disagrees vigorously on Emery's view of the positive role played by speculation in stabilizing the frequency and the width of price fluctuations. He points out that Emery's statement cannot be valid in general. He agrees with him as regards the cases of wheat and cotton price changes, which Emery brings as proof of his statement. But, in his view, these occurrences are to be considered specific and not valid in general. According to Keynes, it is 'difficult to advance an inductive proof' (ibid.: 104) of the stabilizing role of speculation. He recalls the existence of a plurality of causes. This statement by Keynes in the 1910 notes is in line with what was stressed by him in the earlier versions of TP, in 1907 and 1908. It is also a recurrent theme in his own method and present in his later approach to economic theory. To give an example of this recurrent approach, it is worth remembering Keynes's reference to the plurality of causes as one of the central points in his controversy with Tinbergen in 1939.

In the 1910 notes, Keynes points out that, in the period considered by Emery, in addition to speculation other causes might have been at work, such as the widening of markets. These other causes might have helped to stabilize prices, quite apart from speculation. Anyway, Keynes stresses that speculation flourishes only in situations where there is fluctuation. If there is no fluctuation, there is no speculation: 'speculation thrives most in markets that are naturally fluctuating' (ibid.). And this is the reason why, in TM and GT, he will stress the need to stabilize financial markets so as to trim the speculators' sails.

Let us now consider which are the negative aspects of speculation analysed by Emery and why they are shared by Keynes. The first negative element is that speculation hampers capital investment. To this end, it is interesting to see the whole passage Keynes quotes from Emery and also his brief comments:

> [Emery] If speculative prices guide any portion of the producers in their planting, the effect is felt by all. The distinctive influence of speculation is felt in the same way in the investment of capital [Keynes] although this is sometimes denied, on account of the circumstance that the quantity of any given stock is fixed.
>
> But 'securities of all kinds are available to the purchaser.
>
> What is his guide? Prices, of course, as much as in the case of commodities . . . Hence the market that fixes the prices for securities has become the controlling influence in the market [matter?] of investment'. (Ibid.: 105)

From the passage it is easy to draw the conclusion that both Emery and Keynes hold that investment ultimately depends on speculation – an idea which is quite simply the central one in GT. So we now learn that it actually comes from Emery and that it is present in Keynes in 1910.

Among the negative elements of speculation considered by Emery, two are seen by Keynes as 'the evils of speculation' (ibid.: 109). In Keynes's discussion of the first evil, the recurrent distinction between gambling and speculation seen above returns, a distinction based on the absence or presence of knowledge. As the gambler has 'insufficient' knowledge, one of the main evils of speculation is that people with little knowledge may be induced to enter the stock exchange. Thus they might be induced to 'gamble' in Keynes's words. But, as Keynes notes cynically, without these people speculators cannot make money. The passage runs:

> (1) Gamblers whose speculation is not based on knowledge may be drawn into the market.
>
> Yet, without people with insufficient knowledge, how could the possessor of superior knowledge possibly gain? Superior knowledge underlies successful speculation, not 'speculation' at large. (Ibid.: 104)

It should be noted again that here Keynes distinguishes between empirical success and reasonableness of speculation. The accuracy of forecasting and the *superior* knowledge compared with that of the market secure the *success* of speculation. However, it is the presence of knowledge which explains the reasonableness of speculation ('sound speculation') (ibid.: 93). In Keynes's view, the *ex post* empirical success of forecasting is not to be confused, in line with that asserted in TP, with the *a priori* reasonableness of expectation. The unexpected or lucky empirical success of forecasting by unreasonable procedures does not make them more reasonable. Similarly, the non-fulfilment of reasonable expectations does not make them less reasonable. The following passage by Herodotus which Keynes (1921) quotes in TP may help to clarify the point:

> 'There is nothing more profitable for a man,' he says, 'than to take good counsel with himself; for even if the event turns out contrary to one's hope, still one's decision was right, even though fortune has made it of no effect: whereas if a man acts contrary to good counsel, although by luck he gets what he had no right to expect, his decision was not any the less foolish.' (TP: 339–40)[5]

Success depends on *superior* knowledge, while reasonableness depends only on knowledge. Gambling is not reasonable owing to insufficient knowledge.[6]

Of the various evils listed by Emery, the second one noticed by Keynes is the manipulation of the market by dishonest means. This aspect is connected with what Keynes maintains in another passage of the notes and to

which I have already referred: the logical necessity of fluctuations for the existence of speculation and his refusal to recognize the stabilizing function of speculation. Keynes thought that without fluctuations there is no speculation. In this passage Keynes points out how the personal interest of the speculator is in contrast with the existence of stable markets. We again find here the opposition between individual interest (volatile markets) and general interest (stable markets) which is another recurrent characteristic in the mature Keynes. Furthermore, and this is an extremely enlightening point of Keynes's juvenile analysis, market fluctuations may be either real or induced: they may be the result of real causes or of 'false rumours'. Moreover, he recognizes here that there may be *real effects* provoked by the diffusion of false news.

An important aspect of this analysis by Keynes on the dangers of speculation is the anticipation of the well-known theme of the 'beauty contest' in GT: the contrast between a judgment expressing which is the finest candidate in a beauty contest on the basis of real elements and a judgment by which one only aims at forecasting what average opinion believes to be the finest candidate. The first is a real judgment: one chooses the candidate one really believes to be the finest in one's own opinion. The second judgment is somewhat unreal: one holds a belief which one does not really believe in. One forms this latter judgment only to anticipate what the average opinion really believes or appears to believe. Let us consider the passage and then try to interpret it in the light of GT's 'beauty contest' and of TP's analysis:

> manipulation of the market by more or less dishonest means.
>
> The activity of the speculative market depends upon the existence and contrivance of fluctuations. The personal interest of the speculative class is not advanced by the increasing steadiness of the market
>
> Spreading of false rumours
>
> Possible wisdom of acting on a rumour, which one does not himself believe, if one thinks it will be generally believed. (Ibid.: 109)

In the 1910 notes, the distinction is between expectations based upon 'false rumours' and expectations based on real information or knowledge. We can say that in this case, for Keynes, the speculator forms two judgments in his mind at the same time: one is based on real foundations and the other on foundations which are only apparently real. The speculator, as Keynes notes, does not really believe in the 'false rumour' and therefore, rationally, should not behave on the basis of a piece of news which he believes or knows to be false and in which, in any case, he does not really believe. The speculator, therefore, is (or should be) able to form an individual judgment which is reasonable and based on real cognitive grounds (limited and partial grounds, I would add). This judgment is what Keynes in GT will call

'real knowledge' or 'genuine judgement', namely a judgment which has – as its cognitive grounds – evidence or a reason in which one really believes. In GT Keynes writes:

> the element of real knowledge in the valuation of investments by those who own them or contemplate purchasing them has seriously declined. (GT: 153)
>
> Thus certain classes of investment . . . by the average expectation of those who deal on the Stock Exchange as revealed in the prices of shares, rather than by the genuine expectations of the professional entrepreneur. (GT: 151)
>
> Investment based on genuine long-term expectation is so difficult today as to be scarcely practicable. (GT: 157)
>
> It is not a case of choosing those which, to the best of one's judgement, are really the prettiest, nor even those which average opinion genuinely thinks the prettiest. (GT: 156)

The idea of a real belief or a genuine judgment is also connected with the main theme of TP: 'The results of our endeavours are very uncertain but we have a genuine probability, even when the evidence upon which it is founded is slight' (TP: 342). From the passage of the 1910 notes, the speculator does not use his genuine judgment (grounded upon real knowledge or upon reasons in which he really believes) in his actual operating in financial markets as he should do if, I would add, he aimed at the general and not personal interest. Together with this judgment, he holds a different judgment on an only apparently real object, a 'false rumour' – a judgment, say, not real or genuine, in which he does not really believe because it is based upon grounds which *appear* real but that, he knows or believes, *are not* real. Here again is the contrast between reality and appearance, an aspect also present in TP. In the 1910 notes Keynes remarks on this contrast: 'What I have described . . . is a picture of what really happens. The fashion in which it appears to the speculator is somewhat different' (MSS UA/6/3: 83).

The speculator in fact reasonably believes (or knows) that unreal or apparently real objects will in general be believed by the market and that, if believed by the majority of the market, they will become real (self-realizing). Therefore, in the speculator's knowledge, there is (or there must be) specific knowledge (which derives from his past experience) relative to the habitual psychological reactions of the market. Here again is the theme present and recurrent both in TM and in GT – of the reasonableness on the part of speculators to act in such a way as to anticipate the market's average opinion. In 1910, as can be seen from the passage just quoted, Keynes uses the term commonly used for the practical Aristotelian reasonableness: 'wisdom' (ibid.: 109). In 1936, he uses the term 'sensible': 'For it is not sensible to pay 25 for an investment of which you believe the prospective yield to justify a

value of 30, if you also believe that the market will value it at 20 three months hence' (GT: 155).

In the 1910 notes the passage just quoted on 'false rumours' is also to be connected to the theme of the nature of panic on the stock exchange at which Keynes hints in another page of the same notes – a page which appears to have been inserted posteriorly as it carries a later date, 18 May 1912 or 1914 (Keynes's writing is not clear) (UA/6/3/13). Here Keynes describes in a very short but very significant passage the nature of an *unreal* danger (that is an apparent or apparently real danger) and – note – its *real effects*. The similitude Keynes traces is that between panic in the stock exchange and panic in a room. In this case, again, we find strong similarities with the theme of the 'beauty contest' in GT. Equally, we already find present the remark that, actually, nobody really believes in panic and yet panic transforms itself into a real danger. Keynes notes: 'Nature of a Stock Exchange panic. An unreal danger in which no one believes may become a real one if everyone else believes that everyone else will act as if it were real example of panic from a room' (MSS 1910, UA/6/3/13).

Let us interpret this passage. Here Keynes distinguishes between real expectations and, let us say, apparent expectations. The former are grounded on real cognitive evidence or upon reasons in which one really believes; the latter on evidence or reasons only apparently real, in which no one actually believes. The former have outside grounds; the latter have inside grounds. The former have an external reference; the latter are self-referential. As already seen, Keynes points out that nobody really believes in panic, in the 'unreal danger'. Nobody thinks or believes that it is real; people know that panic is not real. Yet it can transform itself into a real danger if each person thinks that everyone else thinks that others will act *as if* it were real.

Furthermore, in this passage, we find the idea that whatever is believed (based on real or apparently real grounds), if believed by the *majority*, is self-fulfilling (that is, it actually becomes real). And this, it should be noted, is true both for expectations with real grounds and for apparently real expectations. Expectations shared by the majority are in any case self-fulfilling. Hence, if shared by the majority, apparently real expectations are self-fulfilling and become real: an unreal danger becomes a real one. There are three aspects to be noted in this reading by Keynes of financial markets.

1. There are beliefs (expectations) in which nobody really believes. There is here a contrast between reality and appearance: what is real and what appears real but is not real.
2. Apparently real beliefs (or events) can transform themselves into real events.

3. Both expectations based upon real and those based upon apparently real grounds, if shared by the majority, are self-fulfilling and become real.

We find here the seed of many of the ideas which will become common in Keynes's later economic writings. In GT, conventions are opinions, like the 1910 panic, in which no one really believes. They are not real knowledge. In GT, for example, the convention that the future is equal to the present is of this nature:

> The essence of this convention . . . lies in assuming that the existing state of affairs will continue indefinitely . . . This does not mean that we really believe that the existing state of affairs will continue indefinitely. We know from extensive experience that this is most unlikely. (GT: 152)

TM and GT also contain the 1910 view that expectations can determine reality, both when their grounds are real and when their grounds are apparently real. In TM the 'consensus opinion' determines reality in a particular way (CW V: 224–30). Expectations shared by the majority can be self-fulfilling in a quite rapid way, similarly to what happens with the real effects of panic. Keynes applies this early idea not only to the agents' behaviour in financial markets (GT: 198–9) but also to entrepreneurs' behaviour. In TM, widely held self-referential expectations are self-fulfilling in the short term (a clear example of self-fulfilling expectations). Describing the behaviour of entrepreneurs, Keynes points out that 'widely held anticipations will tend for a short time to bring about their own verification, even if they have no basis outside themselves' (CW V: 143–4).

In TM and in GT, furthermore, widely held expectations will become real 'forthwith', as Keynes writes (GT: 198), without any need of any effective market transactions and with monetary policy not being able to check it (CW V: 229). The more the economic agents are identical in their own reaction (to panic, for example) or find themselves in the same cognitive circumstances or interpret the situation in a similar way, the more 'false rumours' (and, obviously, real information too) change their beliefs at once without any action on their part: 'since everyone will change his ideas . . . no transaction will result' (GT: 199). And this will obviously have immediate and large effects on the market prices of financial activities. Price movements are 'out of proportion to the activity of dealing' (GT: 199). In the case of 'consensus opinion', when (real or apparently real) beliefs change, the prices of financial activities (and in GT the money interest rate) change without any effective transactions taking place. This explains the excessive reaction of financial markets and their extreme volatility. There is no need for paradoxes as in the Bayesian theory.

From this analysis we can understand the positive role played in Keynes's

analysis of speculation by 'diversity of opinion'. Given that any opinion may become real in particular circumstances, diversity of opinion plays a positive role. In contrast to 'consensus opinion', it helps to stabilize financial markets (GT: 198) in so far as the realization of these different expectations happens through market transactions. These transactions can also be influenced by the monetary authorities, 'since, in fact, a change will influence the ideas of different individuals differently by reasons partly of differences of environment and the reason for which money is held and partly of differences in knowledge and interpretation of the new situation' (GT: 198).

It is now clear how Emery's analysis used by Keynes in his notes on speculation is filtered by the TP method. Keynes's attention to knowledge, to the difference in knowledge among people and according to varying circumstances, to consensus opinion, to what is real and to what appears real but is not real, to the non-calculability of risk (probability) and to the role of confidence ('weight of argument') in the agents' reasonable calculations leads to an analysis of financial markets which is extremely rich in detail and where ambiguity and uncertainty are at home. In his economic writings, Keynes constantly refers, positively or negatively, to his logical probability and – later – also to his weight of argument: that is, to the two criteria used to judge the reasonableness of reasoning. These two criteria are logical, not psychological:

> the best estimates we can make of probabilities and the confidence with which we make them. (GT: 240)

> associate risk premium with probability . . . and liquidity premium with . . . weight . . . a risk premium is expected to be rewarded on the average by an increased return at the end of the period; a liquidity premium is not even expected to be so rewarded. It is payment, not for the expectation of increased tangible income . . . but for an increased sense of comfort and confidence during the period. (CW XXIX: 293–4)

In 1936, as in 1910, Keynes insists that there is a lack of 'real knowledge' as well as too many gamblers in financial markets. In these markets, there are persons who 'have no special knowledge of the circumstances, either actual or prospective'. Here, 'the element of real knowledge in the valuation of investments' has 'seriously declined' (GT: 153). In 1937, as in his 1910 lectures, speculative markets are not efficient and are dominated by 'perplexities and uncertainties' caused by a lack of knowledge:

> Speculative markets . . . Moreover, they are governed by doubt more than by conviction, by fear more than by forecast, by memories of last time and not by foreknowledge of next time. The level of stock exchange prices does not mean that investors *know*, it means that they do *not* know. Faced with the perplexities and

> uncertainties of the modern world, market values will fluctuate much more widely than will seem reasonable in the light of after-events; and one would hope that in such circumstances insurance offices will show a good example of steadiness.
>
> The notion of us all selling out to the other fellow in good time is not, of course, a practicable policy for the community as a whole; yet the attempt to do so may deflect prices substantially from a reasonable estimation of their intrinsic value, and become a serious impediment to contructive investment. (CW XII: 238)

Already in 1924, in reply to some questions by the Committee on National Debt and Taxation, Keynes makes explicit the connection between conventions and ignorance ('lack of knowledge') found in Chapter 12 of GT:

> [Mrs Wootton] What prevents this diversion from correcting itself? What prevents the tendency to invest in gilt-edged securities to straighten it out again?
>
> [Keynes] The fact that there is very imperfect fluidity in the investment market. It is not true that capital seeks the channels of most lucrative investment by itself. It does nothing of this kind. The business of investment is most unsuccessfully carried on, because it is largely conducted by persons, namely, the individual investors, who know nothing whatever about it. It is lack of knowledge.
>
> [Sir J. Stamp] Is it conservatism too?
>
> [Keynes] It is conservatism, obedience to convention, and lack of knowledge. That is inevitable, and those characteristics exist in the greatest degree in the gilt-edge type of investor. He goes into that class of security precisely because he, rightly, does not like to trust his own judgement.
>
> There, you are putting the resources of the community, if you repay debt too fast, into the hands of the class of persons who have least courage and least skill in the utilisation of resources. (Committee on National Debt and Taxation, 1924, CW XIX: 312)

There is in the passage, in comparison to the 1910 analysis, a clear reference to the 'weight of argument' ('he, rightly, does not like to trust his own judgement'). But the substance of the whole argument is not different from the 1910 notes. So, what we are used to considering as a novelty of Chapter 12 of GT, that is conventional expectations, is not original. They are already present in 1924. And the 1910 unreal danger (which becomes real) also anticipates them. The class of persons who have least skill and adopt the conventions are simply the 1910 gamblers.

NOTES

1. I wish to thank Keynes Trustees and King's College for permission to quote from Keynes's manuscripts (MSS) and the Societa' Italiana degli Economisti for permission to publish in English the paper presented at the XXXVI meeting of the society. Section III of the present chapter has already been published as 'Le lezioni di Keynes del 1910 sulla speculazione: alcune osservazioni sulla loro attualita', in S. Vercelli (ed.), *Incertezza, razionalita' e decisioni economiche*, Bologna, Il Mulino, 1998: 207–22.

2. Some interpreters have argued that Keynes was not in actual fact so skilled as is believed. Mini writes that 'in 1920 Keynes suffered a brush with bankruptcy, but even after 1923 he outperformed the market only 14 out of 23 years, that is sixty per cent of the time' (Mini, 1994). He also hints that, when Keynes was successful, it was only thanks to 'insider-trading'; that is, knowledge of reserved information. And Skousen (1992: 161) writes that 'his "general theory" of economic activity was highly influenced by his own inability to predict crashes and major short-term trends in the financial world'.
3. The first version of TP is dated 1907 and titled *Principles of Probability*.
4. On the distinction between 'gambling' and speculation, Keynes differs from Emery, precisely on the role of knowledge and on the interpretation of probability based on knowledge. According to Keynes, one can speculate on monsoon forecasting as well as on wheat harvest forecasting. It depends on knowledge. If one has no knowledge, one gambles; if one has knowledge, one speculates:

   > If the careful study of probability did the gambler any good, it *would* cease to be gambling. Suppose a student of probabilities *did* succeed in discovering a system and went to Monte Carlo to carry it out, it would be reasonable to regard him as a gambler. (Ibid.: 97)

5. The same quotation is also present in the 1907 version of TP (1907: 349)
6. We note how Keynes could have explained this situation of insufficient knowledge by using probabilities characterized by a low 'weight of argument'. But in the 1910 notes there is no reference to the concept of 'weight' and all the theoretical difficulties are traced back to the non-calculability of risk (probability).

11. The Maastricht Treaty: unemployment, competitiveness and distribution

Jesper Jespersen[1]

I INTRODUCTION

This chapter challenges the argument that enhanced monetary integration in Europe will improve the economic conditions for the creation of wealth and prosperity. The impact on employment, competitiveness, distribution and the environment of the establishment of a monetary union is examined. Particular attention is devoted to the implications for the welfare state of the requirement to fulfil the so-called 'convergence criteria'. According to the Maastricht Treaty, it is solely financial conditions which have to be fulfilled by the participant states, notwithstanding the consequences this may have for the real economy, not to mention welfare in a broader sense. This procedure ignores important societal aspects, such as unemployment, income distribution and environmental damage. It is suggested that a European welfare index should be created to correct the analytical and empirical bias in the 'European Monetary Debate'.

II EUROPEAN INTEGRATION AND THE WELFARE STATE

If one looks at the economic and political history of (Northern) European countries for the last fifty years, two catch phrases characterize the period: increasing integration and an expanding 'welfare state'. One cannot really say that one of the characteristics had precedence over the other. The experiences during the inter-war period had been so discouraging that it became an explicit demand from the democratic parties to create a new approach to economic policy after the Second World War had finished. The right-wing parties supported the market, competition and free trade whereas the left called for a welfare state. The outcome was a 'historical compromise' between right and left, creating what can be described as *open welfare societies*.

This was not an easy, linear process. In particular, Great Britain's path was influenced by the nature of her electoral system. Also Germany, in the shadow of military defeat, formed some kind of *social contract* even though the Social Democrats did not take part in government until the late 1960s.

It was never really in doubt that a smooth and rather slow transition towards free(r) international trade would be to the benefit of all participating countries from a purely economic point of view. Accordingly, there was clear and almost unchallenged political support for this development which nevertheless took forty years to complete. American support for European economic integration in the form of Marshall Aid was motivated mainly by the desire to make Western Europe and the USA more dependent on each other. This was designed as a politically necessary step to protect American strategic interests in Europe.

In addition to this process of integration, European countries considered the creation of the welfare state as further protection against communism. For the first thirty years of the post-war period public consumption and income transfers as a proportion of GDP rose uninterruptedly. As long as full employment continued and high economic growth prevailed there was very little resistance from any major political party or from the electorate to further steps being taken in the process of creating this kind of *open welfare state*.

When economic growth slowed down from the mid-1970s onwards it became less obvious that continued economic integration and further extension of the welfare state could proceed unquestioned. A planned Monetary Union beginning in 1980 was discreetly cancelled. Welfare systems came under attack from the soaring expenditure on social benefits for the rising number of unemployed and socially excluded. That development also threw into disarray the theoretical thinking behind the interrelationship between integration and welfare.

The period 1975–90 was the heyday of theories supporting 'more market, less government' (Jespersen, 1994b). One could argue that the culmination of the impact of this school of thought was the writing of the Maastricht Treaty. On the other hand, the prolonged and rather difficult process of getting parliamentary signatures to the Treaty demonstrated that doubts had gained momentum about the desirability of further and speedy monetary integration.

How could that be when the vast majority of academically trained economists (not only those directly employed by the European Commission) still worked with monetary theories and models which unequivocally conclude that 'one money for Europe' is mutually beneficial? In my view, this state of affairs demonstrates better than many high-brow economic discussions that European integration is a highly political project. Economic

theory and models are used and abused as a remedy within the political debate, as has always been the case (as the Swedish economist Gunnar Myrdal argued better than anyone as far back as the 1930s).

My task with this chapter is to consider some of the unattended welfare (economic) aspects of the process of European monetary integration. In so doing, I will draw on economic theory in order to address the political concerns currently being expressed. Of special interest is the general rise in the number of unemployed. With only a few and brief interruptions, unemployment in the EU has been rising ever since the middle of the 1970s.

III FACTORS CREATING WELFARE TENSIONS WITHIN THE EU

Enlargement

At this point it is crucial to stress the importance of the similarities and dissimilarities between the countries under consideration. The first step towards European unity was taken in 1957, mainly as a result of political reasoning – to allow Germany to grow and become economically powerful without creating renewed unease in neighbouring countries. If one disregards southern Italy, the economic strength of the six founding members was fairly equal. That situation continued after the first round of enlargement (perhaps with the exception of parts of Ireland). But the membership of Greece, Spain and Portugal was a blow to the previously rather homogeneous economic (and cultural) EU. Sweden, Finland and Austria (some of the richest European countries) obtained full membership in 1995, making the differences between north and south even more pronounced.

Stronger Competition

Increased competition means increased awareness of what other firms are doing. The economic pressure on firms and households increases when trade barriers are removed. That is, in fact, the channel through which integration at the micro level leads to improved efficiency. Increased competition means more opportunities and more challenges. Survival in a competitive environment means either improved products, lower costs or both. Although it is not a zero-sum game, there will be gainers and losers. How they are distributed among participants depends on the speed of integration, the ability to adapt to change, and institutions. The operation of these factors is hard to predict.

Adam Smith knew[2] that firms try to protect themselves against (cut-throat) competition by mergers and cartel agreements. One can observe, for instance that, in the wake of stronger competition, the variety of brands at the European (or global) level has decreased. This is a consequence of specialization, increasing returns to scale and cross-country cooperation. Institutions are created as a counterweight to untrammelled competition in an attempt to create the 'optimal' degree of competition (cf. the Group of Lisbon's report, *Limits to Competition,* Petrella, 1995). The ambition to deregulate and liberalize all markets for goods, services and factors calls for the creation of institutions to protect the weaker parts of the EU economies, with regard, for example, to regional economies, social groups or the environment. Traditionally, the nation-state is the protector of the welfare state. But increased competition has undermined the ability of the nation-state to redistribute. At the same time, Brussels is prevented from playing such a distributive role.[3]

At any rate, the strength of economic competition within Europe (and globally) is quite different from one market to another. At one end of the spectrum we find financial and foreign exchange markets which are integrated worldwide. No agent can act independently of what is going on in New York, London, Tokyo or Frankfurt at the very same instant. This situation erodes the possibility of any of the member countries keeping the 'old' economic sovereignty. The need for global regulation is obvious.[4] The European Monetary Union should therefore also be evaluated from that perspective.

Many goods and some service markets are also highly integrated and the competitive pressure is felt strongly. The Treaty of Rome and the Common Agricultural Policy are attempts to limit this global competition. At the other end of the competitive spectrum we find the labour market. Very little direct integration within the EU has happened as yet, for cultural, linguistic, educational and practical reasons. But also in this area a barbed wire frontier separates the EU from the outer world.

Exchange Rate Systems

As explained in Jespersen (1994a), the global exchange rate system broke down in 1973 and the European substitute, the European Monetary System (EMS), had severe difficulties in taking off, and continued to be in great disarray. Tensions within the Bretton Woods system had become too costly, especially for the USA, which was the original architect of the global exchange rate system. There were two main reasons for this breakdown. Firstly, the political benefits could no longer compensate the economic loss for the USA due to maintaining the dollar at a fixed value in terms of gold.

Secondly, the liberalization of financial capital flows had amplified the pressure from real imbalances due to excessive speculation.

Seemingly, this negative global experience had to be repeated within a European context before the message was understood. As will be explained in the next section, the economic situation in the EU just after the unification of Germany did not justify fixed exchange rates. Neither speculators nor governments trusted the preconditions behind the Maastricht presumption of unchanged rates from 1992 onwards. Hence the signing of the Treaty led directly to the break-up of the EMS.

IV TWO MACROECONOMIC THEORIES FOR UNDERSTANDING EMU AND THE WELFARE CONSEQUENCES IN THE EU

An Incoherent Monetarist View

The 1989 Delors Report[5] was unclear about the theoretical framework behind the proposed procedure that would most easily lead to a stable monetary union within the EEC. On the other hand, no doubt was expressed that a single currency would be of mutual benefit. Within the Community Paper, 'One Market, One Money', published in 1990, again no doubt was allowed to surface. The arguments were built up around a rather simple equilibrium model and (weak) empirical evidences (Hofman, 1992). Forgotten was the theory of optimum currency areas; also forgotten was historical experience.[6]

In some ways it is something of a paradox that economists with a strong monetarist inclination, who support the idea of competition and market solutions in any other aspects of social life, can turn themselves 180 degrees around when it comes to the matter of the single currency within Europe. Suddenly, a fixed and unchangeable exchange rate is a theoretically well-founded and highly recommendable institution and one common European currency even better – whatever the orthodox theory on 'market solutions' and 'optimum currency area' might prescribe.[7] That is one more example of Myrdal's hypothesis, that economic theory is too often guided by politics rather than a sincere commitment to the truth. In fact, the main difficulty with the proposal for a single currency would appear to be how to persuade the Bundesbank in Frankfurt to give up the Deutschmark (Delors Report I, 1989).

Mainly for that political reason, it was argued that the public sector budget deficit should be legally limited. In the Maastricht Treaty the maximum deficit was set at 3 per cent of GDP.[8] If the monetarist econo-

mists had trusted their equilibrium model they should have argued that any excessive deficit would be corrected by itself as a result of market forces and rational expectations. Accordingly, with regard to the other convergence criteria, if the monetarist model was accepted, inflation would be only a matter of controlling the money supply, which an independent central bank might guarantee. Within this flexible approach one may wonder: do monetarists in fact support the monetarist conclusion? If so, how do they explain all these apparently redundant 'convergence criteria'?

In accordance with the simplistic monetarist model, it was recommended by Delors Report I, and later implemented in the Maastricht Treaty, that the future European Central Bank should have the sole responsibility for inflation.

A Welfare View of EMU

A considerable change in the analytical model was signalled by Delors Report II in December 1993 and further elaborated in June 1994 (European Commission, 1994a). The adjustment mechanisms were specified in more detail and demonstrated to be much more complex than the simple monetarist model would suggest. The social costs of the depression of the early 1990s were taken into consideration. In addition it was seriously argued that environmental damage reduced welfare. Economic success should no longer be measured just in a one-dimensional fashion, with GDP growth the sole criterion (van Dieren, 1994). Although a stable economic framework represented by low inflation, a balanced budget and an independent central bank was still taken as an important requirement for economic success, social costs (for example, unemployment and maldistribution) and environmental considerations (such as the use of exhaustible resources and concentration of pollution) had penetrated analysis and debate.

Subsequently, in 1994, the European Parliament published a report on 'The Social Consequences of the Economic and Monetary Union'. With regard to environmental impact, DGXI of the European Commission published a rather sceptical report (European Commission, 1994b). According to their analysis it would be impossible to keep the growth rate of GDP at 2 per cent per annum and reduce the current level of energy consumption and pollution, given the Maastricht structure of the economy. Maintaining the aspirations of the Treaty of Maastricht implies a constantly deteriorating environmental situation in Europe.[9]

V FINANCIAL CONVERGENCE AND UNEMPLOYMENT

Constraining Fiscal Deficits: Does it Make Economic Sense?

It has become a part of EU ideology that the public sector budget should balance – if not each year then at least on average over the business cycle. And during the business cycle the deficit should never exceed 3 per cent of GDP. When the Monetary Union comes into effect, member states may even be fined if they do not perform in accordance with this requirement.

This is in many respects a step backward to the situation prevailing in the inter-war period, when a balanced (or nearly balanced) budget was the main goal for fiscal policy. The Treasury view (see, for example, Clarke, 1988) stressed the importance of budgetary balance (even including a sinking-fund requirement on public debt). At that time it was not fully understood that the private sector may have a structural surplus which of mathematical necessity has to be counterweighted by a public sector deficit. Within the neoclassical heritage the private sector would automatically balance savings and real investment, thus ensuring that no structural surplus would occur.

Today we know better. The private sector – especially in a period with a stagnating and ageing population – may for a substantial period of time 'oversave'. The private sector prepares itself for old age through financial accumulation. If the public sector is prevented from adjusting to the changed behaviour of households, pension funds and firms, economic development within the EU will become more depressed than is necessary. This provides part of the economic explanation for the weak performance in the EU during the 1990s.

To see this, the general government balance should be split into the *primary balance* (including public expenditures on consumption, investment and income transfers, and public receipts in the form of taxes and so on), on the one hand, and *interest payments on debt and revenue from privatizations*, on the other. The Maastricht Treaty's focus on the overall balance combines the two categories. Looking at the impact on employment of changes in the 'primary balance' is much more important. It would be even better to look at the 'structural balance' where the impact of deviations in employment from 'full employment' on income transfers and tax receipts is excluded. If made correctly, changes in the structural balance would be a relevant measurement of changes in fiscal policy.

As can be seen from the structural balance data in Table 11.1, there was a relaxation of fiscal policy in 1991 to prevent unemployment from rising, which in fact succeeded. But the prevention of further increases in unem-

ployment through fiscal expansion was incompatible with the Maastricht criterion of reducing the *total deficit* from 1993 onward. The continuous tightening of fiscal policy has kept the EU rate of unemployment unchanged at a high level.

Table 11.1 General government financial balances in Europe (per cent of GDP)*

	1989	1991	1993	1995	1997
Structural balance*	−3.6	−5.1	−5.1	−4.5	−3.2
Primary balance	1.3	−0.3	−1.7	−0.3	0.7
Total balance	−2.5	−4.4	−6.5	−5.3	−4.1
Unemployment (per cent)	8.5	8.5	11.1	11.2	11.3

Note: * OECD's measurement of the structural deficit depends on changes in 'structural unemployment' and the estimate of the 'output gap'.

Source: OECD, Economic Outlook, June 1996, Annex table 21, 30, 31 & 32.

The primary balance is very sensitive to changes in unemployment. This is seen quite clearly from 1991 to 1993. The primary budget fell by 1.4 per cent of GDP, although fiscal policy (measured by the structural balance) was unchanged. This suggests that the efficient way of reducing the budget deficit is by reducing unemployment.[10] Arbejderbevægelsens Erhvervsråd (1996) has calculated that the fulfilment of the Maastricht Treaty requirements of a deficit of no more than 3 per cent of GDP in 1999 would cost Europe a further loss in employment of more than one million jobs. Although the policy has to be initiated in those countries with the biggest deficits (Italy, Sweden, Spain and France), the impact will quickly spread to other EU countries, leaving all countries with higher unemployment than otherwise.

Forcing the Rate of Inflation to Converge

The Maastricht Treaty focuses on stable consumer prices as one of the main convergence criteria. That hardly makes sense, taking into consideration that the major part of those items constituting the 'consumer goods basket' consists of traded goods (and services). Owing to increased competition within the EU, consumer price indices are forced to converge. It is domestic costs (especially labour costs) which may deviate because national labour markets are still separated and may perform rather differently. In

fact, in the second half of the 1980s, unit labour cost did develop quite differently (see Table 11.2). In the first half of the 1990s – when unemployment was rising – unit labour costs became more similar. On the other hand, exchange rate variability was significant after the signing of the Maastricht Treaty and the breakdown of the EMS. Without this exchange rate flexibility the differences in unemployment within EU would have been even more dramatic.

At any rate, labour market structures (and statistics) are still very different among the EU countries. Forcing unit labour costs to conform to the same (low) standard, as for example in Germany, requires different levels of unemployment, as shown in Table 11.2. The evidence in the table makes it clear that the consequence of the requirement of wage–cost inflation convergence was very different levels of unemployment. The breakdown of the EMS in 1992–3 was an inevitable and direct consequence of this real divergence. Some countries realized that the loss in output from restoring competitive position (measured by unit labour costs) would be substantial. Efforts were concentrated on narrowing divergence in the future development of unit labour costs, as in fact was achieved (see Table 11.2).

Establishing the Maastricht conditions within each country has meant that a competing deflationary process has been initiated. Each country has to perform closely to the three with the lowest rate of inflation. In practice, it has emerged as a coordinated contractionary economic policy which will last at least until the formal decision about which countries will be accepted to join the Monetary Union has been taken in spring 1998. The Monetary Union was correctly seen as a remedy to prevent competing devaluations, but it was probably not foreseen that the transition period should develop into a situation with competing restrictive policies.

It can, of course, be argued that low inflation by itself represents a welfare gain. Unpredictable inflation does create uncertainty. But the important thing to analyse is how wage inflation will perform if unemployment becomes lower in the future. If the 1986–91 experience repeats itself, countries within a monetary union will run into considerable difficulties.

As can be seen from Table 11.2, one further consequence of this forced process of convergence within Europe has been a historically high real rate of interest. This is mainly a consequence of the ambitious plan of keeping exchange rates within (a part of) the EU unchanged over a long period. One of the immediate results of the loosening of the EMS in 1992/3 was a fall in nominal interest rates and thereby a fall in real rates. Until then the 'European' rate of interest was set by the Bundesbank and kept high because of the German fear of domestic inflation. That left a number of already depressed neighbouring countries with a higher nominal (and real) rate of interest which made their unemployment situation worse,

Table 11.2 Unemployment, unit labour costs and exchange rate variability, 1986–96

	Unemployment (per cent)		Yearly change in unit labour cost (per cent)		Exchange rate change (average yearly per cent)		International Competitiveness (average per cent)	
	1986	1996	1986–91	1991–96	1986–91	1991–96	1986–91	1991–96
Germany	7.7	10.3	1.9	2.2	2.1	2.5	4.0	4.7
France	10.4	12.1	2.1	0.8	0.1	2.3	2.2	3.1
Italy	9.9	12.1	6.0	1.7	−0.2	−4.9	5.8	−3.2
UK	11.0	7.9	7.3	1.2	0.1	−3.4	7.4	−2.2
Austria	4.5	6.2	2.2	1.9	1.1	1.4	3.5	3.3
Belgium	11.8	13.2	1.9	1.5	1.7	1.8	3.6	3.3
Denmark	7.8	9.2	2.9	1.2	0.9	2.0	3.7	3.2
Finland	5.4	16.4	5.1	−0.4	0.7	−2.9	5.8	−3.3
Ireland	17.0	12.4	1.5	0.0	0.2	0.0	1.7	0.0
Netherlands	8.4	7.0	1.0	1.5	1.6	2.1	2.6	3.6
Portugal	8.6	7.4	10.8	4.6	−3.6	−0.9	6.8	3.7
Spain	21.0	22.9	5.2	3.0	2.2	−3.8	7.4	−0.8
Sweden	2.5	7.6	7.6	2.0	−0.4	−2.4	7.2	−0.4

Source: OECD, *Economic Outlook*, June 1996.

including those countries, such as France, with low unit labour cost inflation.

When the exchange rate system broke down it provided scope for a somewhat more flexible monetary policy which, at least for a while, made nominal rates of interest diverge. However, one of the EMU conditions requires that long-term rates of interest do not deviate by more than two percentage points from those three countries with the lowest inflation.

Distribution of Income and Welfare

Much too often economic development is measured by average GDP per capita. That leaves out the very important aspect of distribution and thus important questions related to concepts like coherence and solidarity.[11]

The European Parliament has taken steps towards an investigation of the social consequences of the 'Maastricht process'. In fact, some of these questions were anticipated in their 1994 Report on 'The Social Consequences of the Economic and Monetary Union'. Here it was concluded that social problems had grown markedly within the EU during the last three-to-four years, but no attempt was made to identify a possible relationship between the Maastricht conditions, which applied a macroeconomic straitjacket, and deteriorating social conditions. One could start to estimate the extent of poverty, and the trend during the 1990s. The average number of unemployed people provides a very rough indicator, but it is important to improve on indicators of the quality of life, taking into consideration, among other things, different cultural and institutional conditions.

Another aspect of distribution is the division of value added between capital and labour. As described above, the process of inflation is partly a consequence of having wages determined in money terms instead of real terms. It is the money wage which is negotiated between labour and employers. An improvement in labour's share has to be initiated through higher money wages, with the risk of rekindling cost–price–cost inflation.

On the other hand, slowing down inflation (and making countries financially more convergent) through higher unemployment cannot avoid changing factor shares, as can be seen from Table 11.3. The rising profit share is a consequence of high unemployment and an indicator of the shift in the distribution of power in the labour market. Countries pursuing a strong-currency option can only improve competitiveness and increase the income share of capital through lower wage increases than those abroad. Differences in the functioning and structure of the national labour markets determine in that case how much above the EU average the national rate of unemployment has to be to improve the competitive position sufficiently. Spain is the outstanding example, with unemployment at more than 20 per cent.

Sweden and the UK, since 1992, had adopted a more flexible exchange rate mechanism. Through that channel the international competitive position was improved, income distribution changed and some of the rise in unemployment avoided.

Table 11.3 Capital: income share in OECD countries (per cent)

	1980	1985	1990	1995
Germany	28.5	32.4	35.6	36.0
UK	29.2	32.2	28.2	31.5
France	28.3	32.0	37.6	39.7
Spain	32.3	37.6	40.6	43.4
Denmark	28.4	35.7	36.6	38.5
Sweden	26.4	32.3	27.4	35.1

Source: OECD, *Economic Outlook*, June 1996.

Within the European Union the average material living standard is sufficiently high that no-one should be starving. It is purely a matter of distribution – or more precisely lack of redistribution – that makes many people not only consider themselves as poor but literally makes them poor. Welfare in Europe could be improved considerably without increasing material production.

Environmental Considerations

One more real phenomenon besides unemployment is missing from the Maastricht Treaty. There is no explicit consideration of the impact on the environment. There are some very loose statements about the importance of 'sustainable development' in the opening paragraphs, but when it comes to the conditions and qualifications for joining EMU, environmental issues are left behind.

That omission has partly been remedied in the European Commission's White Paper (1994a), in Chapter 10, on 'Environment and Welfare', which states:[12]

> The actual development within the EU is following a model which prevents an optimal combination of the two most important resources: labour and nature. (1994a: 188)
>
> These inefficiencies (of the market economic system) represent significant but hidden welfare losses. As current economic accounting does not reflect unpriced resources, such as environment, only partial estimates are available. It is, for

> example, generally recognized that the external cost of current transportation systems alone amounts to at least 3–4 per cent of GDP. (Ibid.)
>
> Energy can no longer be considered as an unlimited resource. (Ibid.)
>
> From now on it is an open question whether a higher GDP reflects an illusory rather than a real economic progress. (Ibid.: 189).
>
> Thus, with a more expedient policy it should be possible to improve welfare for the entire population and at the same time to reduce consumption and by that to reduce pressure on the environmental loading. (Ibid.: 190)

What do these quotations tell us? The report recommends a policy which combines environmental improvements with a more labour-intensive mode of production, because the environment and the number of persons employed are important parts of the overall concept of welfare which is not accounted for in the conventional national accounting system. In fact, owing to these omissions from the traditional concept of growth (in terms of GDP), we do not know whether welfare will be improved at all if growth of a kind recommended within the first six chapters of the White Paper should manifest itself in the future.

We do know whether, if current developments within the EU continue unchanged, unemployment will be even higher than today. In addition, we know that the composition of material production is not sustainable at the present level. In other words, even though the volume of material production is growing, there are a number of indicators that point to a deteriorating state of overall welfare, and especially living conditions for the most vulnerable parts of the population.

But an even bigger problem for the time being – which admittedly is recognized by Delors Report II and correctly stressed, for example, by van Dieren (1994) – is that, in fact, we do not know how to combine the environment, employment and distribution in such a way that welfare is improved. Our knowledge in this area is limited. In my view, it is absolutely essential that we create and thoroughly investigate a number of scenarios showing the complex interrelationships of these components of welfare and different policies. For that matter we are in grave need of a 'Green' national accounting system to measure the development in welfare. Although such an accounting system will never be ideal, it could better capture the development of the well-being of society.

That brings me to macroeconomic perspectives on the environment and employment. As far back as 1936, John Maynard Keynes wrote: 'The outstanding faults of the economic society in which we live are its failure to provide for full employment and its arbitrary and inequitable distribution of wealth and incomes' (Keynes, 1936: 372). If he were alive today, he could have added: '*and its inability to prevent the devastation of the environment*'.

It is well known that unemployment can continue for decades, not because of wage stickiness, but because the scale and composition of economic activity are inadequate. It is also well known that the rate of interest may stay much too high for savings and investment to match each other at full-employment production, not to mention the consideration of future generations. The higher the real rate of interest, the more speedily will real resources be exhausted.

VI CONCLUSIONS

In this chapter I have pointed to the very complex processes which characterize European integration for the time being. These processes have become even more complicated as a result of the arbitrary convergence criteria set out in the Maastricht Treaty. By focusing only on financial variables, European policy has a deflationary bias which creates real diversity within and among member countries.

Until very recently, one of the least recognized implications of the EMU conditions has been the increase in unemployment which has taken place during the years since the signing of the Treaty. Apparently, the monetarist theory behind the Treaty has been inadequate for understanding the convergence process. The financial integration and price stability forced upon fifteen rather heterogeneous countries have significantly aggravated the employment situation. Recent studies point to problems of social exclusion and environmental deterioration not contemplated in the background papers leading up to the recommendation of creating a Monetary Union in Europe, which had only concerned financial convergence criteria. New measures to generate sustainable growth have to be put forward. For that reason the White Paper contains a proposal for a massive programme of EU support for those European industries, regions and social groups which would otherwise diverge. There is clearly much to be done by economists in building up the theoretical and empirical back-up for this initiative.

NOTES

1. A previous version of this chapter was also presented at Aalborg University. I am grateful for many constructive comments on both occasions.
2. 'People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some connivance to raise prices' (Smith, 1776/1976: 145).
3. The Common Agricultural Policy is a particularly striking example of how EU money can be diverted from the original intentions.

4. The debate about the usefulness of a 'Tobin tax' on international capital flows should be seen in this perspective; see, for instance, Davidson in this volume.
5. One should not be surprised that the recommendations in the Delors Report were kept narrowly within the monetarist theoretical framework, because the committee was made up of the twelve central bank govenors and three independent experts with a strong monetarist bias.
6. One may wonder why traditional monetarist economists dominating the academic scene in the period preceding the Maastricht Treaty could recommend 'fixed prices' within the European Monetary System. Perhaps the concept of 'political economy' with emphasis on the 'political' is the best explanation.
7. Two remarkable exceptions should be mentioned. First, Milton Friedman has always been in favour of floating exchange rates, partly because his view is that speculation in financial markets has to be stabilizing in a longer-run perspective. Second, the British civil servant at the Commission, Bernard Connolly, presented a negative outlook on the single currency prospect with arguments derived from traditional monetarist thinking: *The Rotten Heart of Europe: The Dirty War for Europe's Money*. He lost his job.
8. In fact the German Minister of Finance, Theo Weigel, proposed that members of the Monetary Union should sign a specific 'Stability Pact' committing governments to limiting the deficit to a maximum of 3 per cent of GDP.
9. This viewpoint is repeated in the first annual report of the newly established European Environmental Agency.
10. In a radio discussion with Josiah Stamp in 1933, Keynes commented: 'Look after the unemployment, and the Budget will look after itself' (Keynes, CW XXI: 150).
11. As a consequence of the doubts with regard to the distributional effects of the monetary union, it was decided within the Maastricht Treaty to establish a so-called 'cohesion fund' which will provide a supplement to the already existing regional and structural funds. Together they amount to approximately ½ per cent of EU GDP.
12. All quotations are the author's translation from the Danish edition.

12. Policies for fighting speculation in foreign exchange markets: the Tobin tax versus Keynes's views

Paul Davidson

I INTRODUCTION

In the classical model, where agents know the future with perfect certainty or, at least, can form statistically reliable predictions without persistent errors (that is, rational expectations), speculative market activities can be justified as stabilizing. When, on the other hand, the economic future is uncertain (non-ergodic), today's agents 'know' they cannot reliably predict future outcomes. Hicks (1979: vii) has argued that, if economists are to build models which reflect real world behaviour, then the agents in these models must 'know that they just don't know' what is going to happen in the future.

In the uncertain world we live in, therefore, people cannot rely on historical or current market data to forecast future prices reliably (that is, in the absence of reliable institutions that ensure orderly spot markets, there can be no reliable existing anchor to future market prices). In such a world, speculative activities cannot only be highly destabilizing in terms of future market prices, but the volatility of these future spot prices can have costly real consequences for the aggregate real income of the community. Nowhere has this been made more obvious than in the machinations of the foreign exchange markets since the end of the Bretton Woods era of fixed exchange rates.

Eichengreen, Tobin and Wyplosz (hereafter ETW) (1995) have recognized the potential high real costs of speculative destabilizing economic activities that can occur if governments permit unfettered flexible exchange markets. They suggest that foreign exchange markets have become the scene of a number of speculative attacks against major currencies.

At approximately the same time that the ETW article appeared in print, the winter 1994–5 Mexican peso crisis exploded and spilled over into a US dollar problem. In international financial markets, where image is often

more important than reality, the dollar was dragged down by the peso during the late winter and early spring of 1995, while the German mark and Japanese yen appeared to be the only safe harbours for portfolio fund managers.

Portfolio fund managers in search of yields and 'safe harbours' can move funds from one country to another in nanoseconds with a few clicks on their computer keyboard. In today's global economy any whiff of currency weakness becomes a conflagration spread along the information highway. Federal Reserve Chairman Alan Greenspan was quoted in *The New York Times* as testifying that 'Mexico became the first casualty of the new international financial system' that permits hot portfolio money to slosh around the world 'much more quickly'. Can the real economies of the twenty-first century afford to suffer many more casualties in this new international financial system?

If initially the major central banks do not dispatch sufficient resources to intervene effectively to extinguish any speculative currency fire, then the resultant publicity is equivalent to hollering 'fire' in a theatre. The consequent panic worsens the situation and central banks whose currencies are seen as safe havens may lose any interest in a coordinated response to the increasing inferno.

What Tobin and his associates are worried about is that with electronically linked international financial markets and an interconnected global economy, there is a strong possibility, which even advocates of free international capital markets have begun to admit, that 'hot money' portfolio flows can have massive disruptive real economic effects.

In this real world in which we live, pragmatists such as Tobin and his associates are implicitly arguing that, because of the possibility of speculative portfolio changes, the social costs of freely flexible exchange rates far exceed the social benefits. Accordingly, there is a role for some form of government intervention in the foreign exchange market. In contrast, orthodox economic theory traditionally argues for unfettered exchange rate markets on the presumption that the social benefits of such markets exceed the social costs of government interference. Mainstream theorists typically reach this conclusion because they conflate the concept of speculation with the concept of arbitrage. Since the latter is always a stabilizing force, orthodoxy insists that the former is also always a stabilizing factor.

If the social costs of free exchange markets exceed the social benefits, then what is required in this global economy with computer linked financial markets is not a system of *ad hoc* central bank interventions while what Greenspan calls the 'new international financial system' burns the real economy. What is necessary is to build into the international system per-

manent fireproofing rules and structures that prevent imagery-induced currency fires. *Crisis prevention rather than crisis rescues must be the primary long-term objective.* If the developed nations do not hang together on a currency-fire prevention system, they will all hang separately in a replay of the international financial market crisis of the Great Depression.

Reasonable people do not think it is a violation of civil liberties to prohibit people from boarding an aeroplane with a gun. Moreover, no-one would think we are impinging on individual rights if the society prohibits anyone from entering a movie theatre with a Molotov cocktail in one hand and a book of matches in the other – even if the person indicates no desire to burn down the theatre. Yet, in the name of free markets, fund managers can imagine an exploding Molotov cocktail and then yell 'fire' in the crowded international financial markets any time the 'image' of a possible profitable fire moves them.

Fifty years ago, Keynes recognized what the best and the brightest economists are only beginning to recognize today, namely that 'there is not a country which can . . . safely allow the flight of funds [hot money] . . . Equally there is no country that can safely receive . . . [these portfolio] funds which cannot safely be used for fixed investment' (Keynes, CW XXV: 25).

Tobin has taken up this Keynesian theme and argued for fire prevention in the form of 'sand in the wheels of foreign exchange markets'; that is, to levy a tax on moving funds from one currency to another. (This is equivalent to taxing, rather than banning, the Molotov cocktail member of the theatre audience.) ETW have also explored the possibility of imposing compulsory interest-free deposits or other capital requirements (therefore creating an 'opportunity cost' tax) to 'discourage short-term round tripping, but not long-term investment' (Greenaway, 1995: 160).

A published discussion between ETW (1995), Garber and Taylor (1995) and Kenen (1995) did not focus on the economic rationale in terms of a Tobin tax (or any other form of government intervention). Rather, Garber and Taylor raised the issue of the institutional feasibility of a foreign exchange transaction tax, while Kenen concentrated specifically on capital controls and why he perceives the impossibility of such controls at the present time. Little discussion of the theoretical rationale for any controls was provided.

Keynes, on the other hand, who distinguished the speculative motive for liquidity preference from the marginal efficiency demand for real investment, analysed this problem in some detail in the 1940s and concluded, as the quotation above suggests, that a system of outright prohibition of international hot money flows would be required. With the help of the formula developed below, it is easy to see why Keynes reached this conclusion.

II CAPITAL UNCERTAINTY AND SPECULATIVE FLOWS

In order for any asset to be considered as a liquid store of value over time, that asset must be readily resaleable in a well organized, orderly spot market. The institution of 'market maker' is a necessary condition for the existence of well organized, orderly spot markets (Davidson, 1972). Since the spot market price of any liquid asset in such a market can change over time, savers who are storing claims on resources must contemplate the possibility of an appreciation or depreciation in the asset's spot market price at a future date when the holder wishes to liquidate her holdings. This potential capital gain or loss is obtained by subtracting today's spot price ($p_s t0$) from the expected spot price at a future date ($p_s t1$) when the asset will be resold. If $(p_s t1 - p_s t0) > 0$, a capital gain is expected from holding the asset until $t1$; if $(p_s t1 - p_s t0) < 0$, a capital loss will be expected.

Offsetting the possible capital loss on choosing any liquid asset is the future earnings q that can be obtained from owning the asset during a period of time net of carrying costs c incurred by holding this asset. Both q and c tend to increase with the time period the asset is held. There are also transactions costs (T_s) incurred in both buying and reselling a liquid asset. These transactions costs are usually independent of the time interval that the liquid asset is held. However, they normally increase at a decreasing rate as the value of the asset increases.

If an unforeseen liability should come due in the immediate future, the transactions cost of taking a position and then liquidating it can easily swamp any net income flow $(q - c)$ received from holding the asset for such a short time while the capital gain (or loss) is likely to be negligible. It is, therefore, normal to prefer to hold some saving in the form of the money in which near-term contractual obligations will come due to cover planned and some possible unforeseen obligations (Hicks, 1967).

The more uncertain the future appears, the more unforeseeable liabilities may come due. The more desirable, therefore, it will be to minimize transactions costs by storing saving in the form of money or other safe short-term assets denominated in terms of the currency of contractual settlement. This soothes our fears of becoming illiquid if anything unpredictable occurs during the period.[1]

Savers find a capital loss repugnant but the lure of capital gains seductive. Let q be the future expected income to be received from holding a financial security over a period of time, and c be the carrying costs where both q and c are denominated in terms of the specific currency of the issuer of the financial asset. Let us allow foreign currencies and stocks and bonds

denominated in foreign currencies to be included in the choice of assets to be held in any portfolio.

If, for a specific liquid asset, the portfolio manager expects

$$(q-c)+(p_s t1-p_s t0)-T_s>0, \tag{12.1}$$

then the manager is a 'bull'. If it is expected that

$$(q-c)+(p_s t1-p_s t0)-T_s<0, \tag{12.2}$$

then the fund manager is a 'bear'. In the simplest case, for example, if $(q-c)$ minus T_s equals zero, then if

$$[p_s t1/p_s t0]>1, \tag{12.3}$$

the person is a bull, while if

$$[p_s t1/p_s t0]<1, \tag{12.4}$$

the person is a bear.

If one holds one's own domestic money there is no future net income $[(q-c)=0]$, no capital gain or loss $[(p_s t1-p_s t0)=0]$, and no transactions costs $[T_s=0]$.

In a flexible exchange rate system, fund managers will estimate the expected future income plus capital gain or loss on all domestic and foreign liquid securities. For ease of exposition in analysing portfolio decisions in a multi-nation open economy context, let us include the fund manager's expected capital gains and losses for each security (in terms of the currency the security is denominated in) in the magnitude of $(q-c)$. Accordingly, the term $(p_s t1-p_s t0)$ can be reserved for the *ceteris paribus* effect of an expected change in the spot exchange rate. Thus, besides expected capital gains (or losses) and all the transactions costs (T_s) associated with the purchase and sale of a liquid asset including the usual cost of converting currencies, expected changes in the exchange rate must also be factored in the decision as to which international liquid assets to hold.

Obviously, the portfolio manager will choose to move her money into those assets that are expected to yield the highest positive values, as in inequality (12.1) and sell those assets that have negative perspective yields, as in inequality (12.2).

In orthodox economic theory when interest rates are equalized, if similar financial assets denominated in different currencies are perfect substitutes, the $(q-c)$ term for these securities is assumed to be equal, given the state

of expectation about future exchange rates vis-à-vis today's rate. Under these stylized circumstances, international speculative hot money flows will occur whenever there is, *ceteris paribus*, a sudden change in sentiment involving the expected value of the future spot exchange rate relative to the current rate, that is, the portfolio managers' evaluation of the $(p_s t1 - p_s t0)$ term changes.

If one or more portfolio managers who control significant portfolio sums suddenly change their expectations regarding future exchange rates, there can be a massive movement in funds from one country to another. Once a significant international flow of funds occurs, this can encourage other fund managers to change their expectations of $(p_s t1 - p_s t0)$ until either of the following occurs:

1. the foreign reserves of the central bank of the nation suffering the outflow of hot money are nearly exhausted.[2] Then the nation cannot maintain an orderly exchange rate market. Consequently, fund managers who are latecomers cannot readily convert their holdings into foreign assets; or
2. the country being drained of reserves increases its interest rate (that is, the $q - c$ term) sufficiently to offset the expected potential capital gain $(p_s t1 - p_s 0)$; or
3. central banks deliberately intervene in the exchange market in an attempt to change private sector expectations regarding $(p_s t1 - p_s t0)$; or
4. some form of taxation is added to increase the value of the T_s term to offset the expected increase in capital gains from an exchange rate change; or
5. some form of outright prohibition of hot money portfolio flows is successfully introduced.

The Tobin tax falls under item (4) where governments use taxation in an attempt to stop speculative flows of hot money. The belief behind the Tobin tax is that adding a marginal tax will increase social costs until they coincide with social benefits, so that private decisions will become socially optimal. By using the above equational relationships, however, it can be shown that the usual suggested magnitude of a 'Tobin tax' or similar 'opportunity cost' capital tax will only marginally increase the cost of speculating. Consequently, a Tobin tax will stop speculation on relatively *small* movements in the exchange rate (independent of the time horizon of the fund manager) while it will have a significantly larger impact on stemming real international trade. In other words, the Tobin tax is not able to solve the problem whenever speculative portfolio flows become significant large conflagrations, while simultaneously they induce large and

permanent private costs (in excess of social costs) of real international trade flows.

The 'half percent tax' used by ETW (1995: 164) as an illustration is equal to 1 per cent of a round-trip transaction. Thus the relationship for determining one's bullishness (or bearishness) requires evaluating the terms: $(q-c)+(p_s t1-p_s t0)-(x)(p_s t1+p_s t0)-T_s$, where (x) equals the magnitude of the Tobin tax rate. If

$$(q-c)+(p_s t1-p_s t0)-(x)(p_s t1+p_s t0)-T_s>0, \tag{12.5}$$

the person is a bull, while if

$$(q-c)+(p_s t1-p_s t0)-(x)(p_s t1+p_s t0)-T_s<0, \tag{12.6}$$

the portfolio manager is bearish. When

$$(q-c)+(p_s t1-p_s t0)-(x)(p_s t1+p_s t0)-T_s=0, \tag{12.7}$$

the agent is neither bullish nor bearish and will not engage in any speculative activities.

Equations (12.5)–(12.7) show that, given the values of $(q-c)$ and T_s, the Tobin tax merely increases slightly the differential between expected future spot price and the current spot price before speculative bull or bear responses are induced.

If we assume the simplest case that $(q-c)=T_s$, then, if

$$[p_s t1/p_s t0]>[1+x/1-x], \tag{12.8}$$

the person is a bull, while no bullish speculative flows will be induced even if expected $p_s t1$ was greater than $p_s t0$ up to the point where

$$[p_s t1/p_s t0]=[1+x/1-\mathrm{x}]. \tag{12.9}$$

Thus, for example, if the magnitude of the Tobin tax is 0.5 per cent, then the expected future spot price must be at least 1.1 per cent higher than the current spot exchange rate[3] to make the agent willing to speculate on any foreign currency.

As long as the spot price is expected to change, *ceteris paribus*, by much more than 1.1 per cent during any period where there is a 0.5 per cent Tobin tax, speculative flows still have a significant positive pay-off. Consequently, any Tobin tax less than 100 per cent *of the expected capital gain* (on a round trip) is unlikely to stop the sloshing around of hot money.

Whenever there is a speculative run on a currency, one expects dramatic changes in that currency. For example, the Mexican peso fell by approximately 60 per cent in the winter of 1994–5. A Tobin tax of over 23 per cent would have been required to stop the speculative surge that created the peso crisis. At best, the Tobin tax might slow down the speculative fever when small exchange rate changes are expected.

The grains of sand of a Tobin tax might be the straw that breaks the speculative back of very small portfolio managers, since normal transactions costs (T_s) of foreign transactions are essentially regressive. An additional proportional (Tobin) tax on top of a large regressive transactions cost might keep more very small speculators out of the market. For movements of larger sums, however, the normal transactions costs quickly shrink to a negligible proportion of the total transaction. In today's free-wheeling financial markets, individuals with even small portfolio sums can join mutual funds that can speculate on foreign currencies; therefore a Tobin tax is unlikely to constrain even small investors, who can always join a large mutual fund to reduce the impact of total transactions costs sufficiently to reduce the remaining Tobin tax to relative insignificance whenever speculative fever runs high.

Finally, there is a rule of thumb that suggests that, under the current flexible exchange rate system, there are five normal hedging trade transactions in every real final goods trade, compared to two for every speculative flow in international finance. If this ratio is anywhere near correct, a 0.5 per cent Tobin tax could imply levying up to a 2.5 per cent tax on normal real trade flow transactions, compared to a 1 per cent round-trip speculative tax. It would appear, then, that a Tobin transaction tax might throw larger grains of sand into the wheels of international real commerce than it does into speculative hot money flows. A 0.5 per cent Tobin tax could be equivalent to instituting a 2.5 per cent universal tariff on all goods and services traded in the global economy.[4]

Independent of questions of the political and economic feasibility of instituting a ubiquitous Tobin tax, therefore, proposals to increase marginal transactions costs in foreign exchange by either a Tobin tax or a small feasible opportunity cost tax on capital are unlikely to prevent speculative feeding frenzies that lead to attacks on major currencies and their economic neighbours, while they may inflict greater damage on international trading in goods and services.

It is such considerations that led Keynes to suggest an outright prohibition of all significant international portfolio flows through the creation of a supranational central bank and his 'bancor' plan. At this stage of economic development and global economic integration, however, a supranational central bank is not politically feasible. Accordingly, what should be

aimed for is a more modest goal of obtaining an international agreement among the G7 nations. To be economically effective and politically feasible, this agreement, while incorporating the economic principles that Keynes laid down in his bancor plan, should not require any nation to surrender control of local banking systems and fiscal policies.

Keynes introduced an ingenious method of direct prohibition of hot money flows by a 'bancor' system with fixed (but adjustable) exchange rates and a trigger mechanism to put more of the onus of resolving current account deficits on surplus nations. It is possible to update Keynes's prohibition proposal to meet twenty first-century circumstances. In the next section, such a system will be proposed. Moreover, this system will be in the best interests of all nations, for it will make it easier to achieve global full employment without the danger of importing inflationary pressures from one's trading partners.

There is not enough space in this chapter to debate all possible alternative proposals for fire prevention of currency speculation. Instead, I hope to raise the public consciousness of the potential tremendous real benefits that can accrue by establishing currency-speculation fire prevention institutions rather than merely relying on either fire-fighting intervention such as that suggested as an emergency fund financed by contributions of the G7 nations and managed by the IMF, or a laissez-faire policy on international capital markets that can produce currency fires to burn the free world's real economies. We must recognize the very real possibility that there can be no safe harbour when a major currency is attacked.

III THE GOLDEN AGE OF ECONOMIC DEVELOPMENT

The Bretton Woods years were an era of unsurpassed economic global prosperity. Economist Irma Adelman of the University of California has characterized the Bretton Woods period as a 'Golden Age of Economic Development . . . an era of unprecedented sustained economic growth in both developed and developing countries'. Table 12.1 provides the statistical evidence that Adelman used in reaching her conclusion about our economic golden age.

Although we do not possess reliable statistics on GDP per capita before 1700, it is probably true that from biblical times until the Renaissance the average standard of living in the world showed little improvement from year to year or even generation to generation. Improvement in global economic living standards began with the development of merchant capitalism during the Renaissance period in Europe. Between 1700 and 1820 (see

Table 12.1 Real GDP (annualized growth rate) in OECD countries

Years	Real GDP per capita (per cent)		
1700–1820	0.2		
1820–1913	1.2		
1919–1940	1.9		
1950–1973	4.9		
1973–1981	1.3		
	Major industrial nations	New industrializing nations	Developing nations
1973–1990	2.5	3.5	−0.1

Table 12.1) the per capita slice of the economic pie was increasing at an average annual rate of 0.2 per cent. Thus, if the average person lived approximately 45 years, the person's standard of living increased by less than 10 per cent from the time of birth to death.

Living standards started to increase substantially early in the nineteenth century. The Industrial Revolution period was truly revolutionary. Between 1820 and 1913, annual living standards improved ten times faster than in the previous century as annual growth rates of 1.2 per cent compounded year after year. The average increase in labour productivity was almost seven times greater than during the previous 100 years. The per capita income of the advanced nations of the world more than trebled in less than 100 years. No wonder this period is often portrayed in Western literature as the era of growth of the common man.

During this 1820–1913 period, the volume of world exports grew thirty-fold as a global economy and financial system were created with a fixed exchange rate under a gold–sterling standard. The growth rate during the Golden Age of Bretton Woods, however, was almost double the previous peak annual growth rate of the industrializing nations during the Industrial Revolution (from 1820 to 1913). Annual labour productivity growth between 1950 and 1973 was more than triple that of the Industrial Revolution. Moreover, between 1950 and 1973, real GDP per capita in the developed (or OECD) nations grew 2.6 times faster than between the wars.

The resulting prosperity of the industrialized world was transmitted to the less developed nations through world trade, aid and direct foreign investment. From 1950 to 1973, annual growth in per capita GDP for *all* developing nations was 3.3 per cent, almost triple the growth experienced by the industrializing nations during the Industrial Revolution. The total

GDP pie of the less developed countries (LDCs) increased at almost the same rate as that of the developed nations, 5.5 per cent and 5.9 per cent, respectively, but the higher population growth of the LDCs caused the lower per capita income growth.

By comparison, the economic record of the flexible rate systems between the world wars and since 1973 is dismal. The growth rate of the major developed nations since 1973 is approximately half what it was during Bretton Woods, not much better than the experience of the nineteenth and early twentieth century. Moreover, the OECD nations have suffered through persistently higher rates of unemployment and, especially during the 1970s, recurrent bouts of inflation. The contrast for the LDCs since 1973 is even more startling, with annual real income per capita declining. The best performances since 1973 have been turned in by the newly developing nations along the Pacific rim, but even with their 'economic miracle', the per capita improvements are significantly lower than those experienced by the industrial nations between 1950 and 1973.

Finally, it should be noted that during the Bretton Woods period there was a better overall record of price level stability than either during the post-1973 period, or between the wars, or even under the international gold standard.

IV THE LESSON THAT SHOULD HAVE BEEN LEARNED

What can we conclude from these facts? First, fixed exchange rate systems are associated with better global economic performance than flexible systems. Second, during the post-war period until 1973, global economic performance was nothing short of spectacular. It exceeded the remarkable performance of the Industrial Revolution and the gold standard fixed exchange rate system. This unparalleled 'golden age' experience required combining a fixed exchange rate system with another civilizing principle, namely that the creditor nations must accept a major share of the responsibility for solving persistent international payments imbalances that may develop. Third, the Bretton Woods period was a remarkably crisis-free economic era.

Since the breakdown of Bretton Woods, on the other hand, the global economy has stumbled from one global economic crisis to another. Economic growth around the world has slowed significantly, while the growing global population threatens to reduce standards of living. The number of mouths to be fed are threatening to increase at a faster rate than global GDP. Economics has once more become the dismal science, with its Malthusian overtones.

Instead of bringing the utopian benefits promised by conservative economics, the post-Bretton Woods system has generated a growing international monetary crisis. As early as 1986, *New York Times* columnist Flora Lewis noted that government and business leaders recognize that 'the issues of trade, debt, and currency exchange rates are intertwined'. Lewis warned that the world is on a course leading to an economic calamity, yet 'nobody wants to speak out and be accused of setting off a panic . . . the most sober judgment is that the best thing that can be done now is to buy more time for adjustments to head off a crash . . . decision makers aren't going to take sensible measures until they are forced to by crisis'.

The current international payments system does not serve the emerging global economy well. The *Financial Times* of London and *The Economist*, both previously strong advocates of today's floating rate system, have acknowledged that this system is a failure and was sold to the public and the politicians under false advertising claims.[5] Yet no leader is calling for a complete overhaul of a system that is far worse than the one we abandoned in 1973. No-one has the courage to speak out in public forums and suggest that the conservative philosophy that has governed our economic affairs in recent decades is a formula for economic disaster.

V THE RESPONSIBILITY FOR RESOLVING INTERNATIONAL TRADE IMBALANCES IN A CIVIL GLOBAL COMMUNITY: THE MARSHALL PLAN EXAMPLE

During the Second World War, Europe's productive capacity was ravaged. Immediately after the war, Europeans required huge quantities of imports to feed themselves and to rebuild their factories and cities. During 1946 and 1947, European nations used up almost all of their pre-war savings (their foreign reserves) to pay for imports from the United States, the only nation that had available productive capacity.

Under any conventional conservative international monetary system, once their reserves were exhausted the Europeans would have to either accept the burden of adjustment by 'tightening their belts', that is by reducing demand for imports to the negligible amount they could earn from exports or to borrow dollars to pay for imports. The Catch 22 of these alternatives was the following. First, Europeans could not produce enough to feed their populations. To tell a starving person to tighten their belt is not only an uncivilized suggestion but it imposes an impossible condition. Had the necessary 'belt tightening' been undertaken, the result would have been to depress further the war-torn standard of living of Western Europeans.

This would have induced political revolutions in Europe, not to mention recession in America's export industries.

Second, during the Great Depression, European export earnings were so low that they defaulted on most of their international debts. Given this experience and the fact that their post-war industries were in a shambles and could not produce enough in exports to service their debt, American banks would not make the massive loans needed by Europeans. It was also obvious that any direct US government loans could not be repaid.

As a civilized strategy to avoid the political and economic chaos that would probably have occurred in Europe, the United States offered to pay for the European potential trade deficits (of imports over exports) necessary to rebuild Europe through the Marshall Plan and other aid programmes. In essence, the Marshall Plan permitted foreigners to buy US exports without either drawing down their last pennies of foreign reserve savings or going into debt that could not be repaid in the foreseeable future. Through the Marshall Plan and other aid programmes, the United States was demonstrating a civilized attitude to the entire global community.[6]

If the United States left the deficit nations to adjust to the vast looming trade imbalance by reducing imports, then (a) the standard of living of Europeans and Asian residents would have been substantially lower, *and* (b) the United States would have slipped into a great recession as there would have been too little international demand for the products of her surplus industrial capacity.

The Marshall Plan and large-scale foreign military and economic aid programmes provided foreigners with large sums of American dollars, *as a gift*, so that they could buy American products. The result was that

a. huge benefits accrued to both foreigners and US citizens. Foreigners used these gifts to buy the American goods necessary to rebuild their economies and to feed their people. Americans obtained additional jobs and earned more income by selling exports to these foreigners; and,
b. by its generosity the United States invigorated, enriched and strengthened the international community, to the immense economic gain of all nations outside the Iron Curtain.

The Marshall Plan gave away a total of $13 billion in four years. (In 1994 dollars this is equivalent to $139 billion.) This 'give-away' represented 2 per cent *per annum* of the United States' GDP. Nevertheless, American consumers experienced no real pain. During the first year of the Marshall Plan, US real GDP per capita was 25 per cent greater than in 1940 (the last peacetime year). Employment and per capita GDP grew continuously between 1947 and 1957 as these foreign aid funds financed additional demand for

US exports. These were exports produced by employing what otherwise would have been idle American workers, and factories created jobs and incomes for millions of Americans. For the first time in its history, the United States did not suffer from a severe recession immediately after the cessation of a major war.

The entire free world experienced an economic 'free lunch' as both the debtors and the creditor nation gained from this United States 'give-away'. The Bretton Woods system in tandem with the Marshall Plan, where the United States took deliberate steps to prevent others from depleting their foreign reserves and become overindebted internationally, resulted in a global golden age of economic development.

By 1958, however, the US international position of being able to export more than it imported was coming to an end. Foreign aid grants exceeded the United States' trade surplus of demand for US exports over US imports. Unfortunately, the Bretton Woods system had no mechanism for automatically encouraging emerging trade surplus (creditor) nations to step into the civilizing adjustment role the United States had been playing since 1947. Instead, these creditor nations converted a portion of their annual dollar export earnings into calls on the gold reserves of the United States. In 1958 alone, the United States lost over $2 billion of its gold reserves. In the 1960s, increased US military and financial aid responses to the Berlin Wall and Vietnam accelerated this trend.

The seeds of destruction of the Bretton Woods system were sown and the golden age of global economic development ended as the trade surplus nations continually drained gold reserves from the United States. When the United States closed the gold window in 1971 in order to avoid a continuing reduction in its foreign reserves and then in 1973 unilaterally withdrew from Bretton Woods, the last vestige of a potentially enlightened international monetary approach was lost – apparently without regret or regard as to how well it had served the global economy.

VI COMPARING THE MARSHALL PLAN AND THE TREATY OF VERSAILLES

This civilized historical episode enhancing a post-war international civil community can be compared to the barbaric policy and the resulting fragmented international system that followed the First World War. Under the 1919 Treaty of Versailles, the victorious Allies imposed a harsh settlement on the defeated nations. Massive reparations were imposed on Germany as the European Allies attempted to obtain compensation for the costs of the war that they had incurred.

In his book, *Economic Consequences of the Peace*, John Maynard Keynes spoke out against the uncivilized policy of imposing reparations on these war-torn nations. Perhaps the victorious European nations whose citizens had suffered through years of war cannot be blamed for mistrusting Keynes's civilized economic arguments or the political ideals of President Woodrow Wilson. The evils of waging war may have eroded the civilized values of the European Allies to the point where they felt compelled to demand a barbaric financial retribution.

The result of this Allied barbarism may have been initially satisfying to the warlike passion for revenge by humiliating a former enemy. But barbaric treatment can breed more barbarism, as the evils imposed by the oppressor shape the values of the oppressed. Although the primary responsibility for Nazi Germany does not lie with the British and French economic policies after the war, to the extent that they helped shape German society's values of the 1920s and 1930s, the harsh Allied terms for peace did have a significant role in the outcome that occurred in the 1930s and 1940s in Europe.

The United States was the only victorious nation that pursued a civilized policy of not claiming reparations. The United States developed a loan plan (the Dawes Plan) for aiding the Germans to meet the Allied claims. Unlike the other victorious Allies, the United States enjoyed an economic boom in the 1920s as the Allies bought American goods with these Dawes Plan dollars. The European victors, even with the boost of war reparations, experienced much tougher economic times.

VII REFORMING THE WORLD'S MONEY

Some fifty years ago, Keynes (CW XXV: 168) provided a clear outline of what is needed:

> We need an instrument of international currency having general acceptability between nations . . . We need an orderly and agreed upon method of determining the relative exchange values of national currency units . . . We need a quantum of international currency . . . [which] is governed by the actual current [liquidity] requirements of world commerce, and is capable of deliberate expansion . . . We need a method by which the surplus credit balances arising from international trade, which the recipient does not wish to employ, can be set to work . . . without detriment to the liquidity of these balances.

What is required is a *closed*, double-entry bookkeeping clearing institution to keep the payments 'score' among the various trading regions, plus some mutually agreed upon rules to create and reflux liquidity while

maintaining the international purchasing power of the international currency. The eight provisions of the clearing system suggested in this section meet the criteria laid down by Keynes. The rules of this Post Keynesian proposed system are designed (1) to prevent a lack of global effective demand[7] due to any nation(s) either holding excessive idle reserves or draining reserves from the system, (2) to provide an automatic mechanism for placing a major burden of payments adjustments on the surplus nations, (3) to provide each nation with the ability to monitor and, if desired, to put boulders into the movement of international portfolio funds in order to control movements of flight capital,[8] and (4) to expand the quantity of the liquid asset of ultimate international redemption as global capacity warrants.

Elements of such a clearing system would include the following:

1. The unit of account and ultimate reserve asset for international liquidity is the International Money Clearing Unit (IMCU). All IMCUs are held *only* by central banks, not by the public.
2. Each nation's or Unionized Monetary System's central bank is committed to guarantee one-way convertibility from IMCU deposits at the clearing union to its domestic money. Each central bank will set its own rules regarding making available foreign monies (through IMCU clearing transactions) to its own bankers and private sector residents.[9]

   Since central banks agree to sell their own liabilities (one-way convertibility) against the IMCU only to other central bankers and the International Clearing Agency while they simultaneously hold only IMCUs as liquid reserve assets for international financial transactions, there can be no draining of reserves from the system. Ultimately, all major private international transactions clear between central banks' accounts in the books of the international clearing institution.
3. The exchange rate between the domestic currency and the IMCU is set *initially* by each nation – just as it would be if one instituted an international gold standard. Since enterprises that are already engaged in trade have international contractual commitments that would span the change-over interval, then, as a practical matter, one would expect that the existing exchange rate structure (with perhaps minor modifications) would provide the basis for initial rate setting.

   Provisions (7) and (8) below indicate when and how this nominal exchange rate between the national currency and the IMCU would be changed in the future.
4 Contracts between private individuals will continue to be denominated in whatever domestic currency is permitted by local laws and agreed upon by the contracting parties. Contracts to be settled in terms of a foreign currency will therefore require some announced commitment

from the central bank (through private sector bankers) of the availability of foreign funds to meet such private contractual obligations.

5. An overdraft system to make available short-term unused creditor balances at the clearing house to finance the productive international transactions of others who need short-term credit. The terms will be determined by the *pro bono* clearing managers.
6. A trigger mechanism to encourage a creditor nation to spend what is deemed (in advance) by agreement of the international community to be *'excessive' credit balances accumulated by running current account surpluses*. These excessive credits can be spent in three ways: (a) on the products of any other member of the clearing union, (b) on new direct foreign investment projects, and/or (c) to provide unilateral transfers (foreign aid) to deficit members. Spending on imports forces the surplus nation to make the adjustment directly through the balance on goods and services. Spending by way of unilateral transfers permits adjustment directly by the current account balance, while direct foreign investment provides adjustment by the capital accounts (without setting up a contractual debt that will *require* reverse current account flows in the future).

Provision (6) provides the surplus country with considerable discretion in deciding how to accept the 'onus' of adjustment in the way it believes is in its residents' best interests. It does not permit the surplus nation to shift the burden to the deficit nation(s) through contractual requirements for debt service charges independent of what the deficit nation can afford.[10] The important thing is to make sure that continual oversaving[11] by surplus nations cannot unleash depressionary forces and/or a building up of international debts so encumbering as to impoverish the global economy of the twenty first century.

In the unlikely event that the surplus nation did not spend or give away these credits within a specified time, the clearing agency would confiscate (and redistribute to debtor members) the portion of credits deemed excessive.[12] This last-resort confiscatory action by the managers of the clearing agency would make a payments adjustment through unilateral transfer payments in the current accounts.

Under either a fixed or a flexible rate system, nations may experience persistent trade deficits merely because trading partners are not living up to their means: that is, because other nations are continually hoarding a portion of their foreign export earnings (plus net unilateral transfers). By so doing, these oversavers are creating a lack of global effective demand. Under provision (6), deficit countries would no longer have to deflate their real economy merely to adjust payment imbalances because others are

oversaving. Instead, the system would seek to remedy the payment deficit by increasing opportunities for deficit nations to sell abroad and thereby earn their way out of the deficit.

7. A system to stabilize the long-term purchasing power of the IMCU (in terms of each member nation's domestically produced market basket of goods) can be developed. This requires a system of fixed exchange rates between the local currency and the IMCU that changes only to reflect permanent increases in efficiency wages.[13] This assures each central bank that its holdings of IMCUs as the nation's foreign reserves will never lose purchasing power in terms of foreign produced goods, even if a foreign government permits wage–price inflation to occur within its borders. The rate between the local currency and the IMCU would change with inflation in the local money price of the domestic commodity basket.

   If increases in productivity lead to declining nominal production costs, the nation with this decline in efficiency wages (say, of 5 per cent) would have the option of choosing either (a) to permit the IMCU to buy (up to 5 per cent) fewer units of domestic currency, thereby capturing all (or most of) the gains from productivity for its residents while maintaining the purchasing power of the IMCU, or (b) to keep the nominal exchange rate constant. In the latter case, the gain in productivity is shared with all trading partners. In exchange, the export industries in this productive nation will receive an increased relative share of the world market.

   By altering the exchange rate between local monies and the IMCU to offset the rate of domestic inflation, the IMCU's purchasing power is stabilized. By restricting use of IMCUs to central banks, private speculation regarding IMCUs as a hedge against inflation is avoided. Each nation's rate of inflation of the goods and services it produces is determined solely by the local government's policy towards the level of domestic money wages and profit margins vis-à-vis productivity gains, that is the nation's efficiency wage. Each nation is therefore free to experiment with policies for stabilizing its efficiency wage to prevent inflation. Whether the nation is successful or not, the IMCU will never lose its international purchasing power. Moreover, the IMCU has the promise of gaining in purchasing power over time if productivity grows more rapidly than money wages and each nation is willing to share any reduction in real production costs with its trading partners.

Provision (7) produces a system designed to maintain the relative efficiency wage parities amongst nations. In such a system, the adjustability of

nominal exchange rates will be primarily (but not always, see provision (8)) to offset changes in efficiency wages among trading partners. A beneficial effect that follows from this provision is that it eliminates the possibility of a specific industry in any nation put at a competitive disadvantage (or secures a competitive advantage) against foreign producers solely because the nominal exchange rate was changed independently of changes in efficiency wages and the real costs of production in each nation.

Nominal exchange rate variability will no longer create the problem of a loss of competitiveness due solely to the overvaluing of a currency as, for example, experienced by the industries in the American 'rust belt' during the period 1982–5. Even if temporary, currency appreciation can have significant permanent real costs; for example, industries may abandon markets and the resulting idle existing plant and equipment may be cast aside as too costly to maintain.

Provision (7) also prevents any nation from engaging in a beggar-thy-neighbour, export-thy-unemployment policy by pursuing a real exchange rate devaluation that does not reflect changes in efficiency wages. Once the initial exchange rates are chosen and relative efficiency wages are locked in, reductions in real production costs that are associated with a relative decline in efficiency wages are the main factor (with the exception of provision (8)) justifying an adjustment in the real exchange rate.

Although provision (6) prevents any country from piling up persistent excessive surpluses, this does not mean that it is impossible for one or more nations to run persistent deficits. Proposal (8) below provides a programme for addressing the problem of persistent export–import deficits in any one nation:

8. If a country is at *full employment* and still has a tendency towards persistent international deficits on its current account, this is *prima facie* evidence that it does not possess the productive capacity to maintain its current standard of living. If the deficit nation is a poor one, then surely there is a case for the richer nations who are in surplus to transfer some of their excess credit balances to support the poor nation.[14] If it is a relatively rich country, then the deficit nation must alter its standard of living by reducing the relative terms of trade with major trading partners. Rules, agreed upon in advance, would require the trade deficit rich nation to devalue its exchange rate by stipulated increments per period until evidence becomes available to indicate that the export–import imbalance is eliminated without unleashing significant recessionary forces.[15]

If, on the other hand, the payment deficit persists despite a continuous positive balance of trade in goods and services, there is evidence that the

deficit nation might be carrying too heavy an international debt service obligation. The *pro bono* officials of the clearing union should bring the debtor and creditors into negotiations to reduce annual debt service payments by lengthening the payments period, reducing the interest charges, and/or introducing debt forgiveness.[16]

If any government objects to the idea that the IMCU provisions provide governments with the ability to limit the free movement of 'capital' funds, this nation is free to join other nations of similar attitude in forming a regional currency union (Unionized Monetary System) and thereby assuring a free flow of funds among the residents of the currency union.

VIII CONCLUSION

In normal times with free capital markets, 'speculators may do no harm as bubbles on a steady stream of enterprise. But the position is serious when enterprise becomes the bubbles on a whirlpool of speculation' (Keynes, CW VII: 159). The grains of sand of a Tobin tax may prick the small bubbles of speculation, but the sand is likely to restrict significantly the flow of real trade. On the other hand, the sands of the Tobin tax will be merely swept away in whirlpools of speculation. Boulders are needed to stop the destructive currency speculation from destroying global enterprise patterns, for 'it is enterprise which builds and improves the world's possessions' (Keynes, CW VI: 148).

NOTES

1. Transactions costs (of holding alternative liquid assets) in the broadest sense – that is, including the *fear* of rapid *unpredictable* changes in spot prices, or operating in a thin spot market where no financial institution will act as a residual buyer and seller – are basic to determining the magnitude of transactions, precautionary and speculative demands for money in the current income period. If all assets were instantaneously resaleable without any costs, there would never be a need to hold 'barren money' rather than a productive asset, except for the necessary nanosecond before it was necessary to meet a contractual commitment that came due. In the real world, the magnitude of actual costs of moving between liquid assets and the medium of contractual settlement is related to the degree of spot market organization and the existence of financial institutions that 'make' spot markets and that thereby assure reasonable moment-to-moment stickiness in spot prices.
2. In flexible exchange rate markets, the central bank typically provides foreign exchange support for private (commercial) banks who make the market in foreign exchange.
3. Or 1.1 per cent higher than the agent's expectation of the future spot exchange rate in the absence of the tax, if the agent requires a risk premium.
4. Even if the 5 to 1 ratio overestimates the number of real trade transactions compared to speculative flows, as long as there is some multiple, the Tobin tax is likely to affect trade flows more than speculative flows.

5. The *Economist* magazine (6 January 1990) indicated that the decade of the 1980s will be noted as one in which 'the experiment with floating currencies failed'. Almost three years earlier (17 February 1987), the *Financial Times* admitted that 'floating exchange rates, it is now clear, were sold on a false prospectus . . . they held out a quite illusory promise of greater national autonomy . . . [but] when macropolicies are inconsistent and when capital is globally mobile, floating rates cannot be relied upon to keep the current accounts roughly in balance'.
6. The Marshall Plan was even offered to the Soviet Union, who refused it.
7. Williamson (1987: 200) recognizes that, when balance of payments 'disequilibrium is due purely to excess or deficient demand', flexible exchange rates *per se* cannot facilitate international payments adjustments.
8. This provides an added bonus by making tax avoidance and profits from illegal trade more difficult to conceal.
9. Correspondent banking will have to operate through the International Clearing Agency, with each central bank regulating the international relations and operations of its domestic banking firms. Small-scale smuggling of currency across borders and so on can never be completely eliminated. But such movements are merely a flea on a dog's back, a minor, but not debilitating, irritation. If, however, most of the residents of a nation hold and use (in violation of legal tender laws) a foreign currency for domestic transactions and as a store of value (for example, it is estimated that Argentinians hold close to 5 billion US dollars), this is evidence of a lack of confidence in the government and its monetary authority. Unless confidence is restored, all attempts to restore economic prosperity will fail.
10. Some may fear that if a surplus nation is close to the trigger point it could short-circuit the system by making loans to reduce its credit balance *prior to* setting off the trigger. Since preventing unreasonable debt service obligations is an important objective of this proposal, a mechanism which monitors and can restrict such pre-trigger lending activities may be required.

    One possible way of eliminating this trigger avoidance lending loophole is as follows: an initial agreement as to what constitutes sensible and flexible criteria for judging when debt servicing burdens become unreasonable is established. Given these criteria, the clearing union managers would have responsibility for preventing additional loans which push debt burdens beyond reasonable servicing levels. In other words, loans that push debt burdens too far could not be cleared through the clearing union: the managers would refuse to release the IMCUs for loan purposes from the surplus country's account. (I am indebted to Robert Blecker for suggesting this point.)

    The managers would also be required to make periodic public reports on the level of credits being accumulated by surplus nations and to indicate how close these surpluses are to the trigger point. Such reports would provide an informational edge for debtor nations, permitting them to bargain more successfully regarding the terms of refinancing existing loans and/or new loans. All loans would still have to meet the clearing union's guidelines for reasonableness.

    I do not discount the difficulties involved in setting up and getting agreement on criteria for establishing unreasonable debt-service burdens. (For some suggestions, however, see the second paragraph of provision (8).) In the absence of cooperation and a spirit of goodwill that is necessary for the clearing union to provide a mechanism assuring the economic prosperity of all members, however, no progress can ever be made.

    Moreover, as the current international debt problem of African and Latin American nations clearly demonstrates, creditors ultimately have to forgive some debt when they previously encourage excessive debt burdens. Under the current system, however, debt forgiveness is a last resort solution acceptable only after both debtor and creditor nations suffer from faltering economic growth. Surely a more intelligent option is to develop an institutional arrangement which prevents excessive debt-servicing burdens from ever occurring.
11. Oversaving is defined as a nation's persistently spending less on imports plus direct equity foreign investment than the nation's export earnings plus net unilateral transfers.

12. Whatever 'excessive' credit balances are redistributed will be apportioned among the debtor nations (perhaps based on a formula which is inversely related to each debtor's per capita income and directly related to the size of its international debt) to be used to reduce debit balances at the clearing union.
13. The efficiency wage is related to the money wage divided by the average product of labour, it is the unit labour cost modified by the profit mark-up in domestic money terms of domestically produced GNP. At this preliminary stage of this proposal, it would serve no useful purpose to decide whether the domestic market basket should include both tradeable and non-tradeable goods and services. (With the growth of tourism, more and more non-tradeable goods become potentially tradeable.) I personally prefer the wider concept of the domestic market basket, but it is not obvious that any essential principle is lost if a tradeable only concept is used, or if some nations use the wider concept while others use the narrower one.
14. This is equivalent to a negative income tax for poor fully employed families within a nation.
15. Although relative prices of imports and exports would be altered by the change in the terms of trade, the adjustment is due to the resulting income effect, not a substitution effect. The deficit nation's real income will fall until its import surplus disappears.
16. The actual programme adopted for debt service reduction will depend on many parameters, including the relative income and wealth of the debtor vis-à-vis the creditor, the ability of the debtor to increase its per capita real income, and so on.

13. An evaluation of the Tobin transactions tax

Philip Arestis and Malcolm Sawyer

I INTRODUCTION

There has been considerable interest in the idea of a tax levied on foreign exchange dealings, first suggested by James Tobin in his 1972 Janeway lecture at Princeton (Tobin, 1974; see also 1978). Some official interest in a transactions tax has been expressed by United Nations Development Programme (1994) and UNCTAD (1995) who have seen its possibilities for raising large amounts of money which could be used to finance development. The purpose of this chapter is to evaluate the proposals for a tax on foreign exchange dealings. We assume that levying such a tax on a national basis would not be feasible and do not discuss that possibility further. We also assume that the tax would be levied on any transaction which involved the exchange of a financial asset denominated in one currency for a financial asset denominated in another currency (cf. Tobin, 1978: 159; Akyüz and Cornford, 1995: 190).

II RATIONALES FOR A TRANSACTIONS TAX

Three rather different (but not mutually exclusive) sets of reasoning have been advanced in support of a transactions tax (which we will use as shorthand for a tax on foreign exchange dealings). The first is that there is a sense in which the volume of foreign exchange transactions is excessive, being many times greater than the volume required to finance trade. The most widely cited figures on turnover on the foreign exchange markets are summarized in Table 13.1. World trade for 1995 was a little over $5 trillion, suggesting a multiple of financial transactions relative to world trade of around 60.

It is, of course, the case that an appropriate level of foreign exchange transactions would be several times the volume of international trade to allow for the financing of both direct and portfolio investment and allow

Table 13.1 Countries with the largest volume of trading in foreign currency, 1992 and 1995

	Daily average foreign exchange turnover 1992 (US$billion)	Percentage share	Daily average foreign exchange turnover 1995 (US$billion)	Percentage share
United Kingdom	290.5	27	464.5	30
United States	166.9	16	244.4	16
Japan	120.2	11	161.3	10
Singapore	73.6	7	105.4	7
Switzerland	65.5	6	86.5	5
Hong Kong	60.3	6	90.2	6
Germany	55.0	5	76.2	5
France	33.3	3	58.0	4
Australia	29.0	3	39.5	3
All others	181.9	16	246.2	14
Total of above	1076.2	100	1572.2	100

Note: Net of local double-counting, but not adjusted for cross-border double-counting.

Source: BIS estimates as reported in Felix (1996).

Market segment	Gross turnover (US$billion)	Percentage share
Total of which	1353.7	100
Spot market	659.5	49
Forwards of which	626.4	46
Outright	77.6	6
Swaps	547.1	40
Futures	9.5	1
Options	51.6	4

Notes: Gross of both local and cross-border double-counting.
Totals do not sum because of incomplete reporting of market segment breakdowns. The number of countries reporting disaggregated data varies from component to component: total 21, spot 20, outright forwards and swaps 12, futures 12 and options 17.
No adjustment for double-counting in futures and exchange-traded options.

Source: BIS (1993, Table IV), as reported in Mendez (1996).

for a degree of financial mobility in pursuit of higher rates of return which serves to bring about a degree of equalization of returns and to permit some risk shifting and spreading; but there is little reason to think that the factor of 60 would be the appropriate one.

This volume of transactions absorbs resources but, more significantly, is seen to have an adverse effect on the world economy. With a floating exchange rate regime, this large volume of transactions is often viewed as generating exchange rate volatility, with consequent detrimental effects on the real economies. Any attempts at fixed exchange rates are made much more difficult by a large volume of transactions. A transactions tax should change the balance of factors influencing the exchange rate, away from short-term expectations towards longer-run and more trade-oriented factors. This rationale for the transactions tax requires that, under a floating exchange rate regime, there is excessive volatility of exchange rates (where 'excessive' is taken to imply 'detrimental') and that reducing the volume of transactions would reduce volatility.

The second rationale for a transactions tax is simply its tax-raising powers. Tobin (1978) suggested this possibility as a by-product of a transactions tax, not as the main aim of his proposal. But the United Nations Development Programme (1994: 9) says that a 'logical source of funds for a global response to global threats is a set of fees on globally important transactions or polluting emissions . . . Tobin suggests a tax rate of 0.5 % on such transactions, but even a tax of 0.05 % during 1995–2000 could raise $150 billion a year. Such a tax would be largely invisible and totally non-discriminatory.'

This may be linked with the view that the financial sector is relatively undertaxed in the sense that financial transactions do not usually bear general sales or value added taxes, nor are they usually subject to specific taxes as, for example, tobacco and alcohol are. Whilst most countries do have taxes on financial transactions (see Campbell and Froot, 1994, summarized in Frankel, 1996), they yield relatively little revenue (our calculation from OECD, 1995, is that such taxes account on average for less than 1.5 per cent of total tax revenue).

The third rationale is related to the conduct of national economic policy. It runs counter to the widely held view that since financial markets 'know best' (exchange rates and stock market prices reflect 'fundamentals'), they exert a healthy discipline on central banks and governments, and any adverse capital movements should be read as a sober judgment that macroeconomic policies are unsound and should be abandoned. A further argument in this context is that a transactions tax can tackle more flexibly these problems which previously required the introduction of financial controls, especially quantitative exchange controls which are normally viewed as

rigid. A related argument is that a transactions tax, by reducing foreign exchange rate volatility, increases the independence of policy makers. The famous 'impossible trinity' may be invoked to make the point. This is that, out of the three attributes of financial openness, currency stability and monetary independence, a country can only have two. Thus, for a country seeking currency stability, a transactions tax might restore some measure of monetary independence.

III VOLATILITY AND SPECULATION

In this section, our main attention relates to a flexible exchange rate system. However, in some respects, many of the arguments discussed later apply to both a flexible exchange rate regime and an adjustable exchange rate one (or, as at present, a mixed mode regime). The most notable difference between the regimes is that of the volatility of exchange rates. Tobin (1996: xiv) argues that the transactions tax 'could be helpful in either regime – fixed or floating or hybrids like floating bands'.

The term 'volatility' suggests an instability on a short-term basis, for example variance of price or price change measured on a daily basis. This volatility may be inconvenient for those involved in international trade because of the uncertainty it engenders, though the use of forward contracts can reduce that uncertainty. Volatility which involved relatively small fluctuations around the 'fundamental' equilibrium exchange rate would be little more than a nuisance. The aspect of exchange rate movements since the early 1970s which is of more significance is the year (or longer) to year volatility which has generated substantial periods when exchange rates are substantially over- or undervalued. This volatility cannot be escaped through the use of forward contracts (which generally do not extend more than 12 months into the future) and has a much more significant impact on international trade.

There can be little doubt that the era of flexible exchange rates since 1971 has been associated with a considerable degree of volatility of exchange rates. Mussa (1986) calculates the change in the logarithm of ratio of price levels in the two countries concerned, of the nominal exchange rate and the real exchange rate. He concludes that, under floating exchange rates, 'there is a strong correlation between short-term movements in the real exchange rate and short-term movements in the nominal exchange rate' (Mussa, 1986: 131). Further, 'short-term changes in nominal exchange rates and in real exchange rates show substantial persistence during subperiods when the nominal exchange rate is floating' (ibid.: 132). Further evidence is provided in Rose (1994) (cited by Eichengreen *et al.*, 1995). Rogoff (1996) poses

what he terms the purchasing power parity (PPP) puzzle, which is 'how can one reconcile the enormous short-term volatility of real exchange rates with the extremely slow rate at which shocks appear to damp out? . . . Consensus estimates for the rate at which PPP deviations damp . . . suggest a half-life of three to five years, seemingly too long to be explained by nominal rigidities' (Rogoff, 1996: 647–8).

In the context of the transactions tax, two specific questions arise: is volatility harmful, and would such a tax reduce volatility? We now address the first question and return to the second after some discussion of the theory of speculation. A separate question which we address later is whether, almost irrespective of any impact on volatility, the resources used in effecting the current volume of foreign exchange transactions are, in some relevant sense, too great.

The possible costs of volatility are relatively well known, even if they are difficult to quantify and are subject to some debate. Volatility engenders a degree of price uncertainty, making effective decision making more difficult. The price (of currency) uncertainty may lead firms to be reluctant to engage in international trade and thereby reduce the volume of international trade. In the context of exchange rate volatility, there may be asymmetric responses to the upward and downward movements of the exchange rate. An overvalued exchange rate reduces export demand, leading to a decline in the domestic tradeable goods sector and a reduction of capacity (or a failure to invest) in that sector, and this may not be fully compensated by the stimulus of export demand coming from an undervalued exchange rate in terms of the opening of new capacity. The effect of volatility on policy makers can be a further concern in so far as volatility generates uncertainty and deflationary responses. If, say, a fall in the exchange rate (arising from the volatility of the exchange rate and unconnected with real variables) generates a deflationary response (for example, increases domestic interest rates) there are detrimental effects on the domestic economy. This may, of course, be offset by a reflationary response to a rising exchange rate, and if the policy responses are symmetrical there would appear to be no net damage. Even so, there may still be some harm in so far as sudden and frequent changes in exchange rate movements generate changes in the economic policy stance, and thereby a more uncertain economic environment.

Two particular broader issues arise here. The first is, how are financial markets to be modelled, particularly with regard to speculation? We discuss this immediately below in terms of two competing traditions. Second, what is the nature of the relationship between the real sector and the financial sector? Specifically, is there some form of classical dichotomy whereby we can separate the real and the monetary, or are there some important feedbacks from the financial to the real whereby volatility of financial markets

would have a real effect. Here we note that the idea of talking of 'fundamentals' is highly suggestive of a separation between real and monetary, with the 'fundamentals' relating to the real side of the economy. But, it may well be the case that there is no classical dichotomy so that there is an intimate link between the real and the financial.

There are (at least) two distinct traditions in the analysis of competitive markets. The first, particularly associated with the analysis of Friedman (1953), suggests that speculation would be stabilizing in any competitive market, including foreign exchange markets. Speculation is here the act of buying or selling for reasons of benefiting from price movements, rather than for reasons related to the financing of international trade, or the acquisition of interest-bearing assets. The mechanism is clear: when price is above equilibrium, speculators believe that the price will fall, and consequently sell now to gain from the currently high price: by their actions they help the fall in price to occur, and the price to move more quickly to equilibrium. The assumption of rational expectations will merely serve to reinforce the conclusion. Speculation is here akin to arbitrage, in that it involves buying low and selling high, albeit across time rather than space. In this model, the market participants have (on average) an accurate measure of the equilibrium and speculators have to behave as required by the model. But that may not be the case, and they may not expect the price to fall when the price is above equilibrium (even assuming that they know what the equilibrium price is) – indeed, they may expect the price to move even higher, in which case prices tend to go up rather than down, thereby destabilizing the price process. Clearly, under rational expectations, applied to a competitive market which behaves according to the Walrasian adjustment mechanism, this cannot happen: speculators know the equilibrium price so that, when price is above the equilibrium price, price should only fall, not increase.

The second tradition can, perhaps, begin with Chapter 12 of Keynes's *General Theory*, in which he emphasized the role of expectations, conventions and perceptions of the views of others. As Keynes put it: 'we devote our intelligences to anticipating what average opinion expects the average opinion to be' (GT: 156). He also stressed the instability which arose from speculation and the suggestion that long-term commitment should be encouraged. In this second approach, market operators are more concerned with the rate of change of price than with the price level. This has variously been described as, for example, 'noise' trading and trading motivated by price dynamics. The signal contained within a particular price may include the rate of change (and higher orders) of price, and a price above the 'equilibrium' may not signal an immediate price fall. This can be interpreted in terms of signal attraction: what is the information which is contained

within a specific price. A price may be seen as high or low (relative to equilibrium) and/or may be interpreted as rising or falling (and/or involving higher derivatives).

This approach would draw on the distinction as to 'whether market prices are based on economic fundamentals or bubbles, fads and herd behaviour' (Sayer, 1992). Clearly, if it is the former then the financial markets may perform a useful service by providing early signals of long-term economic developments. But even if the actions of the financial markets are based on bubbles, fads and so on, they may nevertheless influence the economic 'fundamentals'. If the fad raises interest rates, investment may be thereby affected and hence the 'fundamentals' of the economy change. Similarly, a falling exchange rate would stimulate domestic inflation which would affect the fundamental value of the nominal exchange rate.

The 'fundamentals' for the foreign exchange rate are not clear-cut. Clearly, reference can be made to the purchasing power parity exchange rate or the fundamental equilibrium exchange rate. The difficulties surrounding the measurement of these notions are well known, but of particular significance here is that these exchange rates are often calculated as substantially different. It can further be noted that a model such as that of 'overshooting' (for example, Dornbusch, 1976) with rapid price adjustment in the financial markets combined with sluggish price adjustment in the product and labour markets, can generate volatility in the real exchange rate. In such models there is a sense in which the fundamentals do not change (and as the purchasing power real exchange rate) but the actual exchange rate does. However, the movement in the exchange rate (within the model) does not come through destabilizing speculation on future movements of the exchange rate.

There are theoretical literatures (surveyed by, for example, Camerer, 1989) which show that behaviour which could be termed rational or 'near rational' at the level of the individual can generate 'bubbles'. In a world of uncertainty where knowledge of the economic 'fundamentals' is given to few, it is perhaps inevitable that asset prices will fluctuate and follow fads and fashions. Expectations and beliefs are important driving forces behind price movements in financial markets, and expectations have a self-fulfilling element to them. Expectations that the price of a particular currency is going to fall set up forces which lead to a fall in that currency's price. Most economists today believe 'foreign exchange markets behave more like the unstable and irrational asset markets described by Keynes than the efficient markets described by modern finance theory' (Krugman, 1989). Isard (1995: 182) concurs by saying that 'few [economists] still believe that the behavior of flexible exchange rates can be accurately described by a model based on the hypothesis that market participants are both fully rational and

completely informed about the structure of the model and the behavior of relevant macroeconomic fundamentals'.

From the first tradition identified above, it can be concluded that the greater the volume of speculation the quicker would be the movement to equilibrium, and that any volatility of the exchange rate would be a consequence of movements of that equilibrium position. It could, though, be noted that the 'rational expectations' and efficient markets literature would suggest that a rapid movement of price to its equilibrium value does not need a substantial volume of trading. The efficient markets hypothesis appears to rule out volatility other than that which arises from changes in 'fundamentals', with the market price incorporating all (publicly) available information including presumably knowledge on those 'fundamentals'.

From the second tradition, in contrast, we would conclude that a greater volume of speculation would exacerbate volatility in that, when prices were generally believed to be rising, more money would be backing that bet than the reverse. Specifically, it could be expected that the demand for a particular currency would be positively related to the rate of change of the value of that currency. A simple model which combines these two traditions on speculation is outlined below from which it can readily be seen that the variance of the exchange rate is raised by a greater degree of 'noise trading'. Since it is clearly the case that a transactions tax has a much greater impact on short-term dealing than on long-term dealing, such a tax could be expected to reduce short-term dealing, and hence reduce 'noise trading' and volatility. Figures from the BIS survey (as reported in Felix, 1996) suggest that around 80 per cent of foreign exchange turnover involves a round-trip of less than seven days, and Felix and Sau (1996: 248) make an estimate of 8.67 days as the weighted average duration. It would be expected that the transactions tax would particularly affect short-term deals, though we cannot, of course, associate short-term deals with necessarily generating volatility.

If speculation was stabilizing (which we would take to mean that prices would display little more volatility than would be explained by movements in 'fundamentals'), the first rationale for the transactions tax would fall. If we proceed on the basis that financial markets in general and the exchange markets in particular display a greater volatility than by reference to 'fundamentals', the first rationale given above becomes an important component of the argument for a transactions tax.

The influences on the exchange rate can be summarized in a simple model for a floating exchange rate regime. On any day it is assumed that the exchange rate adjusts to balance demand and supply on that day; that is, $d = m$ where d is the ratio of demand for domestic currency to the demand for foreign currency, and m the ratio of stock of domestic currency to the stock

of foreign currency. Take s as the logarithm of the exchange rate (expressed in terms of units of domestic currency per unit of foreign currency). The relative demand for currency is taken as composed of four elements:

1. a trade-related element (for which for simplicity we will ignore any lags) is a function of the level of the exchange rate; that is, $d_1(s)$ with the derivative of d_1 being positive (assuming the Marshall–Lerner conditions are fulfilled);
2. stabilizing speculation under which the demand for currency depends on its current value relative to some notion of the underlying 'equilibrium' rate (s^*); that is, $d_2(s-s^*)$, with the derivative of d_2 being positive. We can take the value of s^* to be one for which $m=d_1(s^*)$;
3. 'noise trading' or destabilizing speculation where the demand for the currency is related to the rate of change of the exchange rate on the basis of extrapolative expectations; that is, $d_3(s-s\,(-1))$. The derivative of d_2 is negative since, when s is declining, the value of the domestic currency is rising, thereby increasing demand;
4. a random element, u, which is the underlying source of fluctuations.

Then we have

$$d_1(s)+d_2(s-s^*)+d_3(s-s\,(-1))+u=m. \tag{13.1}$$

Linearizing (13.1), we get:

$$\begin{gathered} a_1s+b_1+a_2(s-s^*)+a_3(s-s\,(-1))=m-u \\ (a_1+a_2+a_3)\,s=m-b_1-a_2\,s^*+a_3\,s\,(-1)-u; \end{gathered} \tag{13.2}$$

s^* would be given by $a_1s^*+b_1=m$; that is, $s^*=(m-b_1)/a_1$.

Then, from (13.2):

$$\begin{gathered} (a_1+a_2+a_3)s=(m-b_1)(1-a_2/\,a_1)+a_3\,s(-1)-u \\ (a_1+a_2+a_3)^2\ \mathrm{var}\ s=a_3^2\ \mathrm{var}\ s\,(-1)+\mathrm{var}\ u. \end{gathered} \tag{13.3}$$

Taking variances: since var $s=$ var $s\,(-1)$:

$$\mathrm{var}\ s=\mathrm{var}\ u/((\,a_1+a_2+a_3)^{\,2}-a_3^2). \tag{13.4}$$

The values of a_1, a_2, a_3 depend on the elasticity of each of the first three components of demand and the relative weights to be assigned to each component.

The first derivative of var s with respect to a_3 is negative, so that, as a_3 becomes larger in absolute value, the variance of s increases. Hence, as may be expected, an increase in the relative importance of the 'noise trading' would increase the variance of the exchange rate. In this context, then, if the transactions tax discouraged 'noise trading', it would be predicted to reduce volatility.

IV TAX-RAISING POWERS AND THE USE OF RESOURCES

The tax-raising potential of a transactions tax is considerable, to say the least. The estimation of potential tax yield would clearly require estimates of the price-elasticity of the volume of foreign exchange transactions, and of the degree of tax avoidance and evasion which could be expected to be involved with some shift to untaxed transactions (for example, to countries which do not impose the tax) and also to non-reporting of transactions which should be subject to tax. The proportional significance of a transactions tax will vary greatly between different types of purchaser. For the tourist buying foreign exchange with a buy–sell spread of, say, 7 per cent and a transaction fee of 2 per cent, a 0.5 per cent tax would be of little significance. For the long term investor, a 0.5 per cent tax (1 per cent on a round-trip transaction) represents an annualized cost of 0.1 per cent over 10 years. In contrast, for the short term such a tax represents nearly 4000 per cent per annum on a one-day shift, and for those transacting large volumes the buy–sell spread and the current transactions costs are likely to be small. Mendez (1996) suggests a spread of ten basis points for the publicly quoted markets and three to four basis points on the inter-bank market (basis point being one digit in the fourth decimal place of a foreign exchange price quotation). We would assume that the vast bulk of foreign exchange transactions fall into the latter rather than the former categories, and hence a transactions tax would have a substantial impact. If we take the 'price' of a round trip foreign exchange transaction to be the spread, the imposition of a 0.5 per cent tax (1 per cent on the round trip) would amount to a very substantial price increase: on the basis of a 0.1 per cent spread, a tenfold increase.

D'Orville and Najman (1995) estimated the revenue from a transactions tax for 1992 at $140.1 billion for a tax of 0.25 per cent and $56.32 billion for a 0.1 per cent tax (as reported in Frankel, 1996: 60). However, Frankel argues that they have made a major mistake in these calculations:

> They have assumed, incorrectly, that only a portion of transactions carried out through foreign exchange brokers would be subject to the tax – about one-third

> of the total. The mistake probably arose from assuming that the term 'brokers' applies to all foreign exchange dealers or traders. In reality, the other two-thirds of transactions are handled directly by foreign exchange dealers at private banks, who would be subject to a Tobin tax every bit as much as brokers. (Ibid.)

D'Orville and Najman estimate a fall in volume of 20 per cent as a result of the imposition of a transactions tax.

Frankel (1996: 62) suggests that an elasticity of 0.32 for transactions initiated by financial customers 'might not be a bad guess', but with no change in orders from exporters and importers. With an assumed doubling of transaction costs through the imposition of a 0.1 per cent tax, he suggests a fall in transactions from $376 billion to $346 billion *per diem* for transactions by financial customers. Further, it is assumed that the customer-to-transaction ratio rises from the current 0.31 to 0.5. The new volume of transactions would be $346/0.5 *per diem*, which provides an annual revenue of $166 billion.

Felix and Sau (1996) provide a range of estimates, though starting with an assumption of considerably higher transaction costs (0.5 per cent and 1 per cent are used): their central estimates range between $205.5 billion and $267.6 billion for a 0.25 per cent tax in 1995.

A reduction of, say, half in the volume of foreign exchange transactions would also result in some significant resource savings. Frankel (1996: 61) suggests 'a typical transaction cost for foreign exchange might be 0.1 per cent', though much smaller for inter-dealer trading, and Kenen (1996: 110) states that 'spreads in the wholesale market are well below 10 basis points [0.1 per cent] for the major currencies'.

On the basis of the estimates given above on the volume of transactions, a figure of 0.1 per cent for transaction costs would suggest a total cost of $1 billion *per diem*, and $240 billion *per annum*. This may suggest that, if a transactions tax halved the volume of transactions, and assuming that the transaction costs reflect resource costs, annual savings of the order of $120 billion (£80 billion) could be involved (that is, equivalent to more than 10 per cent of UK GDP, and nearly 0.5 per cent of worldwide GDP. This figure may be an overestimate if there are economies of scale in foreign exchange transactions, and to the extent that the foreign exchange transactions which are reduced are concentrated amongst those which attract lower transaction costs (for example, in the wholesale market).

Any resource saving has to be placed alongside the associated reduction in foreign exchange transactions. The discussion above has focused on the effects on volatility, but there is a more general question, namely, what are the gains from (say) a volume of foreign exchange transactions sixty times the volume of world trade to a volume, say, twenty or thirty times? In so far

as foreign exchange dealing (for speculative purposes) is a zero-sum game, undertaken because of differential expectations on interest rate and exchange rate movements, a lower volume of transactions does not entail any costs (though there would be a redistribution of benefits and costs). It is argued that arbitrage through foreign exchange dealings brings about an equalization of interest rates (adjusted for expected exchange rate movements), and that a 'thicker' market would encourage a speedier return to equilibrium and to such an equalization of interest rates across countries. Assuming that such equalization brings a benefit, even then we do not know what volume of transactions would be required to bring it about: indeed, the theory of efficient markets would suggest that very few, if any, transactions would be required for any such equalization.

There is widespread agreement that the tax would have to be implemented on a coordinated international basis. The tax 'would be an internationally agreed uniform tax, administered by each government over its own jurisdiction. Britain, for example, would be responsible for taxing all intercurrency transactions in Eurocurrency banks and brokers located in London, even when sterling was not involved. The tax proceeds could appropriately be paid into the IMF or World Bank' (Tobin, 1978: 158). But 'tax yields would accrue on a country-by-country basis, raising the question of how much revenue each country would be likely to collect' (Kaul and Langmore, 1996: 257). It may not be necessary for there to be full agreement over the tax rate, though there would be strong pressures towards a degree of uniformity (and probably a requirement for a minimum rate to avoid competitive undercutting of the tax rate between countries). It is clear that there would be very considerable differences in the amount of tax collected in each country.

On the basis of the current composition of foreign exchange dealings, the UK would collect close to 30 per cent of the total, USA 15.5 per cent, Japan 10 per cent, Singapore 6.6 per cent and Hong Kong 5.7 per cent. Part of the international agreement could clearly be that a proportion of the tax collected is paid over to an international body and/or used for agreed development and environmental purposes. The obvious difficulty which arises here is obtaining international agreement over the introduction and the rate of the tax when the revenue from the tax would be so unequally distributed across countries (and to the extent to which countries fear that their financial centres would be reduced in size, the costs also unequally distributed). Further, a substantial retention of revenue at the national level obviously reduces the funds available for international development and environmental purposes.

The widely recognized requirement that any transactions tax on foreign exchange dealing would have to be virtually universal may well be the most

important practical obstacle to the implementation of a transactions tax. It would clearly require the cooperation of all countries with significant foreign exchange dealings within their borders (and, one might add, those with the potential to develop foreign exchange dealing centres), although there would be incentives (comparable with any cartel) for countries to apply a lower tax rate within their jurisdiction. One partial solution to this runs as follows:

> Enforcement of the universal tax would depend principally on major banks and on the jurisdictions that regulate them. The surveillance of national regulatory authorities could be the responsibility of a multilateral agency like the Bank of International Settlements or the International Monetary Fund. (Eichengreen *et al.*, 1995: 165)

V POSSIBLE ADVERSE EFFECTS

Holtham (1995: 237) argues that proposals for a transactions tax 'could inhibit international financial investment or trade finance'. The imposition of a transactions tax in itself would add to the costs of conducting international trade, and the likelihood is that trade would thereby be diminished. In evaluating the overall balance of effects of a transactions tax on international trade, due consideration would need to be given to the effects of reduced volume of exchange transactions, of reduced volatility, enhanced independence of national economic policies and the probable stimulus to worldwide aggregate demand.

Holtham further argues that

> given the existence of a J-curve in the response of the current account to exchange rate changes, any exchange rate driven wholly or largely by the current account (the situation in the absence of capital flows), is subject to unstable oscillations. Some speculative capital flows are necessary for stability. (Ibid.)

In the extreme case where the only foreign exchange dealings which occurred were those related to trade, this argument may hold. But starting from a base where the volume of transactions is around sixty times international trade, a reduction to say thirty times should not eliminate the stabilizing speculative flows (and indeed may enhance their relative importance).

A number of authors (for example, Davidson, 1996) have made the point that a transactions tax would have been virtually powerless to inhibit movement out of the Mexican peso in late 1994. Kenen (1995: 189) invokes the work of Eichengreen and Wyplosz (1993) when he argues that they 'have

shown that a small transactions tax will not much affect the return on a long-term investment, but they have not shown that it can offset the gain expected from betting on a near-term devaluation'. Eichengreen *et al.* (1995: 165) readily concede that point when they write that the transactions tax 'could not protect patent mis-valuations in exchange parities; speculators' gain from betting on inevitable near-term realignments would far exceed the tax costs'. Eichengreen (1996) makes the same point as Davidson when he argues that there may be occasions when speculators may not be deterred by a Tobin tax. He notes that investors speculating on a 15 per cent devaluation would hardly be discouraged by a transactions tax of even 1 per cent. Eichengreen and Wyplosz (1996) argue, however, that in a crisis, the transaction tax could slow down the depletion of foreign exchange reserves and thus give the authorities some breathing space to negotiate orderly realignments.

We would not wish to argue that a transactions tax could prevent a change in the price of a currency in the context of severe misalignment. But we would make two points. First, for a given set of expectations about the timing and extent of a devaluation, the presence of a transactions tax would tend to reduce the volume of transactions. Clearly, those who would be close to the margin of being engaged in the sale of the currency concerned may be dissuaded from doing so by the transactions tax. It could also be noted that a flight from the currency under pressure would at least raise some tax. Second, the argument is applied to those cases where devaluation appears 'inevitable' and where there is a widely recognized serious misalignment. In retrospect, sterling's devaluation in September 1992 on its departure from the ERM looks 'inevitable' after a 'serious misalignment'.

What would be seen as the serious misalignment of currency values has arisen in the recent past in two quite distinct ways, namely within a flexible exchange rate regime and within a fixed exchange rate regime. There would be little doubt that the value of sterling was substantially overvalued in the early 1980s whilst the dollar was substantially overvalued in the mid-1980s. In both cases, the overvaluation arose under a flexible exchange rate regime, and could be viewed as one aspect of the volatility of flexible exchange rates (in this case over, say, a five-year horizon). If the transactions tax operated to reduce successfully the volatility of exchange rates, an element of overvaluation would be removed.

The case with fixed exchange rates is, of course, rather different, for then the overvaluation has arisen as a consequence of government decisions whether active (that is, in determining the rate at which a currency joins a fixed exchange rate club) or passive (not devaluing in the face of relative price movements). It could be noted, though, that the overvaluation of sterling within the ERM came about through an overvaluation of sterling prior

to entry into the ERM during an era of flexible exchange rates (though, of course, sterling had been shadowing the DM in the late 1980s). Almost by definition, one would not wish to prevent or inhibit the rectification of misalignment. But are financial markets selective in only putting pressure on currencies with seriously misaligned values, and what is the role of financial markets in generating misaligned exchange rates ?

The argument is made that a transactions tax, like any other tax, would have distortionary effects: a tax in a competitive market leads to an equilibrium being established which involves lower quantity and fewer resources being allocated to that particular market. For the proposed transactions tax there are three points to be made in connection with this argument. First, as suggested above, the financial sector may be relatively lightly taxed. This would mean that the imposition of a transactions tax may in effect be removing some distortions between markets rather than imposing them. To the extent to which that view is accepted, the introduction of a transactions tax would help to reduce the distortionary effect of the tax system.

Second, the distortionary nature of a tax arises from some trades not taking place that would have otherwise happened, and the trades which would have otherwise occurred would have been mutually beneficial to the trading partners. This leads us back to the question raised above: are there gains from the current volume of exchange transactions which would not arise with a substantially smaller volume?

Third, the analysis of distortions is an equilibrium one and it is equilibrium trades which are discouraged. But there is a sense in which much of the trading in currency markets is disequilibrium trading in the sense of seeking to take advantage of price changes.

VI CONCLUSIONS

We would suggest that the Tobin transactions tax is a feasible tax for raising substantial sums of taxation. It would substantially reduce the volume of currency transactions, with significant resource savings and the hope that it would diminish the volatility of exchange markets. Its introduction would face formidable political problems and its implementation would need to be carefully arranged. Such a tax would have to be introduced on a 'big bang' basis for otherwise foreign exchange dealing would quickly move to those countries which were not applying the tax. It would also have to be 'universal and uniform: it would have to apply to all jurisdictions, and the rate would have to be equalised across markets' (Eichengreen *et al.* 1995: 165). Careful attention would also have to be paid to the aggregate demand

consequences of the introduction of such a tax. We would, though, anticipate that the most substantial obstacles associated with the introduction of a transactions tax are those emanating from the political realities. Two such obstacles stand out, namely the required international coordination and the political power of the financial sector.

14. Say's Law in the open economy: Keynes's rejection of the theory of comparative advantage

William Milberg[1]

I INTRODUCTION

While much ink has been spilled over the question of Keynes's trade *policy* views, very little has been said about his explicit or implicit *theory* of international trade.[2] But – as Keynes himself stressed – all policy positions reflect an underlying theory, and Keynes's views on trade theory were perhaps more controversial even than his political stance of 'pragmatic protectionist'. As he developed his theory of the monetary production economy that would form the framework for the *General Theory*, Keynes came to reject the idea of comparative advantage as the determinant of the direction of trade. His position was contrary to the views of both Marshall (1879, 1923), his former teacher and expert in trade theory, and Eli Heckscher, whose 1919 article has been credited with first stating the factor endowments theory. The principle of comparative advantage assumes full (or at least constant) employment and a price adjustment mechanism sufficient to convert comparative cost differences into absolute money cost differences and bring balanced trade. Keynes rejected the assumption of such an automatic adjustment mechanism, arguing instead that interest rates – not prices – do the adjusting, and that a persistent trade imbalance – not balanced trade – is the likely outcome. For Keynes, the balanced trade implication of comparative advantage theory is equivalent to Say's Law in an open economy context, whereby an addition to export supply automatically creates an import of equivalent value, or vice versa. Persistently unbalanced trade has important policy implications, since it leads to interest rate pressures that will move the economy further away from full employment.

In section II I discuss Keynes's own theory of international trade, and in section III I argue that one of the reasons for placing the *General Theory* in a closed economy framework was Keynes's belief that the argument for the

theory of effective demand would have been weaker, that is less general, if it had allowed for the possibility of persistent current account imbalances. Section IV briefly discusses the dissimilarity between Keynes's and Marshall's views on trade and the similarity, surprisingly, of Keynes's view to those of Marx. Section V concludes with a comment on the present-day relevance of Keynes's heretical trade theory perspective.

II COMPARATIVE ADVANTAGE AS A SPECIAL CASE

Keynes's international trade policy prescriptions changed over time. In the early 1920s, he supported free trade on the grounds that comparative advantage led to optimal specialization and that 'an artificial interference with imports must either interfere with exports or involve an artificial stimulation to capital to leave the country' (CW XIX: 148) (see Wolf and Smook, 1988:174). By 1930, however, Keynes had changed his views and considered the potential costs of a tariff as outweighed by the benefits. The change in views was in part a response to the change in economic conditions faced by Britain and in part a reflection of the evolution of his theoretical views. In an economy with a high level of unemployment, Keynes argued, the case for free trade is no longer valid. In the Macmillan Report of 1930, he wrote:

> The fundamental ground of the free trade argument is that we ought to take the McKenna Duties off in order that we should stop the making of cars and make something else for which we are better suited. And the logical link between one and the other is through this chain, and no other. Just like the Bank rate argument, it works beautifully in a fluid system. But supposing we get jammed at the point of unemployment, the alternative for a time may be between producing motor cars or producing nothing. (CW XX: 114)

This policy view has a clear theoretical underpinning, and in particular one can see an implicit rejection of the law of comparative advantage. According to the theory of comparative advantage it is not possible for a nation to 'produce nothing' for export. The importance of relative, not absolute, costs and prices means that by definition a nation always has a comparative advantage in, and can export, something. For the Keynes of the 1930s it was absurd to spin theories based on the assumption of full employment. Since the model supporting the free trade argument was traditionally based on such an assumption, Keynes insisted on the irrelevance of both the policy and, implicitly, the underlying theory. Again in the Macmillan Committee Report of 1930, Keynes wrote:

> The fundamental argument for unrestricted free trade does not apply without qualification to an economic system which is neither in equilibrium [that is, at full employment] nor in sight of equilibrium. For if a country's productive resources are normally fully employed, a tariff cannot increase output, but can only divert production from one direction into another, whilst there is a general presumption that the natural direction for the employment of resources, which they can reach on their merits and without being given special advantages at the expense of others, will yield a superior national dividend. But if this condition of full employment is neither fulfilled nor likely to be fulfilled for some time, then the position is totally different, since a tariff may bring about a net increase of production and not merely a diversion. (CW XX, 298)

Under conditions of persistent unemployment the theory of comparative advantage is irrelevant because the mechanisms which would otherwise transform a situation of differential comparative costs into one of differences in absolute money costs and prices no longer operate. That is, the adjustment simply does not take place to a sufficient degree to guarantee that the 'law' of comparative advantage will dictate the commodity composition and the balance of trade. Moreover, the normative dictates of the doctrine may also fail to hold, since it assumes full employment. The free trade argument against a tariff, Keynes pointed out in 1932, assumes that the additional workers employed in the protected industry 'will be employed in some other more suitable industry, and does not allow for the contingency that they may not be employed at all' (CW XXI: 207–8).

Keynes rejected the likelihood and efficiency of each of the 'classical' adjustment mechanisms – wages, exchange rates – when persistent unemployment characterizes the economy. Regarding wage adjustment, Keynes did not deny it as a logical possibility, but was sceptical as to both its likelihood and its advisability. In July of 1930, he wrote to Prime Minister Macdonald:

> Free trade is profoundly based on the assumption of equilibrium conditions and in particular that wages always fall to their strict economic level. If they do not, and if for several reasons we do not desire them to, then it is only by means of a tariff that the ideal distribution of resources between different uses, which free trade aims at, can be achieved; and there is an unanswerable theoretical case for a countervailing import duty (and also for an export bounty) equivalent to the difference between the actual wage and the economic wage . . .
>
> I am no longer a free trader – and I believe that practically no-one else is – in the old sense of the term to the extent of believing in a very high degree of national specialisation and in abandoning any industry which is unable for the time being to hold its own. Where wages are immobile, this would be an extraordinarily dangerous doctrine to follow. (CW XX: 379–80)

Keynes admitted that reductions in the money wage would have a positive effect on the current account. But he denied the automaticity of such an

adjustment and warned of its negative effects due to its overall contractionary nature and its regressive distributional consequences. A drastic reduction in money wages would lead to 'social injustice and violent resistance since it would greatly benefit some classes of income at the expense of others' (CW IX: 235–6).

Keynes also viewed devaluation as out of the question because of its contractionary implications, and because it reflected the misplaced notion that the deficit country should bear the entire burden of adjustment (Wolf and Smook, 1988; Davidson, 1992–3).[3] It is not certain that Keynes would have denied the likelihood of automatic adjustment under a flexible exchange rate system. But given that there is little doubt that the flexible exchange rates in the post-Bretton Woods era have not served the purpose of automatic adjustment, it is hard to imagine Keynes arguing for its efficiency. The exchange rate has been driven by financial considerations, and certainly has not responded to 'fundamentals' like the balance of trade (Harcourt, 1995b; Harvey, 1995; Akyüz, 1994; Blecker, 1991; Krugman, 1988).

For Keynes, trade imbalance leads not to a change in the price level (or to an automatic adjustment of wages or exchange rates) but to a potential liquidity problem for the deficit country. A change in the trade balance will result in a change in the monetary base. This will lead to a change in the rate of interest. Thus an improvement to surplus on current account will not bring a rise in wages, but a lowering of interest rates. (See Radice, 1988: 158; Wolf and Smook, 1988: 174). In fact, Keynes argued, under certain conditions the balance of payments is the main determinant of the rate of interest. In this case, efforts to improve the balance of trade are crucial to the achievement of full employment (Keynes, CW VII: 348).

The trade surplus country accrues liquid assets: there is no reason to assume these will be converted into non-liquid assets, much less into foreign-produced non-liquid assets. Saving is thus the mechanism which creates the possibility of both underemployment equilibrium and persistently unbalanced trade. For Keynes, the law of comparative advantage is the international analogue of Say's Law. Just as money-wage flexibility is insufficient to bring about full employment in the closed economy of the *General Theory*, so will money-wage flexibility fail to bring about balanced trade in the open economy context. To the extent that the normative side of the law of comparative advantage relies on the assumption of full employment, it will be invalid since the economy has no natural tendency towards such a condition. The desire for liquidity, to hold money owing to uncertainty, is inherent to the functioning of a monetary production economy. Without liquidity needs there would be no need for money, and the system would in fact be the barter system which characterizes the 'pure theory' of international trade (Davidson and Kregel, 1980: 147).

The logic of comparative advantage implies continually balanced trade. Trade imbalances can only be transitory. This amounts to the assertion that imports and exports are causally related: that is, a decrease in imports should lead to an equivalent decline in exports. This was the argument put forth by Robbins and Beveridge in their rejection of Keynes's call for a revenue tariff to create employment: a reduction in imports will be met with an equal reduction in exports because it will mean, according to Beveridge, 'a reduction of the power of foreigners to buy in Britain' (CW XX: 508). Keynes attacked the Robbins/Beveridge view as true only

> in a hypothetical economic system possessing such an inherent capacity for stable equilibrium, that not only were both the initial and the final positions in equilibrium, but the elasticity of the system was such that any disturbance was responded to so immediately that the system was incapable of ever departing appreciably from equilibrium. (CW XX: 503)[4]

Keynes argued that an import reduction would allow the central bank to lower interest rates, depending on international capital mobility, and the import responsiveness in the rest of world to interest rate and investment changes. The result could be either an increase or a decrease in exports. The comparative advantage view that trade automatically tends to an equality of imports and exports, echoed in many current arguments for free trade, was, according to Keynes, 'due to a complete misunderstanding of the theory of equilibrium in international trade' (CW XX: 509).

Keynes's implicit refutation of the law of comparative advantage can be seen as analogous to his rejection of 'classical' macroeconomics in the first chapter of the *General Theory*. Each is a special case of a larger set of possibilities. Full employment is a possible (although unlikely) outcome, depending on Say's Law. Similarly, the transformation of international comparative cost differentials into absolute money cost and price differentials is a possible, but again unlikely, outcome.

III OPEN ECONOMY FOUNDATIONS FOR THE *GENERAL THEORY*?

While Keynes's ideas on the theory of international trade are typically viewed as subordinate to his views on effective demand and unemployment equilibrium, it is arguable that the key ideas of the *General Theory* were in part spurred by his thinking about international trade problems. It is significant that Keynes's views on commercial policy beginning in 1930 were considered quite radical. Joan Robinson noted the radical departure from

the orthodoxy that Keynes's position on tariffs in 1930 (the 'revenue tariff') represented: 'In some way the unkindest cut of all [against laissez-faire] was Keynes's repudiation of the doctrine that tariffs must be harmful to the country that imposes them' (Robinson, 1962: 86). Moreover, the 'revenue tariff' proposal of 1930 was considered by many to be heretical, a radical departure from Keynes's earlier views. Harrod (1951: 424) called the advocacy of tariffs 'momentous, a betrayal of free trade'. Beveridge, in an indignant letter of response to Keynes published in *The Times*, wrote:

> The test of economic progress is not the maximising of employment, but the maximising of wealth in relation to effort; that, according to the nearly universal opinion of all economists since Adam Smith, means the use of the natural resources of each country in the ways determined by experience under free conditions to be most economical and not their use as distorted by tariffs. Does Mr. Keynes differ from this? (CW XX: 510)

Thus, while Keynes's ideas on the theory of international trade are typically viewed as subordinate to his views on effective demand and unemployment equilibrium, it is arguable that the key ideas of the *General Theory* originated with Keynes's thinking about international trade problems. For example, in the Macmillan Committee Report, Keynes wrote:

> We know no way in which the initial impetus to increased employment can be given except by (i) an increase of exports, (ii) the substitution of home-produced for goods now imported, or (iii) an increase of investment at home . . .
>
> *Indeed the whole problem may be made to centre around the balance of trade.* (CW XX: 285–6, emphasis added)

The solution of the revenue tariff was rooted in the recognition of unemployment equilibrium. If unemployment were only temporary then free trade would be optimal and balanced trade would result from the workings of comparative advantage. But precisely because of the persistence of unemployment, Keynes rejected the free trade prescription, ruling out devaluation and money-wage cuts in order to achieve balanced trade. It was in part the impossibility of free trade bringing full employment which pushed Keynes to formulate a general theory of the existence of unemployment equilibrium. Much of his writing from 1929 to 1933 dealt with the issue of free trade and protectionism and the argument that under conditions of less than full employment a policy of free trade could actually worsen economic conditions (the 'contractionist cure'). That the issue of tariffs hardly figures at all in the *General Theory* (except Chapters 23 and 24) is an indication that Keynes sought to work out the problem of persistent unemployment equilibrium in a closed economy context.[5] This does not rule out the possibility that consideration of an unemployment

equilibrium may have arisen with the thinking on tariff policy and laissez-faire. The idea of an unemployment equilibrium was perhaps so obvious to Keynes in an open economy framework that he sought to show its general applicability by proving the possibility of its existence in conditions not affected by unbalanced international transactions. Thus the *General Theory* may have been placed in the context of a closed economy for the same reasons that Keynes is said to have avoided non-neoclassical conceptions of market structure, pricing or scale economies: if proved only in the presence of such 'distortions', the result of unemployment equilibrium would be discounted for having relied crucially upon these assumptions.

The links between Keynes's views on international trade and the insights of the *General Theory* go beyond analogy. Keynes's transformation on the subject of trade policy was both a response to changing economic conditions *and* a reflection of the development of his theoretical views. In the *General Theory*, Keynes strongly endorsed the view that, in a situation of less than full employment, comparative advantage is inoperative. In Chapter 2, Keynes includes 'the unqualified advantages of laissez-faire in respect of foreign trade' among a list of widely-held views which are thrown into doubt once the saving–investment nexus is broken. In Chapter 23, on mercantilism, Keynes quotes with praise an 1899 statement of the view that the argument for free trade is 'based on the assumption that over-supply is impossible' (Keynes, CW VII: 368). But there are clear indications well before 1936 that Keynes understood the theoretical implications of his policy views. In 1930, even prior to his debate with Beveridge, Keynes wrote:

> To suppose that there exists some smoothly functioning automatic mechanism of adjustment which preserves equilibrium if only we trust to methods of laissez-faire is a doctrinaire delusion which disregards the lessons of historical experience without having behind it the support of sound theory. (CW XXV: 21–2)

By analysing the underlying theoretical stance which informed the policy conclusions on tariffs instead of focusing on the policy prescriptions themselves, one sees that Keynes's rejection of the free trade doctrine was closely linked to his development of an unemployment equilibrium for which the *General Theory* is best known. This view is counter to the claims of Eichengreen (1984) and Pressman (1992) that Keynes's trade policy perspective remained the same and was altered only in response to changing economic conditions. Surely, between the mid-1920s and the mid-1930s, both economic conditions and Keynes's theoretical perspective changed drastically (Radice, 1988: 160).

IV RICARDO, MARX, MARSHALL, KEYNES

Comparative advantage has been embraced by economists perhaps longer than any other concept in the history of economic thought. While the precise origins of the concept have been the subject of some debate, the treatment by Ricardo in *The Principles* is generally accepted as the landmark statement.[6] While all economists are familiar with the principle, it is worth reviewing it with an eye on its implied price adjustment mechanism – the mechanism that would be the focus of Keynes's attack on the free trade argument.

From the perspective of global output, Ricardo argued the logic of specialization according to comparative advantage:

> Two men can both make shoes and hats, and one is superior to the other in both employments; but in making hats, he can only exceed his competitor by one-fifth or 20 per cent., and in making shoes he can excel him by one-third or 33 per cent.; – will it not be for the interest of both, that the superior man should employ himself exclusively in making shoes, and the inferior man in making hats? (Ricardo, 1951: 136)

But the principle also had to make sense as a market phenomenon. That is, no consumer in any country could be expected to purchase a foreign good at a higher price than the going domestic price. Thus when one country has an absolute productivity (or, more generally, cost) advantage or disadvantage in all sectors, the principle of comparative advantage will determine specialization and trade patterns only if comparative cost differentials automatically become absolute money cost and price differentials.

Consider Ricardo's (1951: ch. 7) well-known example of labour-hours per unit of output of wine and cloth in Portugal and England:

	Wine	*Cloth*
Portugal	90	80
England	120	100

The existence of an absolute disadvantage in the production of all commodities for England will lead to a temporary trade deficit for England and a surplus for Portugal. This disequilibrium will invoke Hume's price–specie–flow mechanism, whereby the trade imbalance brings a flow of gold from the deficit to the surplus country. The result will cause the price level to rise in Portugal (the surplus country) and to fall in the deficit country. This price level movement continues until one commodity becomes cheaper in England. This will be the commodity which is produced with the smallest absolute disadvantage, that is, for which England

has a comparative advantage. Once England is competitive in at least one commodity, it will specialize in and export that commodity up to the point where trade is balanced.

By assuming the smooth functioning of the Humean adjustment mechanism, trade theorists since Ricardo have been able to maintain the notion of international trade as a barter relation. For example, John Stuart Mill (1909: 583) wrote, 'since all trade is in reality barter, money being a mere instrument for exchanging things against one another . . . international trade . . . [is] in form, what it always is in reality, an actual trucking of one commodity against another'. And Angell, whose 1926 book was quite influential, wrote, 'Price readjustments, for example, are apparently regarded as fundamentally frictionless, and money is at bottom treated as a merely passive transmitter of inter-commodity values (Angell, 1926: 84–5). Alfred Marshall did not question this aspect of trade theory as 'pure' (non-monetary) theory. His contribution was to provide a rigorous geometric treatment of Mill's reciprocal demand model of trade, introducing a simple representation of the elasticity of import demand and export supply that would allow a more sophisticated understanding of the determination of the barter terms of trade. While it is likely that Marshall's presentation in his 1923 book was the 'state of the art' when Keynes was writing the *General Theory* – Ohlin's pathbreaking work on the role of factor endowments was not published in English until 1933 – Marshall's model is entirely a barter model. That is, exports are 'expenditures on imports', and thus trade is in balance by definition (see Allen, 1965: 15).

Keynes was of course a student of Marshall, and the Marshallian influences on Keynes's thought have received considerable attention (see Jensen, 1983). At the same time, Keynes's predilection for, and even familiarity with, Marxian economic thought was minimal. It is curious then, that, Keynes's views on international trade theory are closer to those of Marx than of Marshall.

According to Shaikh (1980: 208), 'Marx himself never directly accepts or rejects Ricardo's principle of comparative costs.' But a Marxian critique of comparative advantage can be found in Marx's rejection of the requirements of its implied automatic adjustment mechanism, that is, of the mechanism which converts differential comparative cost ratios into differences in absolute money cost or price differences. There are two parts to the Marxian critique. First, Marx calls into question the functioning of the price–specie–flow mechanism. He argues that a 'temporary' disequilibrium trade imbalance will lead the deficit country to experience a fall in bank reserves, not an outflow of gold, as predicted under the price–specie–flow mechanism. The result of this decline in reserves is an increase in the interest rate. According to Marx:

> It is indeed an old humbug that changes in the existing quantity of gold in a particular country must raise or lower commodity prices within this country by increasing or decreasing the quantity of the medium of circulation . . .
>
> In fact, a decrease in the quantity of gold raises only the interest rate, whereas an increase in the quantity of gold lowers the interest rate; and if not for the fact that the fluctuations in the interest rate enter into the determination of cost-prices, or in the determination of demand and supply, commodity-prices would be wholly unaffected by them. (Marx, 1967, vol. 3: 551)

Thus Marx's view of the adjustment mechanism was similar to that which Keynes would propose some fifty years later. Since both economists emphasized the likelihood of persistent unemployment, they focused on the relation between money inflows and outflows and interest rates rather than wage and exchange rate responses to relative price adjustments. Relative price changes induced by moving from autarky to free trade would be expected to bring only limited adjustment in the presence of persistent excess capacity (Kregel, 1980: 267–8). And both Keynes and Marx rejected the notion that the rate of interest is a reward for saving or abstinence.

The similarities in the Keynes and Marx critique of the comparative advantage model extends also to questions of money and scarcity. Ricardo's reliance on the quantity theory was, according to Marx, based merely on assertion. Marx argued that Ricardo should instead prove the validity of this mechanism (Visser, 1977: 281). Thus, instead of the price level adjusting to render comparative advantage operational, the interest rate adjusts, and specialization fails to occur. But will not the interest rate change bring, indirectly, a change in the price level? This is where Marx's second criticism of the law of comparative advantage comes into play. The interest rate increase generates a decline in investment demand which puts downward pressure on prices. But this temporary downward movement in prices brings a reduction in supply which raises prices back to their original level. Ultimately, no change in the price level occurs because of the persistence of excess capacity and unemployment.[7] Ricardo's (1951: 128) assertion that 'no extension of free trade will immediately increase the amount of value in a country' is tantamount to the view that no capacity expansion can occur in the move from autarky to free trade (Dosi *et al.*, 1990: 26). Marx criticized Ricardo directly for his assumption of full capacity utilization:

> It is futile to speak of the stimulus given by Australian gold or a newly discovered market. If it were not in the nature of capital to be never completely occupied, i.e. always partially *fixated*, devalued, unproductive, then no stimuli could drive it to greater production. At the same time, [note] the senseless contradictions into which the economists stray – even Ricardo – when they presuppose that capital is always fully occupied; hence explain an increase of production by refer-

> ring exclusively to the creation of new capital. Every increase would then presuppose an earlier increase or growth of the productive forces. (Marx, 1973: 623)

Marx thus rejected Ricardo's assertion that trade creates no value, asserting that 'whatever is true of foreign trade is also true of home trade' (Marx, 1967, vol. 3: 324).

For Marx the capitalist economy is inherently monetary. The reduction of such an economy into 'money' and 'real' components is analytically unacceptable, and based on 'a simple abstraction of their points of difference' (Marx, 1967, vol. 1: 128). Money is the logical and necessary outcome of a system of commodity production and thus money can never be a veil. The barter economy is a conception useless in the analysis of capitalism (Visser, 1977: 282–3): 'The circulation of money as capital is . . . an end in itself . . . It is only in so far as the appropriation of ever more and more wealth in the abstract [money] becomes the motive of his operation, that he functions as a capitalist' (Marx, 1967, vol. 1: 169–70).

For Marx the law of comparative advantage is invalid because the automatic adjustment mechanism it requires is rooted in a faulty theory of money. Moreover, because of the permanence of unemployment in the form of the reserve army of the unemployed, the welfare effects of international trade resulting from specialization would be negligible, and ultimately negative.

Marx supported free trade, based on the cynical claim that free trade would raise the level of class conflict:

> in general, the protective system of our day is conservative, while the free trade system is destructive. It breaks up old nationalities and pushes the antagonism of the proletariat and the bourgeoisie to the extreme point. In a word, the free trade system hastens the social revolution. It is in this revolutionary sense alone, gentlemen, that I vote in favour of free trade. (Marx, 1982: 224)

Note that this argument refers neither to wage adjustment nor to capital flows. For Ricardo, wage changes are not able to bring about rising competitiveness, since a lower wage is, by definition, met by a rise in the profit rate. Marx agrees with Ricardo on this point:

> The English workers have very well understood the significance of the struggle between the landlords and the industrial capitalists. They know very well that the price of bread was to be reduced in order to reduce wages and that industrial profits would rise by as much as rent fell. (Marx, 1982: 213)

Repeal of the corn laws would lower the price of corn and thus raise the real wage if nominal wages are constant. But of course nominal wages are not constant:

> When less expense is required to set in motion the machine which produces commodities, the things necessary for the maintenance of this machine, called a worker, will also cost less. If all commodities are cheaper, labour, which is a commodity too, will also fall in price. (Marx, 1982: 215)

To the extent that free trade 'increases productive force, competition among workers grows in a far greater proportion' and thus wages actually decline.[8] The move to free trade brings an accumulation and concentration of capital, whereby large industrialists enjoy the fruits of scale economies and small industrialists get driven out of business and into the proletariat, putting downward pressure on wages. Moreover, 'the progress of industry creates less expensive means of production. Thus spirits have taken the place of beer, cotton of wool and linen, and potatoes that of bread' (Marx, 1982: 221). Nominal wages fall accordingly. In the adjustment from protection to free trade, only some of the newly unemployed workers are able to move to jobs in other sectors.

There are two features of the Marx/Keynes critique of the concept of comparative advantage. First, because of their insistence on the inherently monetary nature of capitalist economies, Marx and Keynes could be said to have considered the notion of a 'pure' theory of trade, as opposed to a monetary-based theory, irrelevant for the study of international exchange in a capitalist society. Both economists rejected the classical dichotomy between a 'real' and a 'monetary' side of the economy, each lending itself to a separate sphere of analysis. Pure trade theory requires such a dichotomy. For both Marx and Keynes the monetary system functions in such a way that no automatic adjustment mechanism converts a situation of comparative cost differentials into one of absolute money cost and price differences. Adjustment is through interest rates. Second, for both economists capitalism is characterized by persistent unemployment and excess capacity, albeit for different reasons.[9] There is no tendency for the price system to generate full employment.

Underpinning these common features of the rejection of comparative advantage in Marx and Keynes is the denial of resource scarcity as the driving force of economic phenomena.[10]

The implications of the rejection of scarcity for the treatment of international trade are threefold. First, it requires the reconsideration of the positive theory of international trade based on adjustment strictly due to relative price changes. Second, it introduces the drive for capital accumulation and growth as essential to the process of international exchange (Shapiro, 1977). Third, it raises the possibility that international competitiveness is created, not endowed. The determination of the direction of trade can be rooted outside the realm of natural factor endowments.

Keynes certainly understood this in his appeals to protect aspects of British industry, on the grounds that such sectors were growth-generating and needed temporary protection to weather the slump. Marx, too, understood the political economy of international specialization:

> For instance, we are told that free trade would create an international division of labour, and thereby give to each country the production which is most in harmony with its natural advantages. You believe, perhaps, gentleman, that the production of coffee and sugar is the natural destiny of the West Indies? Two centuries ago, nature, which does not trouble herself about commerce, had planted neither sugar-cane nor coffee trees there. (Marx, 1982: 223)

V BALANCED TRADE: A 'PUERILE OBSESSION' FOR THE 1990s

Keynes's (and Marx's) rejection of the theory of comparative advantage creates the space – and in fact the necessity – for a discussion of international competitiveness, that is an analysis of just how firms and nations successfully capture world export market shares. This has of course been a topic of considerable debate in the advanced capitalist countries in the 1980s and 1990s. The severe deterioration of the US current account in the 1980s led many non-economists to call for measures to enhance 'international competitiveness'. Paul Krugman (1994a) characterized the concern with international competitiveness as a 'dangerous obsession'. Krugman's views on competitiveness are driven by his assertion of the primacy of the principle of comparative advantage:

> International competition does not put countries out of business. There are strong equilibrating forces that normally ensure that any country remains able to sell a range of goods in world markets, and to balance its trade on average over the long run, even if its productivity, technology, and product quality are inferior to those of other nations . . .
>
> Both in theory and in practice, countries with lagging productivity are still able to balance their international trade, because what drives trade is comparative rather than absolute advantage. (Krugman, 1991: 811, 814)

Krugman's response to those unwilling to accept the relevance of the logic of the principle of comparative advantage has been to try to ridicule them:

> I have tried carefully explaining economic concepts like, say, comparative advantage; it doesn't work. What does work, sometimes, is ridicule. If you can make someone who imagines himself to be a deep sophisticate look silly, sometimes it gives him – or at least someone else who might be tempted to follow the same route – pause. (Krugman, 1996: 10)

Keynes in fact criticized economists of his day precisely for such arrogance and condescension towards those policy makers concerned with trade deficits. Keynes (1936: 339) wrote:

> the weight of my criticism is directed against the inadequacy of the theoretical foundations of the laissez-faire doctrine upon which I was brought up and which for many years I taught; – against the notion that the rate of interest and the level of investment are self-adjusting at the optimum level, so that preoccupation with the balance of trade is a waste of time. For we, the faculty of economists, prove to have been guilty of presumptuous error in treating as a puerile obsession what for centuries has been a prime object of practical statecraft.

Since the late 1970s, when the 'golden age' of capitalism gave way to the era of 'globalization', there has been a slowdown of world economic growth, an explosion in the volume of international capital flows, persistently high unemployment in industrialized countries and chronic excess capacity in many manufacturing industries across the globe. Trade imbalances are larger and more persistent than before, and exchange rates are increasingly delinked from economic fundamentals such as the trade balance. The conditions under which comparative advantage might be operative are thus less present today than they were twenty years ago (Milberg, 1996). Certainly, a theory whose central notion is the stability of a balanced trade equilibrium should be presented cautiously and modestly in today's world. If international competitiveness is a 'dangerous obsession', the assumption of balanced trade is a 'puerile obsession'.

As in so many other areas of economic thought, Keynes's insights into the functioning of international trade have been ignored or misinterpreted by the mainstream. Keynes's critique of the principle of comparative advantage indicates that international trade economists would be well served to show some modesty about the practical applicability of their theories.

NOTES

1. I am grateful to Robert Blecker, Arthur Bloomfield, Paul Davidson, Bruce Elmslie, Geoff Harcourt, Jan Kregel and participants in the second conference on Keynes, Knowledge and Uncertainty, held at the University of Leeds, March 1996, for comments on an earlier draft. I alone am responsible for remaining errors and misinterpretations.
2. On the evolution of Keynes's trade policy position, see Eichengreen (1984), Wolf and Smook (1988), Radice (1988) and Pressman (1992). Best known of Keynes's writings on this issue is his July 1933 essay, 'National Self-Sufficiency'. In terms of Keynes's international trade theory views, however, a number of earlier essays are more important.
3. Keynes's view that the effect of a devaluation or tariff depends on 'whether the initial position was one of equilibrium' (CW XX: 504) is captured formally by Krugman and Taylor (1978, case 2).

4. Beveridge and several other prominent economists (including Robbins and Hicks) published their free-trade response to Keynes's tariff proposal in a 1931 book, *Tariffs: The Case Examined*.
5. This could also be viewed as the world economy, which is by definition closed and thus without trade imbalances since it is without 'foreign' trade.
6. For a fascinating discussion of the earlier statement of the doctrine by Torrens and the influence of James Mill on Ricardo himself, see Thweatt (1976).
7. See Shaikh (1980). In more recent work, Shaikh (1992) has developed a Marxian model of exchange rate adjustment, in which trade imbalances can persist in spite of exchange rate movements.
8. Moreover, for Marx wage changes are irrelevant when direct prices are being considered (Shaikh, 1980).
9. According to Dillard (1984), 'Marx's industrial reserve army resembles Keynes's involuntary unemployment, with an important difference. Keynes's involuntary unemployment arises from a deficiency of effective demand and could be alleviated by an increase in investment, whereas the members of Marx's industrial reserve army are the victims primarily of technological unemployment associated with investment.'
10. Shapiro (1977) locates 'the revolutionary character of Post Keynesian economics' in its rejection of scarcity. Matthei (1984) discusses the importance of the Marxian rejection of this fundamental neoclassical concept.

Bibliography

Aharoni, Y. (1966), *The Foreign Investment Decision Process*, Boston MA: Graduate School of Business Administration, Harvard University.

Akyüz, Y. (1994), 'Taming international finance', in J. Michie and J. Grieve Smith (eds) (1995), *Managing the Global Economy*, Oxford: Oxford University Press.

Akyüz, Y. and A. Cornford (1995), 'International capital movements: some proposals for reform', in J. Michie and J. Grieve Smith (eds), *Managing the Global Economy*, Oxford: Oxford University Press.

Allais, M. (1953), 'Le Comportement de l'Homme Rationnel devant le Risque: Critique des Postulats et Axiomes de l'Ecole Americaine', *Econometrica*, **21** (4), 503–46.

Allen, W. (1965), 'Introduction' in W. Allen (ed.), *International Trade Theory: Hume to Ohlin*, New York: Random House.

Allsopp, V. (1995), *Understanding Economics*, London and New York: Routledge.

Amariglio, J. (1988), 'The body, economic discourse, and power: an economist's introduction to Foucault', *History of Political Economy*, **20**, 583–613.

Amariglio, J. and D. Ruccio (1995), 'Keynes, postmodernism, uncertainty', in S. Dow and J. Hillard (1995).

Anderson, B. (1991), *Imagined Communities*, London: Verso.

Angell, J.W. (1926), *The Theory of International Prices*, Cambridge, MA: Harvard University Press.

Angell, N. (1911), *The Great Illusion*, New York: G.P. Putnam's Sons.

Arbejderbevægelsens Erhvervsråd (1996), *Economic Trends*, Copenhagen: eget forlag.

Arblaster, A. (1984), *The Rise and Decline of Western Liberalism*, Oxford: Blackwell.

Arestis, P. (1988), 'Post Keynesian theory of money, credit and finance', in P. Arestis (ed.), *Post-Keynesian Monetary Economics: New Approaches to Financial Modelling*, Aldershot, UK and Brookfield, US: Edward Elgar.

Arestis, P. (1992), *The Post-Keynesian Approach to Economics: An Alternative Analysis of Economic Theory and Policy*, Aldershot, UK and Brookfield, US: Edward Elgar.

Arestis, P. and I. Biefang-Frisancho Mariscal (1994), 'Wage determination in the UK: further empirical results using cointegration', *Applied Economics*, 365–86.

Arestis, P. and P. Howells (1996), 'Theoretical reflection on endogenous money: the problem with convenience lending', *Cambridge Journal of Economics*, **20**, 539–51.

Arestis, P. and E. Paliginis (1995), 'Fordism, Post-Fordism and gender', *Économie Appliquée*, **48** (1), 89–108.

Arestis, P. and M. Sawyer (1993), 'Political economy: an editorial manifesto', *International Papers in Political Economy*, **1**.

Arestis, P. and P. Skott (1993), 'Conflict, wage relativities and hysteresis in UK wage determination', *Journal of Post Keynesian Economics*, 365–86.

Arestis, P., S.P. Dunn and M. Sawyer (1999a), 'Post Keynesian economics and its critics', *Journal of Post Keynesian Economics*, **21**, Summer, 527–49.

Arestis, P., S.P. Dunn and M. Sawyer (1999b), 'On the coherence of Post Keynesian economics: a comment upon Walters and Young', *Scottish Journal of Political Economy*, **46** (3), 339–45.

Armstrong, P., A. Glyn and J. Harrison (1984), *Capitalism Since World War Two*, London: Fontana.

Arrow, K.J. (1951), *Social Choice and Individual Values*, New York: Wiley.

Arrow, K.J. (1974a), 'Limited knowledge and economic analysis', *American Economic Review*, **64**, 1–10.

Arrow, K.J. (1974b), *The Limits of Organization*, New York and London: Norton & Co.

Arrow K.J. (1982), 'Risk perception in psychology and economics', *Economic Inquiry*, **20**, 1–9.

Arrow, K.J. (1985), 'Informational structure of the firm', *American Economic Review: AEA Papers and Proceedings*, **75**, May, 303–7.

Arrow, K.J. and F. Hahn (1971), *General Competitive Analysis*, Edinburgh: Oliver and Boyd.

Asimakopulos, A. (1971), 'The determination of investment in Keynes's model', *Canadian Journal of Economics*, 382–8.

Aston, T. and C. Philpin (eds) (1985), *The Brenner Debate*, Cambridge: Cambridge University Press.

Atkinson, A.C. (1985), *Plots, Transformations and Regressions*, Oxford Scientific Publications.

Aumann R. (1962), 'Utility theory without the completeness axiom', *Econometrica*, **30**, 445–62.

Axelrod, R. (1984), *The Evolution of Cooperation*, New York: Basic Books.

Backhouse, R.E. (1985), *A History of Modern Economic Analysis*, Oxford: Blackwell.

Backhouse, R.E. (ed.) (1994), *New Directions in Economic Methodology*, London: Routledge.

Backhouse, R.E. (1997a), *Truth and Progress in Economic Knowledge*, Cheltenham, UK and Lyme, US: Edward Elgar.

Backhouse, R.E. (1997b), 'Rhetoric and Methodology in modern macroeconomics', in B. Snowdon and H. Vane (eds), *Reflections on the Development of Modern Macroeconomics*, Cheltenham, UK and Lyme, US: Edward Elgar.

Banerjee, A., J.J. Dolado, J.W. Galbraith and D.F. Hendry (1993), *Co-intergration, Error Correction and the Econometric Analysis of Non-Stationary Data*, Oxford: Oxford University Press.

Bank for International Settlements (1993), *Central Bank Survey of Foreign Exchange Market Activity in April 1992*, Basle: BIS Monetary and Economic Department.

Bank of England (1996), 'Recent price shocks', *Inflation Report*, August 7–8, London: Bank of England.

Banks, J. and E. Hanushek (eds) (1995), *Modern Political Economy*, Cambridge: Cambridge University Press.

Baran, P.A. and P.M. Sweezy (1966), *Monopoly Capital: An essay on the American economic and social order*, Harmondsworth: Penguin.

Barry, N. (1981), *An Introduction to Modern Political Theory*, London: Macmillan.

Basili, M. and A. Vercelli (1998), 'Environmental option values, uncertainty aversion and learning', in G. Chichilnisky, G. Heal and A. Vercelli (eds), *Sustainability: Dynamics and Uncertainty*, Amsterdam: Martin Kluwer.

Bateman, B.W. (1987), 'Keynes's changing conception of probability', *Economics and Philosophy*, **3**, 97–119.

Bateman, B. (1989), '"Human Logic" and Keynes's economics: a comment', *Eastern Economic Journal*, **15**, 63–67.

Bateman, B.W. and J.B. Davis (eds) (1991), *Keynes and Philosophy: Essays on the Origin of Keynes's Thought*, Aldershot, UK and Brookfield, US: Edward Elgar.

Baumol, W.J. (1982), 'Contestable markets: an uprising in the theory of industry structure', *American Economic Review*, **72**, 1–15.

Begg, D.K.H. (1982), *The Rational Expectations Revolution in Macroeconomics*, Oxford: Philip Allan.

Bell, D. (1978), *The Cultural Contradictions of Capitalism*, New York: Basic Books.

Belman, D. (1992), 'Unions, the quality of labor relations and firm perfor-

mance', in L. Mishel and P.B. Voos (eds), *Unions and Economic Competitiveness,* New York: M. E. Sharpe.

Bhaskar, R. (1975), *A Realist Theory of Science*, Leeds: Harvester.

Bhaskar, R. (1978), *A Realist Theory of Science*, Brighton: Harvester Press.

Bhaskar, R. (1989a), *Reclaiming Reality*, London: Verso.

Bhaskar, R. (1989b), *The Possibility of Naturalism*, 2nd edition, Hemel Hempstead: Harvester Wheatsheaf.

Bhaskar, R. (1993), *Dialectic: The Pulse of Freedom*, London: Verso.

Binmore K.G. (1986), 'Remodelled rational players', discussion paper, London School of Economics, London.

Blanchard, O.J. (1988), 'Comment on Nickell: the supply side and macroeconomic modelling', in R.C. Bryant *et al.* (eds), *Empirical Economics for Independent Economies*, Washington: Brookings Institution.

Blanchard, O.J. and S. Fischer (1989), *Lectures on Macroeconomics*, Cambridge, MA and London: MIT Press.

Blanchard, O.J. and D. Quah (1989), 'The dynamic effects of aggregate demand and supply disturbances', *American Economic Review*, **79**, 655–73.

Blaug, M. (1980), *The Methodology of Economics: How Economists Explain*, Cambridge: Cambridge University Press.

Blaug, M. (1985), *Economic Theory in Retrospect*, Cambridge: Cambridge University Press.

Blaug, M. (1992), *The Methodology of Economics: How Economists Explain*, revised edition, Cambridge: Cambridge University Press.

Blecker, R. (1991), 'Low saving rates and the "Twin Deficits": confusing the symptoms and causes of economic decline', in P. Davidson and J. Kregel (eds), *Economic Problems of the 1990s*, Aldershot, UK and Brookfield, US: Edward Elgar.

Blinder, A.S. (1991), 'Why are prices sticky? Preliminary results from an interview study', *American Economic Association Papers and Proceedings*, May.

Bliss, C. (1975), *Capital Theory and the Distribution of Income*, Amsterdam: North-Holland.

Boddy, R. and J. Crotty (1975), 'Class conflict and macro-policy: the political business cycle', *Review of Radical and Political Economics*, 1–19.

Boland, L.A. (1979), 'A critique of Friedman's critics', *Journal of Economic Literature*, **17**, 503–22.

Boland, L.A. (1981), 'On the futility of criticizing the neoclassical maximization hypothesis', *American Economic Review*, **71**, 1031–36.

Bonner, J. (1986), *An Introduction to the Theory of Social Choice*, Baltimore: Johns Hopkins.

Booth, A.L. (1995), *The Economics of the Union*, Cambridge: Cambridge University Press.

Bowles, S. and R. Boyer (1988), 'Labour discipline and aggregate demand: a macroeconomic model', *American Economic Review*, **74** (3), 395–400.

Bowles, S. and H. Gintis (1993), 'The revenge of homo economicus: contested exchange and the revivial of political economy', *Journal of Economic Perspectives*, **7** (1), 83–102.

Brady, M.E. (1987), 'J.M. Keynes' Theory of Evidential Weight: its relation to information processing theory and application in The General Theory', *Synthese*, **71**, 37–59.

Brady, M. and H.B. Lee (1989), 'Dynamics of choice behaviour: the logical relation between linear objective probability and non linear subjective probability', *Psychological Reports*, **64**, 91–7.

Braverman, H. (1974), *Labour and Monopoly Capital: The organisation of work in the twentieth century,* New York: Monthly Review Press.

Bray, J., S. Hall, A. Kuleshov, J. Nixon and P. Westaway (1995), 'The interfaces between policy makers, markets and modellers', *Economic Journal,* **105**, 989–1000.

Bray, M. (1982), 'Learning, estimation, and the stability of rational expectations equilibria', *Journal of Economic Theory*, **26**, 313–17.

Bray, M., and N.E. Savin (1986), 'Rational expectations equilibria, learning and model specification', *Econometrica*, **54**, 1129–60.

Brenner, R. (1986), 'The social basis of economic development', in J. Roemer (ed.) (1986), 23–53.

Broomhead, D.S. and G.P. King (1986), 'Extracting qualitative dynamics from experimental data', *Physica,* **20D**.

Brown-Collier, E. (1985), 'Keynes's view of an organic universe: the implications', *Review of Social Economy*, **43**, 14–23.

Buckley, P.J. and M. Carter (1966), 'The economics of business process design', *International Journal of the Economics of Business*, **3** (1), 5–25.

Buckley, P.J. and M. Carter (1997), 'The economics of business process design in multinational firms', in M. Ricketts and R. Mudambi (eds), *The Organization of the Firm: International Business Perspectives*, London: Routledge.

Buckley, P.J. and M. Casson (1976), *The Future of the Multinational Enterprise*, London: Macmillan.

Buckley, P.J. and M. Casson (1981), 'The optimal timing of a foreign direct investment', *Economic Journal*, **92** (361), March, 75–87.

Buckley, P.J. and M. Casson (1988), 'A theory of co-operation in international business', in F. Contractor and P. Lorange (eds), *Co-operative Strategies in International Business*, Lexington, MA: Lexington Books.

Buckley, P.J. and M. Casson (1991), *The Future of the Multinational Enterprise* (2nd edition), London: Macmillan.

Buckley, P.J. and M. Casson (1992), 'Organizing for Innovation: The multinational enterprise in the twenty-first century', in P.J. Buckley and M. Casson (eds), *Multinational Enterprises in the World Economy: Essays in Honour of John Dunning*, Aldershot, UK and Brookfield, US: Edward Elgar.

Buckley, P.J. and M. Casson (1993), 'Economics as an imperialist social science', *Human Relations*, **46** (9), September, 1035–52.

Buckley, P.J. and M. Casson (1996), 'An economic model of international joint ventures', *Journal of International Business Studies*, **27** (5), 849–76.

Buckley, P.J. and M. Chapman (1996a), 'Economics and social anthropology – reconciling differences', *Human Relations*, **49** (9), 1123–50.

Buckley, P.J. and M. Chapman (1996b), 'Wise before the event: the creation of corporate fulfilment', *Management International Review*, **36** (1), Special Issue, 95–110.

Buckley, P.J. and M. Chapman (1996c), 'Theory and method in international business research', *International Business Review*, **5** (3), 233–45.

Buckley, P.J. and M. Chapman (1997), 'The measurement and perception of transaction costs', *Cambridge Journal of Economics*, **21** (2), March, 127–45.

Buckley, P.J. and M. Chapman (1998), 'The management of co-operative strategies in R&D and innovation programmes', *International Journal of the Economics of Business*, **5** (3), November, 369–81.

Buckley, P.J., Z. Berkova and G.D. Newbould (1983), *Direct Investment in the UK by Smaller European Firms*, London: Macmillan.

Buckley, P.J., C.L. Pass and K. Prescott (1988), 'Measures of international competitiveness: a critical survey', *Journal of Marketing Management*, **4** (2), Winter, 175–200.

Bull, H. (1977), *The Anarchical Society*, London: Macmillan.

Caldwell, B.J. (ed.) (1984), *Appraisal and Criticism in Economics,* London: Allen and Unwin.

Caldwell, B.J. (1989), 'Post Keynesian methodology: an assessment', *Review of Political Economy*, **1**, 41–64.

Caldwell, B.J. and A.W. Coats (1984), 'The rhetoric of economics: a comment on McCloskey', *Journal of Economic Literature*, **22**, 575–78.

Camerer, C. (1989), 'Bubbles and fads in asset prices', *Journal of Economic Surveys*, **3**, 3–43.

Campbell, J.Y. and K. Froot (1994), 'International experiences with security transaction taxes', in J. Frankel (ed.), *The Internationalization of Equity Markets*, Chicago: University of Chicago Press.

Cannan, E. (1921), 'The meaning of bank deposits', *Economica*, **1** (new series), 28–36.

Capponi, O. (1992), 'Keynesian equilibrium and the inducement to invest,'

in M. Sebastiani (ed.), *The Notion of Equilibrium in the Keynesian Theory*, London: Macmillan, pp. 46–60.

Carabelli, A.M. (1985), 'Cause, chance and possibility', in T. Lawson and H. Pesaran (eds), *Keynes's Economics: Methodological Issues*, London: Croom Helm.

Carabelli, A.M. (1988), *On Keynes's Method*, London: Macmillan.

Carabelli, A.M. (1991), 'The methodology of the critique of the classical theory: Keynes on organic interdependence', in B. Bateman and J. Davis (eds), *Keynes and Philosophy*, Aldershot, UK and Brookfield, US: Edward Elgar.

Carabelli A.M. (1992), 'Organic interdependence and the choice of units in the General Theory', in B. Gerrard and J.V. Hillard (eds), *The Philosophy and Economics of J.M. Keynes*, Aldershot, UK and Brookfield, US: Edward Elgar.

Carabelli, A.M. (1994), 'Keynes on mensuration and comparison', in K. Vaughn (ed.), *Perspectives on the History of Economic Thought*, Volume X, Aldershot, UK and Brookfield, US: Edward Elgar.

Carabelli, A.M. (1995), 'Uncertainty and measurement in Keynes: probability and organicness', in S. Dow and J.V. Hillard (eds), *Keynes, Knowledge and Uncertainty*, Aldershot, UK and Brookfield, US: Edward Elgar.

Card, D. and A.B. Krueger (1995), *Myth and Measurement: the New Economics of the Minimum Wage*, Princeton: Princeton University Press.

Carrier, J.G. (1997), 'Introduction', in J.G. Carrier (ed.), *Meanings of the Market*, Berg: Oxford.

Cartwright, B. and R. Warner (1976), 'The medium is not the message' in Loubser *et al.* (1976), 639–59.

Carvalho, F. (1983–4), 'On the concept of time in Shaklean and Sraffian economics', *Journal of Post Keynesian Economics*, **6** (2), 265–80.

Casson, M. (1981), 'Foreword', in A.M. Rugman, *Inside the Multinational*, London: Croome Helm.

Casson, M. (1991), *The Economics of Business Culture: Game Theory, Transactions Costs and Economic Performance*, Oxford: Clarendon Press.

Casson, M. (1995), *Entrepreneurship and Business Culture Studies in the Economics of Trust, Volume One*, Aldershot, UK and Brookfield, US: Edward Elgar.

Chapman, M. and P.J. Buckley (1997), 'Markets, transaction costs, economists and social anthropologists', in J.G. Carrier (ed.), *Meanings of the Market*, Oxford: Berg.

Chatfield, C. (1995), 'Model uncertainty, data mining and statistical inference', *Journal of the Royal Statistical Society,* A, **158**, 419–66.

Chick, V. (1983), *Macroeconomics After Keynes: A Reconsideration of the General Theory*, Oxford: Philip Allan.

Chick, V. (1992), 'The small firm under uncertainty: a puzzle of the General Theory', in B. Gerrard and J. Hillard (eds), *The Philosophy and Economics of J.M. Keynes*, Aldershot, UK and Brookfield, US: Edward Elgar.

Chick, V. (1995), 'Is there a case for Post-Keynesian economics?', *Scottish Journal of Political Economy*, **42** (1), 20–36.

Chick, V. and M. Caserta (1996), 'Provisional equilibrium and macroeconomic theory', in P. Arestis and M. Sawyer (eds), *Markets, Unemployment and Economic Policy: Essays in Honour of G.C. Harcourt*, vol 2, London: Routlege.

Choquet, G. (1955), 'Theory of capacities', *Annales de l'Institut Fourier*, **5**, 131–295.

Church, K.B., P.R. Mitchell, P.N. Smith and K.F. Wallis (1993), 'Comparative properties of models of the UK economy', *National Institute Economic Review,* **3** (145), 87–107.

Clarke, P. (1988), *The Keynesian Revolution in the Making, 1924–1936*, Oxford: Clarendon.

Clegg, H.A., A. Fox and A.F. Thompson (1964), *A History of British Trade Unions Since 1889. Volume 1: 1889–1910*, Oxford: Clarendon.

Clements, M.P. (1995), 'Rationality and the role of judgement in macroeconomic forecasting', *Economic Journal,* **105**, 410–20.

Clements, M.P. and D.F. Hendry (1995), 'Macroeconomic forecasting and modelling, *Economic Journal,* **105**, 1000–13.

Clower, R. (1969), 'Introduction', in R. Clower (ed.), *Monetary Theory*, Harmondsworth: Penguin.

Coase, R.H. (1937), 'The nature of the firm', *Economica*, **4** (new series), 386–405 reprinted in G.J. Stigler and K.E. Boulding (eds) (1953), *Readings in Price Theory: Selected by a committee of the American Economic Association*, London: George Allen and Unwin Ltd.

Coase, R.H. (1960), 'The problem of social cost', *Journal of Law and Economics*, **3**, 1–44.

Coase, R.H. (1988[1946]), 'The marginal cost controversy', *Economica*, **13** (new series), references are to the reprint in Coase (1988a).

Coase, R.H. (1988a), *The Firm, the Market, and the Law*, Chicago: University of Chicago Press.

Coase, R.H. (1988b), 'The firm, the market, and the law', in Coase 1988a, pp. 1–31.

Coase, R.H. (1988c), 'How should economists choose?', in *Ideas, Their Origins, and Their Consequences*, Washington DC: American Enterprise Institute, pp. 63–79.

Coase, R.H. (1993[1992]), 'The institutional structure of production', *American Economic Review*, **82**, references are to the reprint in O.E. Williamson and S.G. Winter (eds) (1993), 227–35.

Coase, R.H. (1993a), 'The nature of the firm: Origin', in O.E. Williamson and S.G. Winter (eds) (1993), pp. 34–47.

Coase, R.H. (1993b), 'The nature of the firm: Meaning', in O.E. Williamson and S.G. Winter (eds) (1993), pp. 48–60.

Coase, R.H. (1993c), 'The nature of the firm: Influence', in O.E. Williamson and S.G. Winter (eds) (1993), pp. 61–74.

Coddington, A. (1976), 'Keynesian economics: the search for first principles', *Journal of Economic Literature*, **72**, 480–87.

Coddington, A. (1982), 'Deficient foresight: a troublesome theme in Keynesian economics', *American Economic Review,* **72**, 480–87.

Coddington, A. (1983), *Keynesian Economics: The Search for First Principles*, London: Allen and Unwin.

Cohen, G. (1978), *Karl Marx's Theory of History: A Defence*, Oxford: Oxford University Press.

Cohen, J. (1989), *An Introduction to the Philosophy of Induction and Probability,* Oxford: Oxford University Press.

Colander, D. and A. Klamer (1987), 'The making of an economist,' *Journal of Economic Literature*, **22**, 575–78.

Coleman, J. (1990), *Foundations of Social Theory*, London: Prentice-Hall.

Collins, H. (1991), 'The meaning of replication and the science of economics', *History of Political Economy*, **23**, 123–42.

Connolly, B. (1994), *The Rotten Heart of Europe: The Dirty War for Europe's Money*, London: Faber.

Cornwall, J. (1994), *Economic Breakdown and Recovery: Theory and Policy*, Armonk, NY: M.E. Sharpe.

Cottrell, A.F. (1993), 'Keynes's Theory of Probability and its relevance to economics: three theses', *Economics and Philosophy*, **9**, 25–51.

Cowling, K. and R. Sugden (1987), *Transnational Monopoly Capitalism*, Brighton: Wheatsheaf.

Cowling, K. and R. Sugden (1993), 'Control, markets and firms', in C. Pitelis (ed.), *Transaction costs, markets and hierarchies*, Oxford: Basil Blackwell.

Cowling, K. and R. Sugden (1998), 'The essence of the modern corporation: markets, strategic decision-making and the theory of the firm', *The Manchester School*, **66** (1), 59–86.

Cowling, K. and M. Waterson (1976), 'Price–cost margins and market structure', *Economica*, **43**.

Cross, R. (1982), 'The Duhem-Quine thesis, Lakotos, and the appraisal of theories in macroeconomics', *Economic Journal*, **92**, 320–40.

Cruise O'Brien, R. (1995), 'Is trust a calculable asset in the firm?', *Business Strategy Review*, Winter, 39–54.

Curley, S.P. and J.F. Yates (1985), 'The center and the range of the probability interval as factors affecting ambiguity preferences', *Organizational Behavior and Human Decision Processes*, **36**, 273–87.

Curley, S.P., J.F. Yates and R.A. Abrams (1986), 'Psychological sources of ambiguity avoidance', *Organizational Behavior and Human Decision Processes*, **38**, 230–56.

Curley, S.P. and J.F. Yates (1989), 'An empirical evaluation of descriptive models of ambiguity reactions in choice situations', *Journal of Mathematical Psychology*, **33**, 397–427.

D'Souza, D. (1991), *Illiberal Education*, New York: Free Press.

D'Souza, D. (1995), *The End of Racism: Principles for a Multiracial Society*, New York: Free Press.

Dahl, R. (1984), *Modern Political Analysis*, Englewood Cliffs: Prentice-Hall.

Dahlman, C.J. (1979), 'The problem of externality', *Journal of Law and Economics*, **22** (1), 141–62.

Dalziel, P. (1995), 'Inflation and endogenous money: a process analysis', paper presented to the 24th Conference of Economists, Adelaide: University of Adelaide, September.

Danziger, S. and P. Gottschalk (1988–9), 'Increasing inequality in the United States: what we know and what we don't', *Journal of Post Keynesian Economics*, **11** (2), Winter, 174–95.

Darnell, A.C. and J.L. Evans (1990), *The Limits of Econometrics*, Aldershot, UK and Brookfield, US: Edward Elgar.

Dasgupta, P. (1988), 'Trust as a commodity', in D. Gambetta (ed.), *Trust; Making and Breaking of Cooperative Relations*, Oxford: Basil Blackwell.

Davidson, P. (1972), *Money and the Real World*, London: Macmillan.

Davidson, P. (1977), 'Money and general equilibrium', reprinted in *Money and Employment: The collected writings of Paul Davidson, Volume 1*, London: Macmillan, 1990.

Davidson, P. (1978), *Money and the Real World*, 2nd edition, London: Macmillan.

Davidson, P. (1981), 'Post Keynesian economics', in D. Bell and I. Kristol (eds), *The Crisis in Economic Theory*, New York: Basic Books.

Davidson, P. (1982–3), 'Rational expectations: a fallacious foundation for studying crucial decision-making processes', *Journal of Post Keynesian Economics*, **5**, 182–97.

Davidson, P. (1983), 'The marginal product curve is not the demand curve for labor and Lucas's labor supply function is not the supply curve for labor in the real world', *Journal of Post Keynesian Economics*, **6** (1), Fall, 105–17.

Davidson, P. (1988), 'A technical definition of uncertainty and the long-run non-neutrality of money', *Cambridge Journal of Economics*, **12**.

Davidson, P. (1989), 'On the endogeneity of money once more', *Journal of Post Keynesian Economics*, **11**, 488–91.

Davidson, P. (1991), 'Is Probability Theory relevant for uncertainty? A Post Keynesian perspective', *Journal of Economic Perspectives*, **5** (1), 129–43.

Davidson, P. (1992), 'Eichner's approach to money and macroeconomics', in W. Milberg (ed.), *The Megacorp and Macrodynamics*, New York: M.E. Sharpe.

Davidson, P. (1992–3), 'Reforming the world's money', *Journal of Post Keynesian Economics*, **15** (2) Winter, 153–80.

Davidson, P. (1994), *Post Keynesian Macroeconomic Theory: A Foundation for Successful Economic Policies for the Twenty First Century,* Aldershot, UK and Brookfield, US: Edward Elgar.

Davidson, P. (1996a), 'Are grains of sand in the wheels of international finance sufficient to do the job when boulders are often required?', mimeo, University of Tennessee, Knoxville, June.

Davidson, P. (1996b), 'Reality and economic theory', *Journal of Post Keynesian Economics*, **18**, 479–508.

Davidson, P. and G.S. Davidson (1984), 'Financial Markets and Williamson's Theory of Governance: Efficiency versus concentration versus power', reprinted in *Money and Employment: The Collected Writings of Paul Davidson, Volume 1*, London: Macmillan, 1990.

Davidson, P. and J. Kregel (1980), 'Keynes's paradigm: a theoretical framework for monetary analysis', in E. Nell (ed.), *Growth Profits and Property*, Cambridge: Cambridge University Press.

Davies, J.E. and F.S. Lee (1988), 'A Post Keynesian appraisal of the contestability criterion', *Journal of Post Keynesian Economics*, **11**, 3–24.

Davis, J.B. (1989), 'Keynes on atomism and organicism', *Economic Journal*, **99**, 1159–72.

Davis, J.B. (1989/90), 'Keynes and organicism', *Journal of Post Keynesian Economics*, **12**, 308–15.

Davis, J.B. (1990), 'Rorty's contribution to McCloskey's understanding of conversation as the methodology of economics', *Research in the History of Thought and Methodology*, **7**, 73–85.

Davis, J.B. (1994), *Keynes's Philosophical Development*, Cambridge: Cambridge University Press.

Davis, J.B. (1995), *Keynes's Philosophical Development*, Cambridge: Cambridge University Press.

De Bondt, W. and R. Thaler (1985), 'Does the stock market over-react?', *The Journal of Finance*, **XI**, 793–808.

DeCanio, S.J. (1979), 'Rational expectations and learning from experience', *Quarterly Journal of Economics*, **93**, 47–58.

De Finetti, B. (1937), 'La Prévision: ses lois logiques, ses sources Subjectives', *Annales de l'Institut Henry Poincaré*, **7**, 1–68; English translation: 'Foresight: its logical laws, its subjective sources', in H.E. Kyburg and H.E. Smokler (eds) (1964), *Studies in Subjective Probabilities*, New York: Wiley, pp. 93–158.

De Marchi, N. and C. Gilbert (1989) (eds), special edition on econometrics, *Oxford Economic Papers*, **41**.

De Wolff, P. (1965), *Wages and Labour Mobility*, Paris: OECD.

Debreu, G. (1959), *Theory of Value*, New Haven: Yale University Press.

Deleplace, G. and E. Nell (eds) (1996), *Money in Motion*, London: Macmillan.

Dempster, A.P. (1968), 'A generalisation of Bayesian inference', *Journal of the Royal Statistical Society*, Series B (Methodological), **30** (2), 205–47.

Dennis, K. (1995), 'A logical critique of mathematical formalism in economics', *Journal of Economic Methodology,* **2**, 181–200.

Derrida, J. (1974), *Of Grammatology*, trans. G. Spivak, Baltimore: Johns Hopkins University Press.

Derrida, J. (1978a), 'Freud and the scene of writing', in *Writing and Difference*, trans. Allan Bass, London: Routledge and Kegan Paul.

Derrida, J. (1978b), 'Structure, sign and play in the discourse of the human sciences', in *Writing and Difference*, trans. Allan Bass, London: Routledge and Kegan Paul.

Derrida, J. (1981a), 'Plato's pharmacy', in *Dissemination*, trans. Barbara Johnson, London: Athlone Press.

Derrida, J. (1981b), *Positions*, trans. Allan Bass, London: Athlone Press.

Derrida, J. (1982), '*Ousia* and *Grammē*', in *Margins of Philosophy*, trans. Allan Bass, Chicago: University of Chicago Press.

Derrida, J. (1984), 'Deconstruction and the other', in R. Kearney (ed.), *Dialogues with Contemporary Continental Thinkers*, Manchester: Manchester University Press.

Desai, M. (1995), 'The ties that bind', *The Times Higher Education Supplement*, 27 October.

Dewald, W.G., J.G. Thursby and R.G. Anderson (1986), 'Replication of empirical economics: the *Journal of Money, Credit and Banking* project', *American Economic Review*, **76**, 587–603.

Dews, P. (1987), *Logics of Disintegration: Post-structuralist Thought and the Claims of Critical Theory*, London: Verso.

Diaconis, P. and D. Freedman (1986), 'On the consistency of Bayes estimates', *The Annals of Statistics*, **14** (1), 1–26.

Diamond, P.A. (1994), *On Time: Lectures on Models of Equilibrium*, Cambridge: Cambridge University Press.

Dickens, D. and A. Fontana (eds) (1994), *Postmodernism and Social Inquiry*, London: University College of London Press.

Dillard, D. (1984), 'Keynes and Marx: a centennial appraisal', *Journal of Post Keynesian Economics*, **6**, 421–32.

Dixon, H. and N. Rankin (1994), 'Imperfect competition and macroeconomics: a survey', *Oxford Economic Papers*, **46**; reprinted in Dixon and Rankin (eds) (1995) (page references refer to the latter).

Dixon, H. and N. Rankin (eds) (1995), *The New Macroeconomics*, Cambridge: Cambridge University Press.

Dobbs, I.M. (1991), 'A Bayesian approach to decision-making under ambiguity', *Economica*, New Series, **58** (232), 417–40.

Dornbusch, R. (1976), 'Expectations and exchange rate dynamics', *Journal of Political Economy*, **84**.

D'Orville, H. and D. Najman (1995), *Towards a New Multilateralism: Funding Global Priorities*, New York: United Nations.

Dorward, N. (1987), *The Pricing Decision: Economic Theory and Business Practice*, London: Harper and Row.

Dosi, G. *et al.* (1992), 'Towards a theory of corporate coherence', in G. Dosi, G. Giannetti and P. Toninelli (eds), *Technology and Enterprise in a Historical Perspective*, Oxford: Clarendon Press.

Dosi, G., K. Pavitt and L. Soete (1990), *The Economics of Technical Change and International Trade*, New York: NYU Press.

Douma, S. and H. Scheider (1991), *Economic Approaches to Organizations*, New York: Prentice Hall.

Dow, A.C. and S.C. Dow (1989), 'Endogenous money creations and idle balances', in J. Pheby (ed.), *New Directions in Post-Keynesian Economics*, Aldershot, UK and Brookfield, US: Edward Elgar, pp. 147–64.

Dow, J. and S.J. Werlang (1992a), 'Excess volatility of stock prices and Knightian uncertainty', *European Economic Review*, **36**, 631–8.

Dow, J. and S.J. Werlang (1992b), 'Uncertainty aversion, risk aversion, and the optimal choice of portfolio', *Econometrica*, **60**, 197–204.

Dow, S.C. (1985), *Macroeconomic Thought: A Methodological Approach*, Oxford: Basil Blackwell.

Dow, S.C. (1988), 'What happened to Keynes's economics?', in O.F. Hamouda and J. Smithin (eds), *Keynes and Public Policy After Fifty Years*, *Vol. I: Economics and Policy*, pp. 101–10.

Dow, S.C. (1990a), 'Beyond dualism', *Cambridge Journal of Economics*, **19**, 143–58.

Dow, S.C. (1990b), 'Post Keynesianism as political economy: a methodological discussion', *Review of Political Economy*, **2** (3), 345–58.

Dow, S.C. (1991), 'Keynes's epistemology and economic methodology', in R.M. O'Donnell (ed.), *Keynes as Philosopher–Economist*, London: Macmillan, pp. 144–67.

Dow, S.C. (1992), 'The Post Keynesian School', in D. Mair and A. Miller (eds), *A Modern Guide to Economic Thought*, Aldershot, UK and Brookfield, US: Edward Elgar.

Dow, S.C. (1994a), 'Methodological pluralism and pluralism of method,' discussion paper, University of Stirling, May.

Dow, S.C. (1994b), 'Whither mainstream economics? A survey of economic methodology', discussion paper, University of Stirling, June.

Dow, S.C. (1996a), 'The appeal of neoclassical economics: some insights from Keynes' epistemology', *Cambridge Journal of Economics*, **19**, 715–33.

Dow, S.C. (1996b), 'Horizontalism: a critique', *Cambridge Journal of Economics*, **20**, 497–508.

Dow, S.C. (1997a), 'Mainstream economic methodology', *Cambridge Journal of Economics*, **21**, 73–93.

Dow, S.C. (1997b), 'Methodological pluralism and pluralism of method', in A. Salanti and E. Screpanti (eds), *Pluralism in Economics: Theory, History and Methodology*, Cheltenham, UK and Lyme, US: Edward Elgar, pp. 89–99.

Dow, S.C. (1998), 'Post Keynesian methodology', in J.B. Davis, D.W. Hands and U. Mäki (eds), *The Handbook of Economic Methodology*, Cheltenham, UK and Lyme, US: Edward Elgar, pp. 378–82.

Dow, S.C. (2001), 'Modernism and postmodernism: a dialectical process', in S. Cullenberg, J. Amariglio and D.F. Ruccio (eds), *Postmodernism, Economics and Knowledge*, London: Routledge.

Dow, S.C. and J.V. Hillard (eds) (1995), *Keynes, Knowledge and Uncertainty*, Aldershot, UK and Brookfield, US: Edward Elgar.

Downward, P.M. (1994), 'A reappraisal of case study evidence on business pricing: neoclassical and Post Keynesian perspectives', *British Review of Economic Issues*, **16** (39), 23–43.

Downward, P.M. (1995), 'A Post Keynesian perspective of UK manufacturing pricing', *Journal of Post Keynesian Economics*, **17**, 403–26.

Downward, P.M. (1999), *Pricing Theory in Post Keynesian Economics*, Cheltenham, UK and Northampton, MA, US: Edward Elgar.

Downward, P.M. (2000), 'A realist appraisal of Post Keynesian pricing theory', *Cambridge Journal of Economics* **24** (2), 211–24.

Downward, P.M. (2002), 'A Post Keynesian view of historical pricing dynamics in the UK', *Journal of Post Keynesian Economics*, **24** (2), 329–44.

Downward, P.M. and A. Mearman (forthcoming), 'Critical realism and econometrics: constructive dialogue with Post Keynesian economics' in

P.M. Downward (ed.), *Applied Economics and the Critical Realist Critique*, London: Routledge.

Doyle, M. (1986), 'Liberalism and world politics', *American Political Science Review*, **80**, 1151–63.

Drago, R. (1989–90), 'A simple Keynesian model of efficiency wages', *Journal of Post Keynesian Economics*, **12** (2), Winter, 171–82.

Drakopoulos, S. (1992), 'Keynes economic thought and the theory of consumer behaviour', *Scottish Journal of Political Economy*, **39**, 318–36.

Dunlop, J.T. (1944), *Wage Determination Under Trade Unions*, New York: Macmillan.

Dunn, S.P. (1996), 'A Post Keynesian contribution to the theory of the firm', *Leeds University Business School discussion paper series*, E96/18, University of Leeds.

Dunn, S.P. (1997), 'Bounded rationality, uncertainty and a Post Keynesian approach to transaction costs', *Leeds University Business School discussion paper series*, E97/08, University of Leeds.

Dunn, S.P. (1999), 'Bounded rationality, "fundamental" uncertainty and the firm in the long run', in S.C. Dow and P. Earl (eds), *Contingency, Complexity and the Theory of the Firm: Essays in Honour of Brian Loasby, Volume Two*, Cheltenham, UK and Northampton, MA, USA: Edward Elgar.

Dunn, S.P. (2000a), 'Wither Post Keynesianism?', *Journal of Post Keynesian Economics*, **22** (3), 343–64.

Dunn, S.P. (2000b), '"Fundamental" uncertainty and the firm in the long run', *Review of Political Economy*, **12** (4), 419–33.

Dunn, S.P. (2001a), 'Uncertainty, strategic decision-making and the essence of the modern corporation: extending Cowling and Sugden', *The Manchester School*, **69**, 31–41.

Dunn, S.P. (2001b). 'Galbraith, uncertainty and the modern corporation', in M. Keaney (ed.), *Economist with a public purpose: Essays in Honour of John Kenneth Galbraith*, London: Routledge.

Dunn, S.P. (forthcoming), 'Towards a Post Keynesian theory of the multinational corporation: some Galbraithian insights' in K. Nielson (ed.), *Uncertainty and Economic Decision-Making: Ambiguity, Mental Models and Institutions*, Cheltenham, UK and Northampton, MA, US: Edward Elgar.

Dutt, A. (1992), 'Keynes, market forms and competition', in B. Gerrard and J. Hillard (eds), *The Philosophy and Economics of J.M. Keynes*, Aldershot, UK and Brookfield, US: Edward Elgar.

Edgeworth, F.Y. (1881), *Mathematical Psychics*, London: Kegan Paul.

Eichengreen, B. (1984), 'Keynes and protection', *Journal of Economic History*, **XLIV**.

Eichengreen, B. (1996), 'The Tobin tax: what have we learned?', in Haq *et al.*, pp. 273–87.

Eichengreen, B. and C. Wyplosz (1993), 'The unstable EMS', *Brookings Papers on Economic Activity*, **1**, 51–145.

Eichengreen, B. and C. Wyplosz (1996), 'Taxing international financial transactions to enhance the operation of the international monetary system', in Haq *et al.*, pp. 15–40.

Eichengreen, B., J. Tobin and G. Wyplosz (1995), 'Two cases for sand in the wheels of international finance', *Economic Journal*, **105**, 162–72.

Eichner, A.S. (1976), *The Megacorp and Oligopoly*, Cambridge: Cambridge University Press.

Eichner, A.S. (1979), 'An anthropogenic approach to labor economics', *Eastern Economic Journal*, **5** (4), October, 349–66; reprinted in A.S. Eichner (1985), *Towards a New Economics*, Armonk, NY: M.E. Sharpe, pp. 75–97.

Eichner, A.S. (1986), *Toward a New Economics: Essays in Post-Keynesian and Institutionalist Theory*, London: Macmillan.

Einhorn, H.J. and R.M. Hogarth (1985), 'Ambiguity and uncertainty in probabilistic inference', *Psychological Review*, **92**, 433–61.

Einhorn, H.J. and R.M. Hogarth (1986), 'Decision making under ambiguity', *Journal of Business*, **59**, S225–S250.

Ellsberg, D. (1961), 'Risk, ambiguity and the savage axioms', *Quarterly Journal of Economics*, **75**, November, 643–69.

Ellsberg, D. (1963), 'Reply', *Quarterly Journal of Economics*, **77**, November, 336–42.

Epstein, L., and M. Le Breton (1993), 'Dynamically consistent beliefs must be Bayesian', *Journal of Economic Theory*, **61**, 1–22.

Epstein, L.G. and T. Wang (1994), 'Intertemporal asset pricing under Knightian uncertainty', *Econometrica*, **62**, 283–322.

European Commission (1994a), *Growth, Competitiveness and Employment: Ways Forward into the Twenty-first Century*, White Paper (Delors Report II), Luxembourg: Office for Official Publications of the European Communities.

European Commission, DGXI (1994b), *The Potential Benefits of Integration of Environmental and Economic Policies: An Incentive-Based Approach to Policy Integration*, Luxembourg: Office for Official Publication of the European Communities.

European Commission, Committee for the Study of Economic and Monetary Union (1989), *Report on Economic and Monetary Union in the European Community* (Delors Report I), Luxembourg: Office for Official Publication of the European Communities.

European Commission, Directorate-General for Economic and Financial

Affairs (1990), 'One Market, One Money', *European Economy,* 44, October.

European Parliament (1994), 'The Social Consequences of the Economic and Monetary Union', *Final Report, Social Affairs Series,* 10–1994, Luxembourg.

Evans, G.W. (1983), 'The stability of rational expectations in macroeconomic models', in R. Frydman and E.S. Phelps (eds), *Individual Forecasting and Aggregate Outcomes. 'Rational' Expectations Examined,* Cambridge: Cambridge University Press.

Evans, G.W., and S. Honkapohja (1990), 'Learning, convergence, and stability with multiple rational expectations equilibria', STICERD discussion paper, London.

Fearon, J. (1995), 'Rationalist explanations for war', *International Organisation*, **49**, 79–414.

Felix, D. (1996), 'Statistical appendix' to Haq *et al.* (1996), pp. 289–300.

Felix, D. and R. Sau (1996), 'On the revenue potential and phasing in of the Tobin tax', in Haq *et al.* (1996), pp. 223–54.

Fish, S. (1994), *There's No Such Thing as Free Speech*, Oxford: Oxford University Press.

Fisher, F.M. (1989), 'Games economists play: a non-cooperative view', *Rand Journal of Economics*, **20**, 113–24.

Fisher, I. (1925), 'Our unstable dollar and the so-called business cycle', *Journal of the American Statistical Association*, **20**.

Fitzroy, F.R. and D. Mueller (1984), 'The co-operation and conflict in contractual organisations', reprinted in D. Mueller (ed.) (1986), *The Modern Corporation: Profits, Power, Growth and Performance*, London: Harvester Wheatsheaf.

Foot, M.D.K.W. (1996), 'International regulatory co-operation post-Barings', *Bank of England Quarterly Bulletin*, **36** (2).

Ford, J.L. (1994), *G.L.S. Shackle: The Dissenting Economist's Economist*. Aldershot, UK and Brookfield, US: Edward Elgar.

Förster, S. (1995), 'Dreams and nightmares: German military leadership and the images of future warfare, 1871–1914', mimeo, *Universität Bern Historisches Institut*.

Foss, N.J. (1996), 'The "alternative" theories of Knight and Coase and the modern theory of the firm', *Journal of the History of Economic Thought*, **18** (Spring), 76–95.

Foster, J. and P. Wild (1995), 'The logistic diffusion approach to econometric modelling in the presence of evolutionary change', Department of Economics, University of Queensland discussion paper no. 181.

Foucault, M. (1972), *The Archaeology of Knowledge*, trans. A. Sheridan, New York: Pantheon.

Foucault, M. (1979), *Discipline and Punish*, New York: Vintage Books.
Fourgeaud, C., C. Gourieroux and J. Pradel, (1986), 'Learning procedure and convergence to rationality', *Econometrica*, **54**, 845–68.
Fourie, F.C. v. N. (1993), 'In the beginning there were markets?', in C. Pitelis (ed.), *Transaction costs, markets and hierarchies*, Oxford: Basil Blackwell.
Frankel, J. (1996), 'How well do foreign exchange markets work: might a Tobin tax help?', in Haq *et al.* (1996), pp. 41–82.
Frankel, S.H. (1977), *Money, Two Philosophies: The Conflict of Trust and Authority*, Oxford: Basil Blackwell.
Fransman, M. (1995), *Japan's Computer and Communications Industry*, Cambridge: Cambridge University Press.
Frazer, W.J. and L.A. Boland (1983), 'An essay on the foundations of Friedman's methodology', *American Economic Review*, **73**, 129–44.
Freeman, R. and J.L. Medoff (1984), *What do Unions do?*, New York: Basic Books.
Friedman, D. (1989), *The Machinery of Freedom*, La Salle, IL: Open Court.
Friedman, G. and M. Lebard (1991), *The Coming War With Japan*, New York: St Martin's Press.
Friedman, M. (1953a), 'The case for flexible exchange rates', *Essays in Positive Economics*, Chicago: University of Chicago Press.
Friedman, M. (1953b), 'The methodology of positive economics', *Essays in Positive Economics*, Chicago: University of Chicago Press, pp. 3–43.
Friedman, M. and R. Friedman (1980), *Free to Choose*, London: Secker and Warburg.
Friedman, M. and A.J. Schwartz (1963), *A Monetary History of the United States, 1867–1960*, Chicago: University of Chicago Press.
Frisch, R. (1938), 'Statistical versus theoretical relations in economic macrodynamics', mimeo in Memorandum of 6/11/48 entitled *Autonomy of Economic Relations*, Universitets Okonomiske Institutt, Oslo.
Fukuyama, F. (1992), *The End of History and the Last Man*, New York: Free Press.
Fukuyama, F. (1995), *Trust: The Social Virtues and the Creation of Prosperity*, New York: Free Press.
Gabriel, J. (1994), *Worldviews of International Relations*, London: Macmillan.
Galbraith, J.K. (1967), *The New Industrial State*; 2nd rev. edn, Harmondsworth: Penguin, 1974.
Gamble, A. (1994), *The Free Economy and the Strong State*, London: Macmillan.
Garber, P. and M.P. Taylor (1995), 'Sand in the wheels of foreign exchange markets: a skeptical note', *The Economic Journal*, **105**.

Gärdenfors, P. and N.E. Sahlin (1982), 'Unreliable probabilities, risk taking and decision making,' *Synthèse*, **53**, 361–86.

Gärdenfors, P. and N.E. Sahlin (1988) (eds), *Decision, Probability and Utility*, Cambridge: Cambridge University Press.

Garrison, R.W. (1982), 'Austrian economics as the middle ground: comments on Loasby', in I.M. Kirzner (ed.), *Method, Process and Austrian Economics: Essays in Honor of Ludwig von Mises*, Lexington, MA: D.C. Heath.

Gasché, R. (1986), *The Tain of the Mirror: Derrida and the Philosophy of Reflection*, Cambridge, MA: Harvard University Press.

Gellner, E. (1983), *Nations and Nationalism*, Ithaca: Cornell University Press.

Geroski, P.A. (1991), 'Price dynamics in UK manufacturing: a microeconomic view', *Economica*, **59**, 403–19.

Gerrard, B. (1991), 'Keynes's *General Theory*: interpreting the interpretations', *Economic Journal*, **101**, 276–87.

Gerrard, B. (1992), 'From A Treatise on Probability to The General Theory: continuity or change in Keynes's thought?', in B. Gerrard and J. Hillard (eds), *The Philosophy and Economics of J.M. Keynes*, Aldershot, UK and Brookfield, US: Edward Elgar, pp. 80–95.

Gerrard, B. (1995), 'The scientific basis of economics: a review of the methodological debates in economics and econometrics', *Scottish Journal of Political Economy*, **42**, 221–35.

Gershenfeld, N.A. and A.S. Weigend (1993), 'The future of time series: learning and understanding', in N. A. Gershenfeld and A.S. Weigend (eds), *Time Series Prediction: Forecasting the Future and Understanding the Past,* Reading, MA: Addison-Wesley.

Ghirardato, P. (1994), 'Coping with ignorance: unforeseen contingencies and non-additive uncertainty', discussion paper, Department of Economics, Berkeley.

Giddens, A. (1987), *The Nation State and Violence*, Berkeley: University of California Press.

Gilbert, C.L. (1986), 'Professor Hendry's econometric methodology', *Oxford Bulletin of Economics and Statistics*, **48**, 283–307.

Gilbert, C.L. (1989), 'LSE and the British approach to time series econometrics', *Oxford Economic Papers*, **41**, 108–28.

Gilboa, I. (1987), 'Expected utility with purely subjective non-additive probabilities', *Journal of Mathematical Economics*, **16**, 65–8.

Gilboa, I. (1989), 'Additivizations of nonadditive measures', *Mathematics of operation research*, **4**, 1–17.

Gilboa, I. and D. Schmeidler (1989), 'Maximin expected utility with a non-unique prior', *Journal of Mathematical Economics* **18**, 141–53.

Gilboa, I. and D. Schmeidler (1993), 'Updating ambiguous beliefs', *Journal of Economic Theory*, **59**, 33–49.

Gill, J. and R. Butler (1996), 'Cycles of trust and distrust in joint-ventures', *European Management Journal*, **14** (1), February, 81–99.

Gilpin, R. (1981), *War and Change in World Politics*, Cambridge: Cambridge University Press.

Glahe, F.R. (ed.) (1991), *Keynes' The General Theory of Employment, Interest and Money*, Maryland: Rowan and Littlefield.

Godley, W. and F. Cripps (1981), *Macroeconomics*, London: Fontana Paperbacks.

Good, I.J. (1962), 'Subjective probability as the measure of a non-measurable set, in E. Nagel, P. Suppes and A. Tarski (eds), *Logic, Methodology and Philosophy of Science*, Stanford, CA: Stanford University Press, pp. 319–29.

Good I.J. (1980), 'Subjective probability as the measure of a non measurable set', in H.E. Kyburg and H.E. Smokler (eds), *Studies in Subjective Probability*, New York: Krieger.

Goodwin, C. (ed.) (1991), *Economics and National Security*, Durham, NC: Duke University Press.

Gowler, D. and K. Legge (1983), 'The meaning of management and the management of meaning: a view from social anthropology', in M.J. Earl (ed.), *Perspectives on Management*, Oxford: Oxford University Press.

Granger, C. (1990), *Modelling Economic Series*, Oxford: Oxford University Press.

Gray, J. (1993), *Beyond the New Right*, London: Routledge.

Gray, J. (1995), *Liberalism*, Minneapolis: University of Minnesota Press.

Graziani, A. (1989), 'The theory of the monetary circuit', *Thames Papers in Political Economy*, Spring, 1–26.

Graziani, A. (1994), *La teoria monetaria della produzione*, Arezzo, Banca Popolare dell'Etruria e del Lazio/Studi e Ricerche.

Graziani, A. (1996), 'Money as purchasing power and money as a stock of wealth in Keynesian economic thought', in G. Deleplace and E. Nell (eds), *Money in Motion*, London: Macmillan.

Greenaway, D. (1995), 'Policy forum: sand in the wheels of international finance, editorial note', *The Economic Journal*, **105**.

Greenwald, B. and J. Stiglitz (1993), 'New and old Keynesians', *Journal of Economic Perspectives*, **7**, 23–44.

Haavelmo, T. (1944), 'The probability approach in econometrics', *Econometrica (supplement)*, **12**, 1–118.

Habermas, J. (1990), 'Beyond the temporalized philosophy of origins: Jacques Derrida's critique of phonocentrism', in *The Philosophical Discourse of Modernity*, London: Polity.

Hahn, F. (1982), 'Reflections on the invisible hand', *Lloyds Bank Review*, **144**, 1–21.

Hahn, F. and R. Solow (1995), *A Critical Essay on Modern Macroeconomic Theory*, Cambridge, MA: MIT Press.

Hall, J. (1986), *Powers and Liberties: The Causes and Consequences of the Rise of the West*, Harmondsworth: Penguin.

Hall, R.L. and C.J. Hitch (1951), 'Price theory and business behaviour', in T. Wilson and P.W.S. Andrews (eds), *Oxford Studies in the Price Mechanism*, Oxford: Clarenden Press.

Hall, S. (1995), 'Macroeconomics and a bit more reality', *Economic Journal,* **105**, 974–88.

Hall, S.G. and S.G.B. Henry (1987), 'Wage models', *National Institute Economic Review*, 70–75.

Hamouda, O.F. and G.C. Harcourt (1988), 'Post Keynesianism: from criticism to coherence?', *Bulletin of Economic Research*, **40**, 1–34.

Hamouda, O. and J. Smithin (1988), 'Some remarks on "Uncertainty and Economic Analysis"', *Economic Journal*, **98**, 159–64.

Handelman, S. (1995), *Comrade Criminal: Russia's New Mafia*, New Haven: Yale University Press.

Haq, M.U., I. Kaul and I. Grunberg (eds) (1996), *The Tobin Tax: Coping with Financial Volatility*, Oxford: Oxford University Press.

Harcourt, G.C. (1987), 'The legacy of Keynes: theoretical methods and unfinished business', in D.A. Reese (ed.), *The Legacy of Keynes, Nobel Conference XXII*, San Francisco: Harper and Row, pp. 1–22.

Harcourt, G.C. (1995a), 'Taming speculators', in *Capitalism, Socialism and Post-Keynesianism*, Aldershot, UK and Brookfield, US: Edward Elgar.

Harcourt, G.C. (1995b), 'A "modest proposal" for taming speculators and putting the world on course to prosperity', *Capitalism, Socialism and Post-Keynesianism*, Aldershot, UK and Brookfield, US: Edward Elgar, ch. 3; originally published in *Economic and Political Weekly*, **29** (28), September 1994, 2490–92.

Harcourt, G. and P. Riach (eds) (1997), *The Second Edition of the General Theory*, London: Routledge.

Hargreaves Heap, S. (1989), *Rationality in Economics*, Oxford: Blackwell.

Hargreaves Heap, S. (1993), 'Post-modernity and new conceptions of rationality in economics', in B. Gerrard (ed.), *The Economics of Rationality*, London: Routledge.

Hargreaves Heap, S. and Y. Varoufakis (1995), *Game Theory: A Critical Introduction*, London: Routledge.

Harland, R. (1987), *Superstructuralism: the Philosophy of Structuralism and Post-Structuralism*, London and New York: Methuen.

Harris, N. (1987), *The End of the Third World*, Harmondsworth: Penguin.
Harrod, R.F. (1939), 'An essay in dynamic theory', *Economic Journal*, **49**, 14–33.
Harrod, R.F. (1951), *The Life of John Maynard Keynes*, New York: Harcourt, Brace.
Harvey, J. (1995), 'The international monetary system and exchange rate determination: 1945 to the present', *Journal of Economic Issues*, **29**.
Hausman, D.M. (1992), *The Inexact and Separate Science of Economics*, Cambridge: Cambridge University Press.
Hayek, F.A. (1931), *Prices and Production,* London: Routledge.
Hayek, F.A. (1937), 'Economics and knowledge', *Economica*, N.S., **4**, 33–54.
Hayek, F.A. (1945), 'The use of knowledge in society', *American Economic Review*, **35**.
Hayek, F.A. (1952), *The Sensory Order,* Chicago: University of Chicago Press.
Hayek, F.A. von (1988), *The Fatal Conceit*, Chicago: University of Chicago Press.
Heckscher, E. (1919), 'The effect of foreign trade on the distribution of income', *Ekonomisk Tidskrift*, **XXI**, translated by S. Laursen and reprinted in H. Ellis and L. Metzler (eds), *Readings in the Theory of International Trade*, London: George Allen and Unwin.
Heiner, R. (1983), 'The origin of predictable behavior', *American Economic Review*, **73**, 560–95.
Hendry, D.F. (1980), 'Econometrics: alchemy or science?', *Economica*, **47**, 387–406, reprinted in *Econometrics: Alchemy or Science?* (1993), Oxford: Blackwell.
Hendry, D.F. (1993), *Econometrics: Alchemy or Science?*, Oxford: Blackwell.
Hendry, D.F. (1995), *Dynamic Econometrics*, Oxford: Oxford University Press.
Hendry, D.F. and M.S. Morgan (1989), 'A re-analysis of confluence analysis', in N. De Marchi and C. Gilbert (eds), special edition on Econometrics, *Oxford Economic Papers*, **41**.
Hewitson, G. (1995), 'Post-Keynesian monetary theory: some issues', *Journal of Economic Surveys*, **9**, 285–310.
Hey, J. (ed.) (1989), *Current Issues in Microeconomics*, London: Macmillan.
Hicks, J.R. (1932), *The Theory of Wages*, London: Macmillan.
Hicks, J.R. (1937), 'Mr Keynes and the "classics": a suggested interpretation', *Econometrica*, **5**, 147–59.
Hicks, J.R. (1967), *Critical Essays in Monetary Theory*, Oxford: Clarendon Press.

Hicks, J.R. (1974), *The Crisis in Keynesian Economics*, New York: Basic Books.

Hicks, J.R. (1975), *The Crisis in Keynesian Economics*, Basil Blackwell, Oxford.

Hicks, J.R. (1979), *Causality in Economics*, New York: Basic Books.

Hicks, J.R. (1985), *Methods of Dynamic Economics*, Oxford: Clarendon Press.

Hieser, R.O. (1952), 'The degree of monopoly power', *Economic Record*, **28** (54), May, 1–12.

Hieser, R.O. (1954), 'Review of J. Steindl, *Maturity and Stagnation in American Capitalism* (1952)', *Economic Record*, **30** (58), May, 106–9.

Hieser, R.O. (1970), 'Wage determination with bilateral monopoly in the labour market', *Economic Record*, **46** (113), March, 55–72.

Hindess, B. and P. Hirst (1977), *Mode of Production and Social Formation*, London: Macmillan.

Hirsch, A. and N. de Marchi (1984), 'Methodology: a comment on Frazer and Boland, I', *American Economic Review*, **74**, 782–88.

Hirsch, F. (1976), *Social Limits to Growth*, Cambridge, MA: Harvard University Press.

Hirschman, A. (1970), *Exit, Voice and Loyalty*, Cambridge, MA: Harvard University Press.

Hirschman, A. (1982a), 'Rival interpretations of market society', *Journal of Economic Literature*, **XX**, 1463–84.

Hirschman, A. (1982b), *Shifting Involvements*, Princeton: Princeton University Press.

Hirschman, A. (1991), *The Rhetoric of Reaction*, Cambridge, MA: Harvard University Press.

Hobsbawm, E. (1990), *Nations and Nationalism Since 1780*, Cambridge: Cambridge University Press.

Hobsbawm, E. (1995), *The Age of Extremes: A History of the World, 1914–1991*, New York: Pantheon.

Hodgson, G.M. (1982), 'Theoretical and policy implications of variable productivity', *Cambridge Journal of Economics*, **6** (3), September, 213–26.

Hodgson, G.M. (1988), *Economics and Institutions: A Manifesto for a Modern Institutional Economics*, Cambridge: Polity Press.

Hodgson, G.M. (1999), *Evolution and Institutions: On Evolutionary Economics and the Evolution of Economics,* Cheltenham, UK and Northampton, MA, US: Edward Elgar.

Hofman, H. (1992), 'Kommissionen er på tynd is' (The EC Commission on shaky grounds), *Samfundsøkonomen*, **11** (3), April, 5–12, Copenhagen.

Holtham, G. (1995), 'Managing the exchange rate system', in J. Michie and

J. Grieve Smith (eds), *Managing the Global Economy*, Oxford: Oxford University Press.

Hoogduin, L. (1987), 'On the difference between the uncertainty and the development of a more general monetary theory', *De Economist*, **135** (1), 54–65.

Hoover, K.D. (1984), 'Methodology: a comment on Frazer and Boland, II', *American Economic Review*, **74**, 789–97.

Howard, M. (1979), *Modern Theories of Income Distribution*, London: Macmillan.

Howard, M. and J. King (1985), *The Political Economy of Marx*, Harlow: Longman.

Howard, M. and J. King (1989), *A History of Marxian Economics, Volume I, 1883–1929*, Princeton: Princeton University Press.

Howard, M. and J. King (1992), *A History of Marxian Economics, Volume II, 1929–1990*, Princeton: Princeton University Press.

Hume, D. (1740), *An Abstract of a Treatise of Human Nature; A Pamphlet Hitherto Unknown*, reprinted with an introduction by J.M. Keynes and P. Sraffa (1938), Cambridge: Cambridge University Press.

Hutton, W. (1994), *The State We're In*, London: Jonathon Cape.

Hutton, W. (1996), *The State We're In*, London: Vintage.

Isard, P. (1995), *Exchange Rate Economics*, Cambridge: Cambridge University Press.

Jensen, H. (1983), 'J.M. Keynes as a Marshallian', *Journal of Economic Issues*, **18**, 67–94.

Jespersen, J. (1994a), 'Europæisk Integration – valutarisk set', working paper, Roskilde Universitetscenter, June.

Jespersen, J. (1994b), 'Environment as a macroeconomic issue: the missing link of the Maastricht Treaty', in P.-O. Bergeron and M.-A. Gaiffe (eds), *Croissance, Compétitivité, Emploi: à la recherche d'un modèle pour l'Europe*, Brugge, Collège d'Europe.

Jespersen, J. (1995), 'The Monetary Union and the European Central Bank', in P. Arestis and V. Chick (eds), *Finance, Development and Structural Change: Post-Keynesian Perspectives*, Aldershot, UK and Brookfield, US: Edward Elgar.

Johansen, S. (1988), 'Statistical analysis of cointegration vectors', *Journal of Economic Dynamics and Control*, **12** (2), 231–54.

Johanson, J. and J.-E. Vahlne (1977), 'The internationalization process of the firm: a model of knowledge development and increasing foreign market commitments', *Journal of International Business Studies*, **8** (1), 23–32.

Johanson, J. and F. Wiedersheim-Paul (1975), 'Psychic distance and buyer–seller interaction', *Organisasjon, Marked og Samfund*, **16** (5), 308–24.

Johnson, C. (1993), *System and Writing in the Philosophy of Jacques Derrida*, Cambridge: Cambridge University Press.

Jones, R. and J. Ostroy (1984), 'Flexibility and uncertainty', *Review of Economic Studies*, **51**, 13–32.

Kahn, R.F. (1931), 'The relation of home investment to employment', *Economic Journal*, **41**, 173–98.

Kahneman, D. and A. Tversky (1973), 'On the psychology of prediction', *Psychological Review*, **80**, 237–51.

Kahneman, D., P. Slovic and A. Tversky (1982), *Judgement Under Uncertainty: Heuristics and Biases*, New York: Cambridge University Press.

Kaldor, N. (1978), *Further Essays in Economic Theory*, London: Duckworth.

Kaldor, N. (1983), 'Keynesian economics after fifty years', in D. Worswick and J. Trevithick (eds), *Keynes and the Modern World*, Cambridge: Cambridge University Press.

Kalecki, M. (1936), 'Review of Keynes's General Theory', reprinted in M. Kalecki (1990), *Collected Writings*, vol. I, (ed.) J. Osiatinski, Oxford: Clarendon.

Kalecki, M. (1941), 'The theory of long run distribution of the production industry', *Oxford Economic Papers*, June.

Kalecki, M. (1943), 'Political aspects of full employment', *Political Quarterly*, **14** (4), October–December, 322–31.

Kalecki, M. (1954), *Theory of Economic Dynamics*, London: Allen and Unwin.

Kanth, R. (1986), *Political Economy and Laissez-Faire*, New York: Rowan and Littlefield.

Kaul, I. and J. Langmore (1996), 'Potential uses of the revenue from a Tobin tax' in Haq *et al.* (1996), pp. 255–72.

Kay, N. (1984), *The Emergent Firm: Knowledge, Ignorance and Surprise in Economic Organisation*, London: Macmillan.

Kelsey, D. and J. Quiggin (1992), 'Theories of choice under ignorance and uncertainty', *Journal of Economic Surveys*, **6**, 133–53.

Kenen, P.B. (1995), 'Capital controls, the EMS and EMU', *Economic Journal*, **105**, 181–92.

Kenen, P.B. (1996), 'The feasibility of taxing foreign exchange transactions', in Haq *et al.* (1996), pp. 109–28.

Kennedy, P. (1989), *The Rise and Fall of Great Powers*, London: Fontana.

Keohane, R. (ed.) (1986), *Neorealism and its Critics*, New York: Columbia University Press.

Keynes, J.M. (1910), '8 lectures on company finance and stock exchange, lent term' (Notebook), Keynes's MSS, King's College Library, Cambridge, UA/6/3.

Keynes, J.M. (1921), *A Treatise on Probability*, London: Macmillan.
Keynes, J.M. (1925), *A Short View of Russia*, London: Leonard and Virginia Woolf.
Keynes, J.M. (1926), *The End of Laissez-Faire*, Edinburgh: Neill & Co.
Keynes, J.M. (1936), *The General Theory of Employment, Interest, and Money*, London: Macmillan and New York: Harcourt, Brace and Co.
Keynes, J.M. (1937), 'The General Theory of Employment', *Quarterly Journal of Economics*, **51**, February, 209–23, reprinted in J.M. Keynes (1971–1989), Volume XIV.
Keynes, J.M. (1939), 'Professor Tinbergen's Method', *Economic Journal*, **44**, 558–68.
Keynes, J.M. (1940), 'Comment', *Economic Journal*, **50**, 154–56.
Keynes, J.M. (1971–1989)
'Indian Currency and Finance', *The Collected Writings of John Maynard Keynes*, Volume I, London: Macmillan for the Royal Economic Society.
'The Economic Consequences of the Peace', *The Collected Writings of John Maynard Keynes*, Volume II, London: Macmillan for the Royal Economic Society.
'A Revision of the Treaty: Being a Sequel to The Economic Consequences of the Peace', *The Collected Writings of John Maynard Keynes*, Volume III, London: Macmillan for the Royal Economic Society.
'A Tract on Monetary Reform', *The Collected Writings of John Maynard Keynes*, Volume IV, London: Macmillan for the Royal Economic Society.
'A Treatise on Money: The Pure Theory of Money', *The Collected Writings of John Maynard Keynes*, Volume V, London: Macmillan for the Royal Economic Society.
'A Treatise on Money: The Applied Theory of Money', *The Collected Writings of John Maynard Keynes*, Volume VI, London: Macmillan for the Royal Economic Society.
'The General Theory of Employment, Interest and Money', *The Collected Writings of John Maynard Keynes*, Volume VII, London: Macmillan for the Royal Economic Society.
'A Treatise on Probability', *The Collected Writings of John Maynard Keynes*, Volume VIII, London: Macmillan for the Royal Economic Society.
'Essays in Persuasion', *The Collected Writings of John Maynard Keynes*, Volume IX, London: Macmillan for the Royal Economic Society.
'Essays in Biography', *The Collected Writings of John Maynard Keynes*, Volume X, London: Macmillan for the Royal Economic Society.
'Economic Articles and Correspondence', in D. Moggridge (ed.), *The*

Collected Writings of John Maynard Keynes, Volume XI, London: Macmillan for the Royal Economic Society.
'Economic Articles and Correspondence and Editorial', in D. Moggridge (ed.), *The Collected Writings of John Maynard Keynes*, Volume XII, London: Macmillan for the Royal Economic Society.
'The General Theory and After, Part I: Preparation', in D. Moggridge (ed.), *The Collected Writings of John Maynard Keynes*, Volume XIII, London: Macmillan for the Royal Economic Society.
'The General Theory and After, Part II: Defence and Development', in D. Moggridge (ed.), *The Collected Writings of John Maynard Keynes*, Volume XIV, London: Macmillan for the Royal Economic Society.
'Activities, 1906–1914: India and Cambridge', in E. Johnson (ed.), *The Collected Writings of John Maynard Keynes*, Volume XV, London: Macmillan for the Royal Economic Society.
'Activities, 1914–1919: The Treasury and Versailles', in E. Johnson (ed.), *The Collected Writings of John Maynard Keynes*, Volume XVI, London: Macmillan for the Royal Economic Society.
'Activities, 1920–1922: Treaty Revision and reconstruction', in E. Johnson (ed.), *The Collected Writings of John Maynard Keynes*, Volume XVII, London: Macmillan for the Royal Economic Society.
'Activities, 1922–1932: The End of Reparations', in E. Johnson (ed.), *The Collected Writings of John Maynard Keynes*, Volume XVIII, London: Macmillan for the Royal Economic Society.
'Activities, 1922–1929: The Return to Gold and Industrial Policy', in D. Moggridge (ed.), *The Collected Writings of John Maynard Keynes*, Volume XIX, London: Macmillan for the Royal Economic Society.
'Activities, 1929–1931: Rethinking Employment and Unemployment Policies', in D. Moggridge (ed.), *The Collected Writings of John Maynard Keynes*, Volume XX, London: Macmillan for the Royal Economic Society.
'Activities, 1931–1939: World Crises and Policies in Britain and America', in D. Moggridge (ed.), *The Collected Writings of John Maynard Keynes*, Volume XXI, London: Macmillan for the Royal Economic Society.
'Activities, 1939–1945: Internal War Finance', in D. Moggridge (ed.), *The Collected Writings of John Maynard Keynes*, Volume XXII, London: Macmillan for the Royal Economic Society.
'Activities, 1940–1943: External War Finance', in D. Moggridge (ed.), *The Collected Writings of John Maynard Keynes*, Volume XXIII, London: Macmillan for the Royal Economic Society.
'Activities, 1944–1946: The Transition to Peace', in D. Moggridge (ed.), *The Collected Writings of John Maynard Keynes*, Volume XXIV, London: Macmillan for the Royal Economic Society.

'Activities, 1940–1944: Shaping the Post-War World, the Clearing Union', in D. Moggridge (ed.), *The Collected Writings of John Maynard Keynes*, Volume XXV, London: Macmillan for the Royal Economic Society.

'Activities, 1941–1946: Shaping the Post-War World, Bretton Woods and Reparations', in D. Moggridge (ed.), *The Collected Writings of John Maynard Keynes*, Volume XXVI, London: Macmillan for the Royal Economic Society.

'Activities, 1940–1946: Shaping the Post-War World, Employment and Commodities', in D. Moggridge (ed.), *The Collected Writings of John Maynard Keynes*, Volume XXVII, London: Macmillan for the Royal Economic Society.

'Social, Political and Literary Writings', in D. Moggridge (ed.), *The Collected Writings of John Maynard Keynes*, Volume XXVIII, London: Macmillan for the Royal Economic Society.

'The General Theory and After, A Supplement', in D. Moggridge (ed.), *The Collected Writings of John Maynard Keynes*, Volume XIX, London: Macmillan for the Royal Economic Society.

'Bibliography and Index', in D. Moggridge (ed.), *The Collected Writings of John Maynard Keynes*, Volume XXX, London: Macmillan for the Royal Economic Society.

King, J.E. (1990), *Labour Economics*, 2nd edn, London: Macmillan.

King, J.E. (1995), *Conversations with Post Keynesians*, London: Macmillan.

King, J.E. (1996), 'The First Post Keynesian: Joan Robinson's "Essays in the Theory of Employment" (1937)', in P. Arestis and M.C. Sawyer (eds), *Employment, Economic Growth and the Tyranny of the Market: Essays in Honour of Paul Davidson*, Cheltenham, UK and Brookfield, US: Edward Elgar, pp. 164–84.

King, J.E., R. Rimmer, and S. Rimmer (1992), 'The law of the shrinking middle: inequality of earnings in Australia, 1975–1989', *Scottish Journal of Political Economy* **39** (4), November, 391–412.

Klamer, A.J. and D. Colander (1990), *The Making of an Economist*, Boulder, CO: Westview Press.

Klamer, A.J., D.N. McCloskey and R. Solow (eds) (1988), *The Consequences of Economic Rhetoric*, Cambridge: Cambridge University Press.

Knight, F.H. (1921), *Risk, Uncertainty and Profit*, New York: Houghton Mifflin.

Knight, F.H. (1933), *Risk Uncertainty and Profit*, 2nd edition, London: London School of Economics.

Koopman B.C. (1940), 'The axioms and algebra of intuitive probability', *Annals of Mathematics*, **41**, 269–92.

Koopmans, T. (1957), *Three Essays on the State of Economic Science*, New York: McGraw-Hill.

Kregel, J.A. (1973), 'Economic methodology in the face of uncertainty: the modelling methods of Keynes and the Post Keynesians', *Economic Journal*, **86**, 209–25.

Kregel, J.A. (1980), 'Marx, Keynes, and social change: is Post-Keynesian theory Neo-Marxist?', in E. Nell (ed.), *Growth, Profits and Property*, Cambridge: Cambridge University Press.

Kreps, D.M. (1988), *Notes on the Theory of Choice*, Boulder, CO: Westview Press.

Kreps, D.M. (1990), *A Course in Microeconomic Theory*, Princeton: Princeton University Press.

Kriesler, P. (1996), 'Microfoundations: a Kaleckian perspective', in J.E. King (ed.), *An Alternative Macroeconomic Theory: the Kaleckian Model and Post Keynesian Economics*, Boston: Kluwer, pp. 55–72.

Kristol, I. (1983), *Reflections of a Neoconservative*, New York: Basic Books.

Krugman, P. (1988), 'The persistent US trade deficit', *Australian Economic Papers*, December.

Krugman, P. (1989), 'The case for stabilizing exchange rates', *Oxford Review of Economic Policy*, **5**.

Krugman, P. (1991a), 'Myths and realities of US competitiveness', *Science Magazine*, November.

Krugman, P. (1991b), *Geography and Trade*, Cambridge, MA: MIT Press.

Krugman, P. (1994a), 'Competitiveness: a dangerous obsession', *Foreign Affairs*, March/April.

Krugman, P. (1994b), *Peddling Prosperity*, New York: Norton.

Krugman, P. (1996), 'What difference does globalization make?', *Business Economics*, January.

Krugman, P. and L. Taylor (1978), 'The contractionary effects of devaluation', *Journal of International Economics*, **8**, 445–56.

Kuhn, T.S. (1962), *The Structure of Scientific Revolutions*, Chicago: University of Chicago Press.

Kurz, M. (1991a), 'On rational belief equilibria', discussion paper, Stanford University.

Kurz, M. (1991b), 'On the structure and diversity of rational beliefs', discussion paper, Stanford University.

Kurz, M. (1993), 'Rational preferences and rational beliefs', unpublished manuscript.

Kyburg, H.E. (1992), 'Getting fancy with probability', *Synthèse*, **90**, 189–203.

Kyburg, H.E. and H.E. Smokler (eds) (1964), *Studies in Subjective Probabilities*, New York: Wiley.

Kydland, F.E. and E.C. Prescott (1982), 'Time to build and aggregate fluctuations', *Econometrica*, **50**, 1345–70.

Lachmann, L.M. (1986), *The Market as an Economic Process,* Oxford: Basil Blackwell.

Laclau, E. and C. Mouffe (1985), *Hegemony and Socialist Strategy: Towards a Radical Democratic Politics*, London and New York: Verso.

Lakatos, I. (1974), 'Falsification and the methodology of scientific research programmes' in I. Lakatos and A. Musgrave (eds), *Criticism and the Growth of Knowledge*, Cambridge: Cambridge University Press.

Langlois, R.N. (1984), 'Internal organisation in a dynamic context: some theoretical consideration', in M. Jussawalla and H. Ebenfield (eds), *Communication and Information Economics*, Amsterdam: North-Holland.

Langlois, R.N. (1988), 'Economic change and the boundaries of the firm', *Journal of Institutional and Theoretical Economics*, **144**, 635–57.

Langlois, R.N. (1992), 'Transaction cost economics in real time', *Industrial and Corporate Change*, **1**, 456–65.

Langlois, R.N. & M. Everett (1992), 'Complexity, genuine uncertainty, and the economics of organisation', *Human Systems Management*, **11**, 67–76.

Laury, J.S.E., G.R. Lewis and P.A. Ormerod (1978), 'Properties of macro-economic models of the UK economy: a comparative survey', *National Institute Economic Review,* **83**.

Lavoie, M. (1992a), 'Towards a new research programme for Post-Keynesianism and Neo-Ricardianism', *Review of Political Economy*, **4**.

Lavoie, M. (1992b), *Foundations of Post Keynesian Analysis*, Aldershot, UK and Brookfield, US: Edward Elgar.

Lavoie, M. (1995), 'Horizontalism, structuralism, liquidity preference and the principle of increasing risk', working paper no. 9513E, Ottawa, Ontario: University of Ottawa.

Lavoie, M. (1996), 'Mark up pricing versus normal cost pricing in Post Keynesian models', *Review of Political Economy*, **8**, 57–66.

Lawlor, M.S. (1994), 'The own-rates framework as an interpretation of The General Theory: a Suggestion for complicating the Keynesian theory of money', in J.B. Davis (ed.), *The State of Interpretation of Keynes*, Boston: Kluwer Academic Publishers.

Lawson, T. (1981), 'Keynesian model-building and the rational expectations critique', *Cambridge Journal of Economics*, **5**, 311–26.

Lawson, T. (1985a), 'Keynes, prediction and econometrics', in T. Lawson and H. Pesaran (eds), *Keynes' Economics: Methodological Issues*, London: Croom Helm.

Lawson, T. (1985b), 'Uncertainty and economic analysis', *Economic Journal*, **95**, 909–27.

Lawson, T. (1987), 'The relative/absolute nature of knowledge and economic analysis', *Economic Journal*, **97**, 951–70.

Lawson, T. (1988), 'Probability and uncertainty in economic analysis', *Journal of Post Keynesian Economics*, **11**, 95–70.

Lawson, T. (1989a), 'Realism and instrumentalism in the development of econometrics', *Oxford Economic Papers*, **41**, 236–58.

Lawson, T. (1989b), 'Abstractions, tendencies and stylised facts: a realist approach to economic analysis', *Cambridge Journal of Economics*, **13**, 59–78.

Lawson, T. (1994a), 'The nature of Post Keynesianism and its links to other traditions: a realist perspective', *Journal of Post Keynesian Economics*, **16**, 499–538.

Lawson, T. (1994b), 'A realist theory for economics' in R.E. Backhouse (ed.), *New Directions in Economic Methodology*, London: Routledge.

Lawson, T. (1994c), 'Methodology in economics' in P. Arestis and M. Sawyer (eds), *The Elgar Companion to Radical Political Economy*, Aldershot, UK and Brookfield, US: Edward Elgar.

Lawson, T. (1995a), 'The "Lucas Critique": A Generalisation', *Cambridge Journal of Economics*, **19**, 257–76.

Lawson, T. (1995b), in S.C. Dow and J. Hillard (eds), *Keynes, Knowledge and Uncertainty,* Aldershot, UK and Brookfield, US: Edward Elgar, pp. 77–106.

Lawson, T. (1997), *Economics and Reality*, London: Routledge.

Lawson, T., R. Tarling, and F. Wilkinson (1982), 'Charges in the inter-industry structure of wages: some theoretical positions', *Cambridge Journal of Economics*, **6** (3), September, 227–9.

Layard, R. and S. Nickell (1987), 'The labour market', in R. Dornbusch and R. Layard (eds), *The Performance of the British Economy*, Oxford: Clarendon Press.

Layard, R., S. Nickell and R. Jackman (1991), *Unemployment*, Oxford: Oxford University Press.

Leamer, E. (1983), 'Let's take the con out of econometrics', *American Economic Review*, **73**, 31–44.

Lechte, J. (1994), *Fifty key contemporary thinkers: from structuralism to postmodernity*, London and New York: Routledge.

Leibenstein, H. (1968), 'Entrepreneurship and development', *American Economic Review*.

Leibenstein, H. (1987), *Inside the Firm: the Inefficiencies of Hierarchy*, Cambridge, MA: Harvard University Press.

Leijonhufvud, A. (1969), *Keynes and the Classics*, London: Institute of Economic Affairs.

Leontief, W.A. (1971), 'Theoretical assumptions and non-observed facts', *American Economic Review,* **61**, 1–7.

Lester, R.A. (1946), 'Shortcomings of marginal analysis for wage–

employment problems', *American Economic Review*, **36** (1), March, 63–82.

Levi, I. (1974), 'On indeterminate probabilities', *Journal of Philosophy*, **71**, 391–418.

Levi, I. (1986), *Hard Choices: Decision Making Under Unresolved Conflict*, Cambridge: Cambridge University Press.

Levy, J. (1989), 'The causes of war: a review of theories and evidence', in Tetlock *et al.* (1989), 209–33.

Littleboy, B. (1990), *On Interpreting Keynes: A Study in Reconciliation*, London and New York: Routledge.

Loasby, B.J. (1976), *Choice, Complexity and Ignorance: An Enquiry into Economic Theory and Practice of Decision Making*, Cambridge: Cambridge University Press.

Loasby, B.J. (1986), 'Competition and imperfect knowledge: the contribution of G.B. Richardson', *Scottish Journal of Political Economy*, **33**, 145–58.

Loubser, J., R.C. Baum, A. Effrat and V.M. Lidz (eds) (1976), *Explorations in General Theory in Social Science, Volume Two*, New York: Free Press.

Lucas Jr, R.E. (1978), 'Asset prices in an exchange Economy', *Econometrica*, **46**, 1429–45.

Lucas Jr, R.E. (1980), 'Methods and problems in business cycle theory', *Journal of Money, Credit and Banking*, **12**, 696–715.

Lucas Jr, R.E., (1986), 'Adaptive behaviour and economic theory', *Journal of Business*, **59**, Supplement, 5401–26.

Luenberger, D. (1995), *Microeconomic Theory*, New York: McGraw-Hill.

Luhmann, N. (1979), *Trust and Power*, New York: John Wiley.

Lukes, S. (1974), *Power: A Radical View*, London: Macmillan.

Machina, M.J. (1989), 'Choice under uncertainty: problems solved and unsolved' in J. Hey (ed.) (1989), pp. 12–46.

Machina, M.J. and D. Schmeidler (1992), 'A more robust definition of subjective probability, *Econometrica*, **60** (4), 745–80.

Maddison, A. (1991), *Dynamic Forces in Capitalist Development*, Oxford: Oxford University Press.

Mair, D. and A. Miller (eds) (1992), *A Modern Guide to Economic Thought*, Aldershot, UK and Brookfield, US: Edward Elgar.

Mäki, U. (1988), 'How to combine rhetoric and realism in the methodology of economics', *Economics and Philosophy*, **4**, 89–109.

Mäki, U. (1989), 'On the problem of realism in economics', *Ricerche Economiche*, **43**, 176–98, reprinted in B. Caldwell (ed.), *The Philosophy and Methodology of Economics*, Aldershot, UK and Brookfield, US: Edward Elgar.

Mäki, U. (1990), 'Scientific realism and Austrian explanation', *Review of Political Economy*, **2**, 310–44.

Mäki, U. (1992a), 'On the method of isolation in economics', in C. Dilworth (ed.), *Idealization IV: Intelligibility in Science*, special issue of *Poznan Studies in the Philosophy of The Sciences and the Humanities*, **26**, 319–54.

Mäki, U. (1992b), 'Friedman and realism', *Research in the History of Economic Thought and Methodology*, **10**, 171–95.

Mäki, U. (1992c), 'The market as an isolated causal process: a metaphysical ground for realism', in B. Caldwell and S. Boehm (eds), *Austrian Economics: Tensions and New Developments*, Dordrecht: Kluwer, pp. 35–59.

Mäki, U. (1993a), 'Isolation, idealization and truth in economics', in B. Hamminga and N. de Marchi (eds), *Idealization in Economics*, special issue of *Poznan Studies in the Philosophy of the Sciences and the Humanities*, **38**, 147–68.

Mäki, U. (1993b), 'Economics with institutions: agenda for methodological research', in U. Mäki, C. Knudsen and B. Gustafsson (eds), *Rationality, Institutions and Economic Methodology*, London: Routledge.

Mäki, U. (1994), 'Reorienting the assumptions issue', in R. Backhouse (ed.), *New Directions in Economic Methodology*, London: Routledge, pp. 236–56.

Mäki, U. (1995), 'Diagnosing McCloskey', *Journal of Economic Literature*, **33**, 1300–318.

Mäki, U. (1998a), 'Is Coase a realist?', *Philosophy of the Social Sciences*, **28**, 5–31.

Mäki, U. (1998b), 'Against Posner against Coase against theory', *Cambridge Journal of Economics*, **22**, 587–95.

Mäki, U. (1998c), 'Realisticness', in J. Davis, W. Hands and U. Mäki (eds), *Handbook of Economic Methodology*, Cheltenham, UK and Northampton, US: Edward Elgar.

Mäki, U. (1998d), 'Aspects of realism about economics', *Theoria*, **13**, 301–19.

Mäki, U. (ed.) (2001), *The Economic World View: Studies in the Ontology of Economics*, Cambridge: Cambridge University Press.

Malcolmson, D. (1984), 'Efficient labour organisations: incentives, power and the transaction cost approach', in F. Stephen (ed.), *Firm Organisations and Labour*, London: Macmillan.

Malinvaud, E. (1985), *Lectures on Microeconomic Theory*, Amsterdam: North-Holland.

Mann, M. (1986), *The Sources of Social Power, Volume I*, Cambridge: Cambridge University Press.

Mann, M. (1988), *States, War and Capitalism*, Oxford: Blackwell.

Mann, M. (1993), *The Sources of Social Power, Volume II*, Cambridge: Cambridge University Press.

Manning, A. (1995), 'How do we know that real wages are too high?', *Quarterly Journal of Economics*, **110** (4), November, 1111–25.

Marcet, A. and T.J. Sargent (1988), 'The fate of systems with "adaptive" expectations', *American Economic Review, Papers and Proceedings*, **78**, 168–72.

Marcet, A. and T.J. Sargent (1989a), 'Convergence of least squares learning mechanisms in self-referential stochastic models', *Journal of Economic Theory*, **48**, 337–68.

Marcet, A. and T.J. Sargent (1989b), 'Convergence of least squares learning in environments with hidden state variables and private information', *Journal of Political Economy*, **97**, 1306–22.

Marglin, S. (1974), 'What do bosses do? The origins and functions of hierarchy in capitalist production', *Review of Radical Political Economics*, **6**, 60–112.

Marris, R. (1964), *The Economic Theory of 'Managerial' Capitalism*, London: Macmillan.

Marris, R. (1997), in Harcourt and Riach (1997), vol 1, pp. 52–82.

Marris, R. and D. Mueller (1980), 'The Corporation, Competition and the Invisible Hand', reprinted in D. Mueller (ed.), *The Modern Corporation: Profits, Power, Growth and Performance*, London: Harvester Wheatsheaf, 1986.

Marshall, A. (1879), *The Pure Theory of Foreign Trade*, reprinted London: London School of Economics and Political Science, 1930.

Marshall, A. (1920), *Principles of Economics,* 8th edn, London: Macmillan.

Marshall, A. (1923), *Money, Credit and Commerce*, London: Macmillan.

Marshall, A. (1994), 'Ye machine', *Research in the History of Economic Thought and Methodology*, Archival Supplement 4, Greenwich, CT: JAI Press, 116–32.

Marshall, T. (1992), *Citizenship and Social Class*, London: Pluto Press.

Marx, K. (1867), *Capital, Volume I*, London: Lawrence and Wishart.

Marx, K. (1967), *Capital*, Three Volumes, Moscow: Progress Publishers.

Marx, K. (1973), *Grundrisse*, New York: Random House.

Marx, K. (1976), *Capital*, vol. 1. (translated by B. Fowkes), Harmondsworth: Penguin.

Marx, K. (1982), *The Poverty of Philosophy*, New York: International Publishers.

Mas-Colell, A., M. Whinston and J. Green (1995), *Microeconomic Theory*, New York: Oxford University Press.

Matthei, J. (1984), 'Rethinking Scarcity: Neoclassicism, NeoMalthusianism and NeoMarxism', *Review of Radical Political Economics*, **16**.

Mayer, A. (1981), *The Persistence of the Old Regime*, New York: Pantheon.
Mayer, T. (1993), *Truth versus Precision in Economics*, Aldershot, UK and Brookfield, US: Edward Elgar.
McCallum, B.T. (1970), 'The effect of demand on prices in British manufacturing: another view', *Review of Economic Studies*, **37**, 147–56.
McCann Jr, C.R. (1994), *Probability Foundations of Economic Theory*, London: Routledge.
McCloskey, D.N. (1983), 'The rhetoric of economics', *Journal of Economic Literature,* **21**, 481–517.
McCloskey, D.N. (1985), *The Rhetoric of Economics*, Madison: University of Wisconsin Press.
McCloskey, D.N. (1986), *The Rhetoric of Economics*, Brighton: Wheatsheaf.
McCloskey, D.N. (1991), *Rhetoric and Persuasion in Economics*, Cambridge: Cambridge University Press.
McCloskey, D.N. (1994), *Knowledge and Persuasion in Economics*, Cambridge: Cambridge University Press.
McCloskey, D.N. (1995), 'Modern epistemology: against analytic philosophy: a reply to Mäki', *Journal of Economic Literature*, **33**, 1319–23.
McCloskey, D.N. and S. T. Ziliak (1996), 'The standard error of regressions', *Journal of Economic Literature*, **34**, 97–114.
McConnell, C.R. and S.L. Brue (1992), *Contemporary Labor Economics*, 3rd edn, New York: McGraw-Hill.
McDonald, I.M. and R.M. Solow (1981), 'Wage bargaining and employment', *American Economic Review*, **71** (5), December, 896–908.
McNally, D. (1988), *Political Economy and the Rise of Capitalism*, Berkeley: University of California Press.
McNally, D. (1993), *Against the Market*, London: Verso.
Mearsheimer, J.J. (1990), 'Back to the future', *International Security*, **15** (1), 5–56.
Meek, R. (1971), 'Smith, Turgot and the "four stages" theory', *History of Political Economy*, **3**, 9–27.
Meek, R. (1973), *Precursors of Adam Smith*, London: Dent.
Meek, R. (1976), *Social Science and the Ignoble Savage*, Cambridge: Cambridge University Press.
Mellis, C. and R. Whittaker (1998), 'The Treasury forecasting record: some new results', *National Institute Economic Review*, **164**, 65–79.
Mendez, R.P. (1996), 'Harnessing the global foreign currency market: proposal for a foreign currency exchange (FXE)', *Review of International Political Economy*, **3**, 498–512.
Mercer, J. (1995), 'Anarchy and identity', *International Organisation*, **49**, 229–52.

Messori, M. (1985), 'Le circuit de la monnaie: acquis et problèmes non résolus', in R. Arena and A. Graziani (eds), *Production, Circulation et Monnaie*, Paris: Presses Universitaires de France, pp. 207–41.

Messori, M. and R. Tamborini (1993), 'Money, credit and finance in a sequence economy', discussion paper 20, Dipartimento di Scienze Economiche, University of Rome La Sapienza.

Milberg, W. (1996), 'Globalization and international competitiveness', paper presented at fourth Post Keynesian Workshop, University of Tennessee, Knoxville.

Milgrom, P. and J. Roberts (1992), *Economics, Organisation and Management*, Englewood Cliffs: Prentice-Hall.

Mill, J.S. (1836), 'On the definition of political economy and the method of investigation proper to it' in J.M. Robson (ed.) (1967), *Collected Works of John Stuart Mill*, vol. 4, Toronto: University of Toronto Press.

Mill, J.S. (1909), *Principles of Political Economy, with Some of their Applications to Social Philosophy*, (ed.) W.J. Ashley, London: Longmans, Green and Co.

Mini, P. (1974), *Philosophy and Economics: The Origins and Development of Economic Theory*, Gainesville: The University Presses of Florida.

Mini P. (1994), *J.M. Keynes: A Study in the Psychology of Original Work*, London: Macmillan.

Minsky, H.P. (1976), *John Maynard Keynes*, London: Macmillan.

Minsky, H.P. (1982), *Can 'It' Happen Again? Essays on Instability and Finance*, New York: M.E. Sharpe.

Mintzberg, Henry (1973), *The Nature of Management Work*, New York, Harper and Row.

Mirowski, P. (1994), 'A visible hand in the market place of ideas: precision measurement as arbitrage', *Science in Context*, **7**, 563–89.

Mirowski, P. and S. Sklivas (1991), 'Why econometricians don't replicate (although they do reproduce)?', *Review of Political Economy*, **3**, 146–63.

Mitchell, D.J.B. (1993), 'Keynesian, old Keynesian, and new Keynesian wage nominalism', *Industrial Relations* **32** (1), Winter, 1–29.

Mizon, G.E (1995), 'Progressive modelling of macroeconomic time series: the LSE methodology', *European University Institute Working paper ECO 95110,* Florence.

Modigliani, F. (1944), 'Liquidity preference and the theory of interest and money', *Econometrica*, **12**, 45–88.

Moggridge, D.E. (1992), *Maynard Keynes: An Economist's Biography*, London and New York: Routledge.

Moore, B. (1966), *Social Origins of Dictatorship and Democracy*, Harmondsworth: Penguin.

Moore, B. (1996), 'M-C-M' and sequence analysis: the central role of interest rates in a monetary theory of production', paper presented to the fourth Post Keynesian Workshop, June, California: University of California.

Moore, B.J. (1988), *Horizontalists and Verticalists: The Macroeconomics of Credit Money*, Cambridge: Cambridge University Press.

Moore, B.J. (1991), 'Money supply endogeneity: "reserve price setting", or "reserve quantity setting"?', *Journal of Post Keynesian Economics*, **13**, 404–13.

Moore, B.J. (1995), 'The exogeneity of short-term interest rates: a reply to Wray', *Journal of Post Economic Issues*, **29**, 258–66.

Moore, G.E. (1903), *Principia Ethica*, Cambridge: Cambridge University Press.

Morriss, P. (1987), *Power: A Philosophical Analysis*, Manchester: Manchester University Press.

Morrow, J. (1985), 'A continuous-outcome expected utility theory of war', *Journal of Conflict Resolution*, **29**, 473–502.

Mueller, D. (1989), *Public Choice II*, Cambridge: Cambridge University Press.

Mullin, T. (1993), 'A dynamical systems approach to time series Analysis', in T.Mullin (ed.), *The Nature qf Chaos*, Oxford: Oxford Scientific Publications.

Mussa, M. (1986), 'Nominal exchange rate regimes and the behavior of real exchange rates: evidence and implications', *Carnegie–Rochester Conference Series on Public Policy*, **25**, 117–214.

Mussella, M. and C. Panico (1993), 'Kaldor on endogenous money and interest rates', in G. Mongiovi and C. Rühl (eds), *Macroeconomic Theory: Diversity and Convergence*, Aldershot, UK and Brookfield, US: Edward Elgar.

Neild, R. (1963), *Pricing and Employment in the Trade Cycle*, Cambridge: Cambridge University Press.

Nelson, J. (1996), *Feminism, Objectivity and Economics*, London: Routledge.

Nelson, R.R. and S.G. Winter (1982), *An Evolutionary Theory of Economic Change*, Cambridge, MA: Harvard University Press.

von Neumann, J. and O. Morgenstern (1944), *Theory of Games and Economic Behaviour*, Princeton: Princeton University Press.

Newbould, G.D., P.J. Buckley and J. Thurwell (1978), *Going International – The Experience of Smaller Companies Overseas*, New York: Halstead Press.

Newman, P. (1965), *The Theory of Exchange*, Englewood Cliffs: Prentice-Hall.

Nickell, S. (1990), 'Unemployment: a survey', *Economica*, 391–439.
Norris, C. (1987), *Derrida*, Hammersmith, London: Fontana Press.
North, D. (1990), *Institutions, Institutional Change and Economic Performance*, Cambridge: Cambridge University Press.
Nozick, R. (1974), *Anarchy, State and Utopia*, New York: Basic Books.
Nye, J. (1993), *Understanding International Conflicts*, New York: Harper Collins.
O'Donnell, R.M. (1982), 'Keynes, philosophy and economics: an approach to rationality and uncertainty', unpublished doctoral dissertation, Cambridge University.
O'Donnell, R.M. (1989), *Keynes's Philosophy, Economics and Politics*, London: Macmillan.
O'Donnell, R.M. (1990), 'Keynes on mathematics: philosophical applications and economic applications', *Cambridge Journal of Economics*, **14**, 29–48.
O'Donnell, R.M. (1991), 'Keynes on probability, expectations and uncertainty', in R.M. O'Donnell (ed.), *Keynes as Philosopher–Economist*, London: Macmillan, pp. 3–60.
OECD (1993), *Economic Outlook,* June, Paris.
OECD (1995), *Tax Revenue Statistics*, Paris: OECD.
Oller, L.-E. and B. Barot (1999), 'Comparing the accuracy of European GDP forecasts', National Institute of Economic Research, Stockholm, Sweden.
Olson, M. (1965), *The Logic of Collective Action*, Cambridge, MA: Harvard University Press.
Olson, M. (1982), *The Rise and Decline of Nations*, New Haven: Yale University Press.
Olson, M. (1993), 'Dictatorship, democracy and development', *American Political Science Review*, **87**, 567–76.
Ordershook, P. (1986), *Game Theory and Political Theory*, Cambridge: Cambridge University Press.
Organisation for Economic Co-operation and Development (1995), *Revenue Statistics 1995*, Paris: OECD.
Orléan, A. (1989), 'Mimetic contagion and speculative bubbles', *Theory and Decision*, **27**, 63–92.
Ormerod, P. (1994a), 'On inflation and unemployment', in J. Michie and J. Grieve-Smith (eds), *Unemployment in Europe*, New York: Academic Press, Harcourt Brace.
Ormerod, P. (1994b), *The Death of Economics*, London: Faber and Faber.
Ormerod, P. (1995), 'Local linear approximations to non-linear systems in economics', mimeo, Post-Orthodox Economics, London.

Ormerod, P. and M. Campbell (1997), 'Predictability and economic time series', in C. Heij, H. Schumacher, B. Hanzon and K. Praagam (eds), *System Dynamics in Economic and Financial Models*, New York: John Wiley.

Ormerod, P. and C. Mounfield (2000), 'Random matrix theory and the failure of macroeconomic forecasts', *Physica A*, **280**, p. 497.

Pagan, A.R. (1987), 'Three econometric methodologies: a critical appraisal', *Journal of Economic Surveys*, **1**, 3–24.

Paldam, M. (1989), 'A wage structure theory of inflation, industrial conflicts and trade unions', *Scandinavian Journal of Economics*, 63–81.

Parguez, A. (1975), *Monnaie et Macroéconomie*, Paris: Economica.

Parkin, F. (1979), *Marxism and Class Theory: A Bourgeois Critique*, London: Tavistock.

Parrinello, S. (1995), 'The efficiency wage hypothesis in the long period', in G.C. Harcourt, A. Roncaglia and R. Rowley (eds), *Income and Employment in Theory and Practice: Essays in Memory of Athanasios Asimakopulos*, London: Macmillan, pp. 167–84.

Parsons, S. (1995a), 'Saving Keynes from the Post Keynesians', paper presented at the Post Keynesian Study Group, 5 May 1995; abstract reproduced in the Post Keynesian Study Group Newsletter, September 1995.

Parsons, S. (1995b), 'Post Keynesian Realism and Keynes' General Theory', *Discussion Paper in Economics*, no. 95–04, De Montfort University, Leicester.

Parsons, S. (1996), 'Post Keynesian Realism and Keynes' General Theory', *Journal of Post Keynesian Economics*, **18**, 419–41.

Pasinetti, L.L. (1974), *Growth and Income Distribution*, Cambridge: Cambridge UniversityPress.

Penrose, E. (1995), *The Theory of the Growth of the Firm*, Oxford: Oxford University Press.

Petrella, R. (ed.) (1995), *Limits to Competition: Report of the Group of Lisbon*, Cambridge, MA: MIT Press.

Peppard, J. and P. Rowland (1995), *The Essence of Business Process Re-Engineering*, Hemel Hempstead: Prentice Hall.

Perelman, M. (1984), *Classical Political Economy: Primitive Accumulation and the Social Division of Labour*, Totowa: Rowman and Allanheld.

Pesaran, M.H. and Y. Shin (1994), 'Identification of and testing for cointegrating relations with general non-homogenous restrictions', mimeo, University of Cambridge, Department of Applied Economics.

Phelps Brown, E.H. (1972), 'The underdevelopment of economics', *Economic Journal*, **82**, 1–10.

Phelps Brown, E.H. (1977), *The Inequality of Pay*, Oxford: Oxford University Press.

Pitelis, C. (1991), *Market and Non-Market Hierarchies*, Oxford: Basil Blackwell.

Pitelis, C. and R. Sugden (1986), 'The separation of ownership and control in the theory of the firm: a reappraisal', *International Journal of Industrial Organisation*, **4**, 69–86.

Polanyi, K. (1944), *The Great Transformation*, Boston: Beacon Press.

Polanyi, M. (1967), *The Tacit Dimension*, New York: Anchor.

Polanyi, M. (1973), *Personal Knowledge*, London: Routledge.

Pollin, R. (1991), 'Two theories of money supply endogeneity: some empirical evidence', *Journal of Post Keynesian Economics*, **13**, 366–96.

Ponsard, C. (1986), 'Foundations of soft decision theory', in J. Kacprzyk and R.R. Yeger (eds), *Management Decision Support Systems Using Fuzzy Sets and Possibility Theory*, Cologne: Verlag TUV, Rheinland.

Popper, K.R. (1959), *The Logic of Scientific Discovery*, London: Hutchison.

Popper, K.R. (1963), *Conjectures and Refutations: The Growth of Scientific Knowledge*, London: Routledge and Kegan Paul.

Porter, B. (1994), *War and the Rise of the State*, New York: Free Press.

Posner, R.A. (1993), 'The new institutional economics meets law and economics', *Journal of Institutional and Theoretical Economics*, **149**, 73–87.

Potter, S.M.(1995), 'A nonlinear approach to US GNP', *Journal of Applied Econometrics,* **10**, 109–26.

Prahalad, C.K. and G. Hamel (1990), 'The core competence of the corporation', *Harvard Business Review*, **68**, 79–91.

Pratten, C. (1993), *The Stock Market*, Cambridge: Cambridge University Press.

Pressman, S. (1992), 'The trade policies of John Maynard Keynes', mimeo, Department of Economics, Monmouth College.

Przeworski, A. (1991), *Democracy and the Market*, Cambridge: Cambridge University Press.

Radice, H.K. (1988), 'Keynes and the policy of practical protectionism', in J.V. Hillard, (ed.), *J.M. Keynes in Retrospect*, Aldershot, UK and Brookfield, US: Edward Elgar.

Radner, R. (1968), 'Competitive equilibrium under uncertainty', *Econometrica*, **36** (1), 31–58.

Raeff, M. (1983), *The Well-Ordered Police State*, New Haven: Yale University Press.

Raffaelli, T. (2001), 'Marshall on mind and society: neurophysiological models applied to industrial and business organization', *European Journal of the History of Economic Thought*, **8**, 208–29.

Ramsey, F.P. (1931), *Foundations of Mathematics*, London: Routledge and Kegan Paul.

Rawls, J. (1971), *A Theory of Justice*, London: Oxford University Press.

Rebitzer, J.B. (1993), 'Radical political economy and the economics of labor markets', *Journal of Economic Literature*, **31** (3), September, 1394–1434.

Rees, R. (1989), 'Uncertainty, Information and Insurance', in Hey (ed.) (1989), 79–126.

Reich, M. (1995), 'Radical economics: successes and failures', in F. Moseley (ed.), *Heterodox Economic Theories: True or False*?, Aldershot, UK and Brookfield, US: Edward Elgar, pp. 45–70.

Resnick, S. and R. Wolff (1987), *Knowledge and Class: A Marxian Critique of Political Economy*, Chicago: University of Chicago Press.

Reynolds, L.G. (1951), *The Structure of Labor Markets*, New York: Harper.

Reynolds, P.J. (1987), *Political Economy: A Synthesis of Kaleckian and Post Keynesian Economics*, Sussex: Wheatsheaf Books.

Rhymes, T.K. (1989), *Keynes's Lectures, 1932–35: Notes of a Representative Student*, London: Macmillan in association with the Royal Economic Society.

Riach, P.A. (1976), 'The language of inflation', in E.L. Wheelwright and F. Stilwell (eds), *Readings in Political Economy, Volume 2*, Sydney: ANZ Book Co., pp. 53–60.

Riach, P.A. (1995), 'Wage–employment determination in a post Keynesian world', in P. Arestis and M. Marshall (eds), *The Political Economy of Full Employment*, Aldershot, UK and Brookfield, US: Edward Elgar, pp. 163–75.

Ricardo, D. (1951), *On the Principles of Political Economy and Taxation*, Cambridge: Cambridge University Press, first published 1817.

Richardson, G.B. (1960), *Information and Investment: A Study in the Working of the Competitive Economy*, Oxford: Oxford University Press; 2nd edn 1990.

Richardson, G.B. (1964), *Economic Theory*, London: Hutchinson.

Richardson, G.B. (1972), 'The organisation of industry', *Economic Journal*, **82**, 883–96.

Richardson, G.B. (1975), 'Adam Smith on competition and increasing returns', in A.S. Skinner and T. Wilson (eds), *Essays on Adam Smith*, Oxford: Clarendon Press, reprinted in G.B. Richardson (1998), *The Economics of Imperfect Knowledge*, Cheltenham, UK and Northampton, MA, USA: Edward Elgar, pp. 157–67.

Richardson, G.B. (1997), 'Innovation, equilibrium and welfare', Chapter 2 in S.C. Dow and J. Hillard (eds) (2002), *Post Keynesian Econometrics, Microeconomics and the Theory of the Firm*, Cheltenham, UK and Northampton, US: Edward Elgar.

Rizvi, S. (1994), 'The microfoundations project in general equilibrium theory', *Cambridge Journal of Economics*, **18**, 357–77.
Robinson, J. (1933), *The Economics of Imperfect Competition*, London: Macmillan.
Robinson, J. (1937), *Essays in the Theory of Employment*, London: Macmillan.
Robinson, J. (1962), *Economic Philosophy*, Chicago: Aldine Publishing Co.
Robinson, J. (1964a), *Economic Philosophy*, Harmondsworth: Penguin Books Ltd.
Robinson, J. (1964b), 'Kalecki and Keynes', *Collected Economic Papers*, vol III, Oxford: Blackwell.
Robinson, J. (1969), 'Preface' to Robinson (1933), 2nd edn, v–xii.
Robinson, J. (1978), *Contributions to Modern Economics*, Oxford: Basil Blackwell.
Robinson, J. and J. Eatwell (1973), *An Introduction to Modern Economics*, London: McGraw-Hill.
Roemer, J. (ed.) (1986), *Analytical Marxism*, Cambridge: Cambridge University Press.
Rogoff, K. (1996), 'The purchasing power parity puzzle', *Journal of Economic Literature*, **34** (2), 647–68.
Rorty, R. (1982), 'Philosophy as a kind of writing', in *Consequences of Pragmatism*, Minneapolis: University of Minnesota Press.
Rorty, R. (1989), 'From ironist theory to private allusions: Derrida', in *Contingency, Irony, and Solidarity*, Cambridge: Cambridge University Press.
Rose, A. (1994), 'Are exchange rates macroeconomic phenomena?', *Federal Reserve Bank of San Francisco Review*, **1**, 19–30.
Rosecrance, R. (1986), *The Rise of the Trading State*, New York: Basic Books.
Rosenberg, A. (1992), *Economics – Mathematical Politics or Science of Diminishing Returns*, Chicago: University of Chicago Press.
Rosenberg, N. and L. Birdzell (1986), *How the West Grew Rich*, New York: Basic Books.
Ross, A.M. (1953), *Trade Union Wage Policy*, Berkeley: University of California Press.
Rothbard, M. (1973), *For a New Liberty*, New York: Collier.
Rotheim, R.J. (1988), 'Keynes and the language of probability and uncertainty', *Journal of Post Keynesian Economics*, **11**, 83–99.
Rotheim, R.J. (1989/90), 'Organicism and the role of the individual in Keynes's thought', *Journal of Post Keynesian Economics*, **12**, 316–26.
Rotheim, R.J. (1991), 'Marx, Keynes and the theory of a monetary economy', in G.A. Caravale (ed.), *Marx and Modern Economic Analysis.*

Volume II: The Future of Capitalism and the History of Thought, Aldershot, UK and Brookfield, US: Edward Elgar, pp. 240–63.

Rotheim, R.J. (1992), 'Interdependence and the Cambridge economic tradition', in B. Gerrard and J.V. Hillard, (eds), *The Philosophy and Economics of J.M. Keynes*, Aldershot, UK and Brookfield, US: Edward Elgar.

Rotheim, R.J. (1995), 'Keynes on uncertainty and individual behaviour within a theory of effective demand', in S. Dow and J.V. Hillard (eds), *Keynes, Knowledge and Uncertainty*, Aldershot, UK and Brookfield, US: Edward Elgar.

Rothschild, K.W. (1942–3), 'Monopsony, buying costs, and welfare expenditure', *Review of Economic Studies*, **10** (1), 62–7.

Rothschild, K.W. (1947), 'Price theory and oligopoly', *Economic Journal*, **57** (227), September, 299–320.

Rothschild, K.W. (1954), *The Theory of Wages*, Oxford: Blackwell.

Rothschild, K.W. (1957), 'Approaches to the theory of bargaining', in J.T. Dunlop (ed.), *The Theory of Wage Determination*, London: Macmillan, pp. 281–91.

Rothschild, K.W. (1989), 'Some reflections on the growth of female labour supply and the tertiary sector', *International Review of Applied Economics*, **3** (2), June, 232–42.

Rothschild, K.W. (1993), *Employment, Wages and Income Distribution: Critical Essays in Economics*, London: Routledge.

Rothschild, K.W. (1994), 'Austro-Keynesianism reconsidered', *Contemporary Austrian Studies*, **2**, 119–29.

Rowthorn, R.E. (1977), 'Conflict, inflation and money', *Cambridge Journal of Economics*, **1**, 215–39.

Rowthorn, R.E. (1995), 'Capital formation and unemployment', *Oxford Review of Economic Policy*, **11** (1), 26–39.

Roy, S. (1989), *Philosophy of Economics: On the Scope of Reason in Economic Enquiry*, London: Routledge.

Runde, J. (1990), 'Keynesian uncertainty and the weight of arguments', *Economics and Philosophy*, **6**, 275–92.

Runde, J. (1994a), 'Keynesian uncertainty and liquidity preference', *Cambridge Journal of Economics*, **18**, 129–44.

Runde, J. (1994b), 'Keynes After Ramsey: in defence of *A Treatise on Probability*', *Studies in History and Philosophy of Science*, **25**, 97–121.

Runde, J. (1995), 'Risk, uncertainty and Bayesian decision theory: a Keynesian view', in S.C. Dow and J. Hillard (eds), *Keynes, Knowledge and Uncertainty,* Aldershot, UK and Brookfield, US: Edward Elgar, pp. 197–210.

Rutherford, M. (1989), 'What is wrong with the new institutional econom-

ics (and what is still wrong with the old)?', *Review of Political Economy*, **1** (3), 299–318.

Ryle, G. (1949), *The Concept of Mind,* London: Hutchinson.

Salanti, A. and E. Screpanti (eds) (1997), *Pluralism in Economics: Theory, History and Methodology*, Cheltenham, UK and Brookfield, US: Edward Elgar.

Salazar, C. (1996), 'Between morality and rationality: an analysis of interpersonal economics in rural Ireland', *Economic and Social Review*, **27** (3), 235–52.

Sampson, E. (1993), *Celebrating the Other*, Hemel Hempstead: Wheatsheaf.

Samuelson, P.A. (1939), 'Interactions between the principle of acceleration and the multiplier', *Review of Economics and Statistics*, **21**, 75–8.

Samuelson, P.A. (1947), *Foundations of Economic Analysis*, Cambridge, MA: Harvard University Press.

Samuelson, P.A. (1954), 'The pure theory of public expenditure', *Review of Economics and Statistics*, **37**, 387–9.

Samuelson, P.A. (1968), 'Classical and neo-classical monetary theory', in R. Clower (ed.) (1969), *Monetary Theory*, Harmondsworth: Penguin.

Sardoni, C. (1992), 'Market forms and effective demand: Keynesian results with perfect competition', *Review of Political Economy*, **4**, 377–95.

Sardoni, C. (1996), 'Prices, expectation and investment: a critical assessment of Keynes's marginal efficiency of capital', in S. Pressman and J. Smithin (eds), *The Malvern Conference Ten Years On*.

Sargent, T.J. (1993), *Bounded Rationality in Macroeconomics*, Boston.

Savage, L.J. (1954), *The Foundations of Statistics*, New York: John Wiley and Sons; revised and enlarged edn, New York: Dover, 1972.

Sawyer, M. (1983), *Business Pricing and Inflation*, London: Macmillan.

Sawyer, M. (1985), *The Economics of Industries and Firms*, 2nd edn, London: Croom Helm.

Sawyer, M. (1988), 'Theories of monopoly capitalism', *Journal of Economic Surveys*, **2** (1), 42–76.

Sawyer, M. (1989), *The Challenge of Radical Political Economy*, London: Harvester Wheatsheaf.

Sawyer, M. (1990), 'On the Post Keynesian tradition and industrial economics', *Review of Political Economy*, **2**, 43–68.

Sawyer, M. (1992a), 'Keynes's macroeconomic analysis and theories of imperfect competition', in B. Gerrard and J. Hillard (eds), *The Philosophy and Economics of Keynes*, Aldershot, UK and Brookfield, US: Edward Elgar.

Sawyer, M. (1992b), 'The nature and role of the market', *Social Concept*, **6** (2).

Sawyer, M. (1993), 'The nature and role of the market', in C. Pitelis (ed.), *Transaction Costs, Markets and Hierarchies*, Oxford: Basil Blackwell.

Sawyer, M. (1994a), 'Post-Keynesian and Marxian notions of competition: towards a synthesis', in M. Glick (ed.), *Competition, Technology and Money: Classical and Post-Keynesian perspectives*, Aldershot, UK and Brookfield, US: Edward Elgar.

Sawyer, M. (1994b), 'Post-Keynesian analysis and industrial economics' in M. Sawyer (ed.), *Unemployment, Imperfect Competition and Macroeconomics: Essay in the Post-Keynesian tradition*, Aldershot, UK and Brookfield, US: Edward Elgar.

Sawyer, M. (1995), *Unemployment, Imperfect Competition and Macroeconomics*, Aldershot, UK and Brookfield, US: Edward Elgar.

Sawyer, M. (1996a) 'Money, finance and interest rates', in P. Arestis (ed.), *Keynes, Money and the Open Economy: Essays in Honour of Paul Davidson, Vol. 1*, Cheltenham, UK and Northampton, US: Edward Elgar, pp. 50–68.

Sawyer, M. (1996b), 'New Keynesian macroeconomics and the Determination of employment and wages', mimeo, University of Leeds.

Sayer, S. (1992), 'The city, power and economic policy in Britain', *International Review of Applied Economics*, **6**.

Schmeidler, D. (1982), 'Subjective probability without additivity', working paper, Foerder Institute for Economic Research, Tel Aviv University.

Schmeidler, D. (1986), 'Integral representation without additivity', *Proceedings of the American Mathematical Society*, **97** (2), 255–61.

Schmeidler, D. (1989), 'Subjective probability and expected utility without additivity', *Econometrica*, **57**, 571–87.

Schumpeter, J.A. (1934), *The Theory of Economic Development*, Cambridge MA: Harvard University Press.

Schumpeter, J.A. (1942), *Capitalism, Socialism and Democracy*, New York: Harper and Row.

Schumpeter, J.A. (1955), *Imperialism and Social Classes*, New York: Meridian.

Scruton, R. (1984), *The Meaning of Conservatism*, London: Macmillan.

Seccareccia, M. (1991), 'An alternative to labour-market orthodoxy: the post Keynesian/institutionalist view', *Review of Political Economy* **3** (1), March, 43–61.

Segal, U. (1987), 'The Ellsberg paradox and risk aversion: an anticipated utility approach', *International Economic Review*, **28** (1), 175–202.

Shackle, G.L.S. (1952), *Expectations in Economics*, Cambridge: Cambridge University Press.

Shackle, G.L.S. (1955), *Uncertainty in Economics: And Other Reflections*, Cambridge: Cambridge University Press.

Shackle, G.L.S. (1958), *Time in Economics*, Amsterdam: North-Holland.
Shackle, G.L.S. (1961), *Decision, Order and Time in Human Affairs*, Cambridge: Cambridge University Press.
Shackle, G.L.S. (1967), *The Years of High Theory: Invention and Tradition in Economic Thought, 1926–1939*, Cambridge: Cambridge University Press.
Shackle, G.L.S. (1972), *Epistemics and Economics*, Cambridge: Cambridge University Press.
Shafer, G. (1976), *A Mathematical Theory of Evidence*, Princeton: Princeton University Press.
Shaikh, A. (1980), 'The Laws of International Exchange', in E. Nell (ed.), *Growth, Profits and Property*, Cambridge: Cambridge University Press.
Shaikh, A. (1992), 'Competition and exchange rates: theory and empirical evidence', working paper, Department of Economics, New School for Social Research, New York.
Shapiro, N. (1977), 'The revolutionary character of Post-Keynesian economics', *Journal of Economic Issues*, **XI**.
Shapiro, N. (1995), 'Markets and mark-ups: Keynesian views', in S. Dow and J. Hillard (eds), *Keynes, Knowledge and Uncertainty*, Aldershot, UK and Brookfield, US: Edward Elgar.
Shapiro, N. (1997), 'Imperfect competition and Keynes', in Harcourt and Riach (1997), vol. 1, pp. 83–92.
Shapiro, S.P. (1987), 'The social control of personal trust', *American Journal of Sociology*, **3**, November, 623–58.
Shiller, R.J. (1981), 'Do stock prices move too much to be justified by subsequent changes in dividend?', *American Economic Review*, **71**, 421–36.
Shiller R.J. (1989), *Market Volatility*, Cambridge, MA: MIT Press.
Silberner, E. (1972), *The Problem of War in Nineteenth Century Economic Thought*, New York: Garland.
Simon, H.A. (1957), *Models of Man*, New York: Wiley.
Simon, H.A. (1959), 'Theories of decision making in economic and behavioural sciences', *American Economic Review*, **49**, 253–83.
Simon, H.A. (1976), 'From substantive to procedural rationality', in S. Latis (ed.), *Method and Appraisal in Economics*, Cambridge: Cambridge University Press.
Simon, H.A. (1982), *Models of Bounded Rationality*, Cambridge, MA: MIT Press.
Simon, H.A. (1991), 'Organisations and markets', *Journal of Economic Perspectives*, **5** (2), 25–44.
Simonsen, M.H. and S.R.C. Werlang (1991), 'Subadditive probabilities and portfolio inertia', *Revista de Econometria*, **11**, 1–19.

Sims, C.A. (1980), 'Macroeconomics and reality', *Econometrica*, **48**, 1–47.
Singh, A. (1995), 'Review of wood (1994)', *Economic Journal*, **105** (432), September, 1287–9.
Skidelsky, R. (1992), *The Economist as Saviour, 1920–1937*, New York: Viking Penguin.
Skidelsky, R. (1995), *The World After Communism: A Polemic for our Times*, London: Macmillan.
Skocpol, T. (1979), *States and Social Revolutions*, Cambridge: Cambridge University Press.
Skocpol, T. (1992), *Protecting Soldiers and Mothers*, Cambridge MA: Harvard University Press.
Skott, P. (1991), 'Efficiency wages, mark-up pricing and effective demand', in J. Michie (ed.), *The Economics of Restructuring and Intervention*, Worcestor: Billing and Sons.
Skousen, M. (1992), 'Keynes as a speculator: a critique of Keynesian investment theory', in M. Skousen (ed.), *Dissent on Keynes: A Critical Appraisal of Keynesian Economics*, New York: Praeger.
Smith, A. (1776), *The Wealth of Nations*, reprinted London: Methuen, 1904.
Smith, A. (1976a), *The Theory of Moral Sentiments*, ed. D. Raphael and A.L. Macfie, Oxford: Oxford University Press.
Smith, A. (1976b), *An Inquiry into the Nature and Causes of the Wealth of Nations*, ed. R.H. Campbell, A.S. Skinner and W.B. Todd, Oxford: Oxford University Press.
Smith, A. (1978), *Lectures on Jurisprudence*, ed. R.L. Meek, D. Raphael and P.G. Stein, Oxford: Oxford University Press.
Smith, R. (1994), 'Econometrics' in P. Arestis and M. Sawyer (eds), *The Elgar Companion to Radical Political Economy*, Aldershot, UK and Brookfield, US: Edward Elgar.
Sofianou, E. (1995), 'Post-modernism and the notion of rationality in economics', *Cambridge Journal of Economics*, **19**, 373–88.
Sraffa, P. (1926), 'The laws of returns under competitive conditions', *Economic Journal*, **36**, 535–50.
Steedman, I. (1995), 'Criticising Post Keynesian economics', paper presented at the Post Keynesian Study Group, 5 May 1995; abstract reproduced in the Post Keynesian Study Group Newsletter, September 1995.
Steindl, J. (1952), *Maturity and Stagnation in American Capitalism*, Oxford: Blackwell; reissued with new introduction, New York: Monthly Review Press, 1976.
Steindl, J. (1979), 'Stagnation theory and stagnation policy', *Cambridge Journal of Economics*, **3**.

Steindl, J. (1987), 'Kalecki's theory of pricing: notes on the margin', in G. Fink, G. Pöll and M. Riese (eds), *Economic Theory, Political Power and Social Justice: Festschrift Kazimierz Laski*, Vienna: Springer, pp. 1–18; reprinted in J. Steindl, *Economic Papers 1941–88*, London: Macmillan, 1990, pp. 303–16.

Stekler, H. and R. Fildes (1999), 'The state of macroeconomic forecasting', George Washington University, Center for Economic research discussion paper No. 99–04.

Stettler, M. (1995), 'The rhetoric of McCloskey's rhetoric of economics', *Cambridge Journal of Economics*, **19**, 389–403.

Stigler, G.J. (1961), ' The economics of information', *Journal of Political Economy*, **69**, 213–25.

Stigler, G.J. (1965), *Essays in the History of Economics*, Chicago: University of Chicago Press.

Stigler, G.J. (1976), 'The xistence of x-efficiency', *American Economic Review*, **66** (1), March, 213–16.

Stiglitz, J.E. (1987), 'The causes and consequences of the dependence of quality on price', *Journal of Economic Literature*, **25** (1), March, 1–48.

Stiglitz, J.E. (1994), *Whither Socialism?*, Cambridge, MA: MIT Press.

Stohs, M. (1980), 'Uncertainty in Keynes' General Theory', *History of Political Economy*, **12** (3), 372–82.

Stone, R. (1978), 'Keynes, political arithmetic and econometrics', *Proceedings of the British Academy*, Vol. 64, Oxford: Oxford University Press.

Stumpf, S. (1994), *Philosophy, History and Problems*, 5th edition, New York: McGraw Hill.

Sugden, R. (1983), 'Why transnational corporations?', University of Warwick economics research paper no. 22.

Summers, L. (1989), 'The scientific illusion in empirical macroeconomics', *Scandinavian Journal of Economics*, **93**, 129–48.

Sweezy, P.M. (1939), 'Demand under conditions of oligopoly', *Journal of Political Economy*, **47** (4), August: 568–73.

Tamborini, R (1995), 'Price determination in polypolistic markets and exchange rate changes', *Metroeconomica*, **46**, 63–89.

Targetti, F. and B. Kinda-Haas (1982), 'Kalecki's review of Keynes's General Theory', *Australian Economic Papers*, **21**, 244–60.

Tetlock, P. *et al.* (eds) (1989), *Behavior, Society and Nuclear War, Volume I*, Oxford: Oxford University Press.

Teubner, G. (1993), *Law as an Autopoietic System*, Oxford: Blackwell.

Thompson, E. (1966), *The Making of the English Working Class*, New York: Vintage.

Thweatt, W. (1976), 'James Mill and the early development of comparative advantage', *History of Political Economy*, **8**, 207–34.

Tiao G.C. and R.S. Tsay (1994), 'Some advances in non-linear and adaptive modelling in time-series analysis', *Journal of Forecasting,* **13**.

Tiger, M. (1977), *Law and the Rise of Capitalism*, New York: Monthly Review Press.

Tilly, C. (1992), *Coercion, Capital and European States, AD 990–1992*, Oxford: Blackwell.

Tirole, J. (1988), *The Theory of Industrial Organisation*, Cambridge, MA: MIT Press.

Tobin, J. (1958), 'Liquidity preference as behaviour towards risk', *Review of Economic Studies*, **25**, 65–86.

Tobin, J. (1966), 'Adjustment responsibilities of surplus and deficit countries', in W. Fellner, F. Machlup and R.Triffin (eds), *Maintaining and Restoring Balance in International Payments*, Princeton: Princeton University Press.

Tobin, J. (1974), 'The new economics one decade older', *The Eliot Janeway Lectures on Historical Economics in Honour of Joseph Schumpeter, 1972*, Princeton: Princeton University Press.

Tobin, J. (1978), 'A proposal for international monetary reform', *Eastern Economic Journal*, **4** (3–4), 153–9, reprinted in J. Tobin, *Essays in Economics: Theory and Policy*, Cambridge, MA: MIT Press.

Tobin, J. (1981), *Asset Accumulation and Economic Activity*, Chicago: University of Chicago Press.

Tobin, J. (1982), 'The Commercial banking firm: a simple model', *Scandinavian Journal of Economics*, **84** (4), 495–530.

Tobin, J. (1984), 'James Tobin', in Arjo Klamer (ed.), *The New Classical Economics*, Sussex: Harvester Wheatsheaf.

Tobin, J. (1993), 'Price flexibility and output stability: an old Keynesian view', *The Journal of Economic Perspectives*, **7**, 45–66.

Tobin, J. (1996), 'Prologue', in Haq *et al.* (eds) (1996), pp. ix–xviii.

Torgovnick, P. (1990), *Gone Primitive*, Chicago, University of Chicago Press.

Trotsky, L. (1971), *The Struggle Against Fascism in Germany*, New York: Pathfinder Press.

United Nations Conference on Trade and Development (UNCTAD) (1995), *Trade and Development Report, 1995*, New York and Geneva: United Nations.

United Nations Development Programme (1994), *Human Development Report 1994*, New York and Oxford: Oxford University Press

Usher, D. (1981), *The Economic Prerequisite to Democracy*, New York: Columbia University Press.

van Dieren, W. (1994), 'The disqualification of the Maastricht Treaty', in P.-O. Bergeron and M.-A. Gaiffe (eds), *Croissance, Compétitivité,*

Emploi: à la recherche d'un modèle pour l'Europe, Bruges: Collège d'Europe.

Vautard, R. and M. Ghil (1989), 'Singular spectrum analysis in nonlinear dynamics with applications to paleoclimatic time series', *Physica,* **35B**.

Veblen, T. (1961), 'Why economics is not an evolutionary science?', in *The Place of Science in Modern Civilisation*, New York: Russell and Russel.

Vercelli, A. (1991), *Methodological Foundations of Macroeconomics*: *Keynes and Lucas*, Cambridge: Cambridge University Press.

Vercelli, A. (1992), 'Probabilistic causality and economic analysis: a survey', in A.Vercelli and N.Dimitri (eds), *Macroeconomics: A Survey of Research Strategies,* Oxford: Oxford University Press.

Vercelli, A. (1995), 'From soft uncertainty to hard environmental uncertainty', *Economie Appliquée*, **48**, 251–69.

Vercelli, A. (1996), 'Keynes, Schumpeter and beyond: a non-reductionist perspective', in G.C. Harcourt and P. Riach (eds), *A 'Second Edition' of the General Theory*, London: Routledge.

Vercelli, A. (1999a), 'The recent advances in decision theory under uncertainty: a non-technical introduction', in L.Luini (ed.), *Uncertain Decisions: Bridging Theory and Experiments*, Dordrecht: Kluwer.

Vercelli, A. (1999b), 'The evolution of IS–LM models: empirical evidence and theoretical presuppositions', *Journal of Economic Methodology*, **1**.

Vercelli, A. (2000), 'Financial fragility and cyclical fluctuations', *Structural Change and Economic Dynamics*, **1**, 139–56.

Vercelli, A. (2001), 'Minsky, Keynes and the structural instability of a sophisticated monetary economy', in R. Bellofiore and P. Ferri (eds), *Financial Fragility and Investment in the Capitalist Economy*, Cheltenham, UK and Northampton, MA, US: Edward Elgar.

Vernon, R. (1966), 'International investment and international trade in the product cycle', Quarterly Journal of Economics, **80**, 190–207.

Viner, J. (1931), 'Cost curves and supply curves', *Zeitschrift für Nationalokonomie*, **3**, 23–46.

Visser, H. (1977), 'Marx on money', *Kredit und Kapital*, **10**.

Vromen, J. (1995), *Economic Evolution: An Enquiry into the Foundations of the New Institutional Economics*, London: Routledge.

Wakker, P. (1989), 'Continuous subjective expected utility with non-additive probabilities', *Journal of Mathematical Economics*, **18**, 1–27.

Wallich, H.C. and S. Weintraub (1971), 'A tax-based incomes policy', *Journal of Economic Issues*, **5** (2), June, 1–19.

Walras, L. (1954), *Elements of Pure Economics*, London: Allen and Unwin.

Walters, B. and D. Young (1997), 'On the coherence of Post-Keynesian economics', *Scottish Journal of Political Economy*, **44** (3), August, 329–49.

Walters, B. and D. Young (1999), 'Post-Keynesianism and coherence: a

reply to Arestis, Dunn and Sawyer', *Scottish Journal of Political Economy*, **46** (3), August, 346–8.
Walton, J. (1995), 'By the roots', *London Review of Books*, **17**, 26–8.
Waltz, K. (1979), *Theory of International Politics*, Reading, MA: Addison-Wesley.
Wanniski, J. (1989), *The Way the World Works*, Morristown: Polyconomics.
Warren, B. (1980), *Imperialism: Pioneer of Capitalism*, London: New Left Books.
Weber, M. (1983), *Max Weber on Capitalism, Bureaucracy and Religion*, London: George Allen and Unwin.
Weintraub, S. (1956), 'A macroeconomic approach to the theory of wages', *American Economic Review*, **46** (5), December, 835–56.
Weintraub, S. (1963), *Some Aspects of Wage Theory and Policy*, Philadelphia: Chilton.
Weitzman, M. (1982), 'Increasing returns and the foundations of unemployment theory', *Economic Journal*, **92**, 787–804.
Welch, L. (1993), 'Outward licensing by Australian companies', in P.J. Buckley and P.N. Ghauri (eds), *The Internationalisation of the Firm*, London: Academic Press.
Whitley, R. (1984), *The Intellectual and Social Organization of the Sciences*, Oxford: Clarendon Press.
Wickens, M. (1995), 'Real business cycle analysis: a needed revolution in macroeconometrics', *Economic Journal*, **105**, 1637–48.
Will, G. (1983), *Statecraft as Soulcraft*, New York: Touchstone.
Will, G. (1986), *The Morning After*, New York: Collier.
Will, G. (1992), *Suddenly*, New York: Free Press.
Williamson, O.E. (1975), *Markets and Hierarchies: Analysis and Anti-Trust Implications: A study in the economics of internal organisation*, New York: Free Press.
Williamson, O.E. (1979), 'Transaction-cost economics: the governance of contractual relations', *Journal of Law and Economics*, **22**, 233–61.
Williamson, O.E. (1981), 'The modern corporation: origins, evolution, attributes', *Journal of Economic Literature*, **19**, 1537–68.
Williamson, O.E. (1983), 'The economics of governance: framework and implications', Yale University discussion paper no. 153, July.
Williamson, O.E. (1985), *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*, London: Macmillan.
Williamson, O.E. (1987), *Antitrust Economics*, Oxford: Basil Blackwell.
Williamson, O.E. (1993), 'Calculativeness, trust and economic organization', *Journal of Law and Economics*, **36**, 453–86.
Williamson, O.E. and S.G. Winter (eds) (1993), *The Nature of the Firm: Origins, Evolution, and Development*, Oxford: Oxford University Press.

Willinger, M., (1990), Irréversibilité et cohérence dynamique des choix, *Revue d' Economie Politique*, **100** (6), 808–32.

Winslow, E.G. (1986), 'Human logic and Keynes's economics', *Eastern Economic Journal*, **12**, 423–30.

Winslow E.G. (1995), 'Uncertainty and liquidity preference', in S. Dow and J.V. Hillard (eds), *Keynes, Knowledge and Uncertainty*, Aldershot, UK and Brookfield, US: Edward Elgar, pp. 221–24.

Winslow, T. (1989), 'Organic interdependence, uncertainty and economic analysis', *Economic Journal*, **99**, 1173–82.

Winston, G.C. (1988), 'Three problems with the treatment of time in economics: perspectives, repetitiveness, and time units', in G.C. Winston and F. Teichgraeber III (eds) (1988), *The Boundaries of Economics*, Cambridge: Cambridge University Press.

Wiseman, J. and S.C. Littlechild (1990), 'Crusoe's kingdom: cost, choice and political economy', in S.F. Frowen (ed.), *Unknowledge and Choice in Economics*, Basingstoke: Macmillan.

Wolf, B. and M. Smook (1988), 'Keynes and the question of tariffs', in O. Hamouda and S. Smithin (eds), *Keynes and Public Policy After Fifty Years*, *Vol. 2: Theories and Method*, Aldershot, UK and Brookfield, US: Edward Elgar.

Wood, A. (1978), *A Theory of Pay*, Cambridge: Cambridge University Press.

Wood, A. (1994), *North–South Trade, Employment and Inequality: Changing Fortunes in a Skill-Driven World*, Oxford : Clarendon Press.

Woodford, M. (1990), 'Learning to believe in sunspots', *Econometrica*, **58**, 277–307.

Worswick, D. and J. Trevithick (eds) (1983), *Keynes and the Modern World,* Cambridge: Cambridge University Press.

Worswick, G.D.N. (1972), 'Is progress in economic science possible?', *Economic Journal*, **82**, 73–86.

Wray, L.R. (1990), *Money and Credit in Capitalist Economies: The Endogenous Money Approach*, Aldershot, UK and Brookfield, US: Edward Elgar.

Wray, L.R. (1995), 'Keynesian monetary theory: liquidity preference or black box horizontalism?', Journal of Economic Issues, **29**, 273–83.

Wren-Lewis, S. (1990), 'Nominal inertia and Keynesian effects', *National Institute of Economic and Social Research*, discussion paper no. 174.

Wrong, D. (1979), *Power*, Oxford: Blackwell.

Young, W. (1987), *Interpreting Mr Keynes: The IS–LM Enigma*, Cambridge: Polity Press.

Zadeh, L.A. (1965), 'Fuzzy sets', *Information and Control*, **8**, 338–53.

Zarnowitz, V. and P. Braun (1992), 'Twenty-two years of the NBER-ASA

quarterly outlook surveys: aspects and comparisons of forecasting performance; NBER Working paper 3965.

Zucker, L.G. (1986), 'Production of trust: institutional sources of economic structure, 1840–1920', *Research in Organizational Behaviour*, **8**, 53–111, Greenwich, Connecticut: JAI Press.

Index