

THE STOICS *Edited by* BRAD INWOOD  
WITTGENSTEIN *Edited by* HANS SLUGA and  
DAVID STERN

*The Cambridge Companion to*  
**KEYNES**

---

Edited by  
Roger E. Backhouse  
*University of Birmingham*

and

Bradley W. Bateman  
*Grinnell College*

 **CAMBRIDGE**  
UNIVERSITY PRESS

CAMBRIDGE UNIVERSITY PRESS  
Cambridge, New York, Melbourne, Madrid, Cape Town, Singapore,  
São Paulo

CAMBRIDGE UNIVERSITY PRESS  
The Edinburgh Building, Cambridge CB2 2RU, UK  
Published in the United States of America by Cambridge University Press,  
New York

www.cambridge.org  
Information on this title: www.cambridge.org/9780521600606

© Cambridge University Press 2006

This publication is in copyright. Subject to statutory exception  
and to the provisions of relevant collective licensing agreements,  
no reproduction of any part may take place without  
the written permission of Cambridge University Press.

First published 2006

Printed in the United Kingdom at the University Press, Cambridge

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

ISBN-13 978-0-521-84090-3 hardback  
ISBN-10 0-521-84090-2 hardback  
ISBN-13 978-0-521-60060-6 paperback  
ISBN-10 0-521-60060-X paperback

Cambridge University Press has no responsibility for the persistence or  
accuracy of URLs for external or third-party internet websites referred to in  
this publication, and does not guarantee that any content on such websites  
is, or will remain, accurate or appropriate.

*For Ann, Robert, and Alison, R. E. B.  
For Sheryl, Thomas, Henry, and Lydia, B. W. B.*

## 5 Doctor Keynes: economic theory in a diagnostic science

### THEORY AND PRACTICE

For the greater part of his professional life, John Maynard Keynes was known as a practical man: the author of topical tracts on current economic questions, an adviser to, and an emissary from, the British Treasury, a successful player of financial markets for himself and King's College Cambridge, a member of corporate boards and a portfolio manager for two insurance companies. He was, in this sense, a part-time academic. And although he had long been known to be a first-rate economist, it was only after the publication of the *General Theory of Employment, Interest and Money* in 1936 that he was able to secure his reputation as a first-rate economic theorist. Yet, of the ten volumes of books published in his lifetime, three (the *General Theory* and the two volumes of the *Treatise on Money*, volume I subtitled *The Pure Theory of Money* and volume II *The Applied Theory of Money*) feature 'theory' in their title. And if we note that three of the remaining volumes are clearly non-economic and two are as much political as economic, the proportion of his economic books self-consciously styled as theoretical rises to three-fifths. Even one of the remaining volumes, *A Tract on Monetary Reform*, contains a clearly theoretical core. If Keynes was indeed a theorist, what kind of a theorist was he?

In modern economics, *theory* has come to denote the particular field of economics that deals with formal representations of abstract economies divorced from particular applications – a synonym for mathematical economics. Theory may inform particular applications through *models* that particularize or instantiate theories

under special assumptions. Accepting such a view, DeVroey (2004) argues that 'reasoning in prose is not a model *strictu sensu*, the arising of macroeconomics should be ascribed not to Keynes' *General Theory* but to the subsequent models that tried to translate Keynes' blurred message into a precise model'. Not only was Keynes not a theorist – not a producer of models – but the fact that he was not bars him from having founded macroeconomics, defined as a theoretical discipline.

There are, of course, many objections to De Vroey's characterization, not least that the *General Theory* is by no means devoid of formal, mathematical reasoning; yet it does capture the spirit of modern attitudes towards theory. Lucas (1981: 286) argued that the only reason the economists of the 1930s did not use the dynamic methods of the 1980s was that they lacked the mathematical machinery: 'To ask why [they] did not make use of the contingent-claim view of equilibrium is . . . like asking why Hannibal did not use tanks against the Romans instead of elephants.' We know from Keynes's deep appreciation of Ramsey's 'Mathematical Theory of Savings' that he was fully capable of understanding formalized theory and using it to good account (JMK VI: 144; JMK X: 335–6). Still, Keynes saw the limits to purely formal reasoning. As a matter of style: 'there are occasions for very exact methods of statement, such as are employed in Mr. Russell's *Principia Mathematica*. But there are advantages also in writing the English of Hume' (JMK VIII: 20). As a matter of substance:

It is a great fault of symbolic pseudo-mathematical methods of formalising a system of economic analysis . . . that they expressly assume strict independence between the factors involved and lose all their cogency and authority if this hypothesis is disallowed; whereas, in ordinary discourse, where we are not blindly manipulating but know all the time what we are doing and what the words mean, we can keep 'at the back of our heads' the necessary reserves and qualifications and the adjustments which we shall have to make later on, in a way in which we cannot keep complicated partial differentials 'at the back' of several pages of algebra which assume that they all vanish. Too large a proportion of recent 'mathematical' economics are merely concoctions, as imprecise as the initial assumptions they rest on, which allow the author to lose sight of the complexities and interdependencies of the real world in a maze of pretentious and unhelpful symbols.

(JMK VII: 297–8).

Just as striking as his commitment to English prose is the manner in which Keynes embeds his theoretical writings in topical policy debates. Stylistically, the distinction between Russell and Hume is a genuine distinction; yet it fails to get to the core difference between Keynes's theory and modern macroeconomics. Yes, some modern macroeconomics is abstract and academic; nonetheless, modern macroeconomists also serve as policy advisers and find their formal models of some service in that capacity. Still, the true difference between modern macroeconomic theory and Keynes's theory is, I believe, not unrelated to Keynes's perspective as a policy adviser.<sup>1</sup> Whereas modern theory serves as a simulacrum of the economy – stylized and abstract, to be sure – Keynes's theory is a diagnostic instrument in the service of Dr Keynes, consulting economic physician.<sup>2</sup>

#### MARSHALLIAN AND WALRASIAN METHODOLOGY

Keynes spent his intellectual childhood dangled, as it were, on Alfred Marshall's knee. His methodology is Marshallian in the sense of Milton Friedman's (1949, 1955) useful contrast with Walrasian methodology (Hoover 1988: 218–20; Hammond 1996: ch. 2).

Marshallian methodology sees economic theory as an 'economic organon' – 'not a body of concrete truth, but an engine for the discovery of concrete truth, similar to, say, the theory of mechanics', providing 'systematic and organized methods of reasoning' about factually based hypotheses concerning the 'manner of action of causes' (Marshall 1885: 159, 164, 171).

Walrasian methodology is named after the French economist Léon Walras (1834–1910), a pioneer of the theories of marginal utility and general equilibrium. Friedman, who, at the time he first drew the distinction, probably had only a second-hand knowledge of Walras's principal works, described Walrasian methodology as seeking abstractness, generality and a breadth of assumptions that would permit it to capture 'photographically' (Friedman's term) a systemic picture of the economy. Although Walras's theory of general equilibrium gave rise to the highly influential work of Gerard Debreu (1959), which long defined high mathematical theory in economics, Friedman's term is less directed at pure mathematical economics

than at the approach that the prestige of such methods – even before Debreu – spawned among economists in more applied and empirical fields. As Friedman (1949: 83) puts it: 'we curtsy to Marshall but walk with Walras'. Koopmans's strongly a priori interpretation of the Cowles Commission programme provides a good example of the Walrasian approach (Koopmans 1950; Hood and Koopmans 1953; Hendry and Morgan 1995: ch. 43). The economy is viewed as a system, and theory is only as good as the completeness of its systematic grasp. While the models can be related to data along hypothetico-deductive lines, the emphasis is on the deduction from formal structures (essential to the approach to identification), with little feedback from data to theory.

The distinction between Walrasian and Marshallian methodology is not a distinction between general and partial equilibrium, if general equilibrium means a recognition of the complex interdependence of the various parts of the economy. Rather it is between a theory that is comprehensive and one that is purpose-built. It is necessary, according to Marshall (1885: 160) 'to sacrifice generality of form to some extent'. 'There is no use in waiting idly for [a unified social science]; we must do what we can with our present resources.' He goes on, 'common sense does not deal with a complex problem as a whole. Its first step is to break the problem into its several parts . . . the human mind has no other method of inquiry than this' (Marshall 1885: 164). The economist, Marshall (1885: 171) believes, 'must stand by the more laborious plan of interrogating the facts in order to learn the manner of action of causes singly and in combination'.

Where Friedman cast the Marshallian–Walrasian distinction as a contrast between concreteness and abstractness, I have elsewhere cast it in terms of different strategies (Hoover 2006). With the problem of microfoundations in mind, I contrasted a Walrasian engineering strategy with a Marshallian archaeological strategy. Both want to understand the structure of the economic building. For the Walrasian, it is a question of working it out, starting with the foundations. If we do not get them right, the superstructure will be shaky. For the Marshallian, the problem is that a systematic structure lies beneath the complexities of economic reality. To lay this structure bare, we must dig down to find the foundations, modifying and adapting our theoretical understanding as new facts

accumulate, becoming ever more confident in our grasp of the superstructure, but never quite sure that we have reached the lowest level of the structure.

Keynes's attitude is similar to Marshall's, but Keynes is more a physician than archaeologist. Keynes's hands are soiled not by the dust of an economic Pompeii, but by the blood, sweat and ordure of the body economic. Like the body, the key mechanisms of the living economy are just as hidden and probably more complex than a buried city. And rather than a detached, academic interest, the study of economic physiology originates in the pressing need for diagnosis and cure.<sup>3</sup>

#### AN EXEMPLAR: A TRACT ON MONETARY REFORM

How does Keynes's Marshallian method play out in practice? And what is the role of theory in it? While Keynes's theory changes and develops across the three major economic works (the *Tract on Monetary Reform* [1923], the *Treatise on Money* [1930] and *The General Theory* [1936]), they display a consistent methodology and a similar structure. Of the three, the *Tract* was directed towards the broadest audience and employs the simplest theoretical structure, making it easier to see the role of theory in Keynes's methodological conception.

The opening two chapters of the *Tract* introduce the problem of price stability. Keynes sees the price fluctuations since the First World War as of a different order of magnitude than earlier fluctuations and as 'one of the most significant events in the economic history of the modern world' (JMK IV: 1). Characteristically, Keynes sets the stage with a data-rich description of the economic landscape. Perhaps more important, he engages in conceptual analysis, starting with a taxonomy of economic agents. Keynes lays out the costs of both inflation and deflation and its differential effects on investors (who later in the *General Theory* he prefers to call *rentiers*), businessmen and earners, concluding that inflation is 'unjust' and deflation 'inexpedient' (JMK IV: 36).

He also provides a preliminary sketch of the quantity theory of money. The quantity theory is one of the oldest theories in economics. Broadly, it states that the general level of prices in an economy is proportional to the stock of money. Keynes's initial discussion

takes some sophisticated detours, including one on how the quantity theory would have to be modified to suit a hyperinflation. Anticipating the famous analysis of Cagan (1956), Keynes argued that the demand for money would fall during a period of extremely rapidly rising prices, as the inflation increased the cost of holding money measured by the accelerating fall in its purchasing power measured in the goods it could buy, encouraging people to avoid holding it whenever possible. In order to bring the supply and demand into alignment, the level of prices would have to rise more than in proportion to the stock of money.

Keynes sketches the political economy of inflation, laying the ultimate blame at the feet of an impecunious government and the political influence of the debtor class. The preliminary conceptual and data analysis sets up the main object of the subsequent theoretical analysis: how to secure, on average, a zero rate of expected inflation while minimizing the variability of the general price level.

The analytical core appears in chapter 3, 'The theory of money and the foreign exchanges'. Here Keynes says 'we must lay the theoretical foundations for the practical suggestions of the concluding chapters'. While some of the most interesting analysis concerns the foreign exchanges, we shall concentrate here on Keynes's use of the quantity theory. Unlike in his later works, in which Keynes aims at theoretical innovation, in the *Tract* he adopts what he regards as Marshall's account of the quantity theory. 'This theory,' he writes, 'is fundamental. Its correspondence to the facts is not open to question. Nevertheless, it is often misstated and misrepresented' (JMK IV: 61). His aim is to state it accurately in terms that are precisely defined.

The quantity equation in Keynes's notation can be written:

$$n = p(k + rk')$$

where  $n$  is cash in circulation with the public;  $p$  is a cost-of-living index (measured as price per consumption unit); the public wishes to hold the equivalent of  $k$  units of consumption goods as cash and a further  $k'$  units as bank deposits;  $r$  is the customary bank-deposit reserve ratio (the fraction of deposits that banks must hold in cash), so that  $rk'$  is banks' holdings of reserves (JMK IV: 63). The characteristic neutrality property of the quantity theory (i.e. the proportionality of prices to money) is demonstrated on the assumption

that cash ( $n$ ) increases while the habits of the public and the banks ( $k + rk'$ ) remain constant: to maintain equality in the quantity equation, prices must rise proportionately.

In keeping with other quantity theorists, such as David Hume and Irving Fisher, Keynes notes that neutrality is, at best, a long-run property.<sup>4</sup> In the short run it is a mistake to assume that  $k$ ,  $k'$  and  $r$  are independent of  $n$ . Keynes's analysis of the short run follows a characteristic pattern. The object is the analysis of inflation and deflation. The ultimate causes are exhaustively considered, but the model is not extended to formalize the analysis. The quantity equation itself is the limit of formal analysis. Keynes uses it to provide a classificatory scheme for the various causes. Those that operate through changing cash fall under  $n$ ; through changing credit conditions, under  $r$ ; changing real balances (money demand), under  $k$  and  $k'$ . While  $k$  and  $k'$  are not directly controllable, they can be influenced by bank-rate policy, and remaining instabilities can be offset through the directly controllable  $n$  and  $r$ .

In the remainder of chapter 3 Keynes goes on to develop the theory of foreign exchange, but this is a good point to pause and take stock. The final chapters of the *Tract* use the theory of chapter 3 to reanalyze the problems identified in the first two chapters and to propose a set of policy recommendations to achieve the end of price stability. Taken as a whole, the *Tract* has the form of a diagnostic manual: a symptomatology, relevant physiology, illustrative case studies, and treatment and management options.

The analytical pattern of the *Tract* is exactly the same as that of the *Treatise on Money*. The *General Theory* is also conceived in the same functional pattern, though the book itself concentrates on the relevant physiology, leaving the other aspects at a casual and underdeveloped level. Keynes self-consciously adopted this more academic and detached form 'chiefly addressed to [his] fellow economists' since he believed that the failures of orthodox economics were not to be found 'in the superstructure, which has been erected with great care for logical consistency, but in a lack of clearness and of generality in the premises' (JMK VII: XXI).

Returning to the example of the *Tract*, the modern economist might be inclined to question whether Keynes's reformulated quantity equation qualifies as a theoretical contribution at all. It is a far cry from Debreu – or Walras, for that matter. But theory in

economics has come to have a peculiar meaning. The *Oxford English Dictionary* lists a series of definitions that capture Keynes's conception. One defines *theory* as: 'A conception or mental scheme of something to be done, or of the method of doing it; a systematic statement of rules or principles to be followed.' His major theoretical works are certainly that.

A second runs:

A scheme or system of ideas or statements held as an explanation or account of a group of facts or phenomena; a hypothesis that has been confirmed or established by observation or experiment, and is propounded or accepted as accounting for the known facts; a statement of what are held to be the general laws, principles, or causes of something known or observed.

This fits Keynes's clearly casual analysis and explanatory intent: 'The moral' of his theoretical account of the quantity theory, Keynes writes, 'is that the price level is not mysterious, but is governed by a few, definite, analysable influences' (JMK IV: 68).

Perhaps the most apt definition runs: 'That department of an art or technical subject which consists in the knowledge or statement of the facts on which it depends, or the principles or methods, as distinguished from the *practice* of it.' One citation, for instance, contrasts *music theory*, the knowledge of harmony, counterpoint and so forth, with the art of playing. The *Tract*, like the *Treatise*, fits easily into this mould.

Even if we concede that Keynes has a theory, would not a modern critic be right to regard it as a thin gruel? That would be to misunderstand the function of theory in Keynes's diagnostic schema. The quantity equation in the *Tract* represents a key part of the complex economy, the *causal nexus* (to use Keynes's own phrase – JMK VII: 173) that connects money, prices and the real economy. Essentially, it is meant to capture and isolate a mechanism. Inputs come from outside this mechanism, and the variables of the quantity equation themselves exercise a causal influence over other variables outside the mechanism. But the equation captures the fundamental causal connections among  $n$ ,  $p$ ,  $k$ ,  $k'$  and  $r$ . It serves as an accounting statement: whatever the complex of causes, their effects on the variables of the quantity equation must respect the identity; if any cause alters  $p$ , it must do so, not directly, but through its effect on  $n$ ,  $k$ ,  $k'$  or  $r$ . The

theory is not a machine for prediction, but a tool for analysis. It provides a principled framework for systematically classifying the various symptoms of economic maladies, charting their likely courses and suggesting an appropriate regimen.<sup>5</sup>

#### THEORY AS A CAUSALLY ISOLATED SYSTEM

The diagnostic role of theory in Keynes's economics accounts for his ubiquitous use of causal language.<sup>6</sup> Causality is naturally a diagnostic concept (Hoover 2004a). English idiom says, 'I started the car,' not 'I caused the car to start.' But if the car stalls, it is perfectly idiomatic to say, 'What caused it to stall?' Keynes underscores the importance of a causal account in the opening lines of chapter 10 of the *Treatise*:

The fundamental problem of monetary theory is not merely to establish identities or static equations relating (e.g.) the turnover of monetary instruments to the turnover of things traded for money. The real task of such a theory is to treat the problem dynamically, analysing the different elements involved, in such a manner as to exhibit the causal process by which the price level is determined, and the method of transition from one position of equilibrium to another.

(JMK V: 120)

Keynes's strategy, as we saw in respect of the *Tract*, is to single out a causal nexus as the theoretical core of the analysis. But what qualifies a relationship to be an element of this nexus? Keynes's analytical practice can be clarified by Figure 5.1. Arrows represent causal influence running from inputs to outputs through the causal nexus or theoretical core. This fits the Marshallian strategy, as the theoretical core need not be the core of the whole economy, but only of that part relevant to the problem at hand.

The economy is complex, so the number of inputs ( $N$ ) and outputs ( $M$ ) may be very large. So too, in principle, may the number of elements of the causal core. Only four are shown in the figure, partly for expositional simplicity and partly because it illustrates Marshall's methodological view that the central elements must be chosen in a way that keeps their number tractable. Every possible linkage is shown among the four causal elements in the core, but the business of theory is to state the existence, nature and direction

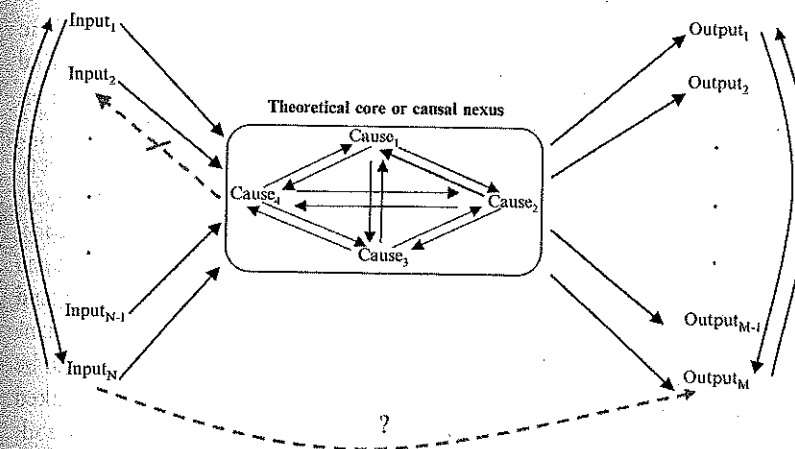


Figure 5.1. The causal structure of Keynes's economic theory.

of the linkages among causal variables, so not all these elements would be operative in a real theory.

The critical point is that the causal flow runs only in one direction from inputs to the core and from the core to outputs. In particular, a link such as the one shown as a dashed grey line from the causal nexus to  $Input_2$  is ruled out. This reflects Keynes's strategy of laying out the core theory and then addressing the range of factors that influence its terms, each influencing the economy through the mediation of the core.

Can we rule out direct influences from inputs to outputs that do not go through the core as shown by the dashed grey link between  $Input_N$  and  $Output_M$ ? Since Keynes does not offer us a methodological analysis, we can only infer from his practice. One piece of evidence to suggest that such links should be ruled out is Keynes's rejection of Fisher's account of the effect of inflation on interest rates (JMK VII: 142). Although Keynes accepts the fact of a correlation between interest rates and high inflation rates, he rejects Fisher's account because, unlike Fisher, he sees it as the product of a more intricate causal chain rather than as a direct linkage. Another piece of evidence is found in the sequence of more elaborate core theories that Keynes develops from the *Tract* through to the *General Theory*. In particular, the insight that Keynes believes

separates the *General Theory* from his previous quantity-theoretic accounts is that the factors that determine prices also determine output, which leads him to widen his core theory to eliminate an unmediated linkage (JMK VII: xxii).

Keynes's analytical practice is not only Marshallian, it is also very much in the spirit of Simon's (2001; see also Boumans 2001) later account of *near-decomposability*. For Simon, a system is nearly decomposable when it can be divided into sub-systems such that the linkages among the elements within each sub-system are strong and the linkages between sub-systems are weak. One Marshallian element of Simon's conception is that, for many purposes, sub-systems can be analyzed as independent units, neglecting the other, weakly linked sub-systems. In practice, Simon frequently associates decomposability with a temporal hierarchy: the elements of a sub-system respond quickly to each other, but only slowly to those in other sub-systems; and, indeed, individual sub-systems can be treated as units relative to one another. For example, plate tectonics treats the continents as sub-systems that interact on a very long time-horizon; while another part of geology, hydrology, treats the interactions of water flows within continents on a much shorter horizon. Hydrology and plate tectonics lose little from mutual neglect.

That Keynes's thinking ran along these lines is evident in his treatment of aggregation and in his famous distinction between the economics of the individual producer and the economics of output as a whole – later enshrined in the division between microeconomics and macroeconomics (JMK VII: 293). For Keynes, as for Simon, time-horizon is a key distinction. It is often forgotten that Keynes's famous *bon mot*, '[i]n the long run we are all dead', was not offered as advice to live in the moment but as an aside in an analytical decomposition: 'But this *long run* is a misleading guide to current affairs. . . Economists set themselves too easy, too useless a task if in tempestuous seasons they can only tell us that when the storm is long past the ocean is flat again' (JMK IV: 65). The level of the ocean matters (coastal cities are lost to rising seas over centuries), but that process has nothing much to do with the immediate effects of, say, a tsunami. Keynes was alert to what we might now call the paradox of monetarism: in the long run, neutral money is the least important factor in the economy; while in the short run, non-neutral money may be the most important (e.g. JMK V: 83).

Keynes makes the point about decomposability less poetically but with more precision in the *General Theory*:

The division of the determinant of the economic system . . . must be made entirely on the basis of experience, so as to correspond on the one hand to the factors in which the changes seem to be slow or so little relevant as to have only a small and comparatively negligible short-term influence on our *quaesitum*; and on the other hand to those factors in which the changes are found in practice to exercise dominant influence on our *quaesitum* . . . Our final task might be to select those variables which can be deliberately controlled or managed by central authority in the kind of system in which we actually live.

(JMK VII: 247)

Echoes of Marshall; anticipations of Simon.

Keynes is unusually attentive to definitions and preliminary conceptual analysis. The *Treatise* opens with a chapter on the classification of money, and it contains a book of five chapters in sixty-three pages dealing with the problem of identifying the appropriate price index for money. The *General Theory* similarly devotes a book of four chapters in fifty-one pages to 'Definitions and ideas'. Keynes's focus on conceptual precision can be best understood as an attempt to articulate his theory in a manner that corresponds to the causal joints of the economy.<sup>7</sup> Referring to his own version of the quantity equation in the *Treatise*, Keynes observes:

they are mere identities, truisms which tell us nothing in themselves. In this respect they resemble all other versions of the quantity theory of money. Their only point is to analyse and arrange our material in what will turn out to be a useful way for tracing cause and effect, when we have vitalized them by the introduction of extraneous facts from the actual world.

(JMK V: 125; cf. 198)

Once again, Keynes anticipates the views of a later author. Nancy Cartwright (1989: ch. 2, section 2) tells the story of the Lamb dip, a phenomenon in which the intensity of a gas laser as a function of its frequency relative to resonance shows a double peak. The physicist Lamb was able to provide a mathematical analysis that permitted exact calculation of the effect, which he and others nevertheless regarded as inadequate until a causal account could be provided.



Keynes's account of liquidity preference in the *General Theory* proceeds from a similar motivation. Keynes taxes classical economics with maintaining simultaneously two different, and causally unconnected, theories of the interest rate in which in 'volume I dealing with the theory of value' it is determined by savings and investment and in 'volume II dealing with the theory of money' it is determined by the quantity of money (JMK VII: 182). Liquidity preference presents the interest rate as determined at the point that divides financial markets into two equally balanced groups – one expecting capital gains, the other capital losses. The interest rate, in turn, is a causal determinant of investment through comparison to the marginal efficiency of capital. Keynes argues that:

the traditional analysis is faulty because it has failed to isolate correctly the independent variables of the system. Savings and investment are determinates of the system, not determinants. . . These determinants are, indeed, themselves complex and each is capable of being affected by prospective changes in the others. But they remain independent in the sense that their values cannot be inferred from one another.

(JMK VII: 183-4)<sup>8</sup>

Some have regarded Hicks's (1946: ch. 12) demonstration of the equivalence of the liquidity preference theory with the earlier loanable funds theory of interest rates as showing that Keynes failed to understand simultaneity. But this misses the point: the Marshallian methodology and causal isolation require that while some relationships may be simultaneous, not every variable can be endogenous in any practically useful analysis. (The spirit of the modern vector-autoregression approach to econometrics, in which the only exogenous terms are random shocks, is quite contrary to Keynes's methodology.) Keynes, like Lamb, looks for an account in which not only does everything add up, but the causal forces are accurately mapped.

It is practically important to get the causal articulation right. Keynes argues that unclearness about 'the causal process through which a reduction in the quantity of money leads eventually to . . . lower . . . prices' encourages the policy-maker 'to contemplate deflation too light heartedly' (JMK V: 244).

A preference for causal articulation has a surprising implication for Keynes. One must sometimes prefer *qualitative* to *quantitative*

investigation. Fisher's quantity equation, Keynes admits in the *Treatise*, is better suited to analyzing the available data (JMK V: 210). Where Keynes, following Cambridge tradition, always related the quantity of money to income, Fisher's famous quantity equation,  $MV = PT$ , relates money to the volume of transactions, which generally exceeds incomes by many orders of magnitude as businesses engage in many pounds' (or dollars') worth of monetary exchanges in the process of generating each pound or dollar of income. Although Keynes accepted that the alternatives to his 'fundamental equations', including not only Fisher's but also his own quantity equation from the *Tract*, are equally good as accounting identities, he came to believe that they fail to map the causes that truly animate the economy (JMK V: 198-9). The economy is sufficiently complex, and precise conceptual analysis demonstrates that it is difficult – or impossible – to capture key causes in statistical data: expectations, for example, are intrinsically unobservable. Qualitative analysis is often the best that we can do.

#### THEORY AND THE REAL WORLD

Keynes's modern reputation largely rests on the *General Theory*, and his opposition to Tinbergen's programme of econometric modelling is well known (JMK XIV: 306-18); it is thus easy to see him as divorced from data or, perhaps, even hostile to it. But the *Tract* is chock full of data, and Keynes introduces volume II of the *Treatise* as 'the applied theory and a quantitative study of the facts as they exist in the leading monetary systems of today' (JMK VI: 3).<sup>9</sup> How does Keynes imagine that theory is applied and how do facts relate to it?

The pure-applied distinction is not simply a distinction between theory that is quantified and adapted to particular economic organizations.<sup>10</sup> Rather, pure theory concerns the theoretical core or causal nexus of Keynes's theory, while applied theory concerns its linkages to the inputs and outputs shown in Figure 5.1. Much of volume II of the *Treatise* concerns the influence of such factors as bank rate, which do not appear in the theoretical core directly, on outcomes for the real economy, also not in the core, mediated through Keynes's fundamental equations.

Keynes's approach is not empiricist in the hypothetical-deductive mode; he does not subject his theory to direct tests. We might think of Keynes's theories as *synthetic a priori*. 'A priori' because they are largely based on common sense and background knowledge, which may implicitly include deductions from the mainstream economic theory of Marshall and other neo-classicals. 'Synthetic', not analytic, because, unlike Austrians (such as Menger 1950 and Mises 1966), Keynes does not regard economic theory as a branch of pure logic; rather, like Marshall, he regards it as an instrument of inquiry into facts about causes.

On the one hand, theory does not relate to data in the simple pattern of verification or falsification. Prior theory is critical to understanding the import of data. Malthus was, in Keynes's view, hard pressed to overthrow dominant Ricardian theory, despite its empirical inadequacies, in large measure because 'he failed to furnish an alternative [theoretical] construction' (JMK VII: 32). On the other hand, theory can be reasonably adjusted to fit the facts. For example, Keynes infers the smoothness of the aggregate liquidity preference function, not from prior theoretical considerations, but from the efficacy of open-market operations (JMK VII: 197).

Keynes's vision of the economy is that it is complex and our knowledge of it is bound to be incomplete and frequently qualitative only. Keynes's (XIV: 306-18) attack on Tinbergen's econometric business-cycle model was based in large measure on the presumed requirement of Tinbergen's (1939) statistics to capture a complete list of causes and for the relationships among the variables to be quantitatively stable – in his view an utter impossibility. Clearly, Keynes would have shown the same scepticism towards Tinbergen's successors, the Cowles Commission's econometric programme (Koopmans 1950; Hood and Koopmans 1953), and the 'Keynesian' efforts to use macroeconometric models to 'fine-tune' the economy.

Equally, Keynes would have dissented from the more recent vision of the goal of theory as providing a simulacrum for the economy. Lucas states the vision clearly: 'Our task . . . is to write a FORTRAN program that will accept specific economic policy rules as 'input' and will generate as 'output' statistics describing the operating characteristics of time series we care about, which are predicted to result from these policies' (Lucas 1981: 288).

Although Lucas's division of inputs, theoretical model and outputs echoes the categories used in Figure 5.1 to describe Keynes's own vision, there are essential differences. Lucas's programme can work only if it captures all the causally relevant factors, since he wants predictions or quantified operating characteristics of the economy. In effect, Lucas makes no distinction between causal relations that belong to the nexus and those that are outside it. It is as if the box representing the causal nexus were drawn around the entire causal system.

In contrast, Keynes, with his Marshallian methodology, does not assert that the causal nexus is complete – hence the causal connections among inputs and among outputs that do not run through the causal nexus. His theory can, even when applied quantitatively, at best suggest tendencies and influences that can provide guidance to the policy-maker, but not forecasts on which any confidence can be placed.

Keynes endorses '[t]he reasonable doubts of practical men [particularly Governor Strong], towards the idea that "the Federal Reserve System has the power to raise or lower the price level by some automatic method, by some magic mathematical formula"' (JMK VI: 305). More positively, Keynes offers a vision of the task of theory quite different from Lucas's: 'The object of our analysis is, not to provide a machine, or method of blind manipulation, which will furnish an infallible answer, but to provide ourselves with an organized and orderly method of thinking out particular problems . . .' (JMK VII: 297). In discussing the credit cycle, he observes that

[t]he possible varieties of the paths which a credit cycle can follow and its possible complications are so numerous that it is impracticable to outline all of them. One can describe the rules of chess and the nature of the game, work out the leading openings and play through a few characteristic end-games; but one cannot possibly catalogue all the games which can be played.

(JMK V: 253)

An effective economic theory is like a good chess manual, a source of guidance and wisdom to the practitioner, but not a mechanical algorithm for translating policy goals into policy actions, nor a crystal ball for foretelling their precise consequences.

The test of a theory as an element of a diagnostic manual is not found in a crucial experiment but in the ability of theory to make

sense of the economic situation. Keynes proves the theory of the *Treatise* in the case studies of historical episodes in chapter 30 of volume II. Even in the more academic *General Theory*, he suggests that the marker of success is 'that our theory must be capable of explaining the phenomena of the trade cycle'.

This is the clue to Keynes's theoretical development from a Marshallian quantity-theorist to the aggregate-supply-and-demand analyst of the *General Theory*. There is no simple, statistical test, yet the theory must make sense of the data and offer a persuasive causal account of the actual development of the economy. While denying that the preconditions for formal statistical tests existed, he nevertheless preferred to examine his theories' ability to rationalize quantitative data where possible. Because he believed that many of the causally relevant conclusions of his theory were necessarily not quantitative, such examinations were not always possible. Yet that did not put the theories beyond test. In a telling aside, Keynes suggests that the doubts expressed by Federal Reserve Governor Strong about the efficacy of monetary control 'cannot be dispelled merely by pointing to the truisms of a quantity equation. In a sense they can only be dispelled by the prolonged success of an actual attempt at scientific control' (JMK VI: 309). Theories are tested, then, not only directly by economists but indirectly through the successes and failures of policy-makers. One of Keynes's goals for his theoretical analysis was to demonstrate that the prospects of success warranted the trial. The successive elaborations of Keynes's monetary theory were each motivated by his perception that the previous version had proved inadequate to the rationalization of the data or to the support of practical policy – a pragmatic, rather than academic, standard.

#### THE ECONOMIC THEORIST IN THE ECONOMY

Keynes's pragmatic, diagnostic conception of economic theory provides a different, and perhaps more satisfactory understanding, of the role of the economist in the economy. Returning to Keynes's chess analogy, we can think of the 'Keynesians' after the Second World War as seeing the economist as a chess master, who can stand above the board and move the pieces – at least

within some limits. The perspective is overarching, if not omniscient. And, indeed, the ambition seemed to be a more comprehensive, predictive understanding of how the economic game would play out conditional on various moves – as if IBM's 'Big Blue' or its successor were to replace Keynes's chess manual.

The New Classical economists, particularly in the wake of Lucas's (1976) critique of econometric policy evaluation, argued that this vision was faulty, because the pieces were not ciphers but actors of the same species as the policy-makers. The new classical solution was, in effect, to endow each piece with the same information and perspective as the chess master. Yet the ambition was still a comprehensive, predictive understanding of the outcomes of the game. It was quickly pointed out that there are paradoxes in such an approach. If the pieces know as much as the chess master, who knows everything relevant up to a random error and can, therefore, predict the future (the rational-expectations hypothesis), then in what sense can the policy-maker truly be an advice-giver? Sargent (1984) saw this as a paradox of free will (cf. Craine and Hardouvelis 1983; LeRoy 1995). In the effort to respect the intentionality of the economic agent, the policy-maker himself has been reduced to a cipher.

Keynes's strategy is different. Neither the economist nor the economic agent possesses the practical omniscience of rational expectations. The chess player is just another player of the board – say, the king's bishop. Yes, he possesses a chess manual, but it is one that has been written, not from the overarching perspective of the chess master, but from the ground-level view of the bishop. Acquisition of economic knowledge occurs within the game. It is necessarily partial, bound by particular perspectives and subject to debate. Yes, Keynes and his fellow economists are the bishops. They argue and debate. They possess the arcane knowledge of the manuals of play, in that sense they know more than the other players. Their theories may be cast in an overarching perspective, but this is merely a projection from inside the game, and not the product of a standpoint that they somehow occupy above the game. The test of their theories is largely the success of their policy advice: does their side win the game? But tests of that sort can be run only if the economists can convince the kings, queens and even the pawns to follow their manual.

Seen this way, Keynes's understanding of the place of economic theory in the economy makes neither the mistake of the 'Keynesians' nor suffers from the paradoxes of the new classicals. And it suggests that Keynes's persistent efforts to cast his economic theory into a specific policy context and, more often than not, to expound it in forms that would be accessible to the policy-maker and the literate public arose not only out of a personal urge to practical action, but out of an understanding of the function and limitations of economic theory itself.

## NOTES

- 1 I accept Clarke's (1988) thesis that the *Treatise on Money* was strongly formed by Keynes's contemporaneous experience as an adviser to the UK Treasury, while the *General Theory* was a more intellectually detached work. Nonetheless, I believe that without experience in practical policy-making, the *General Theory* would have been a very different book.
- 2 Keynes was not a doctor, even in the sense that most modern academics are. The degree of Doctor of Philosophy was uncommon in England in many subjects until after the Second World War, so that Keynes, like Marshall, Pigou, Hicks and many others, held only an MA degree, which involved no further study beyond the BA. Keynes also never held the title Professor. He was a long-serving fellow of King's College Cambridge.
- 3 Keynes himself, as well as expressing the view that '[i]f economists could manage to get themselves thought of as humble, competent people, on a level with dentists, that would be splendid' (JMK IX: 332), was no stranger to medical metaphors: e.g. JMK IV: 80; JMK VI: 130, 199ff.
- 4 It is here that Keynes delivers his quip about being dead in the long run.
- 5 Keynes's diagnostic use of the quantity theory bears a close kinship with Friedman and Schwartz's (1963a, b) analysis of the monetary history of the United States. This is hardly surprising, as Friedman was equally a disciple of Marshall (see Hoover 2006) and knew and approved of both the *Tract on Monetary Reform* and the *Treatise on Money*, despite his reputation as an anti-Keynesian, which was based largely on his objections to the policies advocated by followers of Keynes after the publication of the *General Theory*.
- 6 Some examples of Keynes's ubiquitous use of causal language are found in JMK IV: 129, 142; JMK V: 126, 139, 141, 163, 166, 201, 244, 231; JMK VII: 39, 57.

- 7 It does not weaken the point about the function of these definitions to recall that Keynes's *Treatise on Money* was severely criticized by Hayek and others because of its definitions.
- 8 Keynes's characterization of independence here anticipates Simon's (1953) definition of causal order with reference to recursive systems.
- 9 Bateman (1990) anticipates a key point of this essay: despite Keynes's critical assault on Tinbergen, Keynes was neither an opponent of empirical economics nor of econometrics in general.
- 10 See Backhouse (1998: 88–91) for a discussion of the difficulties of drawing a sharp distinction between economic theory and applied economics in Keynes's time, and Backhouse and Biddle (2000), especially pp. 1–7 for a discussion of Keynes's own view of the distinction.