Ital Econ J (2015) 1:139–153
DOI 10.1007/s40797-015-0009-4

RESEARCH PAPER

Samuelson, Keynes and the Search for a General Theory of Economics

Roger E. Backhouse

Received: 23 September 2014 / Accepted: 10 January 2015 / Published online: 12 February 2015

Abstract Responding to the claims Keynes made in his "General Theory", economists debated whether Keynesian economics or classical economics was more general. This paper argues the concept of generality underlying most of this literature differs from that underlying the neoclassical synthesis proposed by Paul Samuelson in "Economics", and that this in turn differed from the notion of generality found in his "Foundations of Economic Analysis". No fewer than three ideas of what it means to have a general theory are involved.

Keywords General theory · Keynes · Samuelson · Equilibrium · Neoclassical · Synthesis

JEL Classification A1 · B2 · B3 · B4 · D5 · E1

1 Introduction

The idea of a general theory of global applicability has a powerful appeal to economists. Maynard Keynes sought to justify his theory as the *general* theory of employment, interest and money, whilst in the postwar period the prestige of general equilibrium theory rested to a considerable extent on its claim to generality. Postwar debates over Keynes and "the classics" were, to a considerable extent, attempts to show that one theory was general and the other a special case, applicable only if local circumstances were right. Keynesian economics thus provides an interesting test case to discuss the the relationship between global and local approaches to economic analysis.[1]

[1] This was the theme of the STOREP conference for which this paper was first prepared.

R. E. Backhouse (✉)
Department of Economics, University of Birmingham, Edgbaston, Birmingham B15 2TT, UK
e-mail: reb@bhouse.org.uk

The main subject of this paper is, however, not Keynes, but Paul Samuelson, the economist who arguably dominated American economics in the 1950 and 1960s. As far as many economists were concerned, *Foundations of Economic Analysis* (Samuelson 1947) virtually defined how to do economic theory rigorously: it presented the theory of constrained maximisation; it showed how to use methods of linear algebra to derive comparative statics results from such models; it explained how to formulate and analyse economic dynamics; and its appendices developed many of the mathematical techniques that economists needed to know. The ultimate in theoretical rigour might involve the mathematics of convex sets and other techniques not found in *Foundations* but such methods were used by only a tiny minority of economists. Published the following year, *Economics: An Introductory Analysis* (Samuelson 1948) was different. It focused on the so-called "Keynesian cross", the diagram showing equality of aggregate saving and investment which even adorned the book's cover but its appeal to students lay as much in its style and the way discussions of institutions—households, business and government—linked economic analysis to things that students could understand. While writing the book, Samuelson repeatedly apologised to his friends that the book was very "institutional". The book virtually swept the board in elementary economics teaching in the United States, so much so that it was later claimed that all introductory economics textbooks were clones of Samuelson.

The aim of this paper is to argue that the literature contains three very different conceptions of what it means to search for a general theory of economics. Failure to recognise this has caused economists to misunderstand the ideas of one of the most important figures in the discipline since the Second World War.

2 Keynes's General Theory of Employment

The most influential book on economics in the twentieth century bore the title, *A General Theory of Employment, Interest and Money* (Keynes 1972 [1936]). In that book, John Maynard Keynes argued that the theory he was proposing was more general than the classical theory that he was criticising. As he explained in the Preface, he was integrating traditional value theory into a theory of a monetary economy:

> A monetary economy, we shall find, is essentially one in which changing views about the future are capable of influencing the quantity of employment and not merely its direction. But our method of analysing the economic behaviour of the present under influence of changing ideas about the future is one which depends on the interaction of supply and demand, and is in this way linked up with our fundamental theory of value. We are thus led to a more general theory, which includes the classical theory with which we are familiar as a special case. (Keynes 1972 [1936], pp. xxii–xxiii)

The analogy he drew was between Euclidian and non-Euclidian geometry, the latter encompassing the former. Readers also noted the implicit comparison with Einstein's general theory of relativity, of which Newtonian mechanics was a special case [e.g., Pigou (1936, p. 115) commented that "Einstein actually did for physics" what Keynes believed himself to have done for economics]. Whereas the Newtonian theory is the

special case that is relevant to most of the physical problems encountered by human beings, the classical theory of economics, Keynes argued, is simply not relevant to a world in which we know very little about the future.

Though Keynes wrote in terms of his theory being more general than the classical, he did not argue in terms of formal models: though others claimed that all the elements needed to construct such a model were found in his book, he refrained from taking this step. Though he was trained as a mathematician and his arguments were suffused with mathematical ideas, the most important ideas (for example concerning decision making under uncertainty) were formulated verbally.[2] Thus when discussing the long-run policy implications of his theory, he simply wrote about the circumstances under which his theory and the classical theory would apply.

> If our central controls [over the level of investment] succeed in establishing an aggregate volume of output corresponding to full employment…, the classical theory comes into its own again… then there is no objection to be raised against the classical analysis of the manner in which private self-interest will determine what in particular is produced, in what proportions the factors of production will be combined to produce it, and how the value of the final product will be distributed (Keynes 1972 [1936]: 378–379).

Despite his arguments about his theory being more general than the classical theory, he did not derive his conclusions about the applicability of the two theories from a formal mathematical model but provided a verbal argument about how the two theories related to each other.

There was thus scope to debate whether Keynes was correct to claim his theory was the more general one. However, in this very large literature, little attention has been paid to the question of *why* Keynes believed it was desirable to have a general theory. Given his view of economics as a moral science, merely copying the natural sciences would not have been sufficient reason. It is only slightly less plausible to claim that his preference for a general theory reflected his training in mathematics, a discipline in which a more general theory, dependent on less restrictive assumptions and applicable to a larger range of case, is desirable. However, that is still a weak explanation given that Keynes was, at that point in his career far from living in an ivory tower, thoroughly immersed in the practical worlds of journalism, finance and government policy making. The reason has to be sought in his economics.

The canonical statement of the classical theory was found in Alfred Marshall's *Principles of Economics* (Marshall 1920) together with the theory of monetary economics that he had taught for many years at Cambridge and which had been developed by his followers. It was not "general equilibrium" theory in the strict Walrasian sense, but a theory of competitive equilibrium with many distinctive Marshallian qualifications and modifications, which provided a general framework within which to analyse economic problems. Marshall's long run might be difficult to pin down at all precisely, and the theory might need modifying to take into account local conditions, such as the nature of the product, production conditions, and whether the market was compet-

[2] See the discussion of Keynes's use of mathematics in Backhouse (2010).

itive, but supply and demand, with the theories of consumer and producer behaviour on which they were based added up to a general theory.

It was, moreover, a theory with clear welfare implications. Marshall's doctrine of maximum satisfaction sought to demonstrate that, except where some industries were subject to increasing returns to scale, the price and quantity generated by competitive behaviour would maximise the sum of consumer's surplus. Though the analytical apparatus was new, this resulted in a conclusion of which Mill (2006, p. 945) had provided the canonical statement, when he had written that "*Laissez-faire*, in short, should be the general practice: every departure from it, unless required by some great good, is a certain evil". Keynes presumably had Mill's book in mind when he wrote in his last chapter about the social philosophy towards which his theory might lead. In arguing that his was the more general theory, he was implicitly questioning Mill's judgement that the theory of competitive markets constituted the general case and hence that laissez-faire produced the best outcome for society.

At one level the reason why Keynes chose to talk in terms of a general theory is obvious: the classical theory rested on the assumption that people could correctly anticipate the future and Keynes believed that this was a special case of a theory in which the future is imperfectly known. However this does not answer the question of why Keynes chose to emphasise the generality of his theory rather than simply presenting it as a new theory of employment, interest and money that was relevant to the specific circumstances of the time. There are several possible answers to this question.

1. Keynes wanted to demonstrate that the cause of unemployment was not to be found in wage inflexibility. The dislocation of the economy that the world experienced in the early 1930s was not the result of workers holding out for wages that were too high. Cutting wages—a difficult and unjust process—would not solve the problem of unemployment: on the contrary, it would make the situation worse for a large number of reasons (outlined in Chapter 19). To show this he needed to construct a new theory that was demonstrably superior to the traditional theory.

This is true but it still does not go far enough, for it does not explain why a general theory would perform this task better than a new and more appropriate local theory.

2. Offering a theory that was more general than the "classical" theory made it easier for his fellow economists, to whom the book was addressed, to accept his arguments than if he had rejected the "classical" theory in its entirety, because it meant that they did not have to abandon their old ideas completely. They could still use the traditional theory of competitive equilibrium in the specific circumstances where it was applicable.

This begs the question of why he thought that offering a general theory would make it easier for his fellow economists to accept his argument than if he had presented it as an extension of already-accepted ideas.

3. Carabelli (1991), in a rare discussion of this problem, argues that had Keynes offered a special theory, Keynes would have had to produce persuasive empirical

evidence for it, a task that would have been particularly difficult given that the classical theory had such a long history and was so well established.

4. A further reason is that, even had he been able to adduce persuasive empirical evidence that his theory offered an accurate diagnosis of what was happening, his critics would have been able to argue that the world should be changed so that his theory was no longer applicable. It would have been what Peter Clarke has called an "imperfectionist" theory, to which critics would respond that the imperfection should be removed. This had happened in the 1920s when, faced with an uncompetitive exchange rate, policy makers had refused to accept Keynes's argument that the difficulty in reducing wages, caused by labour market institutions, should be taken as a constraint on monetary policy. Instead, the view had been taken that measures should to be taken to reduce wages. In contrast, if his theory were more general, this way of defending orthodoxy would not work: it would be necessary to challenge his arguments directly.

Keynes thus sought to argue that his theory was a more general theory, encompassing the theory of competitive supply and demand represented by Mill and Marshall.

3 The Search for a General Macroeconomic Theory

Keynes's claim to be proposing a general theory of employment laid the foundations for the debate over what Hicks (1937) called "Mr. Keynes and the classics". Keynes's argument over the generality of his theory meshed perfectly with the Walrasian approach preferred by many members of the rising generation of mathematical economists inspired by Hicks, for the simultaneous equations of Walrasian theory were seen as providing a general theory of economics. The "Keynes and the classics" literature offered complete algebraic models from which "Keynesian" and "classical" results could be derived by making different assumptions about parameters or functional forms. However, the use of such formal models of general equilibrium inspired by Walras (different from the Marshallian theory in which Keynes had been trained) of which the IS–LM model was the most popular variant, led inexorably to the conclusion that Keynesian unemployment rested on the assumption that wages did not adjust flexibly to clear the market for labour. Economists might resist that conclusion, positing reasons why the interest rate might fail to equilibrate saving and investment, but the Walrasian logic left no route by which unemployment could be explained unless there were some reason why wage rates did not adjust.

Such arguments led to the conclusion that, the "classical" theory was the general case and Keynesian theory the "special" case. The definitive summary of this view was provided by Don Patinkin in *Money, Interest and Prices* (Patinkin 1956, 1965). Keynesian economics was the economics of disequilibrium, a sort of special case resulting from slow adjustment of prices and wages, because it would not last indefinitely, and classical economics—which defined the equilibrium to which the economy would eventually move—was the general case.

However, once the theory was formulated in this way, it could be turned on its head. It was possible to argue that what happened out of equilibrium was the general case, and it was equilibrium that was the special case. This was the brilliant twist to Patinkin's

argument made by Axel Leijonhufvud in *On Keynesian Economics and the Economics of Keynes* (Leijonhufvud 1968). There was a Walrasian dimension to this argument in that he associated being in equilibrium with the existence of an auctioneer. Given that such an entity is fictitious, except for highly organised markets, disequilibrium was the general case. What made this so significant was that the disequilibrium configuration of such a system was not the disequilibrium of Walrasian theory. Drawing on an argument by Clower (1965), which turned out to have a parallel, un-noticed at first, in *Money, Interest and Prices*, Leijonhufvud argued that if there were no auctioneer, demand and supply functions would not have the form posited by Walrasian theory. Demands and supplies would depend not just on endowments and prices but also on the trades that took place out of equilibrium—on disequilibrium transactions.

Although there was a Walrasian dimension to Leijonhufvud's thesis, his vision of how markets operated was very un-Walrasian. Though he and Clower later turned to Marshall, in his book he suggested a parallel with Friedrich Hayek's conception of markets—always out of equilibrium. The difference was that, where Hayek drew on his vision to explain how only a decentralised market could possibly coordinate economic activities of millions of agents in a world where tastes and technology, the givens of Walrasian theory, were changing all the time, Leijonhufvud concluded that the inevitable information problems meant that markets could not possibly operate smoothly.

By the 1970s, though it was still central to many textbooks, the question of whether Keynes or the classics offered the more general theory had lost its rhetorical force, though there was a fascinating throwback in a debate over Milton Friedman's monetary framework (Gordon 1974) in which all sides laid claim to the general case in which IS and LM curves were neither horizontal nor vertical. Instead, attention became focused on the putative trade-off between inflation and unemployment and a different conception of generality. Though they may not have used this terminology, for Robert Lucas and the "new classical" macroeconomists, a general theory was one derived explicitly from individual optimisation. What he called "free parameters", not grounded in individuals' optimising behaviour, might represent local conditions well—he conceded that such models might fit the data better than models without free parameters—but they were of limited use. The Lucas critique, which contended that models not grounded in the fundamentals of tastes and technology would not survive changes to the policy regime, meant that free-parameter models based on empirically observed regularities could be of no more than local validity.[3]

4 Samuelson: The Mathematical Economist

Samuelson, in *Foundations of Economic Analysis* (1947) also sought a general theory but the basis for it being a general theory was very different.[4] He sought to establish a common mathematical structure underlying different branches of economic theory. The way he claims to have come to this was very pedestrian: working in different

[3] These developments are discussed in considerably more detail in Backhouse and Boianovsky (2013).

[4] For a more detailed account of the origins of this book, see Backhouse (2015).

branches of economics, he had found himself proving the same theorems time and time again. It was more efficient to understand the mathematical structure common to all of these economic problems and then to apply it. The common mathematical structure that lay beneath much economics was constrained optimisation. Using this and linear algebra, needed to derive results from systems of simultaneous equations, he could cut through the puzzles that had confronted previous generations of economics and derive comparative statics results relating to the firms and consumers, operationalising economic theory.

The key figure in leading Samuelson to this conception of the unification of economic theory was his mathematical economics teacher, Edwin Bidwell Wilson. Wilson was a polymath, trained as a mathematician and, as Samuelson never tired of pointing out, a protégé of the great American physicist, Willard Gibbs. He had solved problems in aeronautics, writing a prominent textbook on the subject, before becoming Professor of Vital Statistics in Harvard's Institute of Public Health. In alternate years he taught graduate courses in mathematical statistics and mathematical economics, both of which Samuelson took.

Wilson did not just teach these topics, but would stay on for an hour or more after lectures, talking about anything and everything. One of the subjects he covered was thermodynamics, no doubt inspiring Samuelson to take a course in the subject, possibly from Percy Bridgman, who offered a course under that title at Harvard. One of the lessons Wilson taught Samuelson was that different systems might share a common mathematical structure. He introduced Samuelson to the Le Chatelier Principle, governing the way in which chemical equilibrium changes when a system is subject to external changes. It was possible to work out certain results concerning chemical interactions without knowing anything about the substances concerned simply by knowing that the system was in equilibrium. The Le Chatelier principle, though derived in chemistry, could be generalised to apply to any equilibrium system, whether chemical, thermodynamic or economic. Generality lay in the underlying mathematical structure.

However, and here comes the difference from the "Keynesian" search for generality, even if Samuelson would have liked it to do so, it did not result in the construction of a general theory of economics. Leaving aside the extent to which applying the methods of optimisation to the consumer and the firm meant that those theories were encompassed within a single general theory, there was a profound gap between Samuelson's static analysis of individual agents and his analysis of dynamics. In both cases results were derived from the assumption that a system was in equilibrium but the nature of that equilibrium was very different: in the case of individual agents, the equilibrium was defined by optimum conditions; in the case of dynamic systems, it was stability conditions. The latter was the realm where the "correspondence principle", a term that he introduced between writing his thesis in 1941 and publication of *Foundations* in 1947, came in. The correspondence principle involved using the assumption of stability to derive comparative static results, the justification for this being that comparative static analysis of how an equilibrium changed when parameters changed would be of little value if the equilibrium were not stable. Deriving such results was central to his project of operationalising economic theory.

Samuelson's use of the term, "the correspondence principle", can be read as suggesting a parallel with physics, where the term had been used by Niels Bohr to describe

the idea that the predictions of quantum mechanics correspond to those of classical mechanics when the systems become sufficiently large. It is possible to see here an implied parallel with Keynes's claim that his theory was more general than the classical. However, in that theories of the individual rested on static, optimising behaviour whereas theories of the market were dynamic and did not involve optimisation. In that sense, and contrary to the goals of economists such as Patinkin, Samuelson failed to link static and dynamic theories. He derived results from equilibrium systems but it was not a single system: in the terminology adopted after the war, macroeconomics was not reducible to microeconomics.

Had Samuelson believed that all economic models could be derived from optimisation, the correspondence principle might have been unnecessary, because second order conditions for an optimum would have been sufficient to ensure stability. However, he did not believe this. He drew a distinction between "(1) theorems proceeding from the assumption of maximizing behavior on the part of individuals, and (2) stability conditions relating to the interaction between economic units" (Samuelson 1947, p. 258). When dealing with examples from "economic theory"—supply and demand in one or more markets—he did not even address the possibility that the second order conditions might render the correspondence principle redundant, because he did not wish to model the economy using a single representative agent. As a student of Haberler and Leontief, he will have been familiar with with index number and aggregation problems and at the wartime National Resources Planning Board his major research topic had been how the distribution of income across households affected consumption: he knew that heterogeneity mattered. When he turned from "economic theory" to business cycles, he started with the Keynesian system as defined by James Meade, John Hicks and Oskar Lange, taken to be a three-equation system involving a consumption function, the marginal efficiency of investment and liquidity preference, all of which were assumed to depend on both the rate of interest and the level of income. This was presented as if it were a distinct system from the ones that he had previously analysed. As Samuelson made clear in the book's conclusion, "only a part of economic theory is concerned with the maximising action within an economic unit" (Samuelson 1947, p. 351).

Although it would have been a short step from the maximisation found in the early chapters of *Foundations* to a theory of rational choice in which it is taken as axiomatic that human agents conform to certain norms of rationality, Samuelson chose not to make that step. *Foundations* did not offer anything more than a methodological unification of economic theory, for there was no presumption that the whole of economics could be derived from a common theory. Generality involved finding a common mathematical structure, enabling results from one problem be be applied to other problems. Though this would be an exaggeration, one might argue that the application of the Le Chatelier principle to economics unified it no more than it unified economics and physics.

5 Samuelson and the Neoclassical Synthesis

The previous sections already establish at least two notions of what it means to have a general theory of economics. However, I want to argue that Samuelson's "neoclassical

synthesis" represents yet another conception of a general theory. The term "neoclassical synthesis" was introduced in the third edition of *Economics: An Introductory Analysis* (1955). In this textbook, Samuelson made no claim to be providing a general theory of economics. He did begin by talking about "universal economic conditions but this involved little more than the claim that all societies faced certain very general problems. Societies might face limits on what they could produce, and the dynamics of population might be similar in all societies, but he did not suggest was sufficient to construct a general theory.

To see how different the "neoclassical synthesis" that he presented in *Economics* was from the general theory to which he alluded in *Foundations*, consider his most detailed definition, contained in two paragraphs set in italics for emphasis.

> Neoclassical synthesis: by means of appropriately reinforcing monetary and fiscal policies, our mixed-enterprise system can avoid the excesses of boom and slump and can look forward to healthy, progressive growth.
> This fundamental being understood, the paradoxes that robbed the older classical principles dealing with small-scale "microeconomics" of much of their relevance and validity—these paradoxes will now lose their sting. In short, mastery of the modern analysis of income determination genuinely validates the basic classical pricing principles; and—perhaps for the first time—the economist is justified in saying that the broad cleavage between microeconomics and macroeconomics has been closed. (Samuelson 1955, p. 360).

More succinctly, he argued that "if modern economics (shorthand for the theory of income determination) does its task so well that unemployment and inflation are substantially banished from democratic societies, then its importance will wither away and the traditional economics (whose concern is with the *wise* allocation of fully employed resources) will really come into its own—almost for the first time" (ibid., p. 11). Even more succinctly, he argued that "successful income stabilization validates the classical principles of economics" (ibid., p. 666, n. 2). These definitions clearly echo the view Keynes proposed in the final chapter of the *General Theory* that was discussed earlier.

Samuelson's definition of the neoclassical synthesis posits a clear distinction between "modern economics" and "classical" theory, which deals with the efficient allocation of fully-employed resources. The synthesis was described as "neoclassical" on the basis of its being a combination of modern and ancient (classical) ideas, but there was no implication that these two sets of ideas were necessarily derived from a common theoretical framework. Indeed, if he held the views expressed in *Foundations*, they could not be. Samuelson's argument was that there was a need for one theory to tackle problems of unemployment and another theory to tackle problems of full employment. This view that different types of theory were needed for different situations was echoed in the literature on what were then called "underdeveloped countries"—different types of economics were needed for countries at different stages of development (see Backhouse 1985, chapter 27). It took wise policy, guided by one type of economics, to render another type of economics relevant.

Samuelson claimed that this neoclassical synthesis represented a consensus viewpoint, accepted by most American economists.

> In recent years 90 % of American economists have stopped being "Keynesian economists" or "anti-Keynesian economists." Instead they have worked toward a synthesis of whatever is valuable in older economics and in modern theories of income determination. The result might be called neoclassical economics and is accepted in its broad outlines by all but 5 % of extreme left-wing and right-wing writers. (ibid., p. 212)

Three points can be made about this synthesis. The first is that, though it has clear roots in Keynes, Samuelson's presentation of it has roots in American institutionalism. When writing the book he repeatedly described it, apologetically, to his friends, as "very institutional". Obviously, this meant that the book was elementary, not focusing on abstract theory, but it is impossible to believe that an American economist, well read in the interwar literature, used the word "institutional" without realising its connotations. Being "institutional" meant that it was a book that, unlike *Foundations*, focused on the local. His accounts of households, firms, government, labor markets and so on were rooted on the contemporary United States. Offering a thoroughly local, context-specific body of ideas was entirely consistent with the institutionalists' empiricist conception of science. He drew extensively on data created during the New Deal era by government agencies and by economists who would generally be considered closer to institutionalism than to neoclassical economics. Such a perspective is not surprising for someone who was introduced to economics through the textbooks of Richard Ely and Sumner Slichter, and who admitted to being profoundly influenced by reading John Maurice Clark.

However, the strongest link with institutionalism came through his second mentor, Alvin Hansen. They met after Hansen came to Harvard in the fall of 1937 after which they quickly became very close. Samuelson's most well known articles on multiplier-accelerator interaction (Samuelson 1939a, b) arose from translating Hansen's numerical examples into algebra. In his thinking about macroeconomics and policy, Samuelson was Hansen's disciple. During the war years, when Samuelson worked part-time at the National Resources Planning Board, they remained close, debating fiscal policy, and in 1947 they produced a joint report. In his macroeconomics, Samuelson, still a young economist (aged 25 in 1940), was very much a disciple of Hansen.

This challenges the common view that Hansen was by then a Keynesian, having famously converted to Keynes in between the two reviews he wrote of the *General Theory* in 1936.[5] Hansen was one of the leading exponents of institutionalist business cycle theory in the United States, developing a dynamic theory of investment and the cycle centred on the acceleration principle. Investment was driven by technology, population dynamics and structural factors rather than by the short term expectational factors stressed by Keynes. It can be argued that Hansen came to accept Keynes, perhaps after reading his article in the *Eugenics Review* (Keynes 1937) because he realised that key Keynesian ideas could be incorporated into his own theory. Thus

[5] The argument here draws on Mehrling (1997).

Hansen–Samuelson multiplier–accelerator model should be seen not an as application of Keynesian theory but as the incorporation of the multiplier into a pre-existing theory of the cycle. For most of the war years, Hansen and Samuelson both distanced themselves from Keynes, offering very un-Keynesian explanations of investment and the cycle, though taking on board the multiplier.

It is also relevant to note the political context in which the "neoclassical synthesis" was developed. Used in no fewer than twelve index entries, scattered throughout the book, it was not only the product of an intellectual position that attached great importance to the local but it was also a response to very "local" circumstances. In the previous displayed quotation, Samuelson sought to distance the theory of income determination from Keynesianism. In saying that the theory was accepted by everyone except the extreme left and extreme right, Samuelson recognised that the terms "Keynesian" and "anti-Keynesian" were politically charged. The neoclassical synthesis was thus a political consensus. Furthermore, there was the implication that, if traditional "classical" theory were seen as conservative, then so too was the neoclassical synthesis, for Samuelson presented it not as a justification of Keynesian economics but as a vindication of "real classical truths" (ibid., p. 569). Those "truths" were not just theoretical propositions but involved statements about the real world that were relevant for policy—"classic truths and principles of social life" (ibid., p. 733). Thus the neoclassical synthesis—the use of proper monetary and fiscal policy—could render valid John Stuart Mill's claim that imports, not exports, add to a nation's well being (ibid., p. 623). The neoclassical synthesis validated the case for free trade, undermining the argument that tariff protection was needed to cure unemployment for it was more efficient to use monetary and fiscal policy for this purpose (ibid., p. 659). It made it possible to solve the challenging problems of international economics (ibid., p. 676). When Samuelson turned to the problem of economic growth, after claiming that twenty years earlier it might have been difficult to answer "the neo-Marxian theory of imperialism", he wrote,

> Perhaps we should be thankful that the Russian economists have not mastered modern elementary economics; that they do not yet understand the "neoclassical' synthesis which, combining modern income determination with the older economic theories of resource allocation, clearly demonstrates the ability of resolute free societies to dissipate the ancient fear of mass unemployment. (Ibid., p. 709)

The political dimension of the neoclassical synthesis, as a body of ideas that could help the United States fight the Cold War against communism, could hardly have been any clearer.

The neoclassical synthesis was also rooted in a specific economic context. Samuelson's fullest definition of the term came in a short Epilogue to a chapter, "Fiscal policy and full employment without inflation", in which he explained how the cycle could be controlled. In the first two editions, the emphasis had been on the *difficulty* of creating a healthy economy. The recently passed Employment Act of 1946 affirmed the responsibility of the government to fight mass unemployment and inflation, but the measures it proposed might not be sufficient, for it was also necessary to attend to "the proper relations of prices and different branches of production" Samuelson (1948, p.

436; 1951, p. 419). He did no more than hint at the possibility that the problem of effective demand might be cured, ending his discussion of the Employment Act with the sentence, "If ever the curse of general inflation or deflation has been banished, there will rise to the top of our national policy agenda—and properly so—the true and abiding universal economic problems which every economic society has had to face since the Garden of Eden" (ibid.).

In the third edition the tone was completely different. When the first edition had been published, unemployment was around 3.5 % and rising.[6] Wartime controls had only just been removed and the outlook was far from clear. The Employment Act was recent legislation and no one knew how it would work out in practice. When the second edition appeared, unemployment had been at or over 5 % for two years. Unemployment did fall in 1951, but even if Samuelson had anticipated this by the time the book went to press, it could be attributed to the Korean War, which was also contributing to high inflation. There were no grounds for confidence about the normal level of peacetime activity. In contrast, by the time of the third edition, there had been two years of low unemployment (2.7 and 2.4 %) and, though Samuelson thought it would be much higher in 1954, there was evidence that even Republicans were committed to the goal of full employment. The relevant chapter opened with a quotation from the Republican President, Dwight Eisenhower: "I give you this assurance: every legitimate means available to the Federal Government that can be used to sustain prosperity will be used" (Samuelson 1955, p. 336). Samuelson replaced the sentence referring to the Garden of Eden with the much more positive, "This chapter's Eisenhower quotation affirms that full-employment policy is bipartisan in American politics" (ibid., p. 360). Continuing full employment had changed from being a distant hope to a reality.

The neoclassical synthesis can thus be interpreted as both a defensive move against conservative attacks on policies Samuelson believed to be important, and a response to a changed economic situation in which, for the first time since the war, it seemed possible that mass unemployment might be eliminated. The United States could turn its attention from demand management to microeconomic issues. The neoclassical synthesis explained that there was no inconsistency in this shift of emphasis.

In making such arguments, Samuelson was engaging in what he described, when he came to reflect on "Economists and the history of ideas" (Samuelson 1962) in his Presidential Address to the American Economic Association, as "political economy". Such work was, he recognised, subject to different standards from economic analysis. For example, Marx could be a great, and highly influential political economist despite, in terms of his contribution to economic analysis, being merely "a minor post-Ricardian" (ibid., p. 12). However though that address accepted the difference between economic analysis and political economics, recognising that different audiences were being addressed, it did not tackle the problem of how the two should be related (Samuelson 1966).[7]

[6] Statistics in this paragraph are taken from Samuelson (1955), p. 208. They agree with those in earlier editions.

[7] The anonymous referee who alerted me to this point also suggested that I should consider the distinction between these two attitudes towards general theory in relation to Samuelson's appraisals of classical economists. However, as the referee recognised, this task is too large to undertake in this paper. Space aside,

6 Conclusions

The standard view of Keynesian economics from the *General Theory* to its demise in the 1970s focuses on a single notion of generality: that the more general theory encompasses specific, local theories. This is the notion of generality found Keynes, in the debates over "Keynes and the classics" which continued from the *General Theory* until the early 1970s. It also lies beneath the claims of the new classical macroeconomics to offer a more general theory. The examples I have discussed here show that such a claim is mistaken, for there are at least three distinct notions of the relation between general and local theories.

1. *One theory encompasses another as a special case*, as non-Euclidian geometry encompassed Euclidian, or as Einstein's theory was widely believed to have encompassed Newton's. This was the sense the term was used in debates over "Keynes and the classics" and "Keynesianism versus monetarism/the quantity theory". As Keynesian economics was interpreted and reinterpreted, conclusions changed over whether Keynesian or what is better known as neoclassical economics formed the special case the the notion of what it meant to be more general did not change.
2. *Generalization involving the use of a common method*. This is the sense in which Samuelson constructed a general theory in *Foundations*.
3. *A pragmatic synthesis of different theories* where the claims to theoretical integration are weak, as in Samuelson's version of the neoclassical synthesis.

Keynes claimed to be offering a theory that was more general in the first of these senses. However, because of the way he chose to construct his argument—without providing a complete, formal model from which his own or classical conclusions followed—his book could also contain the passages that inspired Samuelson's neoclassical synthesis, resting on a the third of these notions of generality. He thus offered two ways in which to develop his argument, resting on different understandings of what it means to construct a general theory. One of these was taken up by Hicks, Lange, Modigliani and Patinkin, and the other was taken up in Samuelson's *Economics*.

Samuelson is conventionally viewed as a neoclassical economist *pur sang*. The methods developed in *Foundations*, involving optimising agents, were very similar to those used by Patinkin and so it is not surprising that Patinkin has come to be seen as providing the theoretical foundation for the Samuelson's "neoclassical synthesis". The rationale for this is that Patinkin's theory can, under different assumptions, generate either Keynesian or "classical" conclusions. However, Samuelson did not argue in this way, keeping closer to the synthesis of Keynesian and classical ideas offered in the final chapter of the *General Theory*. Of course, *Economics* was an elementary textbook in which the level of abstraction found in Patinkin's work would have been completely inappropriate but this difference conceals the fact that Samuelson chose

Footnote 7 continued
tackling Samuelson's work on the history of economic thought is beyond the scope of this paper in that most of it came later in his career, and whilst there is undoubtedly some continuity, I am very wary of reading the young Samuelson, who wrote *Foundations* and the early editions of *Economics* through the lens of the mature Samuelson.

not to search for a theoretical integration such as Patinkin had attempted. His two books rested on two different notions of generality, both of which differed from the one which lay beneath the macroeconomic synthesis that dominated postwar macroeconomic theorising.[8] Where Patinkin and others were trying to develop general theories of macroeconomics, Samuelson was not concerned with developing a completely general theory in this sense, notwithstanding his decision to adopt the term "the correspondence principle". As he explained clearly in *Foundations,* he did not believe that macroeconomic problems could be analysed in terms of maximisation. There was thus a gap between the analysis of microeconomic and macroeconomic problems, with neoclassical tools of utility and profit maximisation being used for the former, and aggregative models inspired by the work of Hansen. This was very clear in *Economics*, which was centred on an account of the institutions of American capitalism and which drew repeatedly on empirical work undertaken in the 1930s by economists who would be seen as having institutionalist leanings.

Acknowledgments This paper, written as an address to the STOREP conference in Bergamo, in June 2014, forms part of a project, supported by a Major Research Fellowship from the Leverhulme Trust, to write an intellectual biography of Paul Samuelson. I am grateful to Kevin Hoover, Stephen Marglin and conference participants for comments on earlier drafts and to an anonymous referee for some helpful suggestions.

References

Backhouse RE (1985) A history of modern economic analysis. Blackwell, Oxford
Backhouse RE (2010) An abstruse and mathematical argument: the use of mathematical reasoning in the general theory. In: Bateman B, Hirai T, Marcuzzo C (eds) The return of Keynes: Keynes and Keynesian policies in the new millennium. Harvard University Press, Cambridge
Backhouse RE (2015) Revisiting Samuelson's foundations of economic analysis. J Econ Lit 53(2)
Backhouse RE, Boianovsky M (2013) Transforming modern macroeconomics: searching for disequilibrium microfoundations, 1956–2003. Cambridge University Press, Cambridge
Carabelli A (1991) The methodology of the critique of the general theory: Keynes on organic interdependence. In: Bateman BW, Davis JB (eds) Keynes and philosophy: essays on the origin of Keynes's thought. Edward Elgar, Aldershot, pp 104–25
Clower RW (1965) The Keynesian counterrevolution: a theoretical appraisal. In: Hahn FH, Brechling FPR (eds) The theory of interest rates. Macmillan, London, pp 103–25
Gordon RJ (ed) (1974) Milton Friedman's monetary framework. Chicago University Press, Chicago
Hicks JR (1937) Mr. Keynes and the "classics"; a suggested interpretation. Econometrica 5(2):147–159
Keynes JM (1937) Some economic consequences of a declining population. Eugen Rev 29:13–7
Keynes JM (1972 [1936]) The general theory of employment, interest and money. In: The collected writings of John Maynard Keynes, vol VII. Macmillan, London
Leijonhufvud A (1968) On Keynesian economics and the economics of Keynes. Oxford University Press, Oxford
Marshall A (1920) Principles of economics: an introductory volume, 8th edn. Macmillan, London
Mehrling P (1997) The money interest and the public interest: American monetary thought, 1920–1970. Harvard University Press, Cambridge
Mill JS (2006) Principles of political economy with some of their applications to social philosophy. In: Robson JM, Bladen VW (eds) Collected works of John Stuart Mill, vol 3. Liberty Fund, Indianapolis
Patinkin D (1956) Money, interest and prices, 1st edn. Row , Peterson, Evanston
Patinkin D (1965) Money, interest and prices, 2nd edn. Harper and Row, New York

[8] There is, of course, a parallel between Samuelson's neo-classical synthesis and the social philosophy sketched in the final chapter of the *General Theory*.

Pigou AC (1936) Mr. J. M. Keynes' general theory of employment, interest and money. Economica 3(10):115–32
Samuelson PA (1939a) Interactions between the multiplier analysis and the principle of acceleration. Rev Econ Stat 21(2):75–78 CSP 2:82
Samuelson PA (1939b) A synthesis of the principle of acceleration and the multiplier. J Polit Econ 47(6):786–797 CSP 2:83
Samuelson PA (1947) Foundations of economic analysis. Harvard University Press, Cambridge
Samuelson PA (1948) Economics: an introductory analysis, 1st edn. McGraw Hill, New York
Samuelson PA (1951) Economics: an introductory analysis, 2nd edn. McGraw Hill, New York
Samuelson PA (1955) Economics: an introductory analysis, 3rd edn. McGraw Hill, New York
Samuelson PA (1962) Economists and the history of ideas. Am Econ Rev 52(1):1–18 CSP 2:113
Samuelson PA (1966) In: Stiglitz JE (ed) The collected scientific papers of Paul A. Samuelson, vol 2. MIT Press, Cambridge [CSP 2]