A Dictionary Article on Axel Leijonhufvud's

On Keynesian Economics and the Economics of Keynes: A Study in Monetary Theory

by

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On Keynesian Economics and the Economics of Keynes: A Study in Monetary Theory

1. Professor Leijonhufvud's book, which emerged from his PhD. Dissertation at Northwestern University, was published in 1968, a critical time in the development of macroeconomic theory. Keynesian Economics was at its zenith. Policymakers around the world had adopted it as their guide to conducting stabilization policy. American Keynesians, proudly pointing to the long economic expansion following the 1962 tax-cuts that they had advocated to close the deflationary gap, claimed that their "New Economics" had vanquished the business cycle. Keynesian ideas had won over all but the most willful advocates of laissez-faire, to the point where it was commonly agreed that "we are all Keynesians now."

Keynesian Economics dominated teaching and academic research as much as it did policy-making. The IS-LM model that Hicks and Hansen had extracted from Keynes's *General Theory* had become the reigning paradigm of macroeconomics. Theorists had developed choice-theoretic microfoundations for its major components - the consumption function, the demand function for investment and the demand function for money - informed by a huge volume of empirical research. The apparent success of the Keynesian research program had persuaded many that the broad outlines of macroeconomic theory were now settled, that there was nothing left for theorists to do but fill in the details.

In hindsight it is easy to recognize pride before the fall. The claims of Keynesian economists were grossly inflated, and in reality there were many gaps in their research program, which were soon to be exposed. Within a few years the rational-expectations revolution would destroy the Keynesian consensus. But in 1968 it seemed to many that mainstream Keynesian economics was here to stay. Not even the most disaffected critics could see that a theoretical revolution was around the corner. Thus Milton Friedman and his followers were challenging

Keynesians' policy views and their relative neglect of money, but not their underlying theoretical structure. Phelps, Alchian and the other contributors to the famous Phelps (1970) volume had recognized that IS-LM was in need of a stronger microfoundation, but their work was not yet widely known, and in any event they were trying to firm up the foundation of Keynesian economics, not to undermine it.

2. Leijonhufvud was one of the first to claim that mainstream Keynesian theory was in need of a fundamental reorientation. He argued that the theory of markets underlying IS-LM was fatally flawed and should be replaced. As evidence he cited the model's dependency on rigid wages. Patinkin (1948) had established that there always exists some hypothetical level of wages and prices low enough to generate a full-employment level of aggregate demand, even if the interest-elasticity of aggregate demand is zero and the economy is in a liquidity trap. Orthodox Keynesianism (which at the time attributed little importance to price-level stickiness) maintained that involuntary unemployment is entirely attributable to a rigidity that prevents the wage rate from falling to that hypothetical level.

Leijonhufvud pointed out that such a theory cannot explain how a free-market economic system could malfunction the way it did in many countries during the Great Depression, because the Depression had been accompanied not by rigid wages but by an unprecedented wage deflation. Something other than wage rigidity must have been involved, something that orthodox Keynesianism did not take into account. Actual market forces do not work the way IS-LM presumes.

Specifically, he argued that wage and price adjustment, which economists generally portray as stabilizing market forces, can sometimes be destabilizing, and that there are other market forces, which are usually ignored in macro theory, that are destabilizing. Otherwise the

massive wage adjustments that took place during the Depression would have restored full employment rather than leading to an escalation of unemployment.

Leijonhufvud proposed a radical reform of macroeconomic theory that would focus more clearly on the adjustment processes of actual economies. The IS-LM model is essentially a walrasian general equilibrium model that has been tampered with by preventing the money wage rate from adjusting to its market-clearing value. But walrasian general equilibrium theory is ill-suited for studying the problems of depression and involuntary unemployment, or for addressing the question of whether market forces can be relied on to restore equilibrium. This is because walrasian theory was designed specifically to study ideal states of perfect coordination, states in which all markets are in equilibrium and the concept of involuntary unemployment is meaningless. All the behavioral assumptions of the theory are based on the presumption that markets will always clear. It contains nothing to represent the market forces that might drive the system to such a coordinated state, other than an unconvincing story about a mysterious "auctioneer." Moreover, to assume that the auctioneer is prevented from adjusting one of the prices in the system (the wage rate) is to contradict the rest of the model.

Instead of this walrasian approach, Leijonhufvud proposed what he called a "cybernetic" approach, one with no presumption that the system is in an equilibrium state. Such an approach would model the economy as an algorithm that determines how the state evolves from any given initial position. The "state" includes the transactors' initial information, beliefs, expectations, established trading relationships (especially in the labor market), endowments, debts and other contractual obligations, financial and real assets, and so forth. The approach would specify the set of possible actions that each transactor could undertake in a given situation, and behavioral rules for choosing among them. It would also specify the institutional framework within which exchange and production take place, and that framework would imply outcome functions

determining what happens given any set of actions selected, in any given situation. Included among those outcomes would be changes in the variables defining the state of the system.

According to the cybernetic approach an economy, like biological evolution or any other algorithm, operates myopically, with no long-run goal. It constitutes a dynamical system whose behavior over time can be studied regardless of whether or not it approaches any particular reference point. Like many other algorithms it might exhibit a strong attraction to certain reference points, but there will be circumstances under which it will not converge, or will converge slowly or non-monotonically. The central question Leijonhufvud was trying to get the profession to address was how, and under what circumstances, the algorithm of a decentralized market economy might exhibit attraction to a state of full employment equilibrium.

Leijonhufvud also argued that in broad outline Keynes's own theory was a cybernetic one. Hence the title of the book. Keynesian economics, as embodied in the rigid-wage IS-LM model, is not the Economics of Keynes. On the contrary the view that wage rigidity is the cause of unemployment was the hallmark of the classical tradition, running from Thornton through Marshall, that Keynes was trying to refute. Thus on page 27 of the *General Theory* Keynes states that 'the classical theory has been accustomed to rest the supposedly self-adjusting character of the economic system on an assumed fluidity of money-wages; and, when there is rigidity, to lay on this rigidity the blame of unemployment.' In the famous passage (on page 16) where he ridiculed the classical economists as being like Euclidean geometers in a non-Euclidean world who rebuke their lines for not keeping straight, he was referring to their 'conclusion, perfectly logical on their assumption, that apparent unemployment (apart from the admitted exceptions) must be due at bottom to a refusal by the unemployed to accept a reward which corresponds to their marginal productivity.'

Keynes of course believed that as a factual matter wages were indeed not very flexible, and had much to say about why that is the case. But on the whole he believed that that was a good thing because, as he argued in Chapter 19 of the *General Theory*, wage and price adjustment, if given full rein, would probably lead a depressed economy even further into depression. More specifically, a general decrease in wages and prices would produce 'debt deflation' (to use Fisher's term, which Keynes did not), destabilizing expectations of further price decreases, and adverse distributional effects, all of which would serve to amplify the deficiency of aggregate demand that was the root cause of the problem.

Keynes was technically not up to the challenge of convincingly demonstrating this alleged failure of market forces to cure mass unemployment. The best he could do was deploy a static equilibrium model to address what is essentially a dynamic question. His followers understandably decided to skip the problematical dynamic analysis of Chapter 19 and focus on the relatively tractable static IS-LM model. Since it was commonly agreed that wages were far from perfectly flexible, why not assume that they are fixed? Leijonhufvud argued that we should take Keynes more seriously than this, making use of more up-to-date analytical concepts and tools than Keynes had at his disposal in the 1930s.

One such concept was Clower's (1965) "dual decision hypothesis." Clower argued that when an economic system is not in equilibrium people formulate their market demands differently than in walrasian theory. Specifically, they respond not just to changes in the prices they face but also in the quantities they are able to buy and sell in various markets. Thus excess supply in one market can lead frustrated sellers to curtail their demands in other markets, causing the excess supply to spread, in what Leijonhufvud called an "income-constrained process," much like Keynes's multiplier process. The algorithm of an actual economy should take into account that this process will tend to amplify deviations from full employment equilibrium rather than

dampening them, so that even if wage and price adjustment are stabilizing forces that tend to counteract deviations, the overall behavior of the system may exhibit a sustained cumulative rise in unemployment following a drop in aggregate demand.

Alchian's (1970) analysis of price formation with costly information (which was available to Leijonhufvud in working-paper form at the time) was another important component of the argument. Alchian argued that a transactor trying to sell something will try to gather information about potential trading opportunities, and this takes time. In the process he will not sell to the first bidder he finds. Instead he will formulate a reservation price and wait until either he finds someone willing to pay that price or the experience of being unable to find such a person persuades him to lower the price. Thus even in the absence of unexplained institutional rigidities, wages will adjust only gradually over time following a drop in aggregate demand, giving scope for Clower's deviation-amplifying process to kick in before unemployed workers have acquired enough information to induce them to moderate their wage demands.

More generally, getting to an equilibrium state is largely a question of having people acquire mutually consistent information and beliefs about trading opportunities. Clower and Alchian had provided important clues as to how the algorithm of a market economy affects prices and quantities when information and beliefs are not fully coordinated. The task of macroeconomists should be to fill in the rest of the algorithm's details. This was the book's central message, at least as interpreted by those who were inspired by it, although it contains much else of value relating to various controversies in the Keynesian literature, to monetary policy, and especially to intertemporal coordination failures in which people's expectations about long-term interest rates and about the marginal efficiency of capital are mutually incompatible.

3. The book was an instant success, and was widely hailed as an intellectual tour de force. Critics of Keynesian economics, especially Milton Friedman, praised its breadth of vision and its devastating attack on IS-LM. Together with Clower's contribution, it inspired young economists with no stake in IS-LM to start developing a disequilibrium approach to macroeconomics, of which the most cited work was the Barro-Grossman (1971) article. It is remarkable that a book without a single equation could have such a major influence on a discipline dominated by mathematical modeling.

More generally, the book introduced the economics of information into macroeconomic theory. Shortly after its appearance the Phelps volume was published, containing not only Alchian's paper but also several other contributions studying the disequilibrium dynamics of economies with costly information. One of those contributions was Phelps's introduction, in which he outlined the conceptual framework of the "island parable." In this parable people are located on informationally isolated islands, each with its own local "auctioneer," so that if a fall in aggregate demand causes a downward shift in the demand for labor, workers must travel to another island before getting any signal about whether this is a purely local relative-price effect, in response to which they might prefer to relocate and sell elsewhere, or a global fall in nominal prices in response to which, in the absence of money illusion, they would want to continue trading as before. Phelps and company were laying the foundation for a cybernetic approach much like the one Leijonhufvud had been advocating.

The island parable was the starting point of Robert Lucas (1972), who added to it the seemingly natural and innocuous assumption of rational expectations. The result was a rational-expectations revolution that quickly overthrew IS-LM as the dominant paradigm in macroeconomics. Soon the leading journals were soon filled with search theory, the economics of information, and various other elements of Leijonhufvud's proposed research agenda.

Leijonhufvud's book was less successful as a contribution to the history of economic thought than as a contribution to positive theory. Several critics complained that its interpretation of Keynes was based on questionable textual evidence, that something much like IS-LM can indeed be found in the *General Theory*, and that Keynes actually took an equilibrium approach to modeling the market for aggregate output. Leijonhufvud defended himself against these charges, but he also insisted, as he had in the book, that his primary aim had not been to write doctrinal history but to present a vision of an alternative approach to macro theory. In that sense the book was indeed a success.

4. Leijonhufvud's influence on the course of macroeconomic theory was long-lasting, in the sense that IS-LM has never recovered its position in macro theory. In other ways, however, the book's lasting influence has been almost negligible. For although IS-LM has been largely displaced from the academic journals it continues to be widely used in the more practical realms of policy-making and professional forecasting, and to form the basis of most undergraduate teaching of macroeconomics. Leijonhufvud may have helped persuade a generation of theorists that the foundations of IS-LM are too flimsy to take the model seriously, but clearly he has not persuaded the people that use it for earning a living.

In addition, the rational-expectations revolution that Lucas started when he adopted the island parable has taken macroeconomics on a far different course than Leijonhufvud was advocating. For it displaced not only IS-LM but also the Economics of Keynes. Instead of leading to further work on disequilibrium adjustment mechanisms it induced the leaders of disequilibrium analysis to abandon their research program. Soon the journals were filled with macro models postulating that the economy is always in a state of rational-expectations equilibrium, with no reference to market forces that might bring about such a state.

To some extent the rise of new-classical economics and the waning popularity of all things related to Keynes can be attributed to the neo-conservative movement that gained force throughout the western world in the 1970s. It became less fashionable to discuss the problematical aspects of capitalism, and more acceptable to sweep the difficulties of disequilibrium adjustment under the rug. But in retrospect it is clear that there were also internal scientific reasons for the disappearance of the cybernetic approach to macroeconomics. Lucas had been able to account for the long-run neutrality of money as well as its short-run non-neutrality, and he had also provided a compelling research agenda free from the arbitrariness of mechanical expectational assumptions. Thus it is hardly surprising that young economists were attracted *en masse* to his agenda regardless of their ideological orientation. Moreover, it was not apparent that there was any conflict between rational expectations and Keynesian economics. Soon even mainstream Keynesians learned how to include the assumption into their models, while retaining the key assumption of wage-rigidity, at no risk to their core belief in the need for activist stabilization policy.

As it turns out, however, the assumption of rational expectations is not nearly as innocuous as it first seemed. That is, rather than being just an assumption of individual rationality, it amounts to assuming that the economic system is always in a state of perfect coordination, in the sense that everyone's beliefs are mutually compatible. The question of how the algorithm of an actual economic system might lead it to such a state from an arbitrary initial state cannot be addressed in such a framework because it does not allow the system to begin anywhere else. Thus the rational-expectations revolution, which started from a parable that nicely embodies Leijonhufvud's cybernetic vision, ended up taking the central issue Leijonhufvud was addressing almost completely out of the realm of professional discourse.

The rational-expectations approach is as dominant in theoretical macroeconomics today as IS-LM was in 1968. However, recent developments in the theory of disequilibrium learning in macroeconomics (see Sargent, 1993; and Evans and Honkapohja, 2001) show that at least some macroeconomists are still aware of the problems that Leijonhufvud raised, and are following the cybernetic approach that is antithetical to rational expectations. Moreover, no one who remembers how quickly the reigning orthodoxy fell after 1968 can rationally expect that the current orthodoxy is here to stay.

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