

Evolution Versus Equilibrium

Remarks upon Receipt of the Veblen-Commons Award

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Abstract: Post Keynesian economists have followed Joan Robinson's criticism of general equilibrium theory as abolishing history by allowing all contracts to be executed today for all future contingencies. This was the justification for the support of financial innovation to provide for the completeness of futures markets. The recent crisis has shown that force of history. Instead, many evolutionary and Keynesian economists have suggested the approach of cumulative causation as an approach that includes history and eschews equilibrium. This approach may provide a way to take history seriously in economic analysis.

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Joan Robinson used the aphorism “[t]ime is a device to keep everything from happening at once” to distinguish history from an economy in equilibrium with complete markets for all states, times and places and allows all decisions about the future to be taken in the present. In such conditions there can be no default, since its occurrence would evidence a market failure. Alan Greenspan supported financial innovation to provide more complete markets and more efficient distribution of risk. However, in reality the complete markets were provided by AIG's Financial Products unit. The rest is history.

Explanations of the crisis blame the unexpected appearance of Black Swans with fat tails in one hundred year floods. This is recognition of the difficulties in reducing history to moments of a probability distribution. Economists have not been ignorant of these difficulties. Knight distinguished between risk and uncertainty, Shackle

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highlighted crucial experiments, Davidson emphasizes the distinction between non-ergodic and ergodic processes, and Benoit Mandelbrot has pictured known fractal chaotic processes that are unpredictable. All suggest that statistical estimates of unknown future events cannot be predicted by past events. Recently, David Hendry has noted that time series data cannot provide the basis for forecasts of the future of the economy, which renders the dynamic general equilibrium model logically inconsistent. Sample statistics are not good estimates of population parameters when the population changes over time. This attempt to use statistical methods to incorporate history has failed. Modern economics thus restricts itself to an unchanging environment in which agents are capable of acquiring full knowledge of system evolution to form “rational” expectations. This is the approach that grounded value at risk (VAR) and the risk assessment of every insolvent structured derivative entity. The rest is history.

Is economics condemned by Santayana’s curse to repeat its equilibrium past? There is a call for a “new economic paradigm,” but recollection of Keynes’s theory and Evolutionary economists might better serve this purpose.

In stating that “the whole problem of monetary theory is largely one of deducing changes in anticipations from the changes in objective data that draw them forth,” Hicks (1935, 13) was concerned with the problem of how individuals transformed objective data into expectations, viz. his “elasticity of expectations.” Hayek’s response in “Economics and Knowledge” (1937, 44) stated that the conditions of general equilibrium represent “objective data” and suggested that “the knowledge and intentions of the different members of society are supposed to come more and more into agreement . . . that the expectations of the people and particularly of entrepreneurs will become more and more correct.” Thus, “it is only relative to the knowledge which a person is bound to acquire in the course of the attempt to carry out his original plan that equilibrium is likely to be achieved.” In this approach, not only is the set of objective data forming a general equilibrium presumed to exist, it is assumed that this objective data is independent of the process (Smith’s “higgling and bargaining of the market?”) of acquiring the knowledge necessary to achieve it.

Lachmann (1943, 15-16) noted that Hayek’s “[e]quilibrium economics studies the full implications of the set of data, the open conditions of equilibrium”; [but] “it does not study the ways in which these logical implications are translated into human action, which is thus conceived as a quasi-automatic response to an external stimulus.” A “determinate solution does not entail that those attempting its solution will actually succeed.” For Lachmann the problem is that equilibrium economics does not “study the ways in which these logical implications are translated into human action.” What is needed is to “fill in those formal propositions with definite statements about how knowledge is acquired and communicated.”

Keynes’s *Treatise on Probability* (1921) notes that expectations formation should not be over the frequency of “objects” or realizations, but the complex of factors that produce the events and realizations. Even if there exist stationary realizations from an ergodic stochastic process individuals may nonetheless be uncertain about what specific process has produced them. It is not the probability of the “events” that is of

importance, but rather the estimation of the probability that a particular process has produced the events that are being observed. Expectation formation should not concern whether a fair coin will come up heads or tails, but the “theory” explaining the occurrence of the event (e.g., how a particular combination of muscle movements will produce a head or a tail). For Keynes, “[a] proposition is not probable because we think it so. When once the facts are given which determine our knowledge, what is probable or improbable in these circumstances has been fixed objectively, and is independent of our opinion. The theory of probability is logical, therefore, because it is concerned with the degree of belief which is rational to entertain in given conditions” (1921, 4).

While Lachmann suggests the pursuit of equilibrium may influence the objective data; Keynes goes further to suggest that the appropriate expectations are about the process that produces the objective data rather than about the data itself. Indeed, if decisions of individuals taken on the basis of expectations of the process that determine future outcomes, as in the impact of investment on income and sales via the multiplier, then there are no “objective data” to serve as the object of expectations since it will be determined by the expectations determining spending decisions (Kregel 1986).

History is then how the rational belief in the processes that produce realizations creates the evolution of the objective data. The possibility that there are no “objective data” to anchor expectations and produce equilibrium provides the basis for Keynes’s query: “Is the economic system self-adjusting?” Keynes developed an alternative explanation of the evolution of the economy, which I have suggested (Kregel 1976) was best characterized as “shifting equilibrium” in which the system is ever-changing. For Keynes, “equilibrium is blither” (Shackle 1972, 233).

But Keynes was part of a long tradition rejecting the vision of the system self-adjusting to general equilibrium. This approach places the emphasis on the way rational individuals’ expectations in conditions of uncertainty over the determinants of the objective data generate endogenous forces that produce changes in the objective data that preclude any conception of equilibrium.

Consider Veblen (1898, 388):

For the purpose of economic science the process of cumulative change that is to be accounted for is the sequence of change in the methods of doing things, – dealing with the material means of life. . . . The physical properties of the materials accessible to man are constants: it is the human agent that changes, – his insight and his appreciation of what these things can be used for is what develops . . . the limitation imposed is on what men can do and on the methods of doing it. *The changes that take place in the mechanical contrivances are an expression of changes in the human factor. Changes in the material facts breed further change only through the human factor. . . . Economic action must be subject matter of the science if the science is to fall into line as an evolutionary science (italics added).*

For Schumpeter (1975, 82) “Capitalism, then, is by nature a form or method of economic change and not only never is but never can be stationary. And this evolutionary character of the capitalist process is not merely due to the fact that economic life goes on in a social and natural environment which changes and by its change alters the data of economic action; this fact is important and these changes (wars, revolutions and so on) often condition industrial change, but they are not its prime movers. Nor is this evolutionary character due to a quasi-automatic increase in population and capital or to the vagaries of monetary systems, of which exactly the same thing holds true. The fundamental impulse that sets and keeps the capitalist engine in motion comes from the new consumers, goods, the new methods of production or transportation, the new markets, the new forms of industrial organization that capitalist enterprise creates.”

Gunnar Myrdal (1955, 11-12) notes: “in the normal case there is no such tendency towards automatic self-stabilisation in the economic system, but that the system, if left to itself, will steadily be on the move away from such a state. If left to take its natural course, the economic process will be cumulative instead of equilibrating – in the meaning that secondary changes usually have the same direction as the primary ones and not the opposite one – and it will then most often tend to create inequalities and not equality, and to increase existing inequalities.” In the development field similar ideas can be found in the work of Hirschman and Prebisch.

Nicholas Kaldor building on the work of Allyn Young:

Once however we allow for increasing returns, the forces making for continuous changes are endogenous – “they are engendered from within the economic system” (Young 1928, 530) – and the actual state of the economy during any one “period” cannot be predicted except as a result of the sequence of events in previous periods which led up to it. As Young put it, with increasing returns “change becomes progressive and propagates itself in a cumulative way” (533).

. . . When every change in the use of resources -every reorganisation of productive activities – creates the opportunity for a further change which would not have existed otherwise, the notion of an ‘optimum’ allocation of resources – when every particular resource makes as great or greater contribution to output in its actual use as in any alternative use – becomes a meaningless and contradictory notion . . . The whole view of the economic process as a medium for the “allocation of scarce means between alternative uses” falls apart. (Kaldor 1972, 1244-1245)

Hyman Minsky (1964) asked, “[a]re financial markets self-adjusting?” He argued that equilibrium theory in which financial disruption could not occur was an insurmountable impediment to understanding the persistence of financial crisis. In Minsky’s financial instability hypothesis uncertainty is the result of engaging in commitments to make future financial payments with financial receipts that are uncertain because they, too, will occur in future periods and will be determined by

the actions taken on the basis of individual expectations. Thus future receipts will not be forthcoming unless at that future time there is a willingness to enter into additional financial commitments (since spending in the future will determine future receipts). Both are self-referential or reflexive endogenous processes. His description of the endogenous process by which stability engenders a cumulative progression toward more risky financial structures is well known and has gained new attention as the result of the recent crisis.

George Soros's theory of reflexivity (1987) is the most recent in this line of analysis. Following Veblen it distinguishes between the taxonomy of material goods or "objective data" achieved through cognition and the actions taken by economic agents to change the type and disposition of those goods. In Soros's theory of reflexivity, evolution of commonly held equilibrium values is the result of the interaction of two means of dealing with human uncertainty: cognition, the attempt to increase knowledge of the objective conditions, and praxis, the attempt to use that knowledge which when successful will change the existing body of knowledge and render cognition more difficult. Soros's theory of disequilibrium is based on the idea that the results of cognition will be erroneous because it fails to consider the impact of praxis on values. This causes a divergence in expected and actual values that modifies them. Positive and negative feedback loops seek to identify the cumulative forces that determine the directions of these price movements.

It is important to note that all of these approaches incorporate what Soros has called the general "human uncertainty principle" and differs from "radical" existential uncertainty or irrational bubbles or behavioral explanations. In this principle uncertainty is the endogenous result of the operation of the purposive actions of individuals facing uncertainty produces cumulative processes which have no preordained point of equilibrium and is thus impossible to predict. It is the very action to determine objective data which determines that data, or the act of innovation that opens up a range of future possibilities, or the endogenous adaptation of margins of safety that provide endogenous determination of "objective data." This is the history that Joan Robinson contrasted to equilibrium.

It would be a mistake to believe the absence of history arose from modern general equilibrium. Both Walras and Marshall attempted to explain the process of equilibrium price formation, and both chose a real world example: the stock market (details in Kregel 1992). Walras's *tâtonnement* reflects the process of price formation on the Paris Bourse, while Marshall's description corresponds quite closely to the system of price determination, which is employed in British continuous auction broker-dealer markets. The basic difference between Walras and Marshall is thus between discrete and continuous trading markets.

Walras's *tâtonnement* is a discrete bid auction with recontracting options in which prices are "fixed" at a daily "call" by an auctioneer of the list of stocks for a fixed period of time. Access to the auction is limited to government licensed agents who execute orders on behalf of their clients. The agents are forbidden from trading for their own account. Thus when the agents assemble for the call they possess all the information that is necessary to derive the supply and demand functions necessary to

determine the equilibrium prices of the stocks to be traded. It is “discovered” by an employee of the Bourse – the “auctioneer” – who calls out a range of prices for each stock; for each price the agents reveal, their clients buy and sell orders that are only executed when a balance between bids and offers has been achieved at what then becomes the official market, or equilibrium price “fix.” In this way the auctioneer via the *tâtonnement* elicits the relevant portions of the supply and demand curves for each stock via a price discovery process, which assures that the equilibrium price is set in conditions of perfect knowledge concerning consumer preferences for the moment of time when the auction takes place. Note that it is the institutional structure of the price discovery process that insures perfect information and that there is no necessary relation between the prices fixed at each successive call.

Marshall (1920) instead describes bilateral “higgling and bargaining” that takes place throughout the day. There will be a series of different prices, each the result of an individual exchange. But this is unacceptable since a competitive market should have a uniform price. Marshall argues that the average of all the prices for bargains made during the day will turn out to be the same as would have resulted if there had been a Walrasian *tâtonnement*. To explain this Marshall introduces a dealer who has “perfect knowledge of the conditions of the market” and buys below, and sells above the equilibrium. The price thus established “has some claim to be called the true equilibrium price: because if it were fixed at the beginning, and adhered to throughout, it would exactly equate demand and supply . . .; and because every dealer who has perfect knowledge of the circumstances of the market expects that price to be established. If he sees the price differing much from [the equilibrium price] he expects that a change will come before long, and by anticipating it he helps it to come quickly” (1920, 333-334).

But if dealers carry inventories to intervene then they may influence supply thus the equilibrium price. Marshall argues that perfect knowledge for dealers is not necessary even if they hold inventories. As justification Marshall makes a “latent” assumption: the constancy of the marginal utility of money. “This assumption is justifiable with regard to most of the market dealings” because a dealer looks to reselling “and therefore his potential resources are not diminished” so “there is no appreciable change in his willingness to part with money. . . there are sure to be present some dealers with large stocks of money at their command; and their influence steadies the market” (Marshall 1920, 335). This rules out income effects arising from the path of prices diverging from equilibrium, and also rules out cumulative price trends.

Thus even conscious attempts to provide an explanation of the process by which a market, much less the economy, could reach equilibrium rely on institutional or ad hoc assumptions that eliminate the possibility of cumulative causation. Perhaps it is time to give up the attempt to describe equilibrium as an historical process that can provide insight into economic activity.

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