A CRITICAL LOOK AT THE KEYNESIAN MODEL: THEORY AND APPLICATION

The Coordination of Economic Activities: A Keynesian Perspective

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Almost four decades have elapsed since the publication of Keynes's *General Theory of Employment, Interest and Money*. In the interim we have learned, or at least we have been told, a great deal about "what Keynes said"—and also about "what Keynes meant," "what Keynes *really* meant," and, most recently, "what Keynes really meant, *really*." Still the debate continues. If past experience is any guide, indeed, numerous questions about Keynes's theory—including some of considerable intellectual and historical interest—will never be settled. Rather than add further tidbits to what looks suspiciously like an infinite regress, therefore, we propose to address ourselves on this occasion to the other aspect of the Keynesian debate that is mentioned in the title of this session: the model, or rather family of models, that economists have developed in response to the stimulus of Keynes's great work—"*IS-LM*, and all that."

What does "A Critical Look at the Keynesian Model" reveal? It seems to us that what it reveals most clearly is that *the Keynesian model produces useful and sensible conclusions only in such measure as the user of the model is a good economist.* After all, the basic textbook model imposes next to no constraints on what may be argued from it; worse yet, it is open to *ad hoc* modification and common sense extension in numerous directions at the whim of its user. As a consequence, virtually any bundle of policy measures may be advocated in "Keynesian" language and, in recent years, almost all policy discussions have been couched in just such terms. To state the case succinctly, the Keynesian model imposes virtually no analytical discipline upon its users and thereby grants them essentially unrestricted analytical license. So it is not surprising that the debate over Keynes's contribution, and over the extent to which the latter-day Keynesian model preserves it, should continue. But there is another and even more fundamental reason why the debate continues, namely, we have yet to resolve the central question posed by Keynes's assault on received doctrine: Is the *existing* economic system, in any *significant* sense, self-adjusting?

The standard Keynesian model does not address this central question. It merely leaves room for us to analyze concrete problems under all sorts of alternative presumptions about what the answer might be, e.g., that the private economy never shows any endogenous tendency to return to equilibrium, or that it always tends promptly to restore itself to equilibrium following any disturbance. Moreover, the standard model hardly allows us even to frame the central question in a manner that would direct research onto a promising track. The comparative

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statics of *IS-LM* constructions has a well-demonstrated capacity for converting questions about adjustment performance (or, if you will, stability) into questions about sundry elasticities in the minds of economists.

These observations do not exhaust what might be said about the Keynesian model's capacity for mischief. But the point is simply that, in our judgment, the standard model is incapable of development in the directions to which the central question requires that we turn our attention. In effect, if we wish to say anything worthwhile about the central question, we must start by averting our eyes from the Keynesian model. Where do we proceed from there?

As of the present time, it appears to us that the question posed by Keynes remains unanswered largely because of the continued failure of economists to provide a coherent account of the manner in which production, consumption, and trading activities of individual economic agents are coordinated in theoretical economic systems that bear a family resemblance to economies of actual record. If this surmise is correct, then what is called for now is either a radical reformulation of existing analytical paradigms or—as would seem clearly preferable from almost any point of view—a fresh interpretation of established ideas. We shall pursue the second of these alternatives, although this procedure is calculated to supply less grist for existing analytical mills than food for further thought.

To provide an alternative frame for macro theory capable of addressing the coordination question is a formidable task that is unlikely to be solved except by the concerted efforts of many workers. It is also necessarily a long-run task. (Perhaps that is why it never gets done—so many macroeconomists follow Keynes in being almost equally responsive to the pressure of immediate policy issues and to their own long-run mortality.) But it seems quite clear to us where we have to start. A theory capable of describing system behavior as a temporal process, in or out of equilibrium, requires a prior account of *how trade is organized* in the system. Equilibrium, steady-state theory has managed pretty well without such an account. Macroeconomic theory cannot do so. Microeconomic theories of how business and household units behave—of how production and consumption decisions are made—when the system is *not* in equilibrium will have to be predicated on some such account. How we conceptualize the organization of trade, therefore, is a question with priority over numerous other theoretical questions some of which might otherwise be of more interest and of more promise as objects of theoretical ingenuity.

I.

Our point of departure is established, general, competitive analysis as set out, for example, in Kenneth J. Arrow and F. H. Hahn's recent account of the subject. It is customary to view this body of theory as an almost literal description of an idealized economy in which the notional economic plans of individual economic agents are costlessly coordinated by a central intelligence unit—the so-called auctioneer. This neo-Walrasian conception of economic organization is sharply at variance with that of its patron saint, Leon Walras. Walras regarded his work as an attempt *partially* to characterize equilibrium states of an ongoing economic system. To suppose that Walras conceived his analysis to constitute a *complete* description even of relevant equilibrium conditions would be an egregious error—as is indicated, among other things, by his explicit denial of any such notion in Lesson 35 of the *Elements*. In effect, modern neo-Walrasian theory starts with the

solution to Walras' problem, but then proceeds to ask not whether that solution is acceptable in relation to the problem considered by Walras, but rather whether we can conceive of an economy that is *completely* characterized by equilibrium relations of the kind identified by Walras! The answer to this query—the problem which, so to speak, fits Walras' solution—is, of course, affirmative; for the auctioneer model of standard theory describes just such an economy.

That this particular type of model is unsuitable for analyzing any but *virtual* disequilibria is now generally acknowledged. The question then arises: How might we best proceed to modify standard theory so that it can be used to deal explicitly, at least in principle, with *real* disequilibria? On first thought, one's natural impulse is to eliminate the auctioneer and work instead with models in which individual economic agents engage in trade on a strictly "do it yourself" basis. No doubt that is the direction in which a definitive solution to the problem of economic coordination ultimately must be sought. As of the present time, however, and probably for the near future, second thoughts counsel a more conservative procedure. Specifically, it seems preferable temporarily to continue working with models that postulate the existence of a central coordinator of trading activity, but to jettison two other assumptions of standard theory: (1) the assumption that trades take place only at prices that ensure collective consistency of individual trading plans; and (2) the assumption that trades can be negotiated and executed at no cost to individuals or society in terms either of foregone leisure or scarce resources.

Let us suppose, then, that individual agents can engage in trade only by incurring implicit or explicit search and bargaining costs that are largely independent of quantities traded. On the basis of otherwise standard assumptions, it can then be shown that individuals will abstain from consumption and amass positive inventories of tradeable goods in order to avoid prohibitively heavy costs associated with small-lot trading at frequent intervals. It can also be shown that, in the absence of arrangements that permit individuals to trade in any desired amounts at dates of their own choosing, contacts between individuals will be so costly that large potential gains from trade will remain unexploited. In these circumstances, natural forces of greed and competition might plausibly be invoked to provide a rationale for the gradual emergence of merchant traders and organized markets. In keeping with our earlier decision to stick as closely as possible to received doctrine, however, we shall proceed instead by simply postulating the establishment by social contract of a central supermarket in which individual agents may execute at will pairwise trades of any good for any other good at going rates of exchange determined by a central *trade coordinator*—the counterpart in our discussion of the familiar *deus ex machina* of the neo-Walrasian auctioneer.

So that individuals may be assumed to be able to trade at dates and in amounts of their own choosing, we suppose that the trade coordinator starts with sizable inventories of all tradeable goods. So that operating expenses may be met, and aggregate inventories adjusted over time to conform with prevailing needs of trade, we suppose further that the trade coordinator charges a fee on each transaction or, what comes to the same thing, maintains different rates of exchange on trades of x for y than on trades of y for x. Finally, we suppose that rates of exchange established by the trade coordinator are governed by two basic requirements: (1) relative rates of exchange are varied with a view to maintaining average quantities traded at levels

that will ensure positive holdings of all traded commodities at virtually every point in time; and (2) differentials between buying and selling rates are varied so as to aim at a zero long-run average level of net profit. The first requirement effectively asserts that the trade negotiator is ultimately responsive to prevailing forces of excess demand; the second is a rough device to ensure that the trade negotiator acts as if he (or she) had to compete for customers with other shopkeepers.

So much for the introduction to our story, brief though it may be. All we require at this point is a coherent mental portrait—in terms of ideas that are neither entirely unfamiliar nor arrantly offensive to common sense—of an economy in which trade at other than stationary equilibrium prices may be presumed to occur more or less routinely. The model just outlined seems to meet these specifications. Accordingly, we turn now to a quick—in fact, desperately quick—discussion of the existence and stability of equilibrium, which is followed by an even faster romp through related problems associated with the identification of possible and probable sources of coordination failure.

II.

The existence of equilibria in our supermarket model can be shown to follow from essentially the same assumptions as ensure the existence of equilibria in standard theory. Broadly speaking, equilibrium requires that rates of exchange be such that average rates of purchase and consumption by individual economic agents equal average rates of production and sale for each commodity, that average inventory holdings of individual agents and of the trade coordinator be maintained at constant levels over time, and that actual inventory holdings of the coordinator be nonnegative at every point in time. The familiar zero-excess demand conditions of standard theory may be viewed as a subset of these conditions, valid in the special case where sale and purchase flows are continuous and buying and selling rate differentials are arbitrarily small. In any equilibrium situation, "notional" and "active" demands and supplies of individual agents will, of course, coincide. Subject to certain obvious and minor changes in terminology, moreover, all equilibria will be Pareto optimal.

As far as equilibrium situations are concerned, then, our supermarket model may be viewed as a straightforward generalization of standard theory. As in standard theory, so in the present model: goods are traded directly for other goods; i.e., both models portray organized barter economies. In principle, the trade coordinator might deal in all kinds of commodities—employment contracts, futures contracts, leases, rentals, loans, insurance—as well as in spot trading of physical objects. In all cases we should expect the trade coordinator to impose standard *quid pro quo* requirements—i.e., Say's Principle would be strictly observed in all trades. In the case of contracts that call for future performance of specific acts (payment of interest, rent, provision of labor services, etc.) we should expect the coordinator to impose further *accountability conditions* to guard against conscious fraud or unintentional overcommitment by individual economic agents. In the nature of the case, conditions of this sort would be costly to enforce, and all such costs would have to be borne ultimately by individual economic agents. Accordingly, we should expect trade in any but short-term and easily monitored and enforced contracts to be severely limited. In this respect, the present model stands in sharp contrast to certain versions of standard theory.

III.

Much more could be said about equi-

librium properties of our model, but here the preceding rough and ready observations must suffice. Dealing next with stability, we should begin by remarking that in the context of the present model this issue cannot be discussed in terms simply of trader reactions to price changes and relative speeds of adjustment of prices. The essential question is whether the trade coordinator, acting intelligently and on the basis of information derived from past experience, can manage most of the time to maintain effective control of all inventories so that no individual economic agent is ever denied for very long the right to trade commodities that the trade coordinator normally would handle as a matter of course.

Two considerations merit special notice as factors that would tend to ensure global stability. First—and in contrast with standard theory—price variations may be presumed to be governed not by predetermined velocity coefficients, but rather by reasoned and intelligent decisions of the trade coordinator. Except in circumstances where trader reactions to price variations are both erratic and violent, therefore, it should be possible for the trade coordinator to devise some strategy of price adjustment that would ensure stability. Second—and again in contrast with standard theory—quantities actually traded by individual agents can be directly restricted by the trade coordinator in cases where price adjustments alone do not ensure effective inventory control. Thus, even in exceptional circumstances where global stability might otherwise be a serious problem, departures from equilibrium should be limited in magnitude and bounded in duration. This is not to say that what Leijonhufvud has called "corridor phenomena" are *never* of any consequence; it is merely to say that such phenomena appear to be of no consequence in a world of organized barter.

IV.

The possibility of coordination failures obviously depends directly on the stability of disequilibrium adjustment processes and upon the nature and extent of external shocks to which the system is exposed. In our supermarket model, as in standard theory, it is possible to concoct cases in which everything goes wrong; the ideas of economists extend to many things that are not dreamed of in the real world. Unless one is chronically subject to acute bouts of intellectual perversity, however, such cases are not to be taken seriously. On almost any set of reasonable assumptions about the behavior of individual agents and the trade coordinator, coordination failures should be rare or nonexistent in a world of the kind portrayed by the model considered here. To be sure, if a substantial proportion of traded commodities were highly durable capital goods, then serious problems might arise from time to time in coordinating present production of such goods with future demand for their services (i.e., future purchases of consumption goods). Such problems might be avoided if appropriate facilities existed whereby present purchasers of capital goods could contract currently for future sale of consumer goods outputs; but such facilities would be extremely costly to operate, so it would seem highly implausible to suppose that they would in fact be provided by the trade coordinator. Though we cannot rule out stock-flow complications as a possible source of coordination failures, our own impressionistic feeling—Keynes to the contrary notwithstanding—is that this complication *alone* is not of overwhelming significance. More generally, we should argue that, in a world of organized barter in which the coordination of trading activities is completely centralized, there is no serious reason to object to the classical view of economic activity as a thoroughly

harmonious concert conducted by Adam Smith's invisible hand.

V.

But suppose that some rudimentary monetary and credit complications are introduced into our model. Specifically, suppose that the trade coordinator decides to decentralize exchange activities by establishing distinct trading posts for all but one commodity and designates the exceptional commodity that is tradeable at all posts as *money*. We might then imagine coordination failures to occur from time to time because individual agents develop an irrational passion for cash rather than goods and services. But such failures—commercial crises, as they might be called by a student of eighteenth and nineteenth century economic history—would surely be short-lived, for real balance effects would operate with a vengeance in this kind of commodity-money world.

Suppose next, however, that trading specialists assigned to manage various trading posts were permitted to conclude trades on the basis of book credit as well as cash. Then we should expect a significant —and perhaps predominant—proportion of all trades to be made initially on the basis of book credit, cash settlement coming later in accordance with payment rules of the kind with which we are familiar in real life. In this situation, we should have to distinguish clearly between *means of payment*, which would consist of book credit *and* cash, and *means of settlement*, which would be represented by cash alone. In situations of disequilibrium, credit means of payment could expand or contract rapidly at the discretion of individual economic agents, virtually without reference to the short-run availability of means of settlement. Inflation of money prices could occur and be sustained for some time even with a constant stock of cash, and any major interruption in cash flows (an increasingly probable occurrence as means of settlement became an ever smaller fraction of total means of payment) could produce sharp restrictions on trade. This could lead, in turn, to rapid declines in output and employment, and to consequent price deflation, resulting eventually in widespread insolvency among trade specialists as well as bankruptcy of many individual economic agents. In this kind of world, corridor phenomena might well be of major consequence; i.e., sustained and serious coordination failures might occur because insolvency of trade specialists would temporarily eliminate from the economy market homeostats that are essential for effective coordination of the notional economic plans of individual agents.

Of course the world in which we live is not like this at all. But suppose that it were. Or, more plausibly, suppose that our monetary and credit version of the supermarket model were a reasonable first approximation to the world in which we live. The implications are pretty obvious—and not at all reassuring.

VI.

Here our story must end for now, although in truth it is hardly begun—for, of course, we have yet to regain a "Keynesian perspective." The theoretical conception of the economic system with which we break off (1) lacks a central information-processing and bill-collecting agency; (2) has, instead, middlemen trying to coordinate production and consumption activities in each output market separately; (3) makes the management of stocks of inventories essential to the coordination of these activities; and (4) has the system potentially subject to commercial crises associated with expansions and contractions of the volume of bank and nonbank commercial credit. All of

this might be J. S. Mill or Alfred Marshall. At most, we might stretch our claim to being "with it" to include Knut Wicksell and Ralph Hawtrey.

So what becomes of our intention to provide food for further thought? If there is such a thing as stale food for fresh thought, we can only hope that some readers will derive nourishment from noting that (a) we started from a conceptualization of economic process lodged in "modern" general equilibrium theory, (b) proceeded to complicate matters in what we dare claim to be an obviously desirable and "realistic" direction, and (c) by that route ended up with Mill!