Are Keynesian Uncertainty and Macrotheory Compatible? Conventional Decision Making, Institutional Structures, and Conditional Stability in Keynesian Macromodels

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The theory of capital investment is the cornerstone of the theory of macroeconomic dynamics, and the question of whether or not the agents involved in the investment decision have the information needed to make individually and collectively optimal choices is central to capital accumulation theory. New Classical and neoclassical theory assume that they do. Keynesian and Post Keynesian theory assume that they do not. The outcome of many significant debates in macrotheory depends on which theory is correct about this.

In section 1 of this essay I argue that the Keynesians are right about the information question and that once Keynes's views are accepted, neoclassical theory has little to tell us about how to theorize agent choice. We are then confronted with the question: Are a coherent theory of agent choice and a coherent theory of the macroeconomy possible in the seemingly chaotic world of Keynesian uncertainty? And, if they are, how do we construct these theories? Alternatively, was Lucas correct when he pronounced that "in cases of uncertainty, economic reasoning will be of no value" (1981, p. 224)? Is it true that Keynesian uncertainty is "analytically nihilistic...[creating an] all- embracing subjectivism" (Coddington 1983, p. 61)?

The main thesis of this paper is that economists can indeed construct, coherent theories of agent choice and macrodynamics in a Keynesian world as long as they are willing to add new research methods to their analytical tool kit. Section 2 shows why decision making under uncertainty exhibits what I call "conditional stability," a situation in which behavioral equations will be relatively stable under conditions that hold most of the time. Section 3 then briefly discusses the centrality of institutions to the creation of conditional macroeconomic coherence; however, these sections also argue that both the micro- and macrofoundations of coherence are contradictory in that they create the potential for outbursts of instability even as they help stabilize the economy. Section 4 reiterates the conclusions of the paper.

1. Keynes Versus the New Classicists and Neoclassicists on the Theory of Agent Choice

I first examine New Classical and neoclassical theories of agent choice, especially as they relate to macrotheory. The presumed macrotheoretical objective of these theories is

[*] I would like to thank Gary Dymski, Bob Pollin and Douglas Vickers for helpful comments on an earlier draft of this paper.

to show how decentralized agent choice generates stable market-clearing macroeconomic equilibrium. We argue that in order to accomplish this, the theories must first assume a predetermined equilibrium to serve as the anchor or center of gravity for agent expectations. That is, they must assume their conclusion in order to prove it.

The first task is to clarify the domain of the Keynesian-Classical debate. Keynesians do not argue that the mainstream approach to choice is universally inappropriate. Some decisions, such as what clothes to buy or what food to eat, are repetitive, made over and over again in similar circumstances. Still other decisions may be unique and important, but reversible; if a choice turns out to have been a poor one, the agent can undo it quickly and without major loss. The debate is not about such decisions. Rather, it is about the correct way to theorize decisions that Shackle has designated "crucial" or "momentous."[1] Crucial decisions are unique or nonrepeatable (in part because they significantly alter the conditions under which they were taken), central to the agent's economic well-being, and reversible only at substantial cost.

The most important crucial decisions in macrotheory are the demand for major capital goods and the portfolio selection decision of financial institutions and wealthy individuals. On both sides of the capital investment decision we have agents who must put a present value on various long-lived assets that are subject to large potential capital losses. To evaluate an investment project, one must estimate the expected profit flows over its lifetime; to rationally compose a portfolio requires estimates of long-term financial asset prices over the agent's planning horizon.[2] The key question confronting the theory of agent choice is: What do the agents know about the future and how do they come to know it?

There are two mainstream approaches to the expectations question: the subjective approach to probability of Savage, Ramsey, or Friedman and the objective approach of Muth, Lucas, or Prescott.[3] Neoclassical theory adopts the former, and New Classical theory the latter. Both assume that agents can compose a list of all possible future economic states --a list *known* to be complete-- can assign numerical probabilities to all such states, and therefore can associate a probability distribution of expected returns with every possible choice available to them. Most important, both make the heroic assumption that the agent is absolutely certain that these probability distributions are *knowledge* -- the truth, the whole truth, and nothing but the truth about future economic states and the future consequences of current choice.

The main distinction between the subjectivist and objectivist approach is that whereas the latter asserts that expectations are in fact correct or conform to the objective model, the former makes no such claim. "For the subjectivist, in fact, probabilistic knowledge does not necessarily correspond to anything in external reality" (Lawson 1988, p. 41), whereas the objectivist assumes that agents know "the true probability distributions governing the future state of [the markets they deal in] and the present and future states of

[1] See Shackle 1955 (p. 25), 1972 (p. 384), and 1983-84 (pp. 246-47) for a discussion of crucial decisions.
[2] Although long-term financial assets are liquid, their value can undergo substantial decline within a short period of time. Thus, a decision to hold liquid long-term financial assets may not prove to be costlessly reversible.
[3] See Lawson 1988 or Davidson 1991 for a discussion of the subjectivist-objectivist distinction.

all others" (Lucas 1981, p. 158). It turns out, however, that for the central question before us this constitutes a distinction without a difference.

Consider the subjectivist agent. There are only two ways that rational agents could logically arrive at the conclusion that they know for certain the true probability distributions of future economic states. First, agents could make a sufficient number of observations from an outcome-generating mechanism (or model) they know with certainty has not changed over the period of observation and will not change over the relevant future. The agents here need not know the particular structure of the model. Second, agents could know with certainty the complete structure and function of the mechanism that will generate all future outcomes, in which case they do not need historical observations to predict future states correctly.

In the absence of both of these conditions, it is *irrational* for agents to believe that their subjective probability distributions are knowledge rather than mere hunch or guesswork. But if either condition does hold, there is no distinction between the subjectivist and objectivist approach: subjective and objective realities are identical in both cases. Thus, either the subjectivist neoclassical theory of rational agent choice implicitly assumes agent irrationality or it is indistinguishable from the objectivist, New Classical theory of agent choice. Note that the charge that neoclassical choice theory posits an irrational agent cannot be deflected by an appeal to positivism or instrumentalism: this charge is based on the logical incompatibility of its assumptions -- that subjective and objective distributions have no necessary relation, and that the agent believes that the subjective distribution is knowledge -- and not on the lack of realism of the assumption set.[4]

Both classical theories of agent choice use the probability calculus, a statistical theory developed for repetitive and mechanistic games of chance such as roulette or dice. The statistical properties of the probability distributions used in these theories are based on the assumption of at least potentially infinitely repeatable experiments in an unchanged structure.[5] As Davidson has stressed, classical expectations formation theory is applicable only to "ergodic" stochastic processes: "an ergodic stochastic process simply means that averages calculated from past observations can not be persistently different from the time average of future outcomes" (1991, p. 132). In ergodic processes, "economic relationships among variables are timeless (ahistoric) and immutable" (1987, p. 148).

[4] There is a related problem with subjectivist theory. If subjective probability distributions are not anchored in a pregiven objective equilibrium state, then what can possibly give them stability across time? Conversely, if the subjective probability distributions of orthodox theory were dynamically unstable, then the neoclassical investment function would be unstable as well. In this case, the economy's future time path would itself be unstable because it would depend on unstable subjective probability distributions. Since there is no neoclassical theory of the "laws" governing unstable subjective probabilities, the future would be unknowable. Thus, the core assumption that there exists a predetermined equilibrium path that is independent of agent ignorance and therefore of agent choice is the sine qua non of neoclassical and New Classical investment theory.

[5] As Katzner noted, "without the opportunity of at least hypothetical replication, the notion of probability simply does not make sense" (1987, p. 66).

The structure of ergodic stochastic games of chance is unaffected by any particular pattern of observations it generates: a run of sevens will not change the odds at a dice table. Similarly, an ergodic stochastic economic model cannot be affected by the particular choices of the agents who inhabit it; it cannot exhibit *hysteresis* or *path dependency:* the model and its outcomes -- the future states of the world -- must be independent of agent choice (so that agent choice is not, in any meaningful sense, free). For if future states of the economy were dependent on the pattern of current and future agent choice, if, in Shackle's words, choice was "originative," then every agent would have to know the present and future choices of every other agent (including the process used by each agent to adjust expectations in the light of realized results) in order to know the future. But there is no way, even in principle, that agents could gain knowledge of this kind. Indeed, the impossibility of gaining such knowledge is the foundation of the neoclassical rejection of central planning.

Thus, the neoclassical theory of agent choice is restricted to a world in which agents' decisions do not "create" the future. The axioms of New Classical and neoclassical expected utility theory hold if and only if the future equilibrium path of the economy and the prices associated with it are pre-given, if they are independent of agent choice, agent forecasting error, and out-of-equilibrium dynamics. That is, these classical and methodologically individualistic theories must assume what they are supposed to prove, by positing a stable market-clearing equilibrium path *prior* to constructing a theory of agent choice. Failure to do so would leave agents with nothing solid to anchor their expectations.[6]

Consider, for example, the auctioneered Walrasian general equilibrium model, the only complete neoclassical model of the *process* through which equilibrium is reached. In this model the equilibrium position is assumed to be independent of the process by which agents move from disequilibrium to equilibrium in logical time. It is thus independent of the "errors" that create the excess supplies and demands of disequilibrium. Indeed, the reason why the model *must* prohibit out-of-equilibrium trading is that every such "false" trade would generate a redistribution of wealth that would alter its equilibrium position and would create income-constrained demand and supply functions that could destroy the stability properties of the model. As Clower (1965) and Leijonhufvud (1968) stressed, with false trading, equilibrium would become a moving target whose location at any point in time would depend on the inherently unpredictable particularities of out-of-equilibrium dynamics. The model would thus be path dependent. The prohibition of false trades and

[6] To understand New Classical thinking about this crucial issue, consider Lucas's response to the following question: If people know the true distribution of future outcomes, why are autocorrelated mistakes such a common occurrence?

> If you were studying the demand for umbrellas as an economist, you'd get rainfall data by cities, and you wouldn't hesitate for two seconds to assume that everyone living in London knows how much it rains there. That would be assumption number one. And no one would argue with you either. [But] in macroeconomics, people argue about things like that. (In Klamer 1983, p. 43)

What Lucas clearly has in mind is a model in which the distribution of outcomes (like the distribution of rainfall in London) is pregiven and independent of agent decisions (about whether or not to carry umbrellas) and agent errors. Future equilibrium states exist prior to and independent of the agent choice process that is supposed to generate them.

the use of logical time make equilibrium a predetermined center of gravity to which the system is inevitably drawn.

Rational expectations macrotheories are similarly constructed. All of them provide the agent with a stable, correct and predetermined anchor for expectations formation. In some variants, such as the seminal work of John Muth (1961), it is simply asserted that agents know with certainty the true model of the economy. Given this assumption, rational agents will make decisions that are consistent with and reproduce the model. The vexing question of how agents come to know the full properties of a complex system of stochastic equations, each of which is subject to exogenous shocks, is not discussed.

In other rational expectations models agents may begin with some degree of ignorance; they then have to learn the true properties of the model. However, the observed outcomes are generated by the true equilibrium system of stochastic equations: the information provided to agents is untainted by their own ignorance. The model keeps generating unbiased information about the means and variances of the true distributions that agents can use to learn the model by, for example, Bayesian learning processes or through the use of time series regressions in which initial serial correlation is eventually incorporated in the forecasting equations.[7]

Yet other variants permit agents to be temporarily confused about, for example, the extent to which observed price changes are permanent or transitory.[8] It thus takes time to learn the complete truth about equilibrium; in the meantime, the economy *can* generate outcomes that are not consistent with its full-information, long-term equilibrium properties. However, since these models also assume that the new long term equilibrium position is unaffected by these temporary deviations from it, agents will eventually learn the truth about the future.

Thus, the quintessential character of New Classical models is not generated solely by the assumption that agents use information rationally, but rather requires the implicit assumption that the future is pregiven and independent of agent choice. Where outcomes *do* reflect agent choice, even if agents use all available information rationally, the New Classical results do not hold. Rational expectations are perfectly consistent with multiple equilibria.[9] They are also --and simultaneously--consistent with unstable equilibria. In a world in which agents cannot know a priori which of all possible stochastic equilibrium models is generating current outcomes but, rather, must try to learn the model through a rational interrogation of the data, instability is quite likely. Basing expectations on “false”

[7] "The rational expectations approach is most often applied to models for which the actual outcomes are independent of agents' expectations. ...In these cases, expectations may be pushed toward rational expectations equilibria by rational learning processes. Assuming that the ...process is stationary and has well-behaved statistical properties, learning models could be imagined in which agents eventually correctly predict the distributions of variables" (Fazzari 1985, p. 72).

[8] See, for example, the discussion in Lucas 1981 (pp. 224-31) or in Sheffrin 1983.

[9] See, for example, Fazzari 1985, Bryant 1991, Woodford 1991 or the seminal article on "sunspot" equilibria by Cass and Shell 1983. Sen put the problem nicely. "The sunspot theorists have shown that not only are the existence of sunspot equilibria possible in New Classical models, there is also the possibility of a multiplicity of such equilibria. Therefore, the number of possible dynamic evolutions of a market economy may well be infinite" (1990, p. 565).

data will generate "false" outcomes in an ongoing process that could move the system increasingly further from the initial full-information equilibrium.[10] As Fazzari argued, when expectations affect outcomes,

> there are two related problems with the convergence to rational expectations equilibria. First, since agents learn and realized outcomes depend on expectations the uncertain process being forecast cannot possibly be stationary. Learning leads to changing expectations and changes in expectations cause changes in the underlying process. ...[T]his kind of learning may never reach a self-sustaining state at all. ...Secondly, suppose a rational expectations equilibrium exists. If the system is away from [it], any agent's expectation formation process must consider the expectations of other agents, since the actual outcome will depend on others' expectations. Hence, it is possible that even an agent who knows the properties of the [equilibrium] would forecast results different from the [equilibrium]. (1985, *p.* 73)

Finally, when current choice is allowed to influence future states of the world, as it does in the world in which we live, rational use of information is also consistent with a path-dependent macrodynamic process to which the term equilibrium does not properly apply at all. As Keynes once said: "In a world ruled by uncertainty, with an uncertain future linked to an actual present, a final position of equilibrium, such as one deals with in static economics, does not properly exist" (1979, p. 222). Or, as he put it less formally: "Equilibrium is blither" (in Shackle 1972, p. 233).

Keynes's own conception of uncertainty has been described and analyzed in detail by Shackle (1955, 1972), Vickers (1994), Davidson (1991), and many others. Its central thesis is that the future is *unknowable in principle.* Keynes theorized human decision making in a nonergodic, ever-changing economic and social environment. The economic outcomes we observe over time, he argued, are generated by an ever-changing system of agents, agent preferences, expectations, and economic, political, and social institutions, a system of "originative" choice in which future states of the world are in part created by the current agent choice process itself. "What is imagined for a coming period must, in an ultimate sense, help to shape what will, ex *post,* emerge as the ultimate facts of that period" (Shackle 1972, p. 440). Thus, each observation is drawn from a unique generating mechanism whose structure depends on current and future agent choice as well as the future pattern of institutional change, both of which are inherently unpredictable. There can be no pregiven, center of gravity to anchor the expectations of Keynesian agents; they can never have complete knowledge of the future.

Keynes's clearest treatment of uncertainty appears in the 1937 QJE article. I quote from it at length.

> [In classical theory,] at any given time facts and expectations were assumed to be given in a definite and calculable form; and risks, of which, tho admitted, not much notice was taken, were supposed to be capable of an exact actuarial

[10] "The source of difficulty is that, in models with expectations, there is an aspect of simultaneity in the sense that beliefs affect outcomes and outcomes affect beliefs" (Bullard 1991, Ii p.57).

computation. *The calculus of probability, tho mention of it was kept in the background, was supposed to be capable of reducing uncertainty to the same calculable status as that of certainty itself....* "

Actually, however, we have, as a rule, only the vaguest idea of any but the most direct consequences of our acts. ...Now of all human activities which are affected by this. . .preoccupation [with the remoter consequences of our acts], it happens that one of the most important is economic in character, namely, Wealth. The whole object of the accumulation of Wealth is to produce results ... at a comparatively distant, and sometimes at an *indefinitely* distant, date. Thus the fact that our knowledge of the future is fluctuating, vague and uncertain, renders Wealth a peculiarly unsuitable subject for the methods of the classical economic theory. ...

By "uncertain" knowledge, let me explain, I do not mean merely to distinguish what is known for certain from what is only probable. The game of roulette is not subject, in this sense, to uncertainty: nor is the prospect of a victory bond being drawn. ...Even the weather is only moderately uncertain. The sense in which I am using the term is that in which the prospect of a European war is uncertain, or the price of copper and the rate of interest twenty years hence, or the obsolescence of a new invention, or the position of private wealth-owners in the social system in 1970. About these matters there is no scientific basis on which to form any calculable probability whatever. *We simply do not know.* (1937, pp. 212-14, italics added)

There are at least two ways to formally distinguish Keynes's idea that the future is unknowable in principle from the neoclassical idea that the future is stochastic-stable and that agents know, or act as if they know, this distribution with absolute certainty. First, as Keynes, Shackle, Vickers, and others have stressed, it is logically impossible for agents to assign numerical probabilities to the potentially infinite number of imaginable future states.[11] Even Savage acknowledged that, taken literally, the assumption that agents are able to consider all possible future economic states "is utterly ridiculous" (1954, p. 16). Worse yet, many possible future events are not even imaginable in the present moment: such events obviously cannot be assigned a probability. Shackle created a conceptual

[11] See, for example, the discussion in Shackle 1972 (pp. 151,365, and 400) and Carvalho 1988. Keynes himself observed that in the classical model of agent choice "one arrives presumably at the estimation of some system of arranging alternative decisions in order of preference, some of which will provide a norm by being numerical. But that still leaves millions of cases over which one cannot even arrange a preference" (1979, p. 289).

Bausor stated the problem rather elegantly:

Sample spaces must contain *all* possible future outcomes, including the "true" outcome, and this inclusivity must be *known.* No possibility can be neglected, overlooked or unimagined. States of the world, however, are not ontologically existential. Through effort and skill, they must be conjured up from the imagination, and imagination is always vulnerable to fallibility. People constantly experience previously unimagined phenomena, and the potential for surprise remains ubiquitous. Since sets of imagined possible outcomes cannot be known to be complete, no standard for measuring the relative strength of beliefs exists, and distributing weights so that their sum equals one-the construction of a probability measure-becomes invalid and meaningless. (1989-90, pp. 205-06)

category to contain the unimaginable and unimagined events not evaluated by the agent -- the "residual hypothesis."[12] Given the existence of the residual hypothesis, the sum of probabilities of evaluated outcomes must fall short of one by a margin of unknowable magnitude, and the neoclassical model is fatally flawed.

Alternatively, we could -- for the sake of argument -- think of firms and portfolio selectors as somehow forcing themselves to assign expected future returns to all the assets under evaluation even though they are conscious of the fact that their knowledge of the future is inherently incomplete and unreliable. The key point is that such subjective probability distributions would not be knowledge, and --most important -- any rational agent would know they were not knowledge. Shackle correctly observed that "subjective probability ... has no claim to be knowledge" (in Carvalho 1988, p. 71). And Hicks insisted that in the nonergodic real world, people "do not know what is going to happen and know that they do not know what is going to happen. As in history!" (in Davidson 1987, p. 149). Rational agents would *always* be conscious of their lack of complete knowledge of the future.

Therefore, even given the unrealistic assumption of the existence of these distributions, there is a crucial piece of information about agent decision making that would be missing from any subjectivist theory -- the extent to which the agents believe in the *meaningfulness* of their forecasts or, in Keynes's words, the "weight of belief" or "the degree of rational belief" the agents assign to these probabilities. When knowledge of the future is subjective and imperfect, as it always is, the expectations of rational agents can never be fully and adequately represented solely by probability distributions because such distributions fail to incorporate the agents' own understanding of the degree of incompleteness of their knowledge. These functions neglect the agents' "confidence" in the meaningfulness of the forecasts -- "how highly we rate the likelihood of our best forecast turning out to be quite wrong" (Keynes 1936, p. 148).

Keynes stressed the centrality of agents' consciousness of their ignorance: the state of confidence plays a crucial role in his theory of the investment decision. "The state of confidence [in the ability to make meaningful forecasts] is relevant because it is one of the major factors determining [investment]" (1936, p. 149). The central role of confidence in the investment decision-making process has disappeared from mainstream Keynesian models and cannot exist by assumption in New Classical and neoclassical models.

It is important to distinguish "optimism" and the neoclassical concept of "risk" from Keynes's degree of "confidence." Optimism means that the expected value of the subjective probability distribution of the expected return on an asset is high or attractive. Risk refers to the variance of the distribution or the degree of dispersion about the mean. Confidence is a measure of the extent to which agents believe that their best forecast or

[12] "If [a business man] seeks to make up a list of the specific distinct things which can happen ... as a sequel to any one move of his own, he will in the end run out of time for its compiling, will realize that there is no end to such a task, and will be driven to finish off his list with a residual hypothesis, an acknowledgement that anyone of the things he has listed can happen, and also any number of other things unthought of and incapable of being envisaged before the deadline of decision has come; a pandora's box of possibilities beyond the reach of formulation" (Shackle 1972, *p.* 22).

most preferred probability distribution reflects the "truth" about the future or conforms to the "objective" process that will generate future outcomes. Since a firm conviction concerning the future requires time to develop and take root in the consciousness of the agent, confidence should be closely related --though not identical-- to the degree of *rootedness* of the forecast or its relative stability across time.[13]

Suppose, for example, that management's best guess about market conditions ten years from now is fluid or flighty over time. Suppose that the best guess shifts substantially from week to week or month to month. Suppose that the future looks so unpredictable that management wouldn't bet a nickel that its best guess was "true." If the best forecast about the future is flighty and unrooted across time, if it has no dynamic stability, then management must not have confidence in its ability to forecast the future.

Clearly, changes in the degree of confidence will shift the investment function even if our hypothetical subjective probability distribution is held constant. An attractive subjective probability distribution in which management has no confidence will not provide a sufficient incentive to induce the firm to accumulate risky, illiquid physical capital. Keynes tells us that "if we expect large changes but are very uncertain as to what precise form these changes will take, then our *confidence* [in our ability to forecast] will be quite weak" (1936, p. 148). When confidence is weak, the incentive to invest in physical capital or to hold long-term financial assets is blunted.

The main point is this. In Keynes's model, the future time path of the economy depends on the decisions taken by agents conscious of their ignorance. They cannot obtain information about the future in which they have complete confidence because there is no predetermined future that is independent of the blind groping of ignorant agents. There is no roulette wheel. Keynes thus breaks the logical chain found in neoclassical or New Classical models linking agents (with given endowments and preferences) through the hard data represented by market prices and true probabilistic knowledge of the future to *determinate* (and often "correct," "rational," and optimal) decisions and outcomes. Keynes's markets do not provide his agents with sufficient information to predetermine their decisions. Agents must create or, as Shackle put it, must imagine a substantial part of the information used to make decisions. They must also decide on the degree of confidence they have in the information thus created. Clearly, agent choice under such conditions is a nondetermistic and originative process.

Thus, in a world of uncertainty there is an *empty space* in the logical chain linking agent characteristics and hard data to agent decisions. New Classical or neoclassical theories of choice are impotent in this environment because they define "rationality" as the optimization of a known objective function given complete and correct knowledge of the effects on outcomes of all possible rival courses of action. When the information required to logically connect decision to outcome is inadequate and undependable, New Classical and neoclassical theories have nothing --literally-- to say about how agents choose.

[13] It should be noted that stability of the expectations function may be a necessary but not a sufficient condition for the development of a high degree of confidence. It is possible to have a relatively stable best forecast in which one does not have much confidence. The more likely case, however, is that confidence is eroded by frequent unexpected change in the relevant information available to the agent.

"Uncertainty recognized confronts rational economic man with the insoluble Humian puzzle, what do we do when we do not know the consequences of what we do? In the frame of rational economic man, the problem has no answer" (Fitzgibbons 1988 p. 83).

The main conclusion of this section is that the neoclassical theory of rational choice is not only irrational, in a Keynesian world it is also a methodological dead end. The obvious theoretical question, then, is where do we go from here? Is a world of true uncertainty inherently chaotic and untheorizable, as so many neoclassical economists presume?[14] Or, rather, is it possible to construct a theory of the logic and process of a nondeterminist Keynesian economy? If so, what methodology is appropriate and what properties would the theory possess?

Any attempt to answer these questions must confront the following dilemma. In a world of uncertainty the inherently unpredictable decisions of agents with genuine freedom of choice make future economic states nondeterministic. From the purely microeconomic perspective of the "isolated" agent, then, the path of the economy through time is extremely open ended, bounded only by the limits of technical knowledge, the natural environment, and the individual imagination. Yet history demonstrates that capitalist economies move through time with a substantial degree of order and continuity that is disrupted only on occasion by bursts of disorderly and discontinuous change. Thus, history shows agent choice to be, to a significant degree, bounded, constrained and coordinated -- not entirely chaotic and unpredictable -- much of the time.

The challenge to macrotheory, then, is to incorporate and reflect this dialectical tension between the nondeterminism inherent in individual choice under true uncertainty and the imperfect but significant order and continuity imposed on agent choice by the economic and social institutions and the decision-making "conventions" within which agents evolve and decide. As Fernando Carvalho wrote in one of the few insightful discussions of this tension: "There is a conflict between the order of the [economic] mechanism and the imagination of the solitary person which must be resolved" (1983-84, p. 269).

Much of macrotheory suffers from the failure to treat this dialectical relation in a balanced way. New Classical and neoclassical theory insist on determinism and nonoriginative, unfree agent choice. Shackle, on the other hand, though he recognizes the bounds placed on choice by "natural laws" and mentions on occasion the significance of conventions in the theory of agent choice, places inordinate and unbalanced stress on the limitlessness of imaginative decision making.[15] He has little to say about the institutions that determine which individuals will play what roles in our class-structured, hierarchical society, that mold agent attitudes and preferences, and that help create conditionally stable consensus forecasts and conventional wisdom out of the potentially unstable and infinitely disparate visions of the future held by managers and financial investors. "Shackle's approach ...overemphasizes the freedom of the agent and underestimates the influence of

[14] Woodford observed that "there is doubtless a fear that free use of the hypothesis of expectational instability makes things too easy, Any event, it might be argued, can be 'explained' after the fact by positing an arbitrary shift in expectations" (1991, p, 77).

[15] Of course, not all Post Keynesian work is vulnerable to this criticism.

conditions other than his own imagination. In this context, orderliness becomes an external necessity or constraint, something that cannot be explained *within* Shackle's theory" (Carvalho 1983-84, p. 270).

Indeed, Shackle has little to say about the *macrostructure* and properties of the economic system, about how and why the system-as-an-organic-whole moves from relative order and smooth reproduction to disorder and crisis and back again. Rather, his most inspired work focuses on decision making by the isolated agent, a microeconomic question. His "potential surprise" function, for example, is a nondistributional expectations function that underpins a theory of agent choice at a point in time. He also has little to say --and may indeed believe that there is nothing that can be said-- about the macrodynamic properties of an institutionally structured system of such agents. The one-sidedness of Shacklean theories of uncertainty may be one reason why "Keynes's (and Post Keynesian) economics is frequently accused of being nihilistic" (Carvalho 1988, p. 78).

The main thesis of this essay is that a macrotheory that acknowledges the centrality of uncertainty need not be nihilistic provided that it incorporates the sources of conditional stability built into the capitalist system.[16] We identify, at the most abstract level, two such sources, both stressed by Keynes: "conventional" expectations and confidence formation; and the institutional structure of the economy (and the society). The integrated effects of these two dimensions of economic life generate both the conditional stability and the periods of disorder that characterize the economic record.

It must be emphasized that the balance between order and disorder as well as the endogeneity or exogeneity of the sources of instability and crisis in the model will depend crucially on the character of the structural theory adopted, on whether it exhibits neoclassical, Keynesian, Kaleckian, or Marxian tendencies. In order to maintain our focus on the central methodological issues of the essay rather than on differences between conflicting structural theories we will attempt to keep the argument primarily in the spirit of Keynes's work, except as noted in the text.

In the section to follow we examine in some detail the contribution to conditional stability made by the theory of conventional expectations and confidence formation. Section 3 then briefly discusses the dialectical relation between institutional structures and economic order.

2. Human Agency and Conventional Decision Making

To help us understand the uniqueness of Keynes's treatment of agent choice, we will entertain the following thought experiment. Consider how a rational neoclassical agent inserted into the unfamiliar world of Keynesian uncertainty might deal with the choice problem. A neoclassical agent has well defined objectives but, in this case, would know that the available data base is inadequate to its task. Let us assume, however, that agents

[16] This thesis is also explored in an interesting paper by Lawson (1985), whose general line of argument is similar in spirit to the one made in this essay.

are familiar with the broad contours of economic history, that agents know that the economy exhibits a reasonable degree of coherence most of the time, interrupted on occasion by economic crises or financial panics.

Under these conditions, agents might well decide that some form of adaptive or extrapolative expectations function would generate predictions that were quite serviceable on average; however, they would also be aware that expectations thus formed would, from time to time, be disastrously mistaken. For those decisions that Shackle has termed crucial, the fact that agents would never know at what point catastrophe might strike would be especially chilling. As rational agents, they could never put the potential for a catastrophic crucial decision out of mind.

Thus, neoclassical agents might never develop sufficient *confidence* in the meaningfulness or truth content of extrapolative expectations to justify a positive decision in a crucial choice. They might be perpetually prevented from undertaking significant risky investment by a chronic case of liquidity preference: the economy could sink into a state of permanent stagnation. But this would represent a contradiction because we started with the realistic assumption that the economy is characterized by a history of fairly orderly motion (including relatively orderly cyclical patterns) punctuated with occasional bouts of instability (including abrupt and discontinuous cycle down-turns).

Keynes himself engaged in precisely this thought experiment in *The General Theory* and came to the same conclusion. Keep in mind that the "spontaneous optimism" and "animal spirits" referred to in the following quote cannot characterize neoclassical agents.

> A large proportion of our positive activities depend on spontaneous optimism rather than on a mathematical expectation. ... Most, probably, of our decisions to do something positive, the full consequences of which will be drawn out over many days to come, can only be taken as the result of animal spirits - of a spontaneous urge to action rather than inaction, and not as the outcome of a weighted average of quantitative benefits multiplied by quantitative probabilities. ...If animal spirits are dimmed and the spontaneous optimism falters, leaving us to depend on nothing but a mathematical expectation, enterprise will fade and die. (1936, pp. 161-62)

Clearly, then, a Keynesian theory of decision making under uncertainty must have a theory of agency consistent with its unique premises; it cannot be constructed with displaced neoclassical agents. Neither the ontology nor the epistemology of neoclassical choice theory will do.

In chapter 12 of *The General Theory* Keynes posed the central problem of the theory of agent choice. Firms and wealth holders *must* make investment and portfolio selection decisions; they cannot avoid them. "We do not know what the future holds. Nevertheless, as living and moving beings, we are forced to act" (Keynes 1973b, p. 124). These decisions will profoundly influence their future economic and social status; wrong decisions in "crucial" circumstances will destroy managerial careers or eliminate wealth holders from their rentier positions. Agents, therefore, care deeply about the quality of their

decisions; however, the information they need to assure safe, effective or optimal decisions is in principle unknowable.

With Keynes, we have to ask two basic questions. First, what effect would confrontation with decision-making dilemmas of this kind have on the constitution of agents? Second, what kind of decision-making process would such agents follow? An answer to the first question is required before we can address the second one. Keynes assumed that *agents are socially and endogenously-constituted human beings,* not autonomously constituted, lifeless Walrasian calculating machines. As he put it, "man himself is in great measure a creature of circumstances and changes with them" (in Rotheim 1989-90, p. 321).[17] The theory of agent choice, therefore, must reflect both the social constitution of the agent (which is contingent on, and changes with, the institutions, values, and practices specific to time and place) as well as the psychological complexity of the human-being-in-society. Humans are distinguished from Walrasian atoms in this theory in two ways. First, the relation between agent and social environment is dialectical and interactive. Although individuals' values, preferences, modes of understanding, and so forth are socially constructed, through individual and collective action people transform their decision-making environment over time by, among other things, creating new institutions and adopting new practices designed to reduce the harmful effects of uncertainty.[18]

Second, because they are fully human, agents have a deep psychological need to create the illusion of order and continuity even where these things may not exist. "Part of the explanation which we are seeking is to be found in psychological phenomena" (Keynes 1971, p. 322). Both attributes of Keynesian agents, we shall see, help generate and sustain stability. We first examine Keynes's view of the effect on choice of the psychological need to reduce our perception of uncertainty. (The role of institutions in reducing uncertainty is considered in the next section.)

Keynes argues that even though "we simply do not know" the information that we must have to make safe decisions, we have a human need "to behave in a manner which saves our faces as rational, economic men" (1937, p. 214), a manner that allows us the comfort of the illusion of safety and rationality. People want to believe that they are in the same position in which economists place neoclassical agents, with all the information required to make optimal choices, even though they know at some subconscious or barely conscious level that it is not so. Keynes tells us that we have a psychological need to calm our anxieties, to remove the constant stress created by forced decision making under inadequate information, a need that is neither irrational nor socially or economically dysfunctional. We have, psychologists instruct us, a powerful need to reduce our "cognitive dissonance." We have good reason, in other words, to try to "overlook this awkward fact" that the reproduction of our economic and social status requires a

[17] As Hayek argued, people's "whole nature and character is determined through their existence in society" (1948, p. 6). Discussing Keynes's methodology, Rotheim noted that the "nature of the individual as well as her perception of herself are functions of and change with her interactions with other individuals. ..The individual's very nature is molded by the social context in which she exists and in which she attempts to make decisions" (Rotheim 1989-90, pp. 322-33).

[18] Lawson (1985) refers to Keynes's approach to the agent-structure problem as "societal interactionism."

knowledge of things that, in fact, "we simply do not know." In Keynes's words: "Peace and comfort of mind require that we should hide from ourselves how little we foresee" (1973b,. p. 124). Though little has been written about this psychological propensity of the agent, it is an essential cornerstone of Keynes's theory.

Paradoxically, New Classical and neoclassical theories of agent choice are themselves a reflection of this deep-seated human need to impose knowledge, order, and controllability –rationality-- on our environment even where it is patently clear that these characteristics are simply not there. Although no economist would claim to know someone who believes that he or she has certain and complete knowledge of the future, in their theoretical work most economists hold with ferocity to the assumption that everyone believes they have such knowledge precisely because it creates the comforting vision of a world of rationality, a world subject to conscious human control. As Shackle wryly observed: "Better a contradiction in terms than acknowledge a chink, let alone a gaping rent, in the armour of rationality" (1972, p. 115).

To help us accomplish this calming of our nerves, Keynes argues, we collectively develop a "conventional" process of expectations and confidence formation. Keynes's concept of conventional decision making is a sine qua non of Keynesian macrotheory. It is also one of Keynes's most important and most radical theoretical innovations.

The dictionary definition of conventional as "arising from custom and tradition" captures Keynes's meaning to some degree. In place of the complete information appropriate to the fairy-tale world of neoclassical agent choice, Keynes substitutes an expectations formation and decision-making process based on custom, habit, tradition, instinct, and other socially constituted practices that make sense only in a model of human agency in an environment of genuine uncertainty.[19]

Keynes's most extensive discussion of conventional decision-making appears in his 1937 *QJE* article. We quote from it at length because it highlights a number of crucial assumptions of his theory of agent choice. We save our faces as rational economic men, he argues, in the following ways.

> (1) We assume that the present is a much more serviceable guide to the future than a candid examination of past experience would show it to have been hitherto. In other words we largely ignore the prospect of future changes about the actual character of which we know nothing.
>
> (2) We assume that the *existing* state of opinion as expressed in prices and the character of existing output is based on a *correct* summing up of future prospects, so that we can accept it as such unless and until something new and relevant comes into the picture.
>
> (3) Knowing that our own individual judgment is worthless, we endeavor to fall back on the judgment of the rest of the world which is perhaps better informed.

[19] In a recent study of decision making in financial markets, Zeckhauser, Patel, and Hendricks (1991) show that investors, "for whom rationality by itself provides little guidance as to what [choices] are appropriate" (p. 6), follow simple rules and heuristics (such as "barn-door closing," "regret avoidance," "status quo bias," and "herd behavior") that are excellent examples of the kind of behavioral conventions we have in mind.

> That is, we endeavor to conform with the behavior of the majority or the average. The psychology of a society of individuals each of whom is endeavoring to copy the others leads to what we may strictly term a *conventional* judgment. (1937, pp. 214-15)

There are six propositions concerning a conventional theory of expectations and confidence formation that I wish to entertain here.

1. The conventions to which Keynes refers serve a dual purpose. The first is obvious: conventional expectations formation creates or imagines the previously missing data needed to link rival choices to expected outcomes. Conventions, Keynes tells us, are a "substitute for knowledge" (1973, p. 124).

Much more important, however, conventions calm our nerves and save our faces because they create *confidence* that expectations thus formed have a degree of meaningfulness or validity or truth-content sufficient to sustain an investment decision of great moment for the agent.[20] This creation of confidence in the meaningfulness of forecasts or in the "scientific" character of the "conventional wisdom" is absolutely essential to both the growth potential and the conditional stability of the Keynesian model. Of course, the reason why an agent can sensibly attribute a quasi-objective or quasi-scientific character to conventional expectations is that conventions are socially constituted and socially and externally sanctioned. They are not mere idiosyncratic figments of the individual's imagination. For example, when the collective wisdom of "Wall Street" (as reflected in the views of the business and financial press, investor newsletters, television's market analysts, and so forth) is near unanimous in predicting a buoyant stock market, it is not unreasonable for an individual investor to conclude that this expectation has a solid foundation. After all, the institutions and individuals who constitute "Wall Street" are professionals and insiders, knowledgeable students of the market whose expertise in these matters is richly rewarded. To assume that this collection of experts is as ignorant of the future as the individual investor is to question the rationality of our economic and social institutions.

The willingness of Keynesian agents to believe that their expectations are firmly founded distinguishes them from neoclassical-agents-in-a-Keynesian-world and permits them to overcome the propensity toward perpetual liquidity preference that Keynes associated with the "nothing but a mathematical expectation" methodology of mainstream theories of agent choice. Conventions prevent agents from being perpetually confused and perhaps even psychologically immobilized by their comprehension of the extreme precariousness of their economic status. In the end, it is the propensity of agents to believe in the solidity and validity of the conventional forecast and not some innate or genetically

[20] Samuels stresses the social and psychological underpinnings of the concept of confidence as it is used here. He comments on "the role of [convention] as psychic balm, to assuage the anxiety consequent to our living in a world of radical indeterminacy (uncertainty)" and observes that the "notion of 'confident' is essentially psychological and involves intersubjectivity and therefore both the internal psychological needs and/or drives of the individual and the sociology of the individual's relevant group, as well as questions of the nature and degree of commitment and consensus" (1991, p. 511).

transmitted "spontaneous urge to action" that defeats the forces of ignorance and prevents perpetual stagnation or perpetual chaos in a Keynesian world.[21]

Given the centrality of the psychological dimensions of confidence formation to Keynes's theory, it is surprising that the Post Keynesian literature has devoted so little effort to fleshing out its character and properties. Post Keynesians often write as if casual references to "animal spirits" and the simplest treatment of the term convention exhaust the Keynesian theory of expectations and confidence formation. This superficial treatment of confidence formation is one excuse given by neoclassicists for not taking Keynes's views on uncertainty more seriously.

For example, Davidson recently observed that "whenever decision makers recognize that they face nonergodic conditions and are therefore ignorant regarding the future, ...they can sensibly adopt "haven't a clue" behavior one time and "damn the torpedoes" behavior at another, even if this implies that they make arbitrary and inconsistent choices when exposed to the same stimulus over time" (1991, p. 136). In a similar vein Shackle said that Keynes "had, essentially, only one thing to say about expectation: that it eludes reduction to clear and stable principles and laws, and is law unto itself" (1972, p. 180), and that he "gave no hint of a procedure of thought or judgment by which the place of knowledge could be filled" (1983-84, p. 246). And Fitzgibbons referred to the "radical irrationality" of the Keynesian investor, noting that "it is the psychology of *utter irrationality* that causes the volatility of investment behavior" (1988, pp. 80 and 82, italics added). The argument presented here, in contrast, is that Keynes sketched at least the outline of a coherent theory of conventional decision making that has more than "one thing to say" and cannot be adequately characterized by simple phrases such as "animal spirits" or "utter irrationality."

2. A stable set of conventions provides one of the two major sources of conditional stability in a Keynesian model.[22] (A stable set of institutions is the other.) The following quotation about conventional expectations *from The General Theory* helps clarify this point:

> The facts of the existing situation enter, in a sense disproportionately, into the formation of our long-term expectations; our usual practice being to take the existing situation and to project it into the future, modified only to the extent that we have more of less definite reasons for expecting a change. (1936, p. 148)

As long as conventions such as these maintain the allegiance of the majority of agents, they will help provide continuity and predictability to economic life. To assume that the existing state of affairs will continue indefinitely and to project the existing situation into the future is to adopt extrapolation as a mode of forecasting. Conventions thus help generate an illusion of continuity that can contribute to the creation of stability

[21] Winslow complains that Keynes "does not explain why consciousness of fundamental uncertainty produces incapacitating anxiety or why and how use of the conventions eliminates this consciousness." He goes on to suggest that an "explanation can be found ...in psycho- analysis" (1989, p. 1180).

[22] Heiner goes so far as to argue that consciousness of true uncertainty is the main source of stability in the economy. "Genuine uncertainty, far from being unanalyzable or irrelevant to understanding behavior, is the very source of the empirical regularity we have sought to explain by excluding uncertainty" (1983, p. 570).

when conditions are right. Convention-based extrapolative forecasts help produce order and continuity where chaos might have been.

Extrapolative forecasts certainly cannot guarantee perpetual stability; Minsky's theory of financial instability, for example, posits extrapolative expectations that at times become unstable. They are *consistent* with periods of stability, however, because they are not chaotic or discontinuous and can, under certain conditions and for certain periods, generate a series of non-increasing forecast errors. Under such conditions, expectations themselves will not initiate chaos (though they can transmit unstable behavior originating in other sectors or aspects of the model). They thus help make possible those periods of continuity that Keynes called "normal times" and that Joan Robinson referred to as periods of "tranquility." In tranquil periods confidence develops in the conventional view that there will be a great deal of continuity between the future and the relevant past. Under this convention, forecasts may, for a time, take on the character of self-fulfilling prophesies that reinforce confidence in the conventions that sustain extrapolative expectations.[23] For example, in a Kaleckian model the belief that investment will be profitable will stimulate investment, which in turn may stimulate profits. Conversely, extrapolative expectation formation in a deep depression will lead to investment decisions that will reproduce the depression.

Modified extrapolative forecasts can take highly complex forms and they can accommodate "specific reasons to expect a change" (such as the likely electoral victory of one political party or another) without necessarily under-mining confidence in the conventions that sustain them. As long as the underlying conventions are maintained, the standard practice of modeling expectations through adaptation and extrapolation from truncated time series will be consistent with Keynes's theory of agent choice. Of course, in a Keynesian world the theorist has to model confidence as well as expectations. Confidence might be modeled using some variant of the following assumption. The degree of confidence in the meaningfulness of a forecast is a positive function of the time that has elapsed since the last major forecast error and of the time that has elapsed since the last "crisis of confidence" occurred. A crisis of confidence will take place when a majority of agents lose faith in the conventions that sustain the expectations-generating process.

Thus, in spite of the radical nature of Keynes's theory of the human agent, a Keynesian model of periods of tranquility can be constructed using traditional approaches to expectations formation (excluding, of course, strong versions of the "rational expectations" model). Economists are quite comfortable with models of agent choice conditioned on exogenous preferences; they should be just as comfortable with models of expectation and confidence formation conditioned upon a given set of conventions.

Far from being irrational, then, in a world of true uncertainty conventional decision making turns out to be both individually and socially functional. It is the neoclassical theory of rational choice that is both unrealistic and socially irrational.

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[23] There "is frequently an insistence [in the expectations literature] upon the extent to which a change in expectations, once begun, produces effects that confirm and strengthen that very belief. ...Changes in belief become important in generating fluctuations in circumstances in which they tend to be *self-fulfilling*" (Woodford 1991, p. 77).

3. In the absence of stable conventions (or, more accurately, the allegiance of most agents to a set of such conventions) the expectations-generating process is unstable. Since the process of expectations and confidence formation does not depend solely on hard data and immutable, pregiven economic structures but also depends on the "flimsy foundation" of social conventions and cognitive-dissonance-reducing psychological practices, it is, as Keynes observed, "fragile" and "subject to sudden and violent changes" (1937, p. 215). From time to time events take place that will make it impossible to sustain the convention that the future will look like the present extrapolated. For example, consider the convention that the business community as a collective has a solid understanding of likely future economic developments. Although this particular convention clearly contributes to investor confidence under ordinary circumstance, it is also fragile. On those occasions when the consensus forecast turns out to be disastrously mistaken, the irreducible ignorance of the collective wisdom will be made painfully manifest to all agents, the convention will collapse, and the confidence in the ability to forecast the future that is built on that convention will shatter.

Once confidence in the meaningfulness of the forecasting process is destroyed, irreducible objective uncertainty forces its way into the consciousness of agents, breaking down the conventional barriers they have constructed to conceal it. These are times of crisis and instability, points where the overheated boom cracks or the moderate expansion turns into an overheated boom, times when the conventional belief that the future can be accurately projected from the data describing the past --the main anchor of expectations formation-- is destroyed. The fragility of social conventions and practices makes the behavioral equations that determine the marginal efficiency of capital and the cost of financial capital subject to "sudden and violent changes" as well. In Keynes's words:

> A conventional valuation which is established as the outcome of the mass psychology of a large number of ignorant individuals is liable to change violently as the result of a sudden fluctuation of opinion due to factors which do not really make much difference to the prospective yield; since there will be no strong roots of conviction to hold it steady. In *abnormal times* in particular, when the hypothesis of an indefinite continuance of the existing state of affairs is less plausible than usual even though there are no express grounds to anticipate a definite change, the market will be subject to waves of optimistic and pessimistic sentiment, which are unreasoning *and yet in a sense legitimate where no solid basis exists for a reasonable calculation.* (1936, p. 154, italics added)[24]

[24] Keynes lays similar stress on the potential instability of all conventionally-grounded behavioral equations in his *QJE* article.

> Now a practical theory of the future based on these [conventions] has certain marked characteristics. In particular, being based on so flimsy a foundation, it is subject to sudden and violent changes. The practice of calmness and immobility, of certainty and security, suddenly breaks down. New fears and hopes will, without warning, take charge of human conduct. The forces of disillusion may suddenly impose a new conventional basis of valuation. All these pretty, polite techniques, made for a well-panelled Board Room and a nicely regulated market, are liable to collapse. At all times the vague panic fears and equally vague and unreasoned hopes are not really lulled, and lie but a little way below the surface.
>
> ... I accuse the classical economic theory of being itself one of these pretty, polite

> If we expect large changes but are very uncertain as to what precise form these changes will take, then our confidence will be weak. (1936, p. 148)

The first quote reiterates the thesis that the problem of unstable or flighty expectations is rooted not in the psychoses of irrational investors but rather in the fundamental structure of the economy: in a world of uncertainty, "no solid basis exists for a reasonable calculation." The second suggests that a collapse of confidence is itself a sufficient condition for stagnant investment demand even in the unlikely event that the mean expectation is optimistic. Together they imply that there are two different regimes or states of expectation and confidence formation.

Within a given set of conventions it is possible to achieve stability of expectations and confidence formation and a relatively continuous and smooth melding of the present into expectations of the future. However, such stability cannot be eternal. At some point there will be a serious disjuncture between expectations and outcomes that will create a breakdown or rupture of the conventions themselves. Expectations will then be subject to flights of fear and fancy, to the unstable, unpredictable patterns that Shackle called "kaleidoscopic." The shattering of conventional belief will trigger an *ex post* identifiable though *ex ante* unpredictable series of shifts not only in expectations but in the form of the expectations-generating function itself, as well as in agent confidence in the whole process.

The concept of a rupture in the conventions that guide expectations and confidence formation is a central component of Keynes's theory of "the crisis --the fact that the substitution of a downward for an upward tendency takes place suddenly and violently" (1936, p. 314). For Keynes, it is the key to the construction of a convincing theoretical explanation of the economic crises and financial panics that have always plagued unregulated capitalism, of those discrete, sharp, "sudden and violent changes" in the pace and direction of economic and financial activity that are inexplicable in orthodox theory (1936, p. 315).

4. The relation between conventional decision making and stability is dialectical and contradictory. Some macrotheories, it is true, tend to blame expectational disappointment on sporadic exogenous shocks or unforeseeable changes in economic institutions or in the political regime. However, the hypothesis that profound expectational disappointment is an endogenous phenomena is compelling. Minsky and Keynes (in chapter 22 of the *General Theory,* for example) focus on the *endogeneity* of financial investor expectation and confidence formation. At some point in most cyclical and secular expansions, they argue, investor expectations outrun the ability of the real sector to generate profit and interest flows; the inevitable clash of run-away investor optimism with the limited ability of the real sector to generate property income can shatter investor allegiance to the conventions of expectation formation. Marxists, on the other hand, locate the cause of profoundly disappointed expectations in endogenous developments in both sectors; the downward pressure on profitability --the "profit squeeze"-- that accompanies

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techniques which tries to deal with the present by abstracting from the fact that we know very little about the future. (1937 pp. 214-15)

the end of expansions *and* buoyant investor expectations are jointly responsible for the shattering of conventional belief.[25]

In both Marxian and Keynesian-Minskian theories an expansion of extended vigor will, at some point, generate expectations whose disappointment is inevitable, as well as degrees of financial leverage that make disappointed expectations a likely trigger of financial crises and general instability. In models with realistic endogenous expectations formation, then, allegiance to the conventions of expectation and confidence formation cannot be maintained indefinitely: conventional decision making can never sustain more than *conditional* stability (or what Lawson (1985) refers to as "contingent laws"). Periods of coherence will occasionally be disrupted by bouts of disorder -- "as in history."[26]

5. Keynes's process of expectations and confidence formation is irreducibly social and interactive rather than individualistic and isolated. Expectations are not, as a rule determined by isolated individuals performing complex autoregressions on their personal computers. Rather, every agent needs to divine where other agents think the market is headed. In chapter 12 of *The General Theory* Keynes argues that the situation facing investors in real and in financial capital is similar to that confronted by people who bet on horse races or who try to pick winners in beauty contests. The main task of every agent is to predict the expectations and future actions of other agents.

Indeed, chapter 12 contains one of the earliest "noise trading" or speculative bubble models, a fact noted by Robert Piron (1991) in a recent issue of the *Journal of Economic Perspectives.*[27] The main difference between modem noise-trading theories and Keynes's theory of speculative markets is that Keynes's model does not require the assumption that there exists a subset of irrational investors who refuse to base their expectations on the knowable "fundamentals" all the rational agents use.[28] In a world of true uncertainty there

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[25] See Crotty 1985 for a discussion of the interaction of the real and financial sectors in Marxian theories of instability.

[26] The thesis that the inherent unknowability of the future generates irregular cycles of optimism, confusion, and pessimism is of ancient lineage. For example, writing in the late seventeenth century the philosopher Spinoza observed that because men are

> often kept fluctuating pitiably between hope and fear by the uncertainty of fortune's greedily coveted favours, they are consequently ...very prone to credulity. The human mind is being swayed this way or that in times of doubt, especially when hope and fear are struggling for mastery ...No one can have lived in the world without observing that most people when in prosperity are ...over-brimming with wisdom. ...whereas in adversity they do not know which way to turn. ...No plan is too futile, too obscure or too fatuous for their adoption: the most frivolous causes will raise them to hope, or plunge them into despair. (1951, p. 3)

Spinoza then notes that "this is a general fact I suppose everyone knows" (1951, p.3). Apparently it took economists several hundred years to forget what everyone once knew. (Karen Graubart brought Spinoza's observations to my attention.)

[27] In the *Treatise on Money* Keynes observed that "it may profit the wisest to anticipate mob psychology rather that the real trend of events, and to ape unreason proleptically," and that "it will be to the advantage of better-informed professionals to act in the same way [as the mob]- a short time ahead" (1971, pp. 323 and 324).

[28] The standard noise-trading models also contain the following logical contradiction. The existence of pregiven fundamentals is assumed, but the model shows that financial asset prices can remain far from their equilibrium values for years or even for decades. This being the case, the returns on future real assets would have to stray far from their assumed fundamental or equilibrium values for years or even decades. Thus,

is no immutable, pregiven set of knowable distributions over all future states. The future depends on our expectations of it and the actions we take in the light of these expectations; Keynes's agents know this and therefore quite rationally form their own expectations by trying to guess the expectations of others in an endlessly iterative process.

Moreover, each agent also looks directly to the average or aggregate expectations of the collectivity of agents --to *conventional wisdom*-- for guidance and treats group opinion as if it were, by some miracle, untainted by the irreducible ignorance of the individuals who compose the group.[29] In sum, individual choice is constructed through complex patterns of social dynamics; as Keynes argued, "the whole is not equal to the sum of its parts" (1973a, p. 262) and macrotheory is more than the aggregation of isolated, autonomous, individual decision makers. In his words, economic theory must be "organic" rather than "atomic."[30]

6. Expectation and confidence formation are institutionally specific and historically contingent processes. Section 3 will argue that complex economic, political, and social structures socialize agents (helping form their attitudes and preferences), influence the allocation of differentially socialized agents to distinct economic roles, and, most important, set boundaries on expected outcomes. But even if we confine ourselves to the issues specific to this section, we will reach the same conclusion: both market and non market institutions are central to expectations and confidence formation and, for this reason alone, agent behavior is institutionally and historically contingent. For example, the institutions and processes that make a corporate capitalist class or a business "community" out of individual capitalists --such as business magazines and trade journals, businessmen's clubs and social organizations, upper-class schools, industry trade associations, political parties, television, and the like-- in concert with the institutions and practices that constitute "the market" itself, influence individual decision making by molding expectations and creating the cultural and ideological climate that nurtures business optimism, confidence, and a positive attitude toward risk taking.

As I have argued elsewhere, (Crotty 1990), Keynes's macrotheory is based on an institutionalist methodology. His theory of agent choice is, therefore, totally incompatible with methodological individualism. Both Keynes's agents and their decision-making processes are socially constituted, changing and evolving whenever there are significant alterations in economic and social institutions, class structures and the social conventions of expectations formation.

To conclude this general discussion of conventional decision making we call attention to two of its implications. First, the assumption of true uncertainty does not imply

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these pregiven "fundamentals" have no practical meaning, and there is no reason to label some investors rational and others irrational.

[29] This is not to deny that since conventional wisdom or the consensus forecast does influence the future direction of economic activity, it indeed provides useful (though limited and incomplete) information to individual agents. For example, sensible short term financial market speculation requires a sense of how the rentier class sees the future. However, the economic future is not solely determined by the hopes and expectations of agents; if that were true, both booms and depressions would be perpetual.

[30] Brown-Collier and Bausor (1988) discuss Keynes's important distinction between atomic and organic processes and models. See also Davis 1989, Rotheim 1989-90, and Winslow 1989.

that chaos must replace order in economic theory or that a coherent macrotheory is impossible. A world of uncertainty is characterized by conditional order and conditional stability much of the time. As Keynes once reminded Joan Robinson: "You must not confuse instability with uncertainty" (1973b, p. 137).

Second, the acknowledgment that agents do not possess complete and certain knowledge of the future makes neoclassical methodology an inadequate foundation for the theory of agent choice; the reconstruction of macrotheory requires a methodology appropriate to the study of conventional decision making. As Keynes warned in *The General Theory,* the analysis of uncertainty and conventional decision making is "on a different level of abstraction" than traditional economic theory; "There is not much to be said *a priori,"* or by deduction from first principles, about expectations and confidence formation, and they are not, therefore, amenable to neoclassical methods (1936, p. 149).

Keynes's theory of conventional decision making, on the other hand, though it does not provide a precise and universally applicable answer to the question of how agents make crucial decisions, does suggest a *method* for seeking the answer. Keynes suggested that "our conclusions [should] mainly depend on the actual observation of markets and business psychology" (1936, p. 149). This is sage advice. We cannot identify a realistic set of core axioms and postulates describing agent behavior using abstract analysis alone. Keynes in effect advised economists to add the "mundane" research methods normally associated with other social sciences to their analytical tool kit, methods such as: (1) experiments to learn more about the psychology of individual and group decision making;[31] (2) an examination of sources such as the business press to find out what investors actually think about future prospects at any point in time; (3) concrete studies of the decision-making processes of industrial corporations and financial institutions; and (4) carefully constructed surveys of the state of mind of market participants. Recent survey research by Robert Shiller (1989) and Allan Blinder (1991) and the Donaldson and Lorsch (1983) study of decision making in large industrial corporations are good examples of the kinds of research methods Keynes had in mind.[32]

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[31] See, for example, Machina's (1987) survey article on the various and sundry problems with the neoclassical theory of choice under uncertainty that have been exposed by experimental studies. Astoundingly, most of the flaws in rational choice theory referred to in this article have occurred in experiments in which agents are confronted with simple mechanistic, ergodic games of chance where "subjects have been presented with explicit (i.e. 'objective') probabilities as part of their decision problem." In addition, "when individuals are asked to formulate probabilities they do not do it correctly" (p. 147). Finally, "evidence ...suggests that when individuals making decisions under uncertainty are not explicitly asked to form subjective probabilities, they might not do it (or even act as if doing it) at all" (p. 147). How much greater, then, must be the inadequacy of neoclassical choice theory in circumstances in which objective probability distributions linking choice to outcomes simply do not exist?

See also the critique of neoclassical choice theory in Grether and Plott 1979 and in Tversky, Slovic and Kahneman 1990. According to Grether and Plott, experimental data "suggests that no optimization principles of any sort lie behind the simplest of human choices and the uniformity in human choice behavior which lie behind market behavior may result from principles which are of a completely different sort from those generally accepted" (p. 623). For Keynes, these different principles are those that underlie conventional expectation and confidence formation.

[32] This call for broadening economists' set of research tools is hardly original. Lawson has argued for devoting "more resources into learning about the institutional behaviours, norms, conventions --or, more

As noted, once we have established a realistic set of assumptions about agent behavior and an adequate specification of agent objective functions and perceived constraints through such research methods, there is an important role to be played (during conditionally stable periods) by traditional mathematical methods of representation of expectations formation. Such methods may even be of some help in modeling confidence; however, such formal exercises by themselves can only take us so far. Expectations and confidence formation are complex, institutionally contingent, and nondeterministic psychological and social processes that can never be fully or permanently captured by any *fixed* mathematical formula. The only way theorists can be sure that they have adequately represented the sense of the future prevalent in any particular time and place is to follow Keynes's advice and study the actual decision-making heuristics, social practices, and expectational conventions used by entrepreneurs, managers, rentiers, and workers in each concrete institutional setting.

Our conclusion about research methodology can be stated succinctly. Keynes's stress on the humanity of the agent suggests the use of observational and experimental methods for the study of the psychology of individual and group decision-making, and his work on conventional expectations formation calls for the legitimation of institutional, sociological, psychological, historical and survey research methodology as complements to the traditional deductive logic of economic theory. The profession's instrumentalist faith that the realism of our basic assumption set is irrelevant because econometric tests of derived hypotheses will sort truth out for us is more of a tribal superstition than a scientific methodology.[33] Increased reliance on the research methods used in psychology, history and sociology --the "weaker" social sciences-- can help us construct more realistic theory.

3. The Institutional Foundation of Conditional Stability

To explain the seemingly paradoxical coexistence of uncertainty and conditional stability requires the integration of a theory of conventional decision making with an understanding of the institutional structure of the economy and the ways in which it bounds and constrains agent choice. The orderly reproduction of any society requires that the individuals who compose that society accept the legitimacy of its basic institutions and that they internalize to a significant degree the motivations and values associated with them and respond to the rewards and sanctions inherent in them. Contrary to a fundamental tenet of methodological individualism, individuals do not enter society armed with some "objective" or "autonomous" set of preferences, values and motivations with which to assess and possibly to redesign the social structures they confront. Rather, they are infused

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generally, rule systems-- that are produced and reproduced by people in the various spheres of activity" (1985, p. 925). Shiller suggested that "we must base further modelling efforts on observation and human behavior and on the popular models that inform that behavior" (1989, p. 435). As distinguished an economist as Robert Solow, in a forceful rejection of instrumentalism and the use of unrealistic assumptions, stated that "we have no choice but to take seriously our own direct observations of the way economic institutions work. There will, of course, be arguments about the *modus operandi* of different institutions, but there is no reason why they should not be intelligible, orderly, fact-bound arguments" (1988, p. 311). Unfortunately, the profession has yet take such advice seriously.

[33] For a discussion of the inherent inadequacy of instrumental methodologies in the social sciences, see Breed 1991 or McCloskey 1985.

through a complex process of socialization with values and motivations that reinforce and reproduce society's core institutions.

Sensible social theory must try to acknowledge and integrate the insights of both individualist and structuralist methodology. To be sure, social structures can be changed by groups of individuals. And Keynesians insist that individuals do have significant freedom of choice; they do not always make choices consistent with the orderly reproduction of society. But institutions also socialize individuals, and hierarchical societies do differentially socialize distinct classes of individuals and assign them to qualitatively different economic and social roles. In addition, institutional structures constrain agent choice and set bounds on expected economic outcomes.[34] Moreover, institutions are economic agents themselves. Institutional decision making requires a theory of choice of its own, one that incorporates the effects of particular organizational structures, strategies, and conventions. Marx's famous dictum that "men make history, but they do not make it precisely as they choose" is methodologically on the right track.

Institutional structures, therefore, exert a powerful and often a controlling influence on individual agent choice. As Carvalho noted:

> Institutions transcend individuals. They enforce constraints on actions and events because they orient, constrain and direct the behavior of individuals. ...Their existence implies the presence of a social fabric, a mechanism within which individuals perform their functions. (1983- 84, p. 271)

For this reason, both microtheory and macrotheory must be institutionally specific and historically contingent.

In a well-functioning economy, relatively stable or inert institutional structures help create order and conditional stability. Indeed, many institutions have as their explicit purpose the reduction of uncertainty and/or the insulation of particular agents from its deleterious effects.[35] Here we can do no more than list several important institutional sources of order as examples of the general phenomenon.

1. *Money and forward contracts.* As discussed in Davidson 1987, 1991 and Kregal 1980, money (or relatively riskless, short-term financial assets) provides an insurance policy --a safe haven-- in periods of unusual uncertainty. The ability to postpone risky or irreversible commitments by holding money helps calm nerves, stabilize expectations, and prevent panic. And forward contracts obviously can "limit the outcomes of an otherwise uncertain future" (Davidson 1987, p. 149).

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[34] The treatment of semiautonomous institutional structures presented here, in which institutions mold and constrain agent choice, is obviously in conflict with "rationalist" neoclassical theories in which autonomous agents can choose the set of institutional structures that maximizes economic efficiency.

[35] This proposition is consistent with a neoclassical interpretation of the role and function of institutions in economic life. For example, North argues that "throughout history, institutions have been devised by human beings to create order and reduce uncertainty in exchange" (1991, p. 97). In this neoclassical interpretation, however, institutions are merely instruments through which autonomously constituted, rational agents achieve utility maximization. They do not help socialize or constitute agents, and they always assist, never impede, the attainment of efficient economic outcomes. It is a one-sided, rather than a balanced or dialectical, vision of the relation between people and their institutional environment.

2. *Institutions and practices that regulate competition.* Through cooperative interfirm relations such as oligopolistic structures, trade associations, mergers, enterprise-bank groupings, and so forth, firms have historically attempted to limit the damage done by anarchistic competition. Competition, someone once said, is a struggle to determine the identity of the monopolist. Cooperative arrangements raise average profits and make the future more predictable and controllable. Cooperative relations make it possible for firms to plan the rate of obsolescence of the capital stock and adopt long-term strategies for technical change, price setting, labor relations, R&D, and capital accumulation.

3. *The institutionalization of decision making.* Many important economic decisions have been institutionalized and therefore made more stable in the modem economy. Some institutional decisions are made through the use of heuristics fixed by law, formal policy, or deeply rooted bureaucratic routine. Even decisions not completely legislated or routinized are often filtered through bureaucratic organizational structures and strategies possessing considerable inertia.[36] Moreover, institutions often have longer planning horizons and more stable objectives than do individual agents.[37] Take the national saving rate as an example. Business saving represents the lion's share of national savings; it consists of depreciation, which is controlled by tax laws, and retained profits, which are in part determined by a stable payout heuristic. Even the bulk of private saving is done through private pension plans and Social Security. As a result of this institutionalization, national savings rates are relatively stable overtime (though quite variable across countries because of the diversity of institutional structures).

4. *Government regulation of the macroeconomy.* As events in the 1920s and 1930s demonstrated, in the absence of effective government regulation modern capitalism is neither economically nor politically viable. The success of the Keynesian state in the quarter century following World War II in using macropolicy and lender-of-last-resort powers to set effective lower limits on growth and upper limits on inflation and unemployment provided a solid foundation for long-term expectations formation, helping create both investor optimism *and* confidence in the belief that the future was, in broad outline, predictable.

5. *The Bretton Woods system and international order.* The existence throughout much of the postwar period of a stable and orderly system regulating international trade, investment, and finance was a necessary condition for the impressive growth and stability of the era. The partial deconstruction of that system in the early 1970s was a major contributor to the subsequent outbreak of economic instability in the capitalist world.

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[36] See Crotty 1991 for an analysis of the effect of corporate organizational structures and strategies on the stability properties of the investment function.

[37] Hargreaves Heap makes this argument as follows. Hierarchical firms can be expected to have longer time horizons than [individuals or] individualist organizations. Hierarchies offer a kind of long-term contract. They have internal labor markets where progress becomes routinized. So, the long-term prospects of the individual member are bound up with the long-term health of the organization. What matters is the long-term success of the organization, since this guarantees the individual's security. Hence, if individuals in an organization are concerned with security, their attention will be focused on the long-term horizon. (1986-87, p. 275)

The key point is that institutions such as these can be successful in helping to control and reduce uncertainty much of the time. By setting apparent bounds on likely future outcomes, they help contain and repress the chaos seemingly inherent in free agent choice. They thus help make it possible to construct a coherent theory of the laws and tendencies of a macroeconomy characterized by true uncertainty.

Unfortunately, the institutional foundation of conditional stability and the institutional specificity of the behavioral equations of macrotheory have been seriously neglected by most theoretical traditions (in part because their conceptualization requires that most difficult of all theoretical feats - the integration of individualist and structuralist methodologies).[38] But such neglect is profoundly debilitating because the combination of the institutional structuring of agent choice and the conventions of decision making is the key to solving the paradox of conditional order and stability in a world of apparently limitless individualistic choice.

It must be stressed that many of the institutions that underpin continuity in so-called normal times also contribute to the potential for severe instability in crisis periods, and some make the outbreak of crises more likely. Consider several of our examples. First, money and other liquid assets are essential to the smooth functioning of a capitalist economy yet, as both Marx and Keynes pointed out, it is the ability of agents to "flee" from commodities and risky financial assets to money in times of fear and uncertainty that makes aggregate demand failures and financial panics possible and Say's Law inoperable.

Second, forward money contracts can create what I have elsewhere (1985) called "contractual rigidity" in the economy. As agents precommit through contractual obligations ever larger percentages of their expected cash flows, the economy becomes, to use Minsky's phrase, "financially fragile." At some point in the growth process, then, contracts no longer reduce uncertainty; rather, they exacerbate it.

Third, by insulating firms from competitive pressure, oligopolistic relations permit above average profits and the development of bloated bureaucracies, outdated technologies, and excessively risk-averse strategies. The longer that cooperative interfirm relations are successfully maintained, the greater the incentive for some firm to undermine them by seeking a larger share of the market. Just as anarchic competition motivates cooperative relations, oligopoly eventually breeds aggressive and unpredictable competition.

Fourth, successful government regulation of the economy in the postwar era brought with it a now widely recognized moral hazard problem. The prevention of depression and significant financial panic over many decades created a widely held perception that there was no serious downside risk in financial speculation. This perception in turn caused an ever-increasing tolerance for leverage that has left both industrial and

[38] Both institutionalists and Marxists have long been concerned with the institutional contingency of economic theory. Two notable neo-Marxian efforts to conceptualize the relation between concrete institutional structures and conditional stability are the "social structure of accumulation" approach of Bowles, Gordon, and Weisskopf and the French "Regulation" school associated with Aglietta, Boyer, and Lipietz. See Kotz 1990 for an explanation of these theories and a comparison between them.

financial industries in precarious financial position and has made it extremely difficult if not impossible for most governments to use macropolicy aggressively.[39]

Finally, the story of the endogenous developments that led to the collapse of the Bretton Woods system is an oft-told tale. See, for example, the treatment in Block 1977.

Thus, as was the case with the relation between conventional decision making and stability, the relation between institutional structures and order and continuity is dialectical: institutions can never create more than conditional stability. As noted, most of the stabilizing institutions and practices I discussed embody serious contradictions. They tend to create new obstacles to stability even as they eliminate old ones; they transform the effects of uncertainty and shift them across time rather than permanently eliminate them. A macrotheory based on the integration of institutional structures and conventional expectation and confidence formation should explain not only why, even in the face of uncertainty, capitalism is relatively orderly most of the time, it must also explain why it suffers periodic crises and malfunctions. The contradictory and dialectical role played by conventional decision making and uncertainty-reducing institutions makes the pursuit of permanently effective state control of the capitalist economy thorough traditional macropolicy perpetually elusive.

4. Conclusion

The future *is* unknowable; we exist in an environment of true uncertainty. In such an environment, neoclassical theory fundamentally misspecifies agent choice. Fortunately, the price of recognition of the existence and centrality of fundamental uncertainty is not theoretical chaos as neoclassicists would have us believe. The concept of the socially constructed human agent and conventional decision making in concert with an understanding of the institutional foundations of conditional stability create a world with nondeterminist or contingent laws and tendencies, a world that can indeed be appropriated through theory. However, a theory adequate to its task must be institutionally contingent and never lose sight of the dialectical relation between uncertainty and the structures and practices we have created to try to remove its sting.

[39] See Crotty 1989 for an analysis of the rise and fall of the Keynesian regulatory regime in the post World War II period.

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