The Uncertainty About Uncertainty: A paradigmatic comment on Professor Weiss’ theory of the firm

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"Time and chance happeneth to them all"
Ecclesiastes 9:11

"Uncertainty must be taken in a sense radically distinct from the familiar notion of risk"
Frank H. Knight, "Risk, Uncertainty and Profit"

The Walrasian equilibrium theory has substantially filled economists’ horizons since its reincarnation half a century ago, and the traditions of the static, timeless, equilibrium theorizing have become deeply entrenched. One of the most actively cultivated areas of application in recent times has been the theory of financial markets. The Sharpe-Lintner-Mossin capital asset market pricing model (CAPM) has provided the conceptual foundation for a large body of theoretical and empirical work. On the one hand, its roots exist in the earlier work of Markowitz, whose Portfolio Selection had set the stage for the interpretation of security rates of return as random variables amenable to optimum combinations in terms of a risk-return tradeoff.1

Fama and Miller worked out a quasi-definitive study of the implications for the theory of finance,2 and along with integrative analysis of the kind developed by Hamada,3 attempts were made to marry the security market theory to the financial optimization decisions in the firm, as these had earlier been conceptualized by Modigliani and Miller.4 The theory has been extensively discussed and critiqued, and references abound in the literature cited.5

Professor Weiss’ paper in this issue of the Journal on “Capital Markets, Output, and the Demand for Inputs under Uncertainty” provides us with an imaginative and interesting

further development in this direction. Taking the work cited there in the general theory of the firm under uncertainty, the author attempts to integrate the financing decision, as that, it is supposed, is influenced by the financial asset market theory we have just referred to, into the other decision problem areas the firm confronts. Our intention at this point is not to pass all of the analysis of the paper under review. That deserves close attention from those who assume the explanatory competence of the probabilistic-equilibrium-theoretic analysis the paper posits. Rooms exists, for example, for discussion as to whether the Modigliani-Miller theorems implicit in the paper are, in fact, sufficiently robust to bear the weight of demonstration that is placed upon them. The question has been extensively debated in the literature. Further, question might be raised as to whether the paper takes adequate account, not only of the variability of the required rate of return on corporate equity securities as changes occur in the degree of risk to which the holders are exposed, but also of the cost of debt capital. Little progress seems possible if it is assumed that corporations can, for example, raise debt capital at some suitably defined risk-free rate of interest.

Our interest at present is in the logical and methodological foundations of the analysis the paper presents. The basis of our observations on this level is found in the concern that increasing numbers of economists have exhibited in relation to the timeless, static, risk-free nature of the tradition in which the paper is to be placed. Take first the question of time.

The Marshallian concern for the real and actual passing of time was transected in the 1930s in the manner of Joan Robinson's influential Economics of Imperfect Competition, where she stated, in the elevation of an equilibrium theoretic tradition, that "the technique set out in this book is a technique for studying equilibrium positions. No reference is made to the effects of the passage of time." But, significantly, in the preface to the reissue of her work nearly four decades later, Robinson acknowledged with uncommon candor that her initial assuming away the real problem of time was a "shameless fudge." She went on to state that "the whole analysis, which in reality consists of comparisons of static equilibrium positions, is dressed up to appear to represent a process going on through time." Hicks again has also grasped the point at issue. "Why is it," he asks, "that the theory of monopolistic competition, or imperfect competition, to which so much attention was paid in the thirties, now looks so faded? Because it is quite shockingly out of time." The problem with the Walrasian equilibrium theory, as John Hicks observed in his recantation from the earlier ISLM analysis he had cast in that mold, is that "it is not really in time." Economic theorists, it seems, trapped by the prospect of epistemological security in the static, timeless, mathematized abstractions of equilibrium theory-building, have forgotten what Marshall referred to as "the great importance of the element of time," the problem that stands like a riddle at the core of economic theory. In his respect for real, historic time, Marshall found it "the source of many of the greatest difficulties in economics." The problem that plagues our theoretic construction of what we imagine we see in the world is that "we cannot foresee the future perfectly. The unexpected may happen..." We have become so accustomed to the niceties of mechanical analogies, such as Marshall's "stone hanging by an elastic string, or a number of balls resting against one another in a basin," that we have lost interest in the more "advanced study" to which, for him, all this was designed to lead.

Co-ordinate with the problem of time is that of uncertainty. In the static abstractions of the equilibrium theory, where everything happens at once and the future is collapsed into the present by probabilistic reduction methods, no place exists for genuine, residual uncertainty. To the extent that less than perfect foresight is acknowledged, the forces that bear on the outcomes of decisions are assumed to be determined by random variables, and those in turn, are reckoned to be describable by subjectively assigned probability distributions. The future is there to be discovered and experienced, and in a positivistic fashion we can take it into account by reckoning that tomorrow will be, as to its structural and determining character, precisely the same as yesterday. The logical and epistemological inadequacies of the notion of probability do not, in all, seem to have worried us at all.

But happily, a distinguished and expanding body of literature is now taking all of these questions into account. Knight, Keynes, Shackle, Hutchison, Lohsby, Davidson and others have illuminated this important problem area, and have brought economic theorizing into more comfortable accordance with the world. Hicks has observed that "the probability calculus, which is a powerful tool of discovery in the sciences, has seemed in recent years to be carrying all before it in economics also... It is my belief that the relevance of these methods to economics should not be taken for granted." In his new critique of economics that is, he says, "out of time," Hicks finds that "it has encouraged economists to waste their time upon constructions that are often of great intellectual complexity but which are so much out of time, and out of history, as to be practically futile and indeed misleading." But the theory of the firm has retained its almost pervasive atemporal character. It is thin, moreover, that has accounted for the fact that the theory of money, and in particular the theory of money capital, has not been satisfactorily integrated with the traditional theory of the firm. For money is essentially a time and uncertainty phenomenon. In a timeless equilibrium model of the economy, where all transactions are consummated at once and where, therefore, goods effectively exchange for goods, there is no function for money to perform and there is accordingly no place for money. Moreover, wherever uncertainty and imperfection knowledge have been assumed away there is again no reason to hold money, because all transactions can be settled instantaneously for all time. Money no longer has...

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any mediating function to perform, and it performs no role at all in providing, as it does predominantly in actual fact, a refuge from uncertainty.

This same abstraction from time lies at the heart of the methodology that the paper under discussion embraces. For consider the initial proposition in its Equation (1) that is imported directly from the CAPM theory and provides the starting point for the supposed integration of the financial with other decisions in the firm. Here the proposition is advanced, in effect, that when full general equilibrium conditions are satisfied in the capital asset market, it can be shown that the value of the firm will bear a specific relation to the discounted stream of the firm, suitably adjusted for the risk inherent in those earnings compared with the general asset market risk. Alternatively stated, it can be shown that under these conditions the asset market's required rate of return on a firm's common stock will bear a definable relation to the average required rate of return on the assets in the entire investment opportunity set from which the market portfolio containing the firm's stock is chosen.

Equation (1), accordingly, is, in every sense of the concept, stating simply an equilibrium condition. It defines a relation that, on the basis of the assumption content of the theory, exists when generalized equilibrium conditions are satisfied. As such, it is completely beyond the competence of the equation to say anything at all about the changes that might occur in the market's required rate of return when a change occurs somewhere in the interdependent market system. The equation is in all respects an equilibrium condition, and in no sense contains or exhibits a behavioral relation. The implications of this fact have been examined on an earlier occasion.11

This fact, and the questionable significance it has for the decision problems of the firm, in what, in concession to reality, we must recognize to be demonstrably disequilibrium situations, is further highlighted by the assumption content of the CAPM theory on which the paper under discussion is based. First, the result stated is derivable only on the assumption that all investors in the risky asset market are single period (all having the same single period horizon) expected utility of end-period wealth maximizers, who choose among alternative portfolios of asset opportunities on the basis of the mean (expected value) and variance of the rate of return. All individuals are assumed to be optimizers, subject to the fact that false trading can itself have important implications for asset market behavior and equilibrium, by reason of both its endowment redistribution effects and its expectations inducing effects. False trading, in other words, can alter the wealth endowments with which market participants were assumed to enter the exchange process initially, and can induce changes in the expectations with which market opportunities are regarded. This, of course, damages irrecuperably the assumption of homogenous expectations at the heart of the theory.

Consider now the question of uncertainty. The body of analysis under review must be required to deal with this deeper question at the same time as the implications of real time are confronted. The issue turns on the fact that whatever uncertainties might be perceived or suspected to exist in the world are taken into account by applying, as we have seen, the general theorems of the probability calculus. But it is precisely the applicability, the logical relevance, and the viability of that calculus that must be called in question.

Quite apart from these issues, however, the equilibrium theoretic nature of the arguments we have under review rests also in the fact that, along with equilibrium theorizing in general, the theory supposes that by virtue of a Walrasian tatonnement process, or a general Edgeworthian reconstraining, no transactions are effected in the market until full general equilibrium conditions are satisfied.12 This means that the possibility of what Hicks labeled "false trading,"13 or the consumption of transactions at non-equilibrium prices, is abstracted from completely. The theory, therefore, has nothing to say about real world trading processes at all. It centers all reference to the fact that false trading can itself have important implications for asset market behavior and equilibrium, by reason of both its endowment redistribution effects and its expectations inducing effects. False trading, in other words, can alter the wealth endowments with which market participants were assumed to enter the exchange process initially, and can induce changes in the expectations with which market opportunities are regarded. This, of course, damages irrecuperably the assumption of homogenous expectations at the heart of the theory.


13G. L. S. Shackle, Decision, Order and Time in Human Affairs, p. 53.

The uncertainty about uncertainty

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The calculus of probability . . . was supposed to be capable of reducing uncer-
tainty to the same calculable status as that of
certainty itself . . . I accuse the classical
economic theory of being itself one of these
pretty, polite techniques which tries to deal
with the present by abstracting from the fact
that we know very little about the future.

In that, however, the true methodological
problem is highlighted. Economic theory by
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by epistemological humility. For we should
clearly recognize that the assumption of the
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an assumption of knowledge. We are, at last,
no longer able to be surprised.

In this the dictum of Knight reproduced in
the epigraph of this paper has been assumed
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future, but our final uncertainty about how to
deal with uncertainty itself. The literature we
have cited has begun to point to ways out of
our self-imposed difficulties. Its structural
outlines have been discussed in other places
and space prohibits their examination at this
time. But it would be a pity, and a reproach
to economics as a humane discipline, if un-
certainty about uncertainty were allowed to
continue and contribute to the danger,
readily mounting from other directions, of the
societal irrelevance of the subject itself.

While those who espouse the CAPM model
will, no doubt, protest that it can be, and has
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history essentially beside the point.

It is anticipated that advocates of CAPM
theory will argue that choices and decisions
under true ignorance are, in fact, meaningful.
But this argument is wide of the mark.
It simply attests to a failure to perceive, or
take adequate account of, a large body of
work which has been directed to just that
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If that body of work is taken into account, na-
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