

THE METHODOLOGY AND REQUIREMENTS OF A THEORY 'OF
MODERN COOPERATIVE ENTERPRISE

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Methodology: The science of method or orderly arrangement; specifically, the branch of logic concerned with the application of principles of reasoning to scientific and philosophical inquiry. (Webster's Seventh New Collegiate Dictionary)

Researchers and policy analysts are reexamining the role cooperatively organized business plays in the U.S. economy. The growth in size and importance of cooperatives in certain sectors of the economy, such as agricultural input supply and the processing-marketing of fibers, dairy products, grains and fresh produce, causes concern that these organizations may be creating some of the problems they originally were intended to mitigate. Of particular concern is the potential for the exploitation of market power in those industries or areas where cooperatives dominate. In addition, there is an emergent need to understand the economic nature of cooperative enterprise to determine its appropriate role in a changing market environment where government policy and budgetary support of agricultural markets for the purposes of price and income stability is becoming increasingly unpopular. To address these issues properly, economists must have at their disposal a sound theory of cooperative enterprise to interpret and predict the behavior of these complex organizations.

The purpose of this paper is twofold. The first part of the paper is devoted to exposing some fundamental methodological issues related to maintaining a research program in cooperative enterprise. I will examine the debate about appropriate methodology in neoclassical economics in the context of the constraints conventional interpretations impose on what is considered researchable or scientific problems in the area of business firm organization. The necessary components common to any economic theory will be outlined. The nature and role of assumptions in economic theory will be examined to demonstrate the advantages of incorporating operational reality into the assumptions economists use to construct economic models. In the case of economic theories of firm organization and, in particular, a theory of cooperative organization, the inclusion of operational assumptions implies an explicit accounting of the impacts of the system of resource property rights to ownership and control of a firm which makes cooperative enterprise unique from other forms of organizing economic activity.

After having laid the methodological foundation for the inclusion of ownership and control rights into a theory of cooperative enterprise, the second part of this paper will explore some of the new directions cooperative research should take as a result. Note that the intended purpose is to expose these relationships and their potential impact on the behavior of cooperative firms in the hope of guiding future research efforts. This paper should be considered as a first step in the process of developing a more meaningful theory of cooperative enterprise.

Methodological Role of Property Rights in a Theory of Economic Organizations

The primary objectives of this paper are to establish the theoretical foundation for incorporating property rights into a theory of cooperative behavior and to suggest how such an inclusion will change the orientation of research into cooperative enterprise. The logical first step in the process is to determine the conceptual role of property rights in the construction of an economic theory. Most economic methodologists agree that all economic theory should consist of a specific set of common and identifiable components.¹ Because the property rights to ownership and control in a firm define the limits of choice over resource use in that firm, it will be shown that property rights fall into a category of economic assumptions that must be empirically verifiable. Machlup calls such assumptions the "assumed conditions" of economic theory (1978, p. 148).

The need for realism and verification of assumptions in economic theory has been subject to considerable debate over the years. Much of the confusion has arisen due to a lack of recognition that a number of functional levels of assumptions exist, each with a specific purpose in the construction of theory. It will be shown that the assumptions reflecting the relevant set of property rights governing a firm fall into this category.

A Brief History of the Methodology of Economic Argument

Most economists will maintain that our discipline operates under an established methodology with commonly understood and accepted rules of reasoning. In particular, most would view as desirable a common set of standards from which to construct theories and test their validity. The concept of a universally accepted methodology of economics is comforting because it means that all economists operate more or less from the same rule book. We need not carefully analyze each and every piece of research to identify the logic of reasoning and assure ourselves that this logic has been employed correctly. In short, every economist need not be a practiced methodologist, logician, and philosopher conduct sound research and to read and review the quality of their colleagues' work.

It will be assumed that in the discipline of agricultural economics, we operate under the belief in a common method of reasoning and a common general theoretical structure. It remains to decompose the components of this theoretical structure and determine to which component the assumptions reflecting property rights belong. A brief examination of the historical evolution of the method of economic argument will be useful in accomplishing this task.

The Structure of Economic Argument According to Classical Economists--The process of reasoning and structure of theory employed by twentieth century neoclassical economists can be understood more clearly when contrasted to the methodology espoused by nineteenth century classical or political economists. Classical economic arguments were made with what Blaug and others call the "a priori" method. As is evidenced by the following quote from Senior, general principles of human economic behavior were asserted and

known to be unambiguously "true" from introspection, possibly in combination with casual observation of the world.

. . . a very few general propositions, which are the result of observation or consciousness, and which almost every man, as soon as he hears them, admits, as familiar to his thoughts. (Bowley, p. 43)

Such principles generally included statements of the desire to maximize wealth, aversion to labor or sacrifice, and the pursuit of consumption. Often more specific assertions were included, for example, that rate of population tends to increase faster than the means of subsistence, or that agriculture is subject to long-run diminishing marginal returns.

The key to understanding the difference between the methodological approaches of classical and neoclassical economists is the concept of verification as interpreted by Mill, Cairnes, and, much later, Blaug.

We cannot, therefore, too carefully endeavor to verify our theory, by comparing, in particular cases to which we have **access**, the results which it would have led us to **predict**, with the most trustworthy accounts we can obtain of those which have been actually **realized**. The **discrepancy** between our anticipations and the actual fact is often only circumstance which would have drawn our attention to some important disturbing cause which we had overlooked. (Blaug, p. 59.)

It is always regarded as the strongest confirmation of the truth of a physical doctrine, when it is found to explain facts which start up unexpectedly in the course of inquiry. But the ultimate principles of Political Economy, not being established by evidence of this circumstantial kind, but by direct appeals to our consciousness or to our senses, cannot be affected by any phenomena which may present themselves in the course of subsequent inquiries .. . nor, assuming the reasoning process to be correct, can the theory which may be founded on them. We have no alternative but to assume a disturbing cause. (Blaug, p. 81)

Thus, in economics, as Mill had explained, we test the applications of theories to determine whether enough of the disturbing causes have been taken into account to explain what actually happens in the real world after allowing, in addition, for noneconomic causes. We never test the validity of theories behavior by virtue of these assumptions, which in turn are true by virtue of being based on self-evident facts of human experience. (Blaug, p. 77)

Predictions of economic behavior were derived based on these general principles. However, empirical testing of these predictions was never intended to prove or disprove the validity of the theory because it was already assumed that the general principles were undeniably true. Comparison of predictions with observations of the world was intended only to determine under what circumstances the theory could be usefully applied.

In applications of classical theory, predictions always were said to be subject to "disturbing causes." These disturbing causes are what we now

recognize as noneconomic influences and ceteris paribus conditions. If the predictions of theory did not hold up to empirical scrutiny, classical economists did not doubt the theory, but rather attributed the discrepancy to the influence of uncontrolled disturbing causes.

To summarize, verificationists make predictions based on general economic principles held to be unquestionably true. These predictions may be tested against observed data, but only to determine when and where disturbing causes will not interfere with the general tendencies of theory. The theory can never be refuted by empirical data, only confirmed.

The Structure of Economic Argument According to Neoclassical Economists--Most twentieth century economic reasoning and theory can be characterized by Popper's concept of ****falsification.**** Falsification begins with recognition of what has been called the problem of induction. No universal statement can be logically derived or established by singular statements, but any universal statement can be refuted with the aid of deductive logic by a single contradicting statement (Blaug, p. 12). No matter how many times the sun rises in the morning, we cannot prove conclusively the proposition that it always will rise in the morning by using, as evidence, observations that it has always been so. However, with a single observation of the sun not rising some morning, we have conclusively refuted the proposition.

Falsification requires the formation of propositions about some phenomena that are capable of generating predictions that, in turn, are capable of being tested against observation. These predictions must be formulated in such a way so as to establish clearly the conditions that will demonstrate the proposition false. The prediction must be inconsistent with some event(s). If, upon empirical examination, the prohibited event(s) occur, we have discredited the hypothesis. Popper defines as science the body of propositions that can be falsified and nonscience as those propositions that cannot be falsified (p. 43).

In Popper's view, science is a never ending process of testing theory with intent to refute it. Stern warnings are issued against the use of what are called **"immunizing stratagems"** which insulate a theory from falsifying tests. Such stratagems include unspecified or loosely constructed **"ceteris paribus"** conditions which, upon falsification, prevent the researcher from knowing if the theory failed to predict accurately or if some vague and unaccounted auxiliary condition influenced the result. The most extreme interpretation of Popper envisions scientists as searching for the single, ultimate test of falsification. If a hypothesis fails this test, the entire theory is invalidated. More sophisticated interpretations recognize that no such ultimate test exists, particularly in social sciences where a test of theory necessarily includes a test of predictions conditional on auxiliary assumptions (Blaug, p. 17). Popper, suggests that a theory is well corroborated if it generally stands up to falsifying tests and successfully predicts results that are not also predicted by competing theories.

The difference between **"verification"** and **"falsification"** as approaches to structuring and examining theories is illustrated most clearly in the context of empirical analysis. **"Verificationists"** do not envision empirical evidence

as testing the validity of the predictions of a theory but rather its appropriate application. Remember, the theory is already assumed to be true. **"Falsificationists"** view empirical tests of predictions as tests of theoretical validity.

The Testing of Assumptions in Economic Theory--Popper does not adequately address the role of the assumptions that comprise a theory. He does not specify whether the criteria of "falsification"* apply only to the hypotheses generated from assumptions, or also to the assumptions themselves.

Hutcheson was one of the first to introduce Popper's work to English-speaking economists. Hutcheson took the extreme or naive view of **"falsificationism,"** attacking any form of **"a priorism"** or introspection. He maintained that many of the basic assumptions employed in economic theory to that point in time were irrefutable and therefore unscientific. Hutcheson proposed, as did Popper, that economic inquiries be limited exclusively to statements that were testable by empirical analysis. However, unlike Popper, Hutcheson seems to require not only that the predictions of theory be **"falsifiable,"** but also the basic assumptions from which the predictions were derived.

It does not matter in principle whether the specification of the conditions of a test of this theory is obtained 'directly' and 'independently,' or by working back 'indirectly' from specified tests of the conclusions to the assumptions from which the conclusions are deduced. (p. 481)

Hutcheson is saying that equally valid tests of a theory may be obtained either from direct empirical examination of the predictions or through empirical examination of the validity of the assumptions.

Hutcheson's attack on **"a priorism"** began a debate on the proper components of economic theory that continues to the present day. Students of scientific and economic theory such as Bridgeman, Samuelson, and Gordon argued in support of Hutcheson by insisting that all theoretical economic statements must be operationally meaningful. An economic proposition must imply a "hypothesis about empirical data that could be refuted, if only under ideal conditions" (Samuelson, p. 4). Samuelson concluded that using the criteria of **"operationalism,"** the modern theories of consumer behavior and welfare did not represent valid economic constructs (Blaug, p. 100).

Gorden suggested that operational criteria could and should be applied to mental operations as well as physical. As a result, introspection may be a valid technique for generating assumptions if the assumptions meet operational criteria. For example, we may know in our hearts that managers of firms maximize profits, but we must be able to demonstrate this behavior to use profit maximization as a valid economic assumption. Purely logical statements that are generated from introspective tautologies are not operational and cannot be used in economic theories (p. 49).

Gorden maintains that an "operational statement implies the existence of stable functional relationships among specified economic variables. By

stable is meant the ability to successfully predict changes in the dependent variable of a function over a reasonable period of time.

As an example of the use of propositions in theory that are not operational, Gordon offers the Law of Demand and the resultant prediction of a negative relationship between own price and quantity. Based on operational criteria, the following statement is without empirical content and therefore invalid:

Assuming that prices of related commodities and the tastes and incomes of buyers are given or constant, then there is a relationship between price and sales with a negative slope. ... (p. 50)

The statement does not prohibit any event from occurring. It cannot be empirically refuted. If both price and quantity should fall, then incomes, other prices, or unobservable tastes have changed and the theory appears equally capable of explaining both positive and negative demand responses. A demand curve is not stable if it can account for either contradictory occurrence. This statement could be made operational only if the relevant ranges of the "**ceteris paribus**" conditions are explicitly stated and checked for validity.

The other side of the debate has been argued most vocally by Friedman and Machlup. Friedman counters the concept of "**operationalism**" with the notion of positive science. The goal of positive science is the development of theories that "**yield** valid and meaningful (i.e., not truistic) predictions about phenomena not yet observed** (1953, p. 26). Positive theories must have certain attributes. A theory should be simple; it should require as little knowledge and data as possible to predict events. A theory should be precise in prediction and yet address as wide a field of phenomena as possible. Theories also must be logically consistent (p.27).

A theory or hypothesis (equivalent in Friedman's usage) is valuable only insofar as its predictions coincide with observation. For Friedman, theories are black boxes for generating predictions and, as such, their basic assumptions need not be realistic (read "operational"). In fact, if assumptions are unrealistic, they may be more desirable if they are more simple as a result. Because, in Friedman's view, theories can and should be unrealistic, it is logical folly to interpret an empirical test of assumptions as a direct test of the validity of the theory. Friedman's "irrelevance-Of-assumptions**" thesis has been criticized on a number of counts, mostly stemming from what is considered by many a naive view of what assumptions are and the role they play in theory construction. Friedman generally treats assumptions as homogeneous elements, with little recognition that different categories of assumptions exist, each with a distinct theoretical role. This point will be dealt with in greater detail in the following section on components of theory.

Another criticism leveled at Friedman arises from a confusion as to what is meant by realism in assumptions. Assumptions may or may not be realistic in a number of different senses. Assumptions may be abstract in that they describe the behavior of only a subset of the variables that affect the economic phenomena in question. An attempt is made to include only the most

salient influences in a model. Assumptions may be realistic in the sense that they "ascribe motives to economic actors that we, fellow human beings find comprehensible" (Blaug, p. 105). The pursuit of economic opportunity is a understandable objective for a human being. However, we could not explain profit-seeking by assuming religious adoration of money, even though both statements might imply similar behavior. Finally, assumptions might be unrealistic in the sense that they are patently false in the light of observed behavior.

Friedman's does not seem to intend that assumptions should be patently false, but rather that assumptions should be abstract:

The relevant question to ask about 'assumptions' of theory is not whether they are descriptively 'realistic,' for they never are, but whether they are sufficiently good approximations for the purpose at hand. (1953, p. 31)

However, he confuses the debate and sometimes leaves the impression that factually false assumptions are acceptable if they lead to theories that predict well:

Truly important and significant hypotheses will be found to have 'assumptions' that are widely inaccurate descriptive representations of reality and in general, the more significant the theory, the more unrealistic the assumptions. (1953, p. 30)

Machlup, an opponent of operationalism, interprets this concept as applying to all economic propositions, including fundamental assumptions. He finds that theories constructed of purely operational statements become "'low level generalizations' or 'statements of empirical uniformities and regularities'" (1978, p. 192). He believes that the fundamental assumptions of theory ought to be "pure constructs" that are "a priori" in nature because:

The roughness, or degree of exactness, of empirical concepts depends upon the technical possibilities provided by the state of the arts. The impurities and inaccuracies inherent in most or all practicable operations with sensory observations destroy the logical links between different concepts. But, without logical interrelations, the propositions containing these concepts do not afford logically necessary conclusions. In the possibility of deducing such conclusions lie the sole purpose and value of a theoretical system. (1978, p. 197)²

Machlup argues that operational or empirical constructs have only two uses in economics: "(1) when one has to decide what kind of theoretical apparatus will be suitable for answering particular questions, and (2) when one wishes to verify or test the theoretical apparatus" (1978, p. 201).

There is strong evidence to suggest that while most applied economists would attest to some form of the positive school, the actual practice of economic reasoning may be quite different. **McClosky** argues that the practice of "modernism" (which he defines as a curious mixture of positive science and

operationalism) is impossible and not followed by economists no matter what they say.

Modernism promises knowledge free from doubt, metaphysics, morals, and personal convictions; what it delivers merely renames **as** Scientific Method the scientist's and especially the economic scientist's metaphysics, morals, and personal convictions. (p. 488)

McClosky offers the Keynesian model as an example of a contradiction to modernism in modern economics. Empirical formulations of Keynes' macroeconomic ideas were not attempted until the 1950s, well after most macroeconomists had adopted Keynesian theory as their world view. The adoption of a theory before its predictive power has been demonstrated is surely the positivist's equivalent of mortal sin.

McClosky recommends that we examine closely how economics actually has progressed instead of artificially dictating how we think it ought to progress. In addition to falsification, economists employ a host of tools to argue that a hypothesis has merit. McClosky invites us to examine and become aware of what he calls the rhetoric of economics, which includes the complete package of techniques we use to **argue our science**.

Two often used, but little understood, techniques economists employ are standards of comparison and metaphor. Economists often employ a statistical criterion to decide whether data supports the predictions made by a hypothesis. McClosky argues that statistical criteria alone are arbitrary and do not reflect economic standards of judgment. One economic standard of comparison that often is overlooked is the consequences of being wrong. When we make predictions based on statistical criteria, we should know what associated economic loss function is in terms of misdirected policy or poor advice. McClosky recommends that in addition to statistical criteria, economists must explicitly set down mutually agreed-upon economic standards (as opposed to purely statistical standards) for accepting or rejecting a hypothesis (pp. 496-97).

A second argumentative and communicative technique often overlooked is the power of the literary metaphors economists use to convince. All economic theories, hypotheses, and models are, by virtue of their abstraction, metaphors. We are telling "**stories**" to instill a higher degree of understanding about how the infinitely more complex real economy operates. A metaphor is not merely an ornament to make prose or poetry more pleasing to read. It is a device that in the words of Max Black, "**has** the power to bring two separate domains into cognitive and emotional relation by using language directly appropriate to one as a lens for seeing the other" (McClosky, p. 496). Do we really believe Gary Becker's children are "durable goods," or through use of a carefully considered metaphor do we immediately understand that within the household production unit (another metaphor) children play a unique role? Does the demand for food not stretch very well if it is "inelastic" or have we discovered something about the relationship between price and revenue? McClosky asks us not to become upset at the realization that economists tell stories, but rather to understand that this is part of how we convince and that we need to explicitly recognize the metaphors we

use, their effectiveness in imparting the precise message we desire, and their power to persuade in argument.

McClosky's realization that there are a number of ways to make economic arguments may seem inconsistent with the positive economist's view of science, but it does not really challenge the positive structure of economic theories. Most economists still will maintain that there is no fruitful way to directly test the fundamental assumptions of neoclassical microeconomic theory such as rationality, consistent preference ordering, and the resultant postulates of utility and profit maximization. They would agree with Friedman and Machlup that any such test would have little bearing on the validity of a economic theory because these statements are perceived to be introspective and intended to impart ideals. However, as Machlup (but not Friedman) and others recognize, there are multiple levels of assumptions in economic theory, each with a specific role and each requiring a different degree of operational realism. In the following section, these levels of assumptions will be detailed and the role of property rights assumptions in theory will be identified.

Components of Economic Theory

The general purpose of any economic theory is to provide a framework for the analysis, understanding, and prediction of economic behavior. Theory gives meaning to the events economists observe. From theory we derive hypotheses, which, upon testing, should allow us to explain current economic behavior and predict likely future behavior, subject to the suitability of our ancillary conditions. Theory forms the core of what Kuhn refers to as the research paradigm, which includes not only assumptions and hypotheses, but also the appropriate tools of analysis and argument and the world view that defines what are the interesting questions for economists to address.

Much of the confusion that arises from the debate over the components of economic theory occurs as a result of a lack of mutually agreeable nomenclature. Though labeled differently, most methodologists seem to agree on a theory's basic components, if not their purpose and attributes. The purpose of this section is to establish what the components of an economic theory are and to demonstrate that certain classes of assumptions should exhibit a degree of realism in the context of being subject to empirical examination.

One of the most straightforward and informative descriptions of the components of economic theory is to be found in Silberberg. Because of its brevity, **Silberberg's** discussion is a good starting point from which to examine the structure of modern microeconomic theory. Silberberg argues that economic theory has three basic components. The first is a set of assertions or postulates that are idealized, heuristic statements about how the actors and constructs (i.e., consumers, firms, prices, quantities, etc.) that comprise the economy are expected to behave. These postulates are general in nature and are usually of the form "**all** X have the property **P**." Examples given of the assertions of microeconomic theory include profit and utility maximization.

The second part of an economic theory is a set of test conditions, called assumptions, whose purpose is to relate the abstract and ideal notions of human economic behavior expressed by the assertions of theory to real world conditions. Such conditions are necessary due the nature of the "laboratory" in which economists must work. Because it is impossible to establish controlled experiments of the nature found in, for example, the physical sciences, economists must employ restrictive assumptions about the behavior of variables over which they have no control and which could affect the outcomes of hypothesized behavior. Examples of assumptions as defined here are statements like "the price of bread in the theoretical assertions, in fact corresponds to the price of bread posted at xyz supermarket on such and such date" (p. 7) or "**ceteris paribus**" conditions such as "**all** other prices, incomes, and tastes constant." Silberberg properly maintains that assumptions defined in this way must be operational with respect to the "essential aspects of the theoretical constructs" to give the theory relevance (p. 8). This means that the assumptions of theory must adequately and realistically describe the important economic variables treated by the theory.

The final component of economic theory according to Silberberg is a set of observable events that are either explained or predicted by the theory. While this may seem a trivial point, a theory whose hypotheses explain or predict outcomes that cannot be observed is of little practical value. Similarly, hypotheses cannot be tested if data is required that is unobservable, either directly or by adequate proxy. For example, suppose we generate a hypothesis that predicts that the property rights structure inherent to cooperatives constrains member-patron investment horizons relative to certain other modes of organizing business, resulting in changed patterns of investment. Such a theory is of little value if we cannot measure a curtailed investment horizon or we cannot establish an observable causal link between the property rights structure and the firm's investment behavior. In either case, the theory would be empty in content. Care must be taken that we do not generate hypotheses that seem to explain a great deal but are not operational and therefore cannot be tested or refuted.

Melitz provides a convincing argument for factual realism in certain classes of assumptions. A close reading of Friedman shows that even though he argues against factual realism in any assumption, he recognizes that some assumptions represent fundamental statements of behavior while others are implied statements that result from the assertions (p. 36). Melitz defines this distinction more clearly as generative assumptions and auxiliary assumptions. Generative assumptions are equivalent to Silberberg's fundamental assertions and are used to derive the postulates of theory. Auxiliary assumptions are used in conjunction with generative assumptions to deduce operational predictions. Melitz maintains that auxiliary assumptions, and quite possibly generative assumptions, benefit from operational validity.

Auxiliary assumptions that are either false or untested (or both) reduce the predictive power of theories because of the increased probability of a hypothesis being consistent with false results. Note that this probability is not equal to one because it is possible to reach true conclusions from

partially false premises. The lack of empirically verifiable auxiliary assumptions in economic theory may lead to ambiguity of prediction.

Melitz makes a strong argument for operational attributes in auxiliary assumptions, but we still are left with a rather vague notion of what exactly these assumptions are and what their role in theory is. Are all nonfundamental assumptions to be tested? If so, how rigorously? We observe the use of assumptions in economic theory that are clearly not fundamental statements of human economic behavior (i.e, they serve as auxiliary assumptions) but are so generally defined that definitive empirical verification would be difficult if not impossible. Are such assumptions valid? To answer these questions, we need a conceptual framework of theoretical structure that is more detailed than those offered thus far.

Machlup offers the most comprehensive classification of the components of economic theory found to date. As do most other authors, he initially divides assumptions into two general categories, fundamental and specific. Specific assumptions he further categorized by application, frequency of change, and the need for rigor in testing. Figure 1 reproduces his classification scheme.

Two additional components are proposed, assumed changes and deduced changes. The assumed change component of a theory is a description of the economic problem to be addressed. A proposition is made describing some change occurring in the economic system. Such propositions usually must be operational to have relevance (1978, pp. 148-49). The deduced change component of a theory is the predicted result of the theory or hypothesis that is subject to empirical test. By definition, this component must be operational for the theory to have value. It is worth noting that the deduced change corresponds exactly to Silberberg's concept of observable events.

The correspondence between proposing a problem and predicting an outcome is found in the assumptions that form the core of the theory. These assumptions form the causal mechanism that allows us to observe economic phenomenon and to deduce -predictions, which, upon successful testing, will demonstrate the value of the theory.

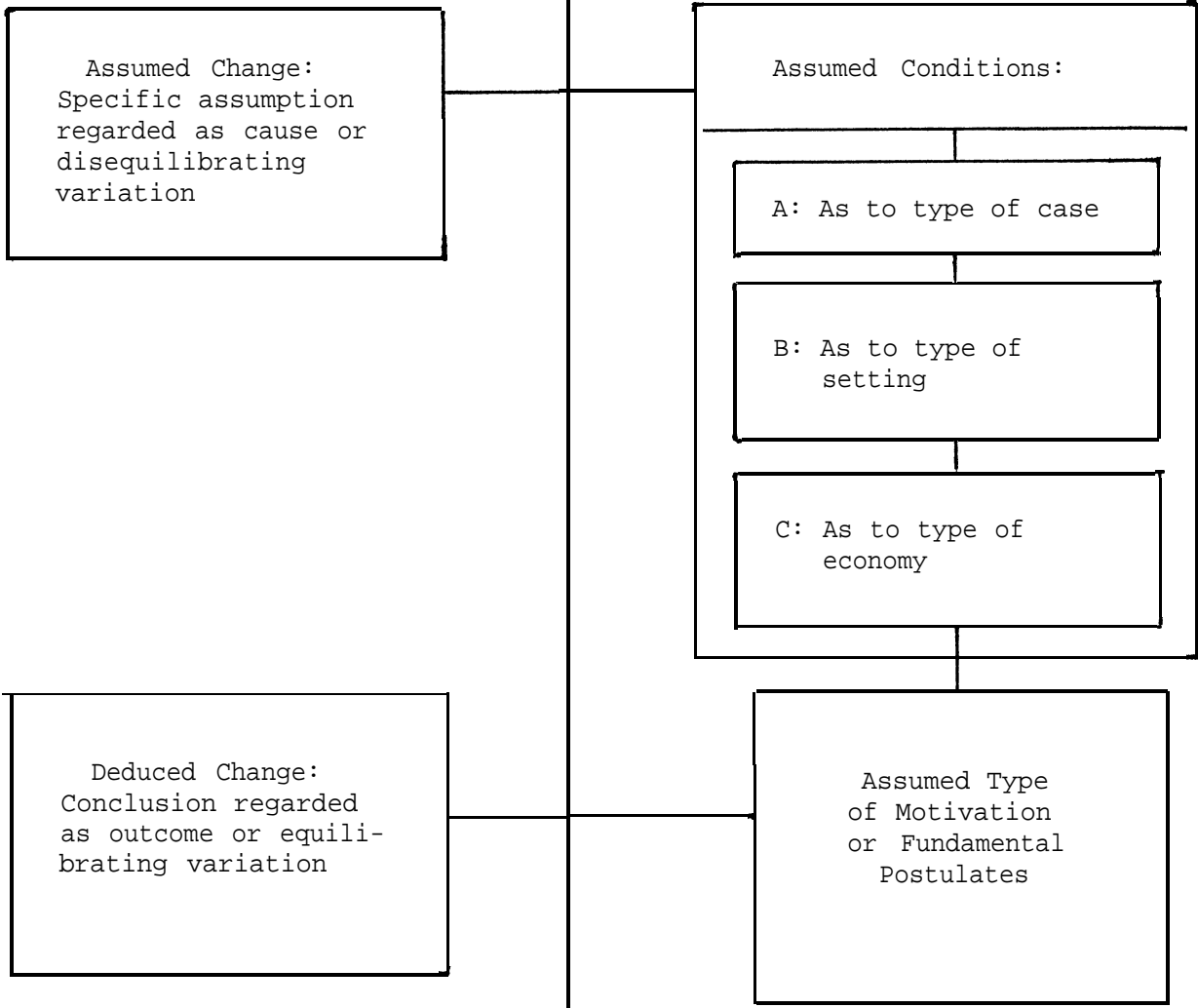
The assumed type of action or fundamental postulates are the, by now, familiar, fundamental statements of economic behavior. As explained, fundamental postulates generally are not subject to direct empirical verification because of their "a priori,** ideal, or abstract nature. Machlup does require that these fundamental statements meet a requirement of realism in the sense that the behavior specified by a postulate, though ideal and/or abstract in nature, must suggest behavior that humans find reasonable and understandable (1978, p. 153).

Machlup makes his most significant contribution to understanding the role of property right assumptions in the structure of economic theory in his exhibition of the various classes of specific assumptions or assumed conditions. These statements define the personal characteristics, technological or organizational circumstances, market forms, and institutions

Figure 1--Machlup's model of the components of economic theory

ASSUMPTIONS ON OBSERVABLE DEPENDENT AND INDEPENDENT VARIABLES

THE "MACHINE" OF PURE THEORY



Source: Machlup 1978.

affecting the economic problem under study (1978, p. 150). Assumed conditions are subdivided into three classes according to the type of circumstance defined and the frequency with which it might be expected to change.

The first class of specific assumptions refers to conditions that affect type of case; i.e., circumstances that may change from problem to problem and that have potential to influence outcomes. Examples of this kind of condition include definitions of the goods involved, cost conditions, elasticities, degree of competition, ease of entry, general expectations, the propensity to consume or save, and liquidity preferences (1978, p. 150).

The second class of specific assumptions refers to conditions that affect type of setting. These are conditions that may change from time to time, but not in every case. Such settings might include the stage of a business cycle or the limitations imposed by the economic policy currently in place. These conditions are not likely to change with every new problem examined but rather with events such as a change in government (1978, p. 151).

The final class of specific assumptions defines conditions of type of economy. Such conditions may change from country to country or over large periods of time but are sufficiently stable to be considered "given" at any particular time or particular place. These conditions generally define the legal and environmental constraints under which the economy must operate. Included in this list of conditions are assumptions reflecting legal and social institutions, private property, freedom of contract, corporation law, and enforcement of contracts (1978, p. 151).

Because assumed conditions form the link between fundamental postulates of behavior and actual economic conditions, they must exhibit some degree of operational validity. Machlup maintains that verification of such conditions is appropriate, but the degree of rigor need not be great. He uses terms like "casual," and "impressionistic" to describe the nature of empirical testing required. The justification for reduced rigor in testing of specific assumptions lies in their varied nature (i.e., the multitude of possible conditions), difficulty in observation, and the inherent degree of theorizing involved in establishing the conditions. In addition, the degree of rigor required for testing assumed conditions declines with the frequency with which the conditions change (1978, p. 151).

In summary, a number of students of the methodology of economic inquiry have provided us with specific set of components that all economic theories must contain. Though different terminology is used, the function of each of these components is the same in every case. Each author distinguishes between assumptions that describe fundamental or ideal statements of human economic behavior and assumptions that attempt to describe the particular social and economic environment in which the theory is to be applied. In the latter case, most agree that these assumptions should exhibit some degree of operational realism if the theory is to have relevance to solving real economic problems. In the following section, it will be shown that assumptions reflecting property rights to ownership and control of a firm's

resources properly fall into the class of assumptions in economic theory that must be operational.

The Structural and Functional Roles
of Property Rights in Economic Theory

The purpose of this section is to argue that assumptions reflecting the property rights to ownership and control of resources in firms' organization should be explicitly incorporated into models of organizational behavior. To accomplish this objective, it will be necessary to define what property rights are and to identify their specific role in the context of economic organization. Property right assumptions can then be assigned a methodological role in the context of **Machlup's** model of economic reasoning previously presented. The determination as to whether property right assumptions need to be factually realistic can then be made.

A Definition of Property Rights--Considering the relative wealth of property rights literature in economic journals, surprisingly few examples exist that precisely define what property rights are or how they evolve. Generally, property rights are defined only in terms of what they accomplish rather than their specific nature. While terse definitions often are not very useful in contributing to the understanding of complex social institutions such as property rights, for the purpose of assigning a methodological role, we need to know something about what property rights are as well as their function.

Consider the following definitions, found in important contributions to the property rights literature:

Property rights specify the proper relationships among people with respect to the use of things, and the penalties for violations of those relationships. (Randall, p. 148)

In the rights of a person to a resource, we include the probability that his decision about demarcated uses of the resource will result in that use, in the sense that his decision dominates that of any other person. (Alchian, p. 237)

Property rights describe the relationship of one person to another with respect to a resource or any line of action. ... Rights are the instrumentality by which any society controls and orders human interdependence and resolves the question of who gets what. (Schmid, p. 5.)

All of these definitions are cloaked in terms of what property rights do rather than what they are. The statements form a basis for determining the probable impact of property rights, but nothing can be gleaned that can assist in understanding how property rights change and evolve. What is the economic incentive for instituting a particular set of property rights? With respect to the theories of firm organization, the question might well be put: What factors determine the organizational structure actually adopted by a firm? The answer to this question is crucial to understanding the role of cooperative enterprise.

A key to understanding how a particular set of rights comes about is to recognize that they are social institutions that evolve to meet the interests of a segment of society with the power to establish and enforce them. As the needs of society change over time and are identified, so will the property rights that govern resource use (Hite, p. 78).

The following definition synthesizes what is known about the structure and form of property rights to ownership and control of the economic resources of a firm, as well as their function.

Property rights are social institutions, expressed as legal restrictions, that are devised to place constraints on how the resources available to an economy may be used. Property rights specifically address: (1) who may make decisions over a particular resource's use; (2) who will bear the risk of gain or loss as a result of employing the resource in some productive activity; (3) for **how** long the right may be considered valid, (4) the circumstances under which the right can be transferred; and (5) the penalties to be incurred for violations of the restrictions imposed by the right.

The Nature and Function of Property Rights to the Resources of a Firm--A neoclassical economic firm usually is defined as a single owner-operated technical entity. Consider the following definition, variants of which can be found in almost every advanced microeconomic textbook:

A firm is a technical unit in which commodities are produced. Its entrepreneur (owner and manager) decides how much of and how one or more commodities will be produced, and the gains the profit or bears the loss which results from his decision [sic]. An entrepreneur transforms inputs into outputs, subject to the technical rules specified by his production function. The difference between his revenue from the sale of outputs and the cost of his inputs is his profit, if positive, or his loss, if negative. The entrepreneur's production function gives mathematical expression to the relationship between the quantities of inputs he employs and the quantities of outputs he produces. (Henderson and Quandt, p. 52.)

The property right structure implicit in this statement implies that the resources available to a neoclassical firm are pure private property resources. Rights to resource use are privately held and fully allocated to individuals. The single agent responsible for making decisions (the entrepreneur) that determine how resources will be combined, assumes 100 percent of the risk entailed in the outcomes of those decisions. The entrepreneur may transfer these rights to anyone else without restriction.

The firm as described by this definition represents only a subset of the economic organizations we can observe that produce goods and services in an economy. A complete list of such organizations would include sole proprietorships, partnerships, investor-owned firms (**IOFs**), nonprofit organizations, mutuals, labor-managed firms, and cooperatives.

The factor that distinguishes each of these economic organizations lies in the nature of the set of property rights that describes ownership and control of the resources these organizations employ. The theory of the firm, with its implicit assumption of a single owner-manager, would appear to describe only a single element of the economic organizations we observe. We are left with two alternatives: (1) to develop an individual model of behavior for each of the alternative modes for organizing economic activity or (2) to seek an encompassing theory of economic organization within which the theory of the firm would represent a valid subset.

Fortunately, the ground work for a theory of economic organizations based on property rights has been established in the research of Fama; Jensen and Meckling (1979a, 1979b); Jensen; and Fama and Jensen. We are asked to view an economic organization not as a technical entity but as an established set of legal relationships between all the agents who have dealings with the organization. In the words of Jensen and Meckling, an economic organization is the:

Nexus of contracts, written and unwritten, among owners of factors of production and customers. These contracts or internal 'rules of the game' specify the rights of each agent in the organization, performance criteria on which agents are evaluated and the payoff functions they face. (1979b, pp. 170-72)

Considering the working definition of property rights previously established Jensen and Meckling have defined an economic organization as the sum of the property rights of those who contribute resources to the firm and purchase its goods and services. Fama and Jensen maintain that the rights that are of prime importance in defining the structure of an organization are those that specify the nature of residual claims and the allocation of the decision process among agents (1983a, pp. 302-4).

An organization has two kinds of claims to the gross cash flow it generates. Certain prespecified payments are contracted to agents for goods or services supplied to the organization. Wages, repayment of debt, and taxes are examples of such fixed claims. The residual claim is the right to the net cash flows of the organization after all fixed obligations have been met.

Residual claimants are the riskbearers of the organization (Fama and Jensen 1983b, p. 328). The residual claims of any organization have four identifiable characteristics: (1) ownership, (2) alienability, (3) redeemability, and (4) ownership horizon. Any restrictions on the ownership of a residual claim means that the role of riskbearing in the organization is tied to some other agent role. For example, partners usually must assume both decision management and decision control rights to hold the residual claim. Alienability refers to the ease with which a residual claim may be transferred from one person to another. A completely alienable claim may be bought or sold with out restriction. Transfer of the residual claims of some organizations may be limited to agents who meet certain criteria³ or transfer may be prohibited entirely. Redeemability refers to the ability to demand, at a specified price, return of the equity that was used to purchase the rights to residual riskbearing in an organization. Redeemable claims are

a feature of financial mutuals where the entire asset base generally is liquid. The ownership horizon refers to the length of time for which the residual claim is valid. An unrestricted claim is valid for the life of the organization. Restricted horizons are often associated with restricted ownership residual claims. For example, the residual claim of a labor production cooperative is valid only so long as the owner remains an employee.

Fama and Jensen decompose the decision process of any organization into two general categories: (1) decision management and (2) decision control (1983a, p. 304). Decision management includes the right to initiate and implement approved decisions. Decision control includes the right to ratify or choose the decision to be implemented, the right to measure performance and the right to set the reward of decision managers.

The reason why Fama and Jensen consider these particular property rights as crucial in determining the organizational structure of a firm is the existence of what are called agency costs. Agency costs arise because the individual agents, bound together by contract in an organization, are utility maximizers. These individuals will seek to maximize their own interests given the available opportunities. Agency costs include the expense of making, monitoring, and enforcing contracts among the agents of a firm to ensure that those with conflicting interests do not usurp the wealth of others. In addition, agency costs include the value of wealth lost because the cost of full enforcement of a contract will exceed its benefits (Jensen and Meckling 1979b, p. 104).

Separation of residual rights and decision rights occurs in many types of organization because of economies to be gained from specialization of riskbearing (the residual claim) functions and decision functions. However, an agency cost is created because those who make decisions are not necessarily residual claimants and therefore may not bear the full consequences of their decisions. The case of the **IOF** serves to illustrate this process. In the **IOF**, residual rights and decisionmaking rights are separated because technology and/or market conditions dictate large capital investments and economies of scale are necessary. Residual claimants' wealth can be increased through specialization of the riskbearing and management roles. A potential agency cost is created because the majority of consequences of management decisions fall on the residual claimants, i.e., the stockholders. Managers could be in a position to make decisions that further their own interests⁴ at the expense of stockholder wealth. Fama and Jensen hypothesize that we observe the separation of decision control rights from decision management rights in an **IOF** to control this source of agency cost. Managers have the right to initiate and implement a particular decision, but the right of approval and evaluation is placed in the hands of a board of directors who presumably must act in the interests of current and future residual claimants.

According to Fama and Jensen, a given economic organization can survive only if it, "... delivers the product demanded by customers at the lowest price while covering costs" (1983a, p. 301). Survival means producing at the lowest possible cost, including agency costs. The function of property

rights to the resources of a firm becomes clear in an economic environment of survival. The rights to the residuals and the decision process of a firm are structured so as to minimize total agency costs.

The nature and function of property rights to ownership and control of resources in an economic organization can now be summarized. Property rights have been defined in general terms as social **institutions'** that restrict the ability of individuals to impose costs on others through the use of resources. Property right systems evolve to protect the interests of segments of society with the power to enforce them. With respect to economic organizations, property rights assign and define the limits of the roles of residual riskbearer, decision manager, and decision controller. 'Such rights are manipulated in the interests of agent groups to minimize the total agency cost involved in producing a good or service. These manipulations result in the various kinds of economic organizations we observe. In the following section, what has been learned about the nature and function of property rights in the context of economic organization will be applied to the methodological task of classifying the role of property right assumptions in economic theory.

The Methodological Role of Property Rights in Economic Theory--The question to be addressed in this section is whether the assumptions reflecting the structure of property rights in a firm need to be operational in the sense of factual realism to construct economic theories that adequately explain and predict the behavior of firms. From a methodological perspective, if it is necessary to explicitly represent the property rights structure that determines an organization's structure, then a justification has been established for incorporating these assumptions into a theory of cooperative enterprise.

The appropriate criterion of judgment must be whether property right assumptions fulfill the requirements of assumed conditions as defined by Machlup. In the last section, the function of property rights to a firm's resources was established as defining the roles and limits of risk bearing, decision management, and decision control. In general terms, property rights were shown to determine a firm's organizational structure. In Machlup's terminology, the assumptions describing the property rights to the resources of a firm would appear to fall into one of two categories under the subheading of assumed change: conditions that describe type of setting or conditions that describe the type of economy in which the firm must function.

The ambiguity is due to Machlup's dual classification criteria. Assumptions describing assumed conditions are categorized according to both purpose and frequency of change. Property right assumptions would appear to fit into conditions describing type of economy because this category includes "legal and social institutions; private property; freedom of contract; .. . and enforcement of contracts" (1978, p. 151) which is a fairly complete list of the attributes of property rights as described in the last section. However, Machlup also maintains that condition describing the type of economy will vary from country to country over long periods of time and are "'settled' for a sufficiently large number of cases to justify taking these conditions as

constant" (p. 151). Conditions describing type of setting are said to be able to change over brief periods of time (p. 150).

The property right structures governing the use of the resources of a firm in a given economy are not nearly as homogeneous as Machlup would have us believe. Assumptions defining these rights are properly classified as "assumed conditions" reflecting the "type of economy,"** but they cannot be treated as constant across all organizations within a given economic system. Models attempting to describe or predict firm-level behavior must incorporate a realistic and verifiable set of assumptions reflecting the appropriate rights structure governing that particular firm type.

Summary

The purpose of this section has been to demonstrate, from a methodological perspective, that explicit treatment of property rights is appropriate in the formation of economic theories of firm-level behavior. The ultimate intent is to provide both a justification and a conceptual basis for incorporating property rights into a theory of cooperative enterprise. This task has been accomplished by carefully documenting how modern economists construct and test theories, what the methodological components of these theories are, and where among these components assumptions reflecting the property rights governing firm-level resource use belong.

A brief history of the evolution of economic methodology has demonstrated that falsification is the principal, but not exclusive method, whereby neoclassical economists test the validity of theory. However, falsification does not imply Friedman's "irrelevance of assumptions" thesis where accuracy in prediction is the only requisite of economic theories and therefore the assumptions of theory do not need to be operational.

A detailed analysis of the components of economic theory reveals that there are two general classes of assumptions. Fundamental assertions establish ideal and often abstract statements of human economic behavior. The other class of assumptions defines the socio-economic environment under which a hypothesis will be tested. Operational realism in this class of assumptions was shown to increase the explanatory and predictive power of economic theory.

The property rights to ownership and control of resources in a firm were found to define the roles of residual claimant, decision manager, and decision controller in an economic organization. The manipulation of these property rights was shown to control the problem of agency cost. It is this manipulation of property rights within economic organizations that determines the different organizational structures that are observed. This concept of economic organization will provide the foundation for incorporating the impact of property rights into a theory of cooperative enterprise.

The final task of this section was to **take** what was learned about the nature and function of the property rights to the resources of a firm and use this information to classify the methodological role of property rights assumptions in the context of Machlup's model of the components of economic

theory. Property rights define the economic environment in which organizations must operate. As such, property right assumptions belong in the category of "assumed conditions" describing the "type of economy." As was previously demonstrated, this category of assumptions must exhibit some degree of operational realism if the resultant theory is to have relevance.

Requirements of a Theory of Cooperative Enterprise

The first section of this paper attempted to illuminate some important methodological issues with respect to the construction of a theory of cooperative enterprise. In the following sections, the issues such a theory of cooperative enterprise needs to address will be discussed. The knowledge gained about the role property right assumptions in the first section of this paper will lead to an explicit examination of some of the important relationships governing the structure, ownership, and control of cooperative firms. Specifically, the motivations of the various agent groups that comprise a cooperative will be explored.

Motivations of the Agents that Constitute Cooperative Enterprises

In the following discussion, repeated reference will be made to the concept of an agent within the context of firms with complex organizational structures such as IOFs or cooperatives. Usually economists refer to an agent as one who acts on behalf of another. Because the term is used in a slightly different context here, a clarification is in order. Neoclassical microeconomic theory conceives of firms as exclusively entrepreneurial units. A single agent, the entrepreneur, holds the rights to make **all** production and business-related decisions and the rights to bear the residual risk of gain or loss as a result of these decisions. Note that in this context the term agent does not only imply one who acts for another but also includes those who act for themselves. Employing the usual neoclassical postulates, the entrepreneurial firm is presumed to maximize profits subject to a budget constraint and a known level of technology. In the nontheoretical economy, we observe firms in which the entrepreneurial rights to make decisions (decision management), to monitor decisions (decision control), and to bear residual risk of gain or loss (the residual claim) may be vested in a number of different agents. To maximize profits in the sense of the neoclassical firm, we must assume that the major agent groups, i.e., stockholders, management, and directors, can be without cost constrained to act toward a single objective.

In a similar manner, our most commonly employed model of cooperative behavior, based on the work of Helmlinger and Hoos, implicitly assumes that all agents within a cooperative are without cost constrained to behave in the singular and homogeneous interest of members. This assumption follows from the traditional micro view of the firm as an entrepreneurial entity where ownership and control are vested in the same agent. In more complex organizational forms, the assumption of a singular firm objective is a potentially misleading simplification. A cooperatively organized enterprise has at least three identifiable major agent groups, each of which may have goals that complement, supplement, or conflict both among and within groups.

These agent groups are the member-patrons, the board of directors, and management.

The purpose of this section is to demonstrate that the usual microeconomic assumptions with respect to agent roles in a firm are inadequate for the task of describing the complexities of cooperative enterprise. The motivations and resulting constraints each major agent group brings to the cooperative firm will be examined. It will be argued that explicit treatment of agent roles and constraints within cooperatives or any other complex firm type will provide new insights into the economic behavior of these organizations.

The Role and Motivation of Members in a Cooperative--Past theories of cooperative enterprise have approached the issue of member motivation from quite different perspectives. Emelianoff and Phillips viewed members as the sole decision agents in a cooperative. Members would decide the level of patronage to supply based on equating the sum of their own operation's marginal cost plus an appropriate segment of the joint-plant marginal cost function with the marginal revenue produced from the cooperative sale of product. The appropriate segment of the cooperative plant's marginal cost curve was argued to be that which began after all other members had made their production decisions. Thus, in the cooperative of Emelianoff and Phillips, members exhibit Cournot-like behavior by implicitly assuming they can make production decisions without regard to subsequent adjustments by other members.

Enke presented a model of consumer cooperative behavior where members may pursue a number of alternative goals, each with different implications for firm performance and equilibrium. Enke demonstrated that the level of production that results in a maximization of the sum of cooperative producer and consumer surplus is optimal from a standard welfare perspective. However, within the context of his model, members may be more concerned with their share of the firm's surplus (based on patronage) than the firm as a whole (Vitaliano). Successful pursuit of individual consumer surplus would result in a level of business where average cost is minimized. Enke's welfare goal for the cooperative would require that price be set where marginal cost equals average revenue. Enke admitted that the actual equilibrium a cooperative would attain will depend on the goals and bargaining strength of members' interests relative to management's, but he provided no mechanism for such bargaining. While **Enke's** model contains a number of serious flaws, it is the earliest attempt at a model that allows for trade-offs among differing group objectives.

The Helmberger and Hoos model of cooperative enterprise assumes that all members are profit-maximizers and that no single member firm is large enough to affect the price the cooperative pays, i.e., members are price-takers with respect to their cooperative. No other role is specified for members. This assumption reduces member participation in the cooperative to an aggregate supply function response. In addition, this assumption contributes to the formation of the operating condition that cooperatives will operate to maximize the per-unit payment price to members.

Historical theories of cooperative enterprise have placed a great deal of emphasis on how members perceived the impacts of their patronage decisions on others in the organization. Resolution of this issue is vital if member behavior is to be modeled correctly. However, the ultimate answer is unlikely to be found in either the awkward marginal response curves of Phillips, the vague multiple-objective **function** of Enke, or the Helmberger and Hoos simplistic member supply function.

It is not difficult to conceive of still other alternative member objectives, consistent with rationality, that would lead to hypotheses and conclusions quite different from these. Members may view the cooperative as providing long-term access to input or output markets that an **IOF** cannot guarantee. Such an objective would require a dynamic analysis including an understanding of how members discount future versus current returns. Members also may view the cooperative as an institution for reducing the unique risks faced in production agriculture. In particular, farmers have relatively large amounts of capital invested in undiversified, specialized-use assets such as land, buildings, and equipment. Having all their "eggs in one basket," producers may view the cooperative as a mechanism to avoid exploitation of their risky positions by concentrated upstream and downstream markets. Cooperatives also reduce short-term producer price risk through pooling. The implications of these and other alternative member objectives cannot be adequately addressed in the context of a static maximization model that assumes a world of perfect certainty.

The Role of Director Boards in Cooperative Enterprise--The role of elected directors remains an ignored issue in cooperative theory. This failure of existing theory to explicitly examine the role of directors in cooperative enterprise seems to imply by default that their intended purpose is to act as representatives of the common entrepreneurial interest of members. As previously suggested, the interests of members can differ due to reasons of size, risk preference, and perceived discount rate of future returns. A role that directors may play that is consistent with the traditional micro view is the reconciliation of diverse and potentially conflicting members so the cooperative makes decisions that contribute to the long-run benefit of the cooperative firm.

Directors form the link between the large-group, decisionmaking process of members and the actual decisions adopted by the cooperative. Olson has demonstrated that small groups may be able to make decisions that large groups cannot, even if the common interest is served. Under this view, directors establish policy for operation of the firm, rectify major operational decisions taken by management, and monitor management behavior to ensure the protection of member interests however they are expressed or perceived.

Thus far, nothing has been revealed about the role of directors of a cooperative that conflicts with the neoclassical theory of the firm or the Helmberger and Hoos models. However, the structure of the board of directors encountered in cooperatives is sufficiently different from that found in the **IOF** so one is compelled to ask why. The typical board found in an **IOF** is made up of a combination of "**inside**" members who are usually representatives

of management or major stockholders and "outside" members who are respected for their expertise but who have no financial interest in the firm. In contrast, the board of most cooperatives is made up entirely of elected member-patrons whose primary experience is related to farm management and who typically have little prior experience in controlling the affairs of a large and complex business enterprise. There are important exceptions to this norm, particularly in the case of interregional agricultural cooperatives where some board members are representatives of the management of constituent regional cooperatives and others may be selected as "outside" directors.

The unique structure and role of the board of directors in a cooperative is hypothesized to be a function of the unique set of property rights embedded in cooperative enterprise. For this reason, discussion of board structure and the impact directors may have on the performance of cooperative associations will be left to the following section on the impact of cooperative property rights.

The Role of Management in Cooperatives --The Helmberger and Hoos model of cooperative behavior holds that management is constrained to operate within the limits dictated by a firm-wide objective function (i.e., maximization of per-unit price paid for member-supplied input) despite the fact that the authors have maintained that organization theory allows for alternative management behavior.

Other historical treatments of cooperative theory are worth mentioning because of the polar manner in which they treat the role of management. Enke was the earliest of formal cooperative theorists and the only early writer to suggest an active role for management. He specified a number of possible management objectives and strategies, including member-price minimization and the avoidance of hostile behavior on the part of business rivals. He maintained that the ultimate managerial role will depend on the voting strength of the interest groups in a cooperative (p. 153). The possibility of an independent managerial agenda distinct from member interests was not considered.

Most other early writers followed **Emelianoff** and Phillips in specifying that there was little or no role for management in cooperatives. These writers, including Clark (1952a); Aizilnieks; Aresvik; and Robotka, believed that all decision activity emanated solely from member firms. Ohm followed the Phillips model but specified a coordinating role for management. Savage and Trifon opposed the Phillips model and insisted that cooperatives had an independent economic existence apart from member firms in that some decisions were clearly made at the cooperative plant level by directors and management.

Those models that do specify an active role for management in cooperatives relegate such activity to the operation of a well-expressed, single-purpose, objective function. Yet, conditions may exist that would afford managers the opportunity to pursue goals other than those that could be considered strictly in the interest of members. Informational, institutional, or structural constraints may be present that prevent any manager from achieving a specified, firm-wide goal or acquiring the information necessary to do so. In addition, constraining management to act exclusively in the interest of

members is not costless (Jensen and Meckling 1979b). The level of expenditure of monitoring resources on the part of members or the board required to ensure maximization of member interest may be excessive. The marginal cost of monitoring and enforcement may exceed the marginal benefit generated. Another condition that could allow managers to pursue other objectives is the cooperative's structural inability to generate certain information related to the quality of management performance. Because the generation of this information is a function of the unique set of property rights that defines a cooperative, discussion of this issue will be left to the following section.

Economists have proposed a number of objectives a firm's manager might follow if allowed the latitude to do so. Such objectives include the maximization of some form of firm revenue (Baumol), firm growth rate (Marris), or managerial amenities (Williamson). More recently, Jensen and Meckling (1979a, 1979b) and Fama and Jensen (1983a, 1983b) offered a more general theory in which all agent groups within a firm (owners, directors, employees, management, etc.) will pursue the objective of constrained personal utility maximization. Managers will act so as to maximize the value of their pecuniary and nonpecuniary reward. Pecuniary awards are based on salary and contractual performance incentives specified by the firm. Nonpecuniary rewards are based on the utility gained from actions that managers perceive will increase their present and future stock of human capital and by such personal amenities as good working conditions, large and cooperative staffs, prestige, etc.

The behaviors implied by agent utility maximization clearly allow for conflict with operation of a firm at maximum profit (IOF) or maximum per-unit payment price (cooperatives). Managerial behavior can be partially constrained by expending resources on monitoring and contractual incentives, but this process is costly and imperfect. Models of cooperative enterprise that are constructed without at least considering the effects of the types of described here must leave open the possibility of biased results.

The Impact of Property Rights on Cooperative Structure and Performance

The concept of a property right refers to the probability that an individual's decision over the use of a particular resource will determine that use (Alchian). This simple, yet informative definition of a property right leads us to a discussion of what is perhaps the most important and overlooked distinction between cooperative enterprise and other forms of organizing business. There exists a number of definitions of what a cooperative is, yet the essential distinction from other firm types lies in the basic restructuring of the property rights relating to control over resource use and the rights to the benefits or loss (residual risk) generated by the business enterprise. In an IOF, control over how resources are used and the rights to residuals ultimately rest in the hands of the owners of common stock in the organization. Decision control is based on the share of capital invested, and decisions are assumed to be judged on the merits of the returns generated by that capital. In a cooperative, the basic property rights governing ownership and control are structured so that decision

control and the rights to residuals rest solely in the hands of those who patronize the firm as members. The possible reasons behind this alteration of property rights, particularly in the case of agricultural cooperatives, were discussed in the earlier section on member motivations.

The issue of how changing property rights may affect the structure and performance of cooperatively organized firms is completely ignored in current models of cooperative behavior that employ some variant of the entrepreneurial theory of the firm. The theory of the firm assumes a given and constant distribution of property rights for all types of business organization. The Helmlinger and Hoos model of cooperative enterprise merely manipulates by assumption the standard objective function of a profit-maximizing firm so that the firm itself earns no profit. In this way, traditional analysis focuses on price and output determination and treats any impact changing property rights might have on cooperative firm performance as a nonexistent issue. The following discussion will attempt to show that explicit treatment of the effects of property rights may reveal impacts on the organizational structure and performance of complex firms.

As previously mentioned, the essential difference between the structure of property rights defining a cooperative and IOF is the restriction of ultimate decision control and the rights to firm residuals to those who patronize the firm as purchasers of goods or users of services. Ancillary to this restructuring of rights is the fact that cooperative firm control is generally based on one-member/one-vote terms and not by share of capital invested. In addition, because membership and control in such organizations is restricted to patrons, these rights have value only as long as the member firm or individual remains an active patron. In agricultural cooperatives, this restriction on membership limits the term of decision control and residual claim on the firm to the active working life span of the member-producer.

A number of impacts on cooperative organizational structure and performance are suggested by this change in basic property rights. The first impact relates to the unique structure observed in the cooperative board of directors. In an IOF, the rights to ownership and control are traded openly on the stock market. Jensen and Meckling (1979b) and Fama and Jensen (1983a) have maintained that if the stock market can be considered a perfect market, then, among other things, stock prices will perfectly reflect the quality of management decisions in a given IOF. Firms whose stock is considered undervalued due to poor management are subject to takeover by rival firms. It is hypothesized that this process serves as a partial constraining force on management to act in the interests of stockholders or face loss of their livelihoods. In a cooperative, the rights to ownership and control usually are not transferable; thus there can be no market for these claims. No information is generated by a secondary market for use in the evaluation and control of management behavior in cooperatives. It can be hypothesized that this loss of an important control mechanism is responsible for the observed structure of the board of directors in a cooperative; i.e., that directors are required to be member-patrons of the firm to replace the control mechanism on management that is lost due to the effect of the property right that prevents useful information about management performance from being

generated. Because they have a direct and personal interest in the well-being of the firm, board members are less likely to condone behavior that they perceive as not serving the general interest of members.

It has now been shown that the lack of marketability and limited life span of the rights members hold in a cooperative firm may have bearing on the organizational structure of these firms. It remains to be shown that property rights also have potential to affect the performance of a cooperative firm as compared to an IOF. Accepting the assumption of a perfect market, the stock held in an IOF is considered to have an infinite horizon in that stock prices should reflect investors' expectations with regard to the present value of the returns to investments in the firm regardless of the length of the income stream to be generated by the investment (Fama). However, in a cooperative, there is no secondary market for ownership and control rights and a member cannot capture the benefits from an investment beyond the term for which he or she remains active. Upon retirement from a cooperative, members typically are returned only the original face value of any outstanding equity capital they have invested in the firm (Baarda). Members can capture economic gains from the firm only through patronage. Therefore, the member **may perceive** the value of the income stream generated by such an investment as truncated by his or her expected term of membership. An investment would not be judged acceptable unless the present value of returns generated by the truncated income stream was deemed adequate.

Cooperatives whose membership behaves in this manner may **either underinvest** relative to IOFs that perform the same function or the distribution of their investment portfolio may be skewed toward shorter-term projects. In either case, Fama has shown that the portfolio of investments adopted by a firm whose residual claims are limited in horizon will be not be optimal relative to firms whose claims have infinite horizon.

The adverse effects of the investment horizon problem in cooperative enterprise may be overcome, to some degree, by inclusion of certain features into these firms' organizational structures. First, because it is the board of directors that ultimately ratifies investment policy, a concentrated educational effort to convince directors of the necessity of guarding the long-term interests of their firms may help to overcome the built-in incentive for members to maximize shorter-run interests. Secondly, it may be possible that the horizon problem is eliminated if there exists another mechanism whereby members can capitalize the present value of investments whose stream of future returns extends beyond their expected term of membership. In the case of agricultural cooperatives, it could be hypothesized that the present value of future investments is capitalized into the value of a member's fixed assets, e.g., the value of farmland. In the simplest example, the farmland of a producer may become more valuable in areas where there is access to a cooperative than in cases where there is not, ceteris paribus. Further, farmland values may fluctuate with relative performance of the local marketing or supply cooperative, ceteris paribus. Unfortunately, experience with research into the constituents of farmland value has demonstrated that it is quite difficult to separate empirically and measure the various components contributing to land prices. Finally, in

cases where farmers can pass cooperative membership to succeeding generations and they perceive utility in doing so, the horizon problem may be ameliorated.

At this point, it is reasonable to ask why it is important to know how a changing set of property rights will affect the performance of cooperatively organized firms, i.e., what policy implications can be drawn from the knowledge that cooperatives may follow an investment pattern different from an IOF performing the same function. If cooperatives invest inefficiently relative to IOFs in industries that require longer-term commitments of capital, then, from society's point of view, resources will be better utilized if government does not subsidize entry into these industries. The investment horizon problem may provide at least a partial explanation of why cooperative organization in the U.S. economy is rarely observed outside the agricultural sector. The marketing and supply activities of agricultural cooperatives require investments that generally are of a short-term nature (relative to member horizons). However, a cooperatively organized firm in the steel industry (e.g., a labor-managed firm) may be at a disadvantage due to the long-term nature of returns to investments in plant, equipment, and research and development.

The effect property rights have on cooperative organizational structure and control features also have important policy implications. If the hypothesis that the structure of the cooperative board of directors replaces the unique control function that is lost due to the lack of a secondary market for residual claims proves valid, then it can be expected that this control function will weaken as organizational hierarchies emerge that are further removed from the member-patron and member-director agricultural experience. The emergence of the giant interregional agricultural cooperative in such areas as petroleum products, equipment manufacture, and international export of commodities in recent years has led to boards of directors consisting of agricultural producers who may have little experience in the complexities of their cooperative's lines of business. Directors may feel incapable of judging the quality of management decisions. In such situations, the rights to decision control may be effectively relinquished to management. In addition, such boards often are partially made up of management representatives from the constituent regional organizations. Such a trend could lead to increasing degrees of management control and possibly to affairs such as the AGRI Industries (Waterloo) and Farmers Export (Rowen) incidents where a large interregional cooperative apparently became controlled by management with resultant adverse results for members.

Summary and Conclusions

The first objective of this paper was to justify, from a methodological viewpoint, the direct examination of the impact of property right assumptions with regard to their effect on the predictive and explanatory power of economic theories of business organization, particularly a theory of cooperative enterprise. Property rights were shown to fall into a class of economic assumptions that must exhibit a degree of factual realism if the theory is to have relevance in accurately explaining and predicting the

behavior of complex economic organizations. Because factual realism in certain classes of assumptions to which property rights belong is shown to enhance -the power of a theory, it is methodologically sound to empirically examine the validity of property right assumptions either by direct test of the assumption when possible or by test of the resulting hypotheses generated by the theory.

Having established the methodological foundation for the explicit incorporation property right assumptions into a theory of cooperative organization, the second purpose of this paper was to present and discuss the new issues that become relevant research questions as a result and have been largely ignored in conceptual or applied research in the United States. As more realistic assumptions are made regarding the incentive structure of the various agents that constitute a cooperative firm and the nature of the property rights that govern cooperative ownership and control, testable hypotheses can be formed and examined that will increase our knowledge of how cooperatives can be expected to function relative to competing firm types. Specifically addressed are the potential implications of member, director, and management incentives on firm performance and the impact of cooperative property rights on organizational structure and performance.

Notes

1. For examples, see Friedman 1968; Machlup 1978; Melitz; and Silberberg.
2. It is important to note that after having made this definitive **statement**, Machlup goes on to demonstrate that some assumptions of theory need necessarily be operational. This will be demonstrated.
3. For example, it may be necessary for the residual claimant to also become a partner.
4. For example, better working conditions, prestige, or an enhanced perception of worth in the market for managers.
5. It should be noted that while U.S. cooperative theorists have effectively ignored, for the most part, the issue of conflicting members, director, and management goals, several foreign writers have made initial attempts at dealing with the issue. For examples, see Eschenburg; Perrault; and Pichette.

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