Written Exam for the B.Sc. in Economics 2014-15

The Philosophy of Science

Final Exam

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The Psychological Foundation of Economics: the History of Consumer Theory

W. Fred van Raaij, Erasmus University

[W. Fred van Raaij is professor of economic. psychology, Erasmus University, Department of Economics, P.O. Box 1738, 3000 DR Rotterdam, The Netherlands. He is editor of the Journal of Economic Psychology.]

ABSTRACT

Several attempts have been made to base economic (consumer) theory on a better psychological foundation. The revolution of the 1920s has failed. It merely led to a reinforcement of the hard core of economic theory. Apart from this, consumer research developed in marketing, mainly based on a social and behavioral approach. This approach is still successful in solving practical problems and is integrated in "grand theories." A second revolution under the label of "behavioral economics" is under way and could use behavioral consumer research, which is in the 1980s in a better shape than Psychology was in the 1920s.

INTRODUCTION

The history of science is more than a chronological story of how science developed by accumulation of findings, models, and theories. Traditionally, "growth of knowledge" theories tell the history of economics, social sciences, and consumer theory as an offspring of both economics and social sciences. "Growth of knowledge" theories may describe the actual evolution of science, in a way a historian may describe the history of WWII. However, the historical accounts of the evolution of science are not neutral and unbiased. The historian is largely selective, what to include and what to be left out, The historian may attribute developments to persons that influenced the course of scientific developments. A marxist historian is more likely to attribute developments to underlying societal and economic forces, in this case the exploitation of consumers by multinational corporations. A third attribution is the attribution to the Zeitgeist, cultural developments influencing the direction of science.

The history of science is interwoven with the epistemology of science, i.e. the way new knowledge is acquired and accepted in the scientific community. Epistemology may be defined as the "science of science," the study of how scientists select research topics; how scientists communicate through journals and conferences; how referees or "invisible colleges" determine what is "good science" (and should be published); and how scientists proceed with their work at the frontiers or rear-guards of research.

Epistemology cannot be studied without reference to the methodology of science. The deductive methodology of mathematics, and the hypothetico-deductive method of astronomy and physics are examples for many economists and social scientists.

For a large part, however, social scientists use an inductive approach of "fact finding" and generalization. in this contribution, attention should be paid to the methodology of consumer theory and research. The methodology largely determines, how scientific research proceeds by verification or by falsification of theories and hypotheses, and by changes in the dominant paradigm (Kuhn 1970) or research program (Lakatos 1968).

In this paper, the development of consumer research in economics, in marketing, and in consumer policy is described from a historical, epistemological, and methodological viewpoint. It may be clear that this is too large a task in a limited number of pages. Hopefully, I traced the major developments, but as I am selective and biased myself, others might provide their differing viewpoints.

EPISTEMOLOGICAL APPROACHES

1. Karl Popper

Popper's principal problem was to demarcate science from non-science, In his Logik der Forschung (1934) Popper replaced the Vienna-Circle=s principle of verifiability by the principle of falsifiability, as a test of a genuine scientific hypothesis. This is in accordance with common statistical theory of testing and rejecting hypotheses. From a theory, one or more hypotheses may be derived; after the operationalization of concepts, the hypothesis may be tested with empirical data. A rejection of the hypothesis brings "deadly" evidence to the theory, which should be adapted or rejected. Science is not to "proof" anything, as common sense assumes, but is to "disproof" hypotheses. A hypothesis stands upright, as long as no disproof has been found. Popper gradually evolved a powerful anti-inductionist view of science as an endless dialectical sequence of "conjectures and refutations" (Blaug 1976).

Is a single refutation enough to discard a theory? A hasty reading of Popper's work may lead to this "naive falsificationism." But nearly all social phenomena are stochastic in nature, which implies that a rejection of a hypothesis may be due to chance. To discard a theory after one refutation amounts to intellectual nihilism. On the other hand, the proponents of a theory are unlikely to give tip their vested interest in the theory after one piece of negative evidence. Popper is aware of this principle of "tenacity," the tendency of scientists to evade falsification of their theories by the introduction of suitable ad hoc auxiliary (intervening) constructs or hypot-he-se-, Vhereas Popper's falsificationism is "aggressive," testing theories to destruction, it provokes defensive movements of the proponents of the theory under attack.

Friedman (1953) is a Popperian with an F-twist applied to economics. He defends the apparently absurd idea that "unreal assumptions" are not a vice but a virtue. The more significant the theory, the more unrealistic the assumptions. Economic theory starts from assumptions mainly about consumer and producer behavior. Whereas the Popperian emphasis is on falsification of outcomes (hypotheses, predictions), assumptions do not matter so much. Friedman's argument, the F-twist, sparked off a vigorous controversy. A veridical description of reality matters less than correct predictions. Musgrave (1981) untwists the F-twist by distinguishing negligibility, domain, and heuristic assumptions in economic theory, Assumptions may be "unreal" in the beginning of theory development but by successive approximation assumptions will be replaced by more veridical assumptions.

2. Thomas Kuhn

In Kuhn's Structure of Scientific Revolutions (1970, second edition), the emphasis shifts, from the methodology of falsification to positive history. The principle of "tenacity" is no longer the exception but the rule. "Normal science," in Kuhn is terminology, is problem-solving activity in the context of an accepted theoretical framework or paradigm. By accident more than by planning, anomalies to the dominant paradigm are obtained. A few anomalies or unexplainable findings do not discomfort most scientists. The phenomena are stochastic, anyway. A series of "anomalistic" findings may start critical thinking and after some time a revolution or the overthrow of the current paradigm by a new and hopefully better one.

For Popper, science is in a permanent state of revolution. For Kuhn, the history of science is marked by long periods of steady refinement, interrupted by discontinuous jumps, hopefully jumps forward, or revolutions. In a revolutionary period, the old and the new paradigm are in conflict. If the new paradigm is more fruitful and successful in solving hitherto unsolved problems, the new paradigm will certainly win. Conversion of scientists to the new paradigm resembles a religious conversion; it is an emotional and difficult transition from the former to the new paradigm. Many scientists of an older generation refuse to he converted and remain believing in the former degenerating paradigm.

What is a paradigm? Kuhn employs the term for the choice of problems and methodology. In place, he is going so far to give it a wider meaning of Weltanschauung or basic philosophy. The appropriate definition is "the entire constellation of beliefs, values, techniques, and so on, shared by the members of a given community"(Kuhn 1970, p. 173).

In astronomy and physics, the Copernican, Newtonian, and Einstein-Planck revolutions come to mind. In chemistry, Lavoisier might have caused a revolution. The Copernican revolution took 150 years to become accepted. Modern revolutions will probably take shorter to become accepted. Paradigmatic changes are not really discontinuous; the former and the new paradigm may exist together for a long period.

Important in Kuhn's arguments is the role of values in scientific judgments and reference groups ("invisible colleges") as determinants of scientific behavior. Intergenerational conflicts play a role as well. Younger scientists will normally be the first to accept the new paradigm. Being the first to accept the new paradigm may create problems in getting one's manuscripts accepted in established scientific journals. Early adopters of the new paradigm may have a lead to others with their publications. Believers in the old paradigm will gradually lose to the new generation, because their solutions and methodology becomes less and less accepted.

3. Imre Lakatos

Lakatos' (1970) approach is a compromise between Popper's "aggressive methodology" and Kuhn's "defensive methodology." See also Lakatos and Musgrave (1970). Lakatos starts stating that isolated theories and hypotheses are inappropriate units of appraisal. What ought to be appraised are clusters of interrelated theories or scientific research programs (SRP). A SRP is an organic unity, consisting of a "hard core," a "positive heuristic," and a "protective belt." The hard core and the positive heuristic are essential parts of a research program. Giving them up means abandoning the research program. Non-essential, replacable components belong to the protective belt. Changes in the protective belt of a research program are favorably judged only if they are theoretically or empirically progressive. A progressive change is an extended theory that explains more phenomena than the former theory.

Progressive changes in the protective belt are welcomed in the process of normal science. Changes in the hard core or positive heuristic are revolutionary and cause the death of a research program or the replacement by a new research program.

The hard core specifies the fundamental characteristics of a research program, cf. Kuhn's paradigm. The positive heuristic is a "normative" hard core: A set of imperatives which contain guidance as to how the reserch program should unfold, how it should he defended, what falls within and what falls outside its scope (Latsis 1976). Note that the hard core of a research program cannot really be falsified.

Research programs may degenerate, astrology for example. Now research programs may develop, Popper, Kuhn, and Lakatos find most of their examples from physics, and are rather negative about economics and social sciences, as "pre-paradigmatic proto-sciences."

CONSUMER THEORY IN ECONOMICS

During the second half of the 19th century three major developments took place in psychology (Coats 1976): James' (1890) conception of the physiological-biological determinants of human behavior; McDougall's, (1908) instinct theory; and Watson's (1913) behaviorism. At about the same time, the new subjective theories of value (the so-called marginal revolution) were being assimilated into economic theory.

As economics is or should be a social science, the new psychological approaches should be integrated in economic theory that was so far based on a naive type of hedonism. In the period 1880-1920, the proponents of a better psychological foundation of economics, notably Veblen (1919), attacked the defenders of the "orthodox" economic theory. These defenders did not form one homogeneous group. Some economists flatly denied that any psychology was relevant for economics as a science, arguing that economics should concentrate on "catallactics," the science of exchanges, in which prices are the only elements to be included, without reference to consumer or entrepreneurial motivations. Some other economists took "a priori" positions. They wanted to start from basic assumptions about human behavior, and these basic assumptions are: rationality, complete knowledge, and utility maximization. Although it may be clear that these assumptions are not very realistic, they might nevertheless be good starting points for theorizing. If hypotheses (predictions) from the theory are refuted, the assumptions may be relaxed. Assumptions are heuristic in this sense. They are a starting point and not a dogma. Whereas simple theories are preferred over complex ones (Occam's razor), one should start with simple, albeit unrealistic,-assumptions.

The opponents (Veblen 1919) asked for a wholesale reconstruction of the foundations of economics. Veblen's devastating satirical portrayal of the hedonistic conception of man as responding passively to external stimuli was persuasive, when juxtaposed against the actively intelligent interpretation of human nature by James. The critics' proposals included the following propositions and procedures (Coats 1976):

1. Employ methods similar or identical to those used in the natural sciences.

2. Adopt 'realistic' fundamental assumptions, i.e. assumptions compatible with observed behavior or consistent with psychological findings.

3. Derive assumptions from psychological research into the actual behavior and motivations of consumers.

4. Abandon efforts to formulate abstract, general theories and concentrate on the development of middle-level, empirically-grounded theories,

5. Develop empirically testable theories which will serve as a basis for scientific explanation, prediction, and/or control.

6. Undertake systematic empirical studies as a basis for formulating sound empirical generalizations and for testing and, if necessary, reformulating established theories.

7. Wherever possible, replace static theories by dynamic theories, accounting for change.

8. Broaden the scope of economic theory to take account of the social forces influencing economic behavior.

9. Go beyond prices and exchange values to examine the influence of market and non-market forces on economic and social welfare.

The first five propositions constitute the hard core of this rival research program (paradigm), since they could not be given up without abandoning the entire program. Propositions 6 and 9 comprise the positive heuristic, i.e. the guidelines how to develop the research program both theoretically and empirically. Propositions 7 and 8 illustrate the kind of problem shift entailed by the new program.

Hedonism was repudiated as a valid psychological theory. Veblen (1919) cum suis proposed a more objective and empirical-approach to the study of economic behavior. However, the defenders were more united than the attackers. Fisher (1892) disliked "this foisting of psychology on economics." It is not the economist's province to build a theory of psychology. Antecedents of preference lay completely within the realm of psychology.

Knight(1921a) asserts that many psychological theories are irrelevant to economics as a science, for "the basis of a science of conduct must be fixed principles of action, enduring and stable motives." Although Knight admits that "it is doubtful, if this is fundamentally the character of human life" (Knight 1921a). Knight accepts the "severe limitations" of economics as a science that economics is not about the content of economic behavior, but establishes laws universally

valid as to its form. The attackers, trying to base economics on psychologically sound foundations, did not make constructive proposals, according to Knight. The strictures are valid as limitations, not as negations. "The principles of the established economics are partial statements, but sound as far as they go, and they go about as far as general principles can be carried" (Knight 1921b).

Nor all defenders of traditional economic theory accepted all of Knight's arguments. Most of them were less subtle and less interested in epistemological and methodological issues. By the end of the 1920s it was clear that the ambitious efforts to infuse psychology into economics or to reconstruct basic economic theory, employing new psychological findings, had manifestly failed (Coats 1976). Psychology was at that time still in a unsettled state, and the efforts may have been over-ambitious and premature.

The development of the Slutzky-Hicks-Allen indifference curve analysis and, after WWII, econometric methodology ("the formalist revolution") seemed to confirm that psychology had little or nothing to contribute to the theoretical development of economics as a science. Already in 1915, Slutzky declared that "if we wish to place economics upon a solid basis, we must make it completely independent of psychological assumptions and philosophical hypotheses."

Although the attackers "lost, their attack was not without consequences for the bastion of economic theory. During the debate the hard core of economic theory was not merely preserved intact. It was reinforced. The key concepts were more carefully specified. The protective belt of auxiliary hypotheses was strengthened by the elimination of unnecessary propositions. The fundamental assumption of "economic man" was reformulated as "rationality" or the "logic of choice." Veblen disdainfully dismissed this as "pecuniary logic." This restoration of the basic theory was an essential prerequisite for its later econometric development.

By the end of the 1920s the hard core of orthodox economic demand theory has emerged in roughly the following propositions:

1. Basic economic theory is necessarily abstract, static, and general in form.

2. The fundamental assumptions must therefore be simple, uniform, and constant; they can neither be 'realistic' nor subject to falsification.

3. It is assumed that consumers aim to maximize their utility (satisfaction).

4. Consumers have limited budgets.

5. Consumers have unlimited wants in general, but experience diminishing marginal utility from consuming successive units of a good.

6. Consumers have perfect knowledge of relevant market conditions (prices, etc.).

7. Consumers make rational calculations, adjusting their expenditures at the margin.

8. Individual decisions are independent of those of others,

The positive heuristic, in Lakatosian terms, consists of the following recommendations:

9. Construct static models.

10. Reduce the numbers of assumptions to a minimum, including psychological assumptions.

11. *Develop general* theories.

12. Concentrate on the analysis of exchange values.

13. Reinterpret the theory to take account of discrepancies between the assumptions and the facts in order to improve predictions.

Although economic orthodoxy won over the heterodox psychology-oriented reformers in the 1920s, it might have been a Pyrrhus victory. Katona (1953) and Simon (1963) *reopened the* debate. To cite Simon (1963, p, 709,711):

Economics has been moving steadily into newer areas where the power of the orthodox model has never been demonstrated and where its adequacy must be considered anew. Orthodox economics was highly successful in handling small-maze problems without depending on psychology. New societal issues require the cooperation of the economist and the psychologist, employing cognitive theory.

The economic theory of consumer demand still serves as a basis for microeconomics. Later refinements are Lancaster's (1966) approach to handle goods as bundles of attributes rather than indivisible entities. Ratchford (1979) translated Lancaster's approach to consumer behavior research. A good example of a textbook in the microeconomic tradition is Deaton and Muellbauer (1980). Modern *develop*ments of the microeconomic approach to the study of consumer behavior are the Chicago School (Becker 1981).

Criticism remains with the fundamental assumptions of maximizing behavior, the unwillingness to consider the *processes of* individual and group decision making, the neglect to study interactions within the household and between households, the changes of tastes and preferences, the interaction of mass media and conversation, and so on. Some economists move in these directions, e.g. including the costs of information acquisition and the "costs of thinking" (Shugan 1980).

Economic theory is not degenerating, in Lakatosian terminology, but largely remains form rather than content, optimalization rather than description, abstract rather than concrete. As Ferber (1973) argued, it might still be fruitful to start from a parsimonious (economical) economic model of the income-consumption relationships, the so-called "income hypotheses" (Sheth, Van Raaij, and Wandwossen 1979), and improve the relationship by a process of successive approximation.

[The section “CONSUMER THEORY IN MARKETING” is taken out as it is not relevant for the exam]

CONCLUSIONS

The battle of the 1920s was lost. Psychology, then, was still in an unsettled stage, dominated by extreme schools, such as behaviorism on the one hand and psychoanalysis on the other hand. Psychology (Which psychology?) was not infused into economics. Economics as a science developed along the SlutzkyHicks-Allen lines of indifference curves and econometric methodology. Microeconomics became a mathematical jewel in a glass case, without much practical usability.

Along completely different lines, and in the beginning as a psychoanalytical reaction to the economic maximization principles, behavioral consumer research developed in a marketing context. Marketing, at least in the U.S., is not a part of economics, but part of business administration. The practical usefulness of these studies for marketing management and consumer policy is evident. The Association for Consumer Research (ACR) is one of the major organizations in this area. Not only consumer policy, but "government policy" in general may benefit from this development. Studies on tax paying, investment and entrepreneurial behavior has strong similarities to consumer research, being similar in theory and methodology, cf. the Journal of Economic Psychology.

One may expect that in the future economists, dissatisfied with the usefulness of microeconomic consumer theory, find behavioral consumer research a good substitute for microeconomic consumer research. Behavioral consumer research and psychological research in 1985 are in a much better shape than psychological research was in 1920. Some indications of this direction are the foundation of the Society for the Advancement of Behavioral Economics (SABE)in 1983. SABE promotes the application of the behavioral sciences to economic problems and wants to replace unreal

assumptions in economic theory by behavioral assumptions. We expect and hope that this second revolution will be more successful than the revolution of the 1920s.

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Questions:

(1) In the article it is stated:

"*For a large part, however, social scientists use an inductive approach of "fact finding" and generalization.*"

During the course we learned about induction and deduction. Please explain these two methodological approaches. Is neoclassical economic theory based on an inductive or deductive approach? Furthermore, please explain the "problem of induction" discussed in the course.

Points to include in the answer:

- The answer should contain a clear and concise definition of both induction and deduction.
- Neoclassical economic theory is essentially a deductive endeavor. See lecture slides of lecture 2 ("Models") for points to include in this answer. In particular the students should argue why it is the case that neoclassical economic theory uses a deductive methodology rather than an inductive approach.
- The problem of induction was essentially formulated by David Hume. See lecture slides 1-9 of lecture 4 ("Hume, Friedman and the Methodology of Positive Economics") for more points.

(2) Karl Popper's methodological approach overcomes the problem of induction. Please explain his approach and explain how it overcomes the problem of induction.

Points to include in the answer:

- See slides 1-16 of lecture 5 ("Popper") and the associated mandatory reading for the relevant points to include in this answer.
- Popper's empirical approach was not inductive. It was a deductive testing of theories. He thought that the only meaningful empirical approach consisted of the testing (i.e. falsification) of scientific theories. It was not about "extrapolating" from few observations to general laws that govern our social universe as in the inductive methodology. The problem of induction does thus not apply to his philosophy of science.

(3) In the article it is stated:

"*Friedman (1953) is a Popperian with an F-twist applied to economics.*"

What is the F-twist and what does the author mean by this statement?

Points to include in the answer:

- See slides 33-38 of lecture 4 (“Hume, Friedman and the Methodology of Positive Economics”) as well as the associated mandatory reading material for the points to be included in this answer.
- Friedman was like Popper into testing theories. Or, more precisely, he was into testing the “predictive power” of theories without any regard to the realism of the underlying assumptions. In this sense he “refuted” a theory – according to the author of this article – when it had no predictive success. This is why the author calls Friedman a Popperian with an F-twist.

(4) Even though economists have long tried to resist basing their theory on psychological approaches, recent years have seen a change in this direction. In particular experimental economics has added to this change. Please explain what experiments in economics are and what types of experiments exist. What are their differences? Explain the two concepts of internal and external validity. Explain how experiments can uncover causal mechanisms rather than mere correlations. Furthermore, explain why Karl Popper would have been a proponent of experiments in economics.

Points to include in the answer:

- See slides 32-55 of lecture 15 (“Experimental Economics I”), slides 3-13 of lecture 16 (“Experimental Economics II”) and the associated reading for the points to include in this answer.
- Popper would be a strong proponent of experiments that test theories.

(5) What is the latest methodological revolution in economics that we discussed during the course? Explain it and discuss which technical methods it uses. Give examples of findings that this latest methodological revolution has uncovered.

Points to include in the answer:

- See slides 6-7, 11-12 and 16-18 of lecture “Neuroeconomics” as well as the associated mandatory reading for the points to be included in this answer.