

Tilburg University

A closer look at economic psychology

Wärneryd, K.E.

Publication date:
1993

[Link to publication in Tilburg University Research Portal](#)

Citation for published version (APA):

Wärneryd, K. E. (1993). *A closer look at economic psychology*. (CentER Discussion Paper; Vol. 1993-62). CentER.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

Take down policy

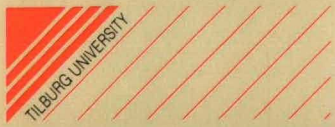
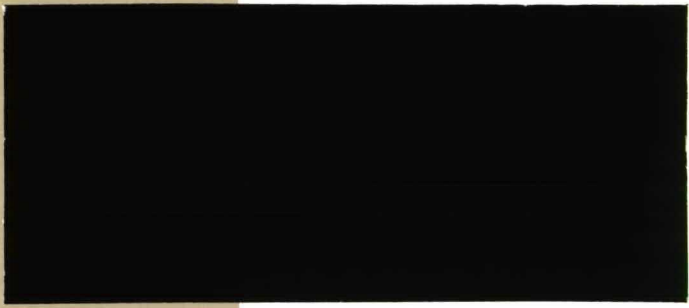
If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

CBM
RR

8414
1993
62

entER
for
omic Research

Discussion paper



Center
for
Economic Research

No. 9362

**A CLOSER LOOK AT
ECONOMIC PSYCHOLOGY**

by Karl-Erik Wärneryd

October 1993

ISSN 0924-7815



K.U.B.
BIBLIOTHEEK
TILBURG

A CLOSER LOOK AT ECONOMIC PSYCHOLOGY

Karl-Erik Wärneryd*

The Stockholm School of Economics and
CentER for Economic Research, Tilburg University

ABSTRACT

Economic psychology encompasses at least three different approaches to the psychological study of economic problems. In the oldest sense, economic psychology means the psychological foundations of economic theory. In a second use, economic psychology is referred to as a field of applied psychology. In the third sense, economic psychology is (the beginning of) a separate discipline, borrowing from both psychology and economics, but working towards developing an independent theoretical framework that aims at providing descriptions of economic behavior. The paper reviews historical and current relationships between economics and psychology.

* This is a revised version of an invited address presented at the IAREP/GEW Joint Conference, Frankfurt, August 27-30, 1992. I want to thank the convenors of the Conference for inviting me and Rob Alessie for stimulating comments on this paper.

THE THREE MEANINGS of ECONOMIC PSYCHOLOGY

Philosophy was for many centuries the parent science of all other sciences. It embraced both psychology and economics. At some point in time separate disciplines started diverging from the main source. As sciences closely related to philosophy, psychology and economics had many common interests and one and the same person could give significant contributions to both sciences. Economics was sometimes seen as a subdivision of psychology and at any rate, psychological knowledge was held to be fundamental to economic theory. Over the last century, the two disciplines seem to have diverged more and more. In recent years researchers from both fields have found that they may again have something to learn from each other. Psychologists have become involved in the study of economic behavior, especially decision making, and economists have adopted psychological research methods like the laboratory experiment and use hypotheses from social and cognitive psychology.

These new crossings of the disciplinary border lines are more than fishing expeditions into unexplored areas. While many uses of psychology in economics may be seen as fishing for new explanatory concepts, there are now systematic attempts to utilize interdisciplinary possibilities. These attempts can be classified under the umbrella label of economic psychology. Economic psychology actually represents a broad spectrum of attempts to combine knowledge from the two fields. I would like to submit that the concept of economic psychology is used in at least three senses:

1. The psychological foundations of economics
2. A field of applied psychology
3. A separate field of study.

I shall first make a brief presentation of the three uses, then discuss the historical relations between psychology and economics, relying mostly on what some prominent economists wrote on psychological phenomena. This will be followed by some glimpses of present research in economic psychology and, finally, I shall advance some ideas about the possible future of economic psychology.

The Psychological Assumptions behind Economics

Once in a while, authors dealing with the psychological underpinnings of economics have used *economic psychology* to designate the psychological assumptions underlying economic theory. The concept is occasionally found in writings by leading economists and historians of economic thought e.g. SCHUMPETER [1954], HAYEK [1978/1985], and COATS [1976]. Generally, the concept of economic psychology is employed when there is a discussion of the meaning of the utility maximization or rationality postulate which is fundamental to economic theory.

TARDE [1902] noted that he launched the concept of economic psychology in 1881 when he published a critique of economic theory. He conceded that some members of the Austrian School in economics also used economic psychology in the sense of the psychological foundations of economics. In his 1902 text, he seriously criticized Adam SMITH [1776/1982] for being a poor psychologist, disregarding human interaction, when he formulated his economic theory. In Tarde's view, Adam Smith was dealing with economic psychology when he proposed that human actors had an important role in the development of markets. The pursuit of self-interest, the division of labor, and the exchange of goods are the basic elements of human action according to Smith. In his view, exchange is the main characteristic that distinguishes humans from animals.

As economic theory is today, there is little room for psychology; economics is depsychologized (COATS [1976] [1988]). The older KEYNES [1917/1988] stated the independence of economics from psychology very clearly: "The bare facts that other things being equal men prefer a greater to a smaller gain, that under certain conditions they will forego present for the sake of future gratifications, and the like, are psychological facts of great economic importance. But they are assumed by the economist, not established by him. He does not seek to explain or analyse them; nor does he investigate all the consequences to which they lead. Economic laws in the strict sense are different from the above. They are not simple laws of human nature, but laws of complex social facts resulting from simple laws of human nature." (KEYNES [1917/1988, 84]).

Mainstream economists still see little room for scientific psychology in the realm of economics. Recent developments under the label of "behavioral economics", however, involve a more accepting attitude towards psychology. While the concept of economic psychology is often used when psychologists deal with economic problems, behavioral economics usually refers to the attempts by economists to include psychological thinking and research methods into the sphere of economics. Economic psychology as equivalent to behavioral economics is a promising attempt to work with some of the difficulties of present economic theory, essentially meaning that economics is provided with more and better descriptive details about human behavior than what is embodied in the simple psychological assumptions of economic theory.

Economic psychology in the sense of the psychological underpinnings of economic theory does not necessarily imply that the rationality concept is opposed. Despite many objections that can be raised against the rationality postulate, this paradigm is hard to replace for its elaborate structure and elegance and for lack of something better. Psychologists can conceivably add to the discussion by contributing data on circumstances under which rationality does or does not occur and thus help explain anomalies (THALER, 1992). Their results can to some extent make irrational behavior predictable (cf. AKERLOF and DICKENS [1982]). They can also look at what constitutes utility, what the relations are between revealed preferences and subjective utility (cf. SEN [1979]). Economists like Gary BECKER [1976] tend to see anomalies as minor deviations from rationality which can be explained in terms of rationality or which are random and thus insignificant. Some economists explore whether economic theory can handle the found anomalies using economic reasoning (see e.g. MACHINA [1990]). Psychological experiments indicating frequent and large deviations from economic rationality, notably prospect theory (KAHNEMAN and TVERSKY [1979]) have met considerable interest among economists, but have also met with criticism, based on experimental work by economists. The results from the psychological studies have been questioned, among other things, for lack of mundane realism, for non-use of monetary incentives in the experiments, and for disregarding learning effects (see e.g. MACHINA [1990]; SMITH [1991]; HEY [1992]. HAUSMAN [1991] accuses economists of dogmatism and reluctance against new evidence. He reviews the preference reversal phenomenon, finds it well established experimentally, and criticizes economists for playing it down because it clashes with some fundamental economic theory.

Few economists question the rationality postulate. Many economists today seem to think in accordance with LAKATOS's [1978] research program. "The basic unit of appraisal must be not an isolated theory or conjunction of theories but rather a '*research programme*', with a conventionally accepted (and thus by provisional decision 'irrefutable') '*hard core*' and with a '*positive heuristic*' which defines problems, outlines the construction of a belt of auxiliary hypotheses, foresees anomalies and turns them victoriously into examples, all according to a preconceived plan." (LAKATOS [1978,110]). In general, Lakatos's thinking about research programs seems to be gaining wide acceptance in economics (cf. LATSIS [1976]; de MARCHI and BLAUG [1991]). The basic postulate of rationality is kept as the hard core of economic theory. Models derived from this postulate can be rejected without any effect on the hard core. This implies that scientific psychology can never affect the rationality postulate. It can very well

inspire and enter into models in the belt of auxiliary hypotheses. Behavioral economists actually explore such possibilities.

THALER [1992], however, focusses on a number of *anomalies* in economic behavior which cannot be explained by economic theory and shows how they can be understood by using results from cognitive psychology and experimental economics. He cites two reasons for the avoidance of models with assumptions of less than fully rational behavior. "First, it is not generally possible to build good descriptive models without collecting data, and many theorists claim to have a strong allergic reaction to data. Second, rational models tend to be simple and elegant with precise predictions, while behavioral models tend to be complicated, and messy, with much vaguer predictions. But, look at it this way. Would you rather be elegant and precisely wrong, or messy and vaguely right?" (THALER [1992,198]) Even though, on the whole, I opt for the second alternative, I have to admit that with messy models and vague predictions it is often difficult to know whether one is wrong or right.

If economic psychology is not interpreted as restricted to the simple psychological foundations of economic theory, but in the broader sense of behavioral economics, there are many interesting prospects. Economists are increasingly accepting psychological research that enriches economic models or gives access to new types of data. Typically, these economists try to comply with or cope with the rationality concept by reinterpreting psychological concepts so that the latter become compatible with the rationality postulate. A well-known example is given by AKERLOF and DICKENS [1982] who developed dissonance theory in rationality terms and applied it in the study of safety behavior. This theory had earlier been used by HIRSCHMAN [1965], an economist who has frequently relied on psychology and especially on dissonance theory in his discussion of how to make attitudes change in economic development. THALER and SHEFRIN [1981] give another example with their theory of self-control and saving. These economists feel free to adopt psychological thinking and use it in their models as long as they can make it compatible with the rationality postulate.

It is also possible to use psychology without reflecting on the rationality assumption, for descriptive purposes. LEA et al. [1992] propose a focus on the consequences rather than on the axioms of rationality which means that psychologists leave the rationality concept alone and concentrate on other issues of relevance to economic behavior. Researchers can use psychology to elaborate descriptions of behavior or to gather data that provide measures of economic concepts that are otherwise hard to appreciate. Unfortunately psychology is sometimes used as a cafeteria in which choices of theory fragments can be made to fit any preconceived notion about human behavior and humans.

A Field of Applied Psychology

A second way of defining economic psychology starts with psychological theories as a basis for the study of economic behavior. Economic behavior is seen as an area of application where scientific psychological knowledge can be put to test and used for solving a new kind of practical problems. In a textbook on applied psychology, ANASTASI [1964,277] defined economic psychology as follows: "A branch of consumer psychology that has been taking shape since World War II is economic psychology. Cutting across the fields of economics and psychology, this area of research employs some of the data-gathering procedures developed in consumer opinion surveys and in the [previously discussed] food acceptance methodology. In its analysis of consumer data, economic psychology combines concepts taken from psychology, mathematics, and economics."

Anastasi cites some examples of pertinent research. Her first examples concern product development problems. Given that the price of a product cannot exceed a certain amount, which quality grade is optimal? She correctly refers to this research as belonging to operations

research. Another example is taken from a study of meal preferences assessed through mail questionnaires distributed to the members of a faculty club. Every day there was a choice among three differently priced dishes in the restaurant. Combining meal preferences and price preferences, JONES [1959] was able to make rather accurate predictions of actual choice in the faculty restaurant. As a research assistant in the Psychometric Laboratory at the University of Chicago I was involved in the early stages of this study (without knowing that it was economic psychology). The other examples cited by Anastasi are taken from George Katona's work. They deal with economic attitudes and buying behavior. In the United States, economic psychology is still primarily seen as the empirical study of economic expectations.

In the Preface of the recent Handbook of Consumer Behavior, ROBERTSON and KASSARJIAN [1991,ix] declare: "Few areas in consumer behavior can claim the persistence and longevity of economic psychology. Based on the work of Katona and the Michigan Survey Research group, this view suggests that consumer spending patterns are heavily influenced by consumer expectations of their economic well-being and by consumer sentiments (pessimism, optimism, or confidence)." They add: "Economic psychology was not destined to enjoy rapid expansion in the United States. In Europe, however, interest has been steadily growing."

In addition to the study of consumer and business expectations and attitudes, economic psychology in Europe comprises many other aspects of consumer and business economic behavior. Commonly, the label of consumer behavior or in some cases consumer psychology is employed to cover a broad field, usually with close connections to marketing. While consumer behavior study has had and to a large extent still has a strong managerial orientation, the economic-psychological study of consumer psychology has more of a theoretical orientation, attempting to construct more general theory which can serve more purposes than just managerial uses (see LEA et al. [1987]; van RAAIJ et al. [1988]). Consumer behavior researchers may not always like the idea that their well-established field be classified as part of economic psychology as the tendency is in Europe. They may prefer the view that economic psychology is restricted to expectations and well-being.

Economic psychology in the applied sense has meant a constant influx of methods and hypotheses from basic psychological research. At the turn of the century, there were already prominent psychologists who worked at least part-time with problems in economic behavior, mostly with personnel-selection or advertising problems. SCHÖNPFLUG (1993) maintains that applied psychology has in general been independent of basic research and that there has rather been an inflow from practice to basic research.

Researchers who are interested in developing basic psychological theory should find economic behavior a fascinating behavioral field to study. People are generally concerned with economic problems and it is comparatively easy to motivate potential subjects outside college classes to serve as subjects or respondents. Private economic problems can apparently be essential contributory factors to minor and sometimes even major emotional disturbances in everyday life and to the developing of neuroses. Very little research attention in psychology has been devoted to this area. Somehow psychologists have hesitated to deal with the role of economic affairs in everyday life. Some developments in the applied field of economic psychology have been important for progress in basic psychology. A lot of theory-oriented research on judgments, human information processing and decision making is carried out in the consumer behavior area. Attitude research has received important inputs from consumer behavior studies.

Psychological research is in principle aimed at establishing behavioral laws and at the same time it is focused on individual differences. Individual differences are the substance of much of applied psychology. There is research to select individuals to perform certain tasks, and there is research on individual reactions to economic stimuli. The question is often: under what circumstances does Y follow from the occurrence of X and under what circumstances does Z

follow? This means that in economic psychology the idea is to look at *segments*, characterized by different psychological circumstances, for example consumers who have different attitudes. Each segment is homogeneous with respect to a psychological characteristic whereas there are significant differences between segments.

When economic problems are studied by psychologists, the focus lies on the use of psychological thinking with little regard for economic variables. Economic psychology in the true sense of the study of what influences economic behavior should be genuinely interdisciplinary using both economic and psychological variables and models based on theory from both fields. More psychologists working on economic behavior problems with a view towards developing psychology would, however, give helpful contributions to economic psychology as an applied field. The applied field can be better served with new theories, models, and methods. If basic psychological research devotes more interest to economic behavior.

Economic Psychology as a Special Field of Study

A third way of viewing economic psychology is to treat it as a science on its own, combining psychology and economics and formulating theories that tie the two disciplines together. The focus is on the study of economic behavior and includes the study of the individual/the household as well as decision makers in business and in the public sector. George Katona who was by his first training a psychologist and later studied economics instituted the first research program in economic psychology. After a career as an economic journalist and investment advisor, he fell ill and had to change to something more quiet so he again started to do psychological research. His specialty was to utilize Gestalt theory in the study of learning and problem solving. His "Organizing and Memorizing" is a classic in the field and still widely cited. When World War II broke out, Katona used some of his psychological knowledge to warn against uncontrolled inflation, which he had experienced in Germany after the first World War. His book "War without Inflation" aroused interest among some leading economists. He was offered a job with the Cowles Commission which had the task of conducting research that could help solve the problems of a war and after-war economy.

In the middle 1940's Katona started a research program that involved asking consumers and businessmen about their expectations of their own financial status and the national economy. Katona first used economic psychology to designate the new field, but later changed to psychological economics and even later to behavioral economics. Economic psychology then became identified with the empirical study of expectations and attitudes regarding economic problems. The use of such studies quickly spread to other countries and became the concern of economists and to some extent statisticians. Katona's research, however, comprised much more than the study of expectations. It included saving, consumer spending habits, saving motives, attitudes towards inflation, and consumer motivation in general.

Katona was highly critical of abstract economic theory. He was mainly concerned with macroeconomic issues like the sales of durable goods, saving, and inflation. He complained that economic theory made completely wrong assumptions about behavior at the micro level so that aggregate predictions were mostly wrong. Economists tended to overlook the fact that most consumer behavior was based on routines and that the factors influencing genuine decision making were important to study empirically. He seems to have become more and more convinced that it was necessary to build up a special field of study (see e.g. KATONA [1975, 1979]). He advocated an economic-psychological theory that was descriptive and low-level, i.e. close to empirical observations. This theory would be a valuable complement or even replacement of the abstract economic theory and the empirical research based on it. Similar ideas about the role of psychology as provider of data on actual economic behavior is found in SIMON [1986].

In Europe, economic psychology is now usually defined as the psychological study of economic behavior at different levels of aggregation, from the individual/household to the decision makers at the macroeconomic level, and of factors influencing such behavior. It is mostly associated with the study of consumer behavior in a much broader sense than in Katona's work and it is thus in this respect similar to consumer psychology. The field also covers a number of other areas such as the psychology of saving, fiscal psychology, entrepreneurship, and unemployment. A distinction is often made between *macro-* and *micro-economic psychology*. Reviewers of recent publications in economic psychology have pointed out that there is no coherent framework. In fact, Katona had a simple micro model which was useful also at the macro level: saving/consumption is dependent on *ability* to save/consume and *willingness* to save/consume. Consumer ability to save/consume is defined as disposable income and willingness is assessed through interview data on financial expectations and attitudes. Later attempts at providing a more integrated framework for the field have been done, the most advanced one being the work by LEA et al. [1987] who try to combine psychological and economic reasoning.

When economic psychology is interpreted in this way it appears as a new field of study that is neither completely within the bounds of economics nor completely within those of psychology. It is notable that some of the professorial chairs in economic psychology are in psychology departments whereas the rest are in schools of business or in economics departments. The question about what road or roads economic psychology will be taking in the future is complex. What I shall deal with in the following mainly belongs to the area of macro-economic problems. First, some of the historical roots of economics and psychology are traced. The purpose is to sift out some ideas for the future of economic psychology in the three senses presented above. While the study of consumer behavior and influences on such behavior is well-established and accepted as an integral part of economic psychology, much more remains to be done in the area of macroeconomic psychology.

EARLY ECONOMICS AND PSYCHOLOGY

Economics as the Study of Self-Interest, Pleasure and Pain

The economic science was by ARISTOTLE [undated/1976] said to have wealth as its end. The science dealt with household and property management. Economics which was early called a science in addition, like psychology, comprised practical knowledge and was practiced outside of the supremacy of philosophy. Psychology was for many centuries a fundamental part of many other sciences and was taught within and as part of those (SCHÖNPFLUG, 1993). There thus existed applied psychology that was quite independent of philosophy and the more theoretical thinking about psychological problems, mostly consciousness and mind-body problems, in the parent discipline.

Some of the best discussions of psychological problems relating to economic behavior can be found in the publications of the classical and early neoclassical economists. Before Adam Smith economics was a science without human actors. There were two dominating schools. *The mercantilists* studied foreign trade and stressed its importance for a national economy. The role of the government was confined to controlling trade and in a way serving the merchants. *The physiocrats* who were mainly French saw agriculture and mining as the only real sources of wealth generation whereas all other activities were parasitic. The only role for government was to make sure that property was secure.

ADAM SMITH (1776/1982) introduced psychology in political economy by stressing the good consequences if man pursued his self-interest (self-love) and heeded some natural instincts. The forces of the market would then take care of creating a balanced economy—the work of the invisible hand. TARDE [1902] accused Smith of having forgotten the psychology he espoused in his "Theory of Moral Sentiments", when he wrote "The Wealth of Nations". Smith was

blamed for missing the fact that humans were social beings, interacting with others, and not exclusively pursuing their self-interest. For many years both before and after Tarde it has been held that Adam Smith changed his concept of man from *The Theory of Moral Sentiment* to *The Wealth of Nations*. Whereas Smith in the former book stressed consideration of other men's happiness in the pursuit of one's own happiness, he apparently spoke in favor of self-interest as the guiding principle in the latter.

SMITH [1759] talked about three components of virtue: prudence, benevolence and justice, and self-command, while SMITH [1776,119] asserted "It is not from the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from their regard to their own interest. We address ourselves, not to their humanity but to their self-love, and never talk to them of our own necessities but of their advantages." Smith here praised the effects of division of labor and according to more recent thinking this involved no disregard for benevolence. There is no incongruity between the first book and what is said in the later book according to the editors of SMITH [1759/1982,20-25]. They note that Smith himself did not see any difference. HAYEK [1978/1985,268] says: "It is an error that Adam Smith preached egotism: his central thesis said nothing about how the individual should use his increased product; and his sympathies were all with the benevolent use of the increased income. He was concerned with how to make it possible for people to make their contribution to the social product as large as possible and this he thought required that they were paid what their services were worth to those to whom they rendered them."

Bentham and utilitarianism focussed the interest of political economy on the problems for a government to create maximum happiness for its population. Self-interest was held to be the only motivation of human action and hedonism became the main psychological tenet of economics. Bentham and utilitarianism proclaimed the greatest good of the greatest number of people and saw this as a fulfillment of the self-interest. Each individual was assumed to be driven by the search for pleasure and the avoidance of pain, but also respecting the greatest good of the greatest number. In this manner, utilitarianism could be the foundation both for economic theory and for ethics. Later authors have found it more difficult to reconcile self-interest and hedonism with utilitarianism (see e.g. discussion by SEN [1979]).

Economics, mostly called political economy, became the science that dealt with human pleasure and pain. JEVONS [1871] and BÖHM-BAWERK [1888] although using somewhat different words both saw economics as the study of pleasure and pain which involved the study of human emotions. In a passage on economics and ethics JEVONS [1871/1911,23] described economics as follows: "The theory which follows is entirely based on a calculus of pleasure and pain; and the object of Economics is to maximize happiness by purchasing pleasure, as it were, at the lowest cost of pain." BÖHM-BAWERK [1888] described the subject matter of his field in terms of happiness that are clearly related to feelings of pain and pleasure, at the same time as he rejected hedonism and utilitarianism. Many contemporary psychologists were also interested in pleasure and pain, but mostly the more physiological aspects. Later, the experimental psychologists working on learning adopted the label of *reinforcement* to designate the effects of pleasurable or painful events. BORING [1950] refers to this as "a hedonism of the past" meaning that these psychologists were not interested in intentions ("hedonism of the future"), but rather in consequences after rewards and punishments. Reinforcement is still an important concept in the psychology of learning, especially in SKINNER's [1974] theory which has had some acceptance among economists (ALHADEFF [1982]).

In his introduction to "Principles of Economics", MARSHALL [1890/1947,1] said that economics is both a study of wealth and a branch of the study of man. "POLITICAL ECONOMY OR ECONOMICS is a study of mankind in the ordinary business of life; it examines that part of individual and social action which is most closely connected with the attainment and with the use of the material requisites of wellbeing." This is still a highly

psychological phrasing of the subject. It is noteworthy that Marshall used the words "A study of mankind in the ordinary business of life", presumably to distinguish the subject matter from that of psychology. The science of psychology was at that time still closely related to problems raised in philosophy rather than in everyday life.

EDGEWORTH [1881/1967], an economist who is sometimes mentioned also in the history of psychology took up to a critical scrutiny Jevons's idea of economics as the science of pleasure and pain. He asked for numerical measurements for the mathematical reasoning to be meaningful. "Professor Bain has shown[1] how one may correct one's estimate of one's pleasures upon much the same principle as the observations made with one's senses; how one may correctly estimate the pleasures of others upon the principle 'Accept identical objective marks as showing identical subjective states', notwithstanding personal differences, as of activity or demonstrativeness. This "moral arithmetic" is perhaps to be supplemented by a moral differential calculus, the Fechnerian method applied to pleasures in general. For Wundt has shown that sensuous pleasures may thereby be measured, and, as utilitarians hold, all pleasures are commensurable. The first principle of this method might be: Just perceivable increments of pleasure, of all pleasures for all persons, are equatable." (EDGEWORTH [1881/1967,60]).

As a support for his contention that utility can be measured, Edgeworth thus cited Fechner, Bain and Wundt, all three of whom are classified as psychologists in the history of psychology, although Fechner was a physiologist, Bain like Jevons a logician, and Wundt a medical doctor and philosopher. Edgeworth treated the Utilitarian Calculus of pleasure which was the basis for ethics as something separate from the Economical Calculus of Pleasure, which was the basis for economics. Earlier the two were treated as belonging together, but Edgeworth saw them as distinct. Attempts are nowadays being made of bringing ethics and economics closer together again (e.g. SEN [1987]; ETZIONI [1988]).

It is interesting to compare the economists' notions of feelings of pleasure and pain as needing no definition and the psychologists' efforts at about the same time to establish the true nature of feelings and emotions. The psychologists were influenced by the physiologists in their dealing with such matters. WILLIAM JAMES [1890] who became widely known for his "Principles of Psychology" which was published in 1890, is also known for his theory of feelings and emotions which was based on physiological assumptions and his own work in the laboratory (the James-Lange theory of emotions).

Developments in Economics and Psychology in the Early 1900's

It has been said that when economists started to develop abstract theory, economics took an important step away from history: it became a science which could make predictions (MANICAS [1987]). And it has made predictions. FRIEDMAN [1953] asserts that the true measure of the value of economics is the accuracy of the predictions it makes. History did not give up that easily. Towards the end of the nineteenth century there was a "Methodenstreit" in Germany involving Carl Menger who was in favor of abstract reasoning and Friedrich Schmoller who represented the historical approach (CALDWELL [1986]). To some extent the History School has returned into focus with institutional and evolutionary economics (HAUSMAN [1988,37]). In the Anglo-Saxon countries there was a fight between psychology and economics in which some economists grabbed arguments from the well-known psychological works of William James, William MacDougall and John Watson (see COATS [1976]).

FLORENCE [1927], a British economist, who was on the whole favorable towards using psychological theories in economics, rejected McDougall's theory of instincts as a foundation for economics. He did this on the ground that instincts left no room for considering costs or

sacrifices. Some deliberation of utility versus costs and other sacrifices was according to him a necessary feature of consumer choice. Later, attitude theories have been criticized for disregarding the cost or sacrifice aspects of behavior and for too much concentration on benefits. To some extent this criticism has been valid, but it should be noted that the attributes measured according to leading attitude theories comprise both costs and benefits and models like the new "Theory of Planned Behavior" combine attitudes with such variables as social norms and perceived control to predict behavior (see AJZEN [1991]).

A decisive blow to the role of psychology was dealt by ROBBINS [1935/1979]. He discussed the nature of economics and formulated a much-quoted definition of economics: "Economics is the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses." The definition does not mention need satisfaction which had earlier often been part and parcel of definitions of economics. This illustrates the fact that Robbins was hostile towards the science of psychology. He was particularly emphatic in his rejection of Behaviorism which in his view had misled some economists into rejecting the economic theory of subjective value as non-scientific since value could not be observed. Like many other economists Robbins referred to common-sense psychology as a support for the rationality postulate. "All that we need to assume as economists is the obvious fact that different possibilities offer different incentives, and that these incentives can be arranged in order of their intensity." (ROBBINS [1935/1979,40]). Robbins translated the rationality concept into something that was a pure logic of choice, with the main emphasis on consistency. It just involved knowing one's preferences and acting in accordance with them. Contrary to what is often assumed, Robbins made some room for apparently inconsistent behavior: "The marginal utility of not bothering about marginal utility is a factor of which account has been taken by the chief writers on the subjective theory of value from Böhm-Bawerk onwards." (ROBBINS [1935/1979,42])

Mainstream economics has developed a rather strict paradigm for research. CALDWELL [1986,10] gives the following description of the typical procedure in economic research: "If one were to reflect on what comprises scientific procedure in economics, the following set of instructions might emerge: Find a problem, model it as a maximization problem, derive some testable hypotheses (the predictions of the model), find empirical proxies for the theoretical constructs, do the econometrics, get your results. (It might well be added: If the results agree with the model, publish them; if not, find out why, and then publish them)." Caldwell notes that in the 50's and 60's, many macroeconomists did not follow this paradigm of Friedman's since their models did not yield any testable propositions.

Kant (BORING [1950]; DANZIGER [1990,19]) had declared that psychology could never become a science because psychology could not use mathematics nor experiments. Kant's successor Herbart showed that psychology could use mathematics so one step towards making psychology a science was taken. When psychologists started becoming oriented towards physiology, the experimental method and mathematics turned out not to be a problem. The birth of scientific psychology is often dated to 1879 when Wilhelm Wundt founded his laboratory in Leipzig. His work in the laboratory was essentially a combination of physiological psychology which had received an important push forward through Fechner's work published in 1860 and John Stuart Mill's work on associationism. Associationism starts with supposedly irreducible mental elements and assumes that learning and the development of higher processes consist mainly in the combination of those elements. So mind-body relationships and consciousness were the main preoccupation of the new psychological science. The approach meant that stimulus-response associations were seen as purely mechanical. This view was further enhanced in Watson's behaviorism and reached its apogee in Skinner's operant conditioning theory (SKINNER [1974]).

PSYCHOLOGY AND ECONOMICS: A BRIEF OVERVIEW

ROBBINS [1935] and many other economists emphatically reject the possibility and desirability of relying on scientific psychology; reliance on everyday experience suffices for making the simple psychological assumptions in economic theory plausible. Also according to ARROW [1963, 738], economic theory is fundamentally based on observations that are non-scientific in most psychologists' eyes. "The whole axiomatic approach can be thought of as crystallizing everyday or introspective observations." When the early economists discussed psychological problems that were taken from everyday life and out of concern with societal issues, they freely used introspection. The contemporary psychologists were preoccupied with research problems inspired by philosophy, but typically rejected introspection as inferior to the experimental method.

To what extent did the early economists use the results of scientific psychology? This is perhaps not a relevant question judging from what SCHUMPETER [1954,27-28] said in his "History of Economic Analysis". He attacked the view that psychology was the basis from which economics like every other social science must start and from which all fundamental explanation must be taken. "Actually, however, economists have never allowed their analysis to be influenced by the professional psychologists of their times, but have always framed for themselves such assumptions about psychical processes as they thought it desirable to make. On the one hand, we shall note this fact occasionally with surprise because there exist problems in economic analysis that might be attacked with advantage by methods worked out by psychologists." He then goes on to explain that using a psychic fact does not mean borrowing anything from professional psychology. "...I am simply formulating what rightly or wrongly I believe to be a fact of common experience. If we place ourselves on this standpoint, we shall find that there is much less of psychology about economic propositions than one might think at first sight."

While Schumpeter devoted considerable attention to professional psychology in his history of economics, his view is at the end quite similar to that of Robbins. Schumpeter was more concerned about the neglect of what he, following Max Weber's lead, called economic sociology. He distinguished between three component parts in economics: economic theory in which he included statistics, economic history, and economic sociology. He conceded that the use of psychoanalytic theory could be very useful in economic history.

Schumpeter was probably right in his assertion that the economists used professional psychology when they found it useful, and that, mostly, they did not find any use for it. Did they then mainly depend on common-sense psychology? First, a few words should be said about what scientific psychologists think about common-sense psychology. FLETCHER [1984,204] defines common sense in the following manner: "a cultural group's body of shared beliefs about the world". Common-sense psychology is then psychological beliefs that are shared by some cultural group. According to this view it can be studied through everyday language (ordinary language). Psychological knowledge has always been an ingredient in everyday life and more or less taken for granted and psychological science has had difficulties of finding its way with common-sense psychology. The latter is partly more advanced, partly lagging far behind scientific psychology according to a recent source (KELLEY [1992]).

Psychologists have a tendency to be somewhat doubtful about common-sense psychology. This is mainly because it is too easy to be unaware of the influence of common-sense psychology on psychological research and especially on its influence on interpretations of results. FLETCHER [1984,203] concludes that "...common sense is a valuable but inherently dangerous resource available to psychologists." This may also hold true for economists using common-sense psychology. SKINNER [1974.234], like most behaviorists, was very hostile towards common-sense psychology: "The disastrous results of common sense in the management of

human behavior are evident in every walk of life, from international affairs to the care of a baby, and we shall continue to be inept in all these fields until a scientific analysis clarifies the advantages of a more effective technology. It will then be obvious that the results are due to more than common sense."

If common-sense psychology is defined as above, it is probable that the classical and neoclassical economists did not entirely depend on common-sense psychology. Psychology did not exist as a scientific discipline that could give answers to questions concerning those problems that were of greatest concern to economists. Every social science and natural sciences like medicine had their own psychology (SCHÖNPFLUG [1993]). Observations of psychological phenomena were made by other disciplines while the philosophers who were interested in psychology were devoted to exploring more abstract thinking. Those who needed psychological knowledge often made rather astute observations of human behavior and were more discerning than the philosopher-psychologists. In certain periods, there were similarities in the thinking of economists and scientific psychologists. SCHUMPETER [1954] attributed these similarities to phraseological influences and the effects of *Zeitgeist* rather than to actual influence from psychology.

There are all the same some differences in how the early economists related to what was contemporary scientific psychology. Was Adam Smith depending on common-sense psychology or on more systematic observation when he wrote the following passage which is essentially the contents of prospect theory (KAHNEMAN and TVERSKY [1979]): "We suffer more, it has already been observed, [...] when we fall from a better to a worse situation, than we ever enjoy when we rise from a worse to a better. Security, therefore, is the first and the principal object of prudence. It is averse to expose our health, our fortune, our rank, or reputation, to any sort of hazard." (SMITH [1759/1982,213]).

One way for economists to deal with psychology was to cite as support for their reasoning about human behavior ideas and results from the works of psychologists. JEVONS [1871], for example, cited his colleague Alexander Bain who is considered to be the first British psychologist. He did so in many contexts and in particular when discussing feelings and emotions as part of developing marginal utility theory. As indicated above EDGEWORTH [1881] who contributed to economic theory by elaborating it on the basis of mathematical physics, referred to psychological research results from Fechner, Bain and Wundt, sometimes criticizing them.

A different approach to psychological science was taken by BÖHM-BAWERK [1888]. He made careful observations himself. This is still typical of the Austrian school, but the members of the School may, however, be accused of armchair psychologizing rather than heeding the findings of scientific psychology. Böhm-Bawerk gave an excuse for daring to deal with psychological issues. He complained that professional psychologists were as yet devoting little attention to the psychological problems that were of interest to the economist. His colleague MENGER [1871] did not cite any psychological research, but developed some psychological theory of his own, a need hierarchy which is similar to the (overused) one of Maslow. It is said that some Austrian psychologists were inspired by Menger's marginal utility theory to use the ideas in their study of religious behavior (SCHUMPETER [1954]). PARETO [1909] more or less developed his own psychology and he said that the attempts to refer to Fechner's law as a support for the idea of diminishing utility was unnecessary. Except for that he seems to have given few references to psychological science in his economic texts. According to ALBOU [1984] there is still a lot to learn from Pareto's reasoning for researchers in economic psychology.

It would seem that some economists like Jevons, Edgeworth and Marshall who developed the mathematical approach to economics were more inclined to cite the results of the science of

psychology. They somehow took the substance of their theory from psychology and used it as an argument and a support for the chosen mathematical form. As we all know, the psychological substance gradually lost in import and mathematics came to prevail. Psychology disappeared more and more from economic contexts, in spite of protests based on in turn experimental psychology, McDougall's theory of instincts, and Watson's behaviorism and its followers.

FISHER [1930] used psychological concepts in his development of economic theory. In his discussion of the factors that determined interest rates, he talked about subjective or psychic income and he suggested that impatience be used instead of time preference when spending versus saving was discussed. COATS [1976] mentions that Fisher in his doctoral dissertation treated the potential role of psychology in economics and found that the developments in scientific psychology were of little use. Fisher did not make any explicit references to scientific psychology. According to him, a major source of psychological ideas was a book by John Rae "The Sociological Theory of Capital" (RAE [1905]). This book was written by an educator with some background studies in medicine and political science and was first published in 1834 under a different title and was according to the author meant to be a critique of *The Wealth of Nations*. It contains a discussion of the desire to accumulate wealth that had influence on such economists as John Stuart Mill, Böhm-Bawerk, and Marshall.

To conclude this somewhat arbitrary selection of economists, I would like to say a few words about KEYNES (1936) as he appears in his main opus. He stated: "...the psychological law upon which we are entitled to depend with great confidence both *a priori* from our knowledge of human nature and from the detailed facts of experience, is that men are disposed, as a rule and on the average, to increase their consumption as their income increases, but not by as much as the increase in their income." (KEYNES [1936,96]). This sounds like common-sense psychology, but may be based on more than casual observation. SCHUMPETER [1954] called the law a statistical fact which it was unnecessary to give the rank of a behavioral law. Keynes did not refer to psychological science in this or any other context in the book, but he mentioned psychological factors quite frequently without giving any precise meaning to them except as used in everyday language.

In some contexts Keynes used the concept of *animal spirits* to designate what many other authors call psychological factors. He defined it as a kind of spontaneous optimism that makes entrepreneurs invest money in their ideas. Interestingly, Keynes may have been influenced by psychoanalysis when he formulated some of the ideas in his *General Theory* (WINSLOW [1986]). In one of his earlier works "A Treatise on Money" he discussed some of Freud's ideas in footnotes, but in his *General Theory* he did not at all refer to psychoanalysis. Winslow finds indirect evidence for psychoanalytic influences in Keynes's discussion of liquidity preference (anal fixation) and of animal spirits.

HAYEK [1978/1985,284] who like Schumpeter was not much of an admirer of Keynes said about Keynes: "Widely read as Keynes was in many fields, his education in economics was somewhat narrow." It appears that Keynes knew much more about psychoanalysis than about psychology (WINSLOW [1986]) except for his own psychological observations. He was after all engaged in practical affairs where he could make observations and he had many friends who were observers of society and human behavior (the Bloomsbury group).

Once the psychological foundations of economics were laid down, there was little room for psychology. The idea that characterizes economics is that economic theory is and can be based on a simple psychological law that will hold over time and space. If psychological science digs up new findings that lead to questioning this law which agrees with common sense, such findings will rather be a problem for psychology than for economics. There are economists and others who have wanted to reject the rationality postulate and completely rewrite economic

theory. SCITOVSKY [1976], [1986] is a notable example and so are AIHADEFF [1982] and MAITAL [1982]. Their efforts have not been met with much enthusiasm by their economist colleagues.

This selection of economists who have dealt explicitly with psychological assumptions in their verbal treatments of economics is not meant to prove or even suggest that the psychological reasoning of these economists has been in any way essential to the development of economic theory as it appears today. The fact that psychological phenomena were dealt with in verbal contexts may even have facilitated the abandonment of psychology since this provided means of assuming away psychological phenomena. The increasing focus on equilibrium theory, indifference curves and revealed preferences saved economists from having to pay attention to individual idiosyncracies of human beings. The interesting fact to note is that economics now has finally reached the stage where serious use is found for results and methods from scientific psychology.

Economics Used by Psychologists

Despite the common charge, especially from socio-economists, that economics is an imperialistic science, economic models have not penetrated into other social sciences to any dominating extent. There are areas where economic thinking has gained some acceptance such as public choice theory in political science and some areas in sociology where the rationality concept is exploited (COLEMAN [1990]). There are few examples of such influence on psychology, except in the study of decision making. This bold statement does not agree with the theme in, for example, RADNITZKY and BERNHOLZ [1987], but I have a feeling that there is often a confounding of economists' influence on society and their (much smaller) influence on other social sciences.

As noted earlier there was some influence from the early Austrian economists on contemporary psychologists. MENGER's [1871] ideas informed some study of religious behavior. It is said that Böhm-Bawerk's work influenced the Austrian act psychologists who later reached fame as Gestalt psychologists (ENDRES [1987]). Their opposition against the elementism and atomism that characterized experimental psychology had some similarities with what Böhm-Bawerk asserted about the contemporary psychologists in his book on capital.

ARROW [1963,726] suggests that Freud was influenced by the Austrian economists of his time when he formulated his theory of libido and what was called "the economic principle" of balance between the ego and the id. "Freud's use of the term 'economic' in his discussions of metapsychology is remarkably precise. He is referring to the allocation of the scarce resources of the libido among competing uses, just as the individual allocates his scarce income among competing commodities. It might be interesting for the historian of thought to see what, if any, influence the thought of economists had in Freud's development. Vienna in the 1870s and 1880s was the center of a great school of economists who were very much interested in the utility theory--indeed, this group was one of its originators."

In recent years, there has been more communication between the fields of psychology and economics in certain research areas. Research on decision making under risk and uncertainty is nowadays truly interdisciplinary. A first presentation of economic and statistical research on decision making under risk and uncertainty to psychologists was made by EDWARDS [1954]. His article aroused a lot of interest among psychologists for experimental work in the area. Herbert Simon has had considerable influence on cognitive psychology, but not as an economist, rather as a computer scientist.

HURSH et al. [1987] represent a new field within psychology which they say is heavily influenced by economics: behavioral analysis. These authors have found economic theory an

inspiring source of concepts and ideas for their psychological research which belongs to Skinner's tradition. An early account of this common ground was given by LEA [1978]. AINSLIE [1975] relied to some extent on classical and neoclassical economists in his discussion of specious rewards and how to overcome addiction. In a recent book, he has launched the concept of piceoeconomics to designate economics within an individual (AINSIE [1992]).

There has been a remarkable lack of interest among psychologists for dealing with economic issues and even more so, trying to learn from economic research. One reason for the lack of interest in economic theory may primarily relate to the fact that most psychologists dislike the rationality concept. This may have kept psychologists from studying economic behavior which in principle should be at least as interesting as other behavior. The laws governing behavior are presumably valid also for economic behavior. The question then becomes one of the researcher's interest in confirming findings in a specific area about which s/he knows little and which is the guarded specialty of another discipline. Those psychologists who have been interested in economic behavior have seen it as an area of application rather than basic research and many of them have been attracted by business as consultants and employees ever since the beginning of this century.

Psychology is not an integrated science with a dominating research paradigm such as in economics. There are conflicting paradigms, sometimes still called "schools", and there is a focus on developing theory for limited behavioral areas rather than for behavior in general. Earlier on the majority of psychologists probably had a basic training in experimental psychology with an emphasis on methodology. Nowadays the basic training seems to vary much more and there is more of an early specialization. Economic psychology is still a too rare option among specializations offered to psychology students. For economists who are looking for complementary training in psychological research there are also very few opportunities. The International Association for Research in Economic Psychology (IAREP) arranges annual meetings and with some intervals summer schools to encourage psychologists and economists to undertake interdisciplinary research on economic behavior.

THE CURRENT ROUTES IN ECONOMIC PSYCHOLOGY

What is the present status of psychology and economics? In the next section, glimpses of research in economic psychology will be given. It should be noted that although much of the research noted here has appeared under the label of economic psychology, being published in e.g. the Journal of Economic Psychology, as doctoral dissertations or in books with economic psychology as part of the title or subtitle, some of the research relating to economics and psychology is innocent of this label. It must be admitted that much of this research is not ordinarily classified as belonging to economic psychology. Much of the research in economic psychology concerns consumer behavior. Since there are many good overviews of consumer behavior research, although, being written by U.S. authors they tend to neglect European research, I shall not deal with this research (see e.g. ROBERTSON and KASSARJIAN [1991]). An excellent survey of psychological research relating to economic issues is given by LANE [1991] who proposes new dimensions in the study of the market economy. Developments in areas relating to macroeconomic problems will be dealt with in the first place: expectations, consumer satisfaction, saving behavior, taxation, entrepreneurship, and time preferences.

Expectations in Macroeconomic Psychology

KATONA's [1975] measurement of financial expectations has proved its mettle and ability to survive. The "Index of Consumer Sentiment" (which is now usually called "Index of Consumer Expectations") was introduced in the late 1940's and is still, with minor modifications, used in many countries. The reason for its survival is obviously its ability to predict in a useful manner certain economic developments related to turning points in the business cycle. It is capable of

short-term predictions of changes in interest rates (as far as six months ahead), changes in the Consumer Price Index (three months ahead) and changes in the unemployment rate (nine months ahead) (CURTIN [1992]). There is some divergence of opinion about the use of the Index in time-series analysis. There are examples of significant contributions to explaining variance in savings and consumer durable sales over time, when the measures are combined with economic variables in multiple regression equations of time-series data (BIART and PRAET [1987]; van RAAIJ and GIANOTTEN [1990]). There are also examples of failures to explain any significant portion of the variance in sales of durables and in savings (for an overview see VANDEN ABBEELE [1988]). On the whole, the acceptance of the Index for short-run forecasts is high and the Index is often cited in the mass media.

In economic psychology, expectations are seen as partly based on previous experience, partly on new information. When little new information is attended to, the past experience dominates. When new information of import is received, it determines the expectations (van RAAIJ [1989]). These hypotheses were derived from psychological theory of problem solving by KATONA [1975] and they were tested on data from many surveys. In economics, rational expectations theory is based on the use of the best available information which in MUTH's [1961] original formulation was expressed as follows: "...expectations, since they are informed predictions of future events, are essentially the same as the predictions of the relevant economic theory." The theory involves an extension of the rationality concept to expectations. While the rational expectations theory has had enormous influence on financial economics and macroeconomics (see e.g. KLAMER [1984]), there is still a wide gap between the empirical measurements of information and expectations in economic psychology and this theory. Some of the ideas associated with the theory could probably be put to productive use in the study of actual expectations and behavior, such as the assumptions of arbitrage effects.

The mass media, through reporting on ill events and signs of poor prospects, are assumed to build up expectations, especially of an impoverished future (van RAAIJ [1989]). KATONA (1975) suggested that in some cases a *social learning* process was started in which a large number of people were simultaneously reached by important information and reacted in the same fashion. What the mass media reported could have great influence on such social learning. Such effects could not be explained or foreseen on the basis of economic theories of expectations according to Katona and this was a reason for frequent measurements of consumer and business expectations.

Only a few studies exist of the correlation between mass media reports and economic developments. Katona's evidence was mostly indirect. An overview is given by van RAAIJ [1989]. He concludes that there is often an overinterpretation of tendencies: "If reporters interpret random and/or minor deviations from the trend as structural trends attributing the deviation to internal causes, people generally will form or revise expectations based on this information. Both mass media reporters and the public at large will base their conclusions on imperfect information." (van RAAIJ [1989,490]). An interesting study of how headlines reporting violence on the front page of the New York Times correlated with department store sales in New York, can serve as an example of how such studies can be done. SCHACHTER et al. [1986,240] found that the more violence was reported, the smaller were the sales. Having carefully checked for other possible explanations, the authors concluded "...we are inclined to accept the interpretation that reports of violence in the mass media can create a community-wide state of uneasiness sufficient to affect department store sales." In another study they investigated fluctuations on the New York Stock Exchange and found that emotions, induced by such factors as reports on airplane crashes and presidential elections, seemed to explain certain deviations from market efficiency.

In a Dutch study, van VELDHOVEN and KEDER [1988] found quite high correlations between newspaper economic news and the Index of Consumer Sentiment in the Netherlands.

Their tentative conclusion was that there was in particular an influence of negative news. What constituted positive news was somewhat more puzzling. It seemed as though the absence of economic news sometimes had a positive effect on expectations. Using the concept "pessimistic rumination", ZULLOW [1991] tested media influence on consumer optimism or pessimism and on economic growth. He carried out content analyses of pessimistic themes in popular music and in Time magazine and found that there was a correlation with the Index of Consumer Sentiment and the Gross National Product. Moreover, he traced a time sequence with popular songs as the first step or indication of growing pessimism in the U.S.A., followed by changes in the Index and later in GNP.

Whereas the Index of Consumer Expectations is based on a few simple interview questions asking about changes in the present and the future financial status of the household and of the national economy, studies of perceptions and expectations of inflation often ask for quantitative estimates. In general, people seem to have a fairly good grasp of how much prices have increased during the last year (JONUNG [1981]; BLOMQUIST [1983]; WÄRNERYD and WAHLUND [1985]; BATCHELOR [1986]). When asked about coming price level changes over the next twelve months, people on average seem to be able to make reasonably good predictions. Although many respondents in a survey hesitate to make any prediction, those who do, in some cases provide an average estimate that is amazingly close to the actual development (as assessed after twelve months). The way the questions are asked appears to be of great importance. When people are asked how much the prices of certain goods have gone up or how the price of a basket of goods has changed the results are much less accurate. HUDSON [1989] concluded that there are two sets of inflation expectations. One is based on direct experience of price changes and can be measured in surveys through asking questions about price changes for shopping baskets of goods. The second set derives from information about price changes received from the mass media and from other people. It is covered through questions about percentage changes in price levels. On average the indirect estimates tend to be much closer to reality than the direct ones which wildly overestimate price rises.

Consumer Well-Being and Satisfaction

Much research in economic psychology has been devoted to questions of well-being (e.g. STRUMPEL [1974] and [1976]; for a report on a program of research see GROENLAND [1989]). A particular aspect is consumer satisfaction or rather dissatisfaction, since many studies have focused on consumer complaints (HUNT [1991]). Recently, FORNELL [1992]; see also JOHNSON and FORNELL [1991] has shown that it is possible to construct an index of consumer satisfaction for various industries. The Consumer Satisfaction Barometer (CSB) is a measure at the aggregate level. It has so far not been related to macroeconomic issues, but could conceivably develop into something similar to the Index of Consumer Expectations. The CSB has been tried out in Sweden and reports on customer satisfaction in over 30 industries and for over 100 corporations (FORNELL [1992]). It involves measuring the *quality* of the marketing of goods and services and captures (1) general satisfaction, (2) confirmation of expectations about the properties of goods and services, and (3) the distance from the customer's hypothetical ideal product. The analysis reported shows how the CSB is related to customer loyalty and market share.

Saving Behavior

Much of the differences in saving between countries and over time periods can be explained by economic and demographic factors, but there still remains a role for psychological research to play. The fact that at every level of income there are people who save and people who do not save illustrates that economic and demographic variables may not tell the whole truth. The psychology of saving was for long solely the concern of economists who attributed saving to a quality called "thrift". Classical and neo-classical economists devoted a lot of interest to factors

that influenced thrift (for a review, see WÄRNERYD [1989]). It was suggested that impatience and lack of self-control were important factors and it was assumed that such factors were associated with low education, low income, and low age. Some economists provided rather elaborate psychological theories which were quite different from what the contemporary psychologists were busy studying.

Survey-based research on saving started in the 1940's under the leadership of George Katona. This research established a paradigm for asking people about their savings, saving attitudes and saving motives that has later been adopted by economists in many countries. More recently, a number of economic psychologists have turned their attention to the study of saving behavior. ÖLANDER and SEIPEL [1970] presented a behavioral model of saving behavior with a highly cognitive texture. It was based on the decision making process. The primary purpose for this model was to dovetail results from empirical studies and to note where there were major gaps in the research. They found that there were actually very few attempts to study psychological variables in the context of saving behavior except for the work carried out and inspired by George Katona. The second purpose was for the model to guide further research. JULANDER [1975] and LINDQVIST [1981] used the model as a starting point for their empirical studies of saving behavior and developed simpler versions of it.

Survey studies have asked about saving motives much along the lines suggested by early economists like FISHER [1930]. A consistent finding is the great importance of saving to have a buffer ("the notorious rainy day" in Fisher's terms). More recently, the idea of saver groups who may respond differently to economic stimuli has been introduced. WAHLUND and WÄRNERYD [1987] suggest the existence of four saver types: wealth managers, goal savers, buffer savers, and cash managers. The groups are characterized by their main motives for saving. Cluster analyses of Swedish survey data support the meaningfulness of the categories. Knowing something about the properties of these groups, the potential consequences of, for example, a tax incentive plan for stimulating saving can be approached more meaningfully than if all savers are treated as one aggregate.

Researchers in economic psychology have over the last few years displayed an increasing interest in the study of saving and also of debt (see e.g. LIVINGSTONE and LUNT [1992]). Laboratory experiments, with high mundane realism, have been introduced as a way of studying children's saving (WEBLEY et al. [1991]). Judging from papers read at the most recent annual conferences in economic psychology, many studies that are under way involve developments of new models for explaining the psychology of saving. Some of the projects make serious attempts to combine economic and psychological thinking. RITZEMA [1992] is an example. The life-cycle hypothesis is the object of continuous research efforts with the purpose of making its explanations and predictions better. One type of effort involves using psychological theory. A recent example is given by SHEFRIN and THALER [1988] who present the behavioral life-cycle hypothesis. The latter stresses the importance for saving of individual self-control, self-imposed rules and precommitments. It has succeeded in stimulating saving research that includes measures of self-control, the use of mental accounts and time horizons.

Taxation

The commerce between the taxpayer and the tax authorities has attracted a lot of research interest (see LEWIS [1982]; *The Journal of Economic Psychology*, special issues May 1982 and December 1992). Tax evasion has received most attention, but there are also studies of how work motivation is affected by taxes (CALDERWOOD and WEBLEY [1992]; von GRUMBKOW and WÄRNERYD [1986]) and studies of the effects of changes in tax systems (WAHLUND [1992]; SCHOLZ et al. [1992]).

Psychological theories of various kind have been employed to explain tax evasion. Prospect theory predicts that paying money to make up for insufficient pay-as-you-earn tax is a problem that leads to more tax evasion than if the taxpayer expects return of money (ROBBEN [1991]). Equity theory has been invoked to explain why people evade taxes. Some taxpayers may have a feeling that, after tax, they are not equitably recompensed for their work. WÄRNERYD and WALERUD [1982] found some support for the idea in their data which came from a representative sample of Swedish men and among other things involved the endorsement of attitude statements relating to inequity. COWELL [1992] submits that there is enough substance in earlier findings to make it worthwhile to include equity/inequity in a formal model of tax evasion.

WAHLUND [1989] reports on perceptions of tax changes after a change in the Swedish tax system 1983-1985. He found that there was a delay in perceptions of lowered income taxes and that the changes were perceived to be very small. The effects of the tax system change on self-reported tax evasion were negligible (WAHLUND [1992]). In their research on the U.S.A. Tax Reform Act of 1986, SCHOLZ et al. [1992,653] found that there was a relatively weak linkage between objective changes and subjective responses. Other influences played a major role in shaping responses to the tax reform. "In particular, prior attitudes of the individual toward the state and the attitudes of others with whom the individual talks--legitimacy and discussion--influence evaluations and changes in attitude *independently* of the objective impacts of reform on the individual." The rather complex analyses give a clear indication that psychological variables are essential for understanding and possibly predicting the outcome of a tax reform. The authors present a cognitive model that neatly disentangles the complex set of influences.

A group of researchers in economic psychology at Erasmus University Rotterdam (HESSING et al. [1988]) have carried out an ambitious program of research on tax evasion. They have proposed a socialpsychological model that explains tax evasion and they have shown empirical support for the model. The model explains tax evasion in terms of situational and personal instigations and constraints (WEIGEL et al. [1987]). On the basis of their experiments comparing tax evasion assessed by tax auditors with self-reported tax evasion they question the use of self-reports (ELFFERS [1991]; ROBBEN [1991]). Their conclusion after reviewing their own and others' efforts to assess tax evasion is worth noting: "Tax evasion is a highly complex behavioural act which is fragmented over many different periods in a tax year, based on different detailed aspects of tax obligations, occurring in different spheres of life, and under everchanging situational, economic, fiscal, social and psychological conditions. Last but not least, it occurs with changing and multifaceted levels of conscious intentions to comply or evade." (ELFFERS et al. [1992,564]). The sad conclusion is that it is not feasible to capture all essential aspects of tax evasion through simple measurements.

Entrepreneurship

The study of entrepreneurship has attracted many researchers, comparatively few of them psychologists (see BROCKHAUS [1982]; WÄRNERYD [1988]). There is no specifically psychological theory of entrepreneurship, but elements of several theories are used in the study of entrepreneurship. There is, for example, Atkinson's theory of achievement motivation (ATKINSON [1957], [1964]) and MCCLELLAND's [1961], [1975] work on need achievement and the power motive. In MCCLELLAND [1961] aggregate measures of achievement motivation, assessed through content analyses of children's books, were correlated with macroeconomic measures of economic activity. Entrepreneurs are according to McClelland and his followers characterized by high need achievement implying that they tend to choose tasks (activities) with moderate probabilities of success, in laboratory studies approximated as $p=0.50$. They want to succeed and they want to be proud of their achievements which they cannot be if the success is too easily won. If, on the other hand, the task is too difficult, they may not be able to succeed without the help of some luck.

According to MCCLELLAND and WINTER [1969], Atkinson's model implies that if Government can increase the probability of success for business firms from low to moderate, the high need achievers who have the highest potential for entrepreneurship will be attracted to business. So will also the low need achievers, but not to the same extent. If high fear of failure prevails, however, the effects will rather be for people to leave business, if the probability of success increases from low to moderate. If the probability of success increases from moderate to high, high need achievers will find business uninteresting and seek other challenges with moderate levels of success probabilities. Those with high fear of failure will be attracted since they see chances of being successful. The effects of financial support, i.e. creating opportunities, will depend on the psychological characteristics of the population. Psychological variables are essential for understanding the outcome of subsidizing programs.

A common criticism is that psychological variables have not proved that they can contribute substantially to explaining variations in entrepreneurship. It is said that structural variables belonging to the environment are more important. A conclusion that lies near at hand is that variables belonging to the environment, usually called structural or system variables, and psychological variables must be combined in the analysis of entrepreneurship. Certain types of motivation which may be related to personality characteristics must be combined with cognitive factors and be assumed to operate under certain situational circumstances. DAVIDSSON [1989] presents a structural equation model which in its essentials is quite simple and still seems to provide a good structure for an analysis of entrepreneurship problems and policy measures to stimulate entrepreneurship.

The model has the following components. There are three objectively defined factors: ability, need, and opportunity, all of them defined in terms of objective indicators. In the model they are combined with the corresponding subjective variables: perceived ability, perceived need, and perceived opportunity. These variables are measured through subjective report from the individual. Together they influence a fourth subjective variable: entrepreneurial motivation. All of the variables contribute to the dependent variable "observed entrepreneurship". The model mixes objective, structural data with subjective data of cognitive and motivational phenomena. The model has been empirically tested on what the author calls "continued entrepreneurship", i.e. the growth of small firms. The empirical tests so far indicate that the model has good explanatory power. The author summarizes his findings as follows (DAVIDSSON [1989,210]): "Objective measures of Ability, Need, and Opportunity are capable of explaining a substantial share of the variation in past growth rates. Need factors appear relatively more important than the other two. The results also leave considerable room for explanations based on the manager's subjectively perceived Ability, Need, and Opportunity."

The Study of Time Preferences

Jevons, Böhm-Bawerk and Marshall, all stressed that the value of a future good decreased very rapidly with the first lapse of time and then more slowly. BÖHM-BAWERK [1888] said that in particular when the undervaluation (or lower evaluation of the future good) was caused by defects of will, there might be a strong difference between an enjoyment which offered itself at the very moment, and one which did not. There was, however, only a small or no difference between an enjoyment which was pretty far away, and one which was farther away. The decreasing value of an object with increasing remoteness in future time, is in economics expressed as an exponential function with a constant discount factor. Self-control was by the early economists considered to be an important factor for explaining saving behavior. The degree of self-control can be conceptualized as degree of time preference. Persons with low self-control are assumed to have a strong preference for the present. They can be said to ask a high interest rate in their discount functions for future events or in more psychological terms be impatient. A common assumption is that discount functions fall very rapidly at first and then level off in the long run.

MARSHALL [1890/1947,225] wrote: "Cases are not rare of men who alternate between earning two or three pounds a week and being reduced to the verge of starvation: the utility of a shilling to them when they are in employment is less than that of a penny when they are out of it, and yet they never attempt to make provision for the time of need." In a footnote he added: "They 'discount' the future benefits....at the rate of many thousands per cent per annum."

In a study of Dutch households, ANTONIDES [1988] found that there were actually differences in discounting factors between people who saved and those who did not save. For the former the (by Antonides calculated) monthly discount factor was 0.014 % while it was 0.026% for non-savers. Non-savers with an optimistic view of the future had the highest discount factor: 0.035 % per month. Recent economic-psychological studies in the Netherlands indicate that measurements of people's time preferences contribute significantly to explaining saving (RITZEMA [1992]). Time preferences were measured on a simple scale, representing different degrees of impulsiveness-thriftiness, in an interview survey of savings and saving habits.

The fact that people had a tendency to change their plans over time led the economist STROTZ [1956] to suggest a way of describing the phenomenon of changing tastes and also to give some advice as to how the individual could safeguard against such behavior when it was unwanted. He proposed two ways to impose self-control so that undesirable crossings of discount functions could be prevented. People could a) precommit themselves or b) use the strategy of consistent planning. *Precommitment* can be exemplified by Ulysses's behavior in the episode with the Sirens; he tied himself to the mast so that he could not yield to the temptation. *The strategy of consistent planning* consists in choosing the best of the plans that the individual counts on actually being able to follow. This entails some provision against deficient self-control in the future. Strotz, like Böhm-Bawerk and Fisher, thought that the proper discount functions were established early in life through the teaching of parents and through social pressure from the environment. Children and other "uninstructive" groups in society were too impatient in their discounting of the future.

AINSLIE [1975], a psychiatrist, further expanded Strotz' ideas and related them to psychological research. He described a discount function that strongly overvalued objects and events that were close to the present. On the basis of psychological research, he suggested that impulsiveness can be described in terms of a discount function, but that the functions do not follow the course of exponential functions with a constant exponent. He concludes that a hyperbola, meaning that the expected value of the object divided by the time before an object becomes available, is preferable to an exponential expression. The idea is further developed in AINSLIE [1992].

Some recent thinking and experimental work on phenomena that were in fact touched upon by some of the classical economists have produced some hypotheses of great interest in connection with the characteristics of time preferences. A basic idea behind the new thinking is that people in general prefer improvement to deterioration. They tend to order things in such a way that a climax is reached rather than to put the best things first and risk an anticlimax. This implies that a *negative* time preference may at least sometimes be possible as an alternative to the generally assumed positive time preference (the strength of which is, however, assumed to vary). Economic utility theory predicts that things are rank ordered from most preferred to least preferred and chosen in that order, given a budget constraint. According to LOEWENSTEIN [1987] and [1988], there are two kinds of utility to consider: the utility derived from actual consumption and the utility derived from anticipating future consumption. The latter, if positive, is called *savoring* and if negative, *dread*. When there is a preference for an improvement order, some preferred events will be postponed and some non-

preferred events may be wanted earlier. The latter would for example be the case if a person waits for a painful operation: it is better to get it over with.

Summarizing the research evidence which is still rather slim, LOEWENSTEIN and PRELEC [1991, 348] state: "Savoring and dread contribute to the preference for improvement because for gains, improving sequences allow decision makers to savor the best until the end of the sequence. With losses, getting the worst outcomes over with quickly eliminates dread. Adaptation and loss aversion induce preference for improvement because, over time, people tend to assimilate to ongoing stimuli and to evaluate new stimuli relative to their assimilation level. Thus, changes in, rather than levels of, consumption are the carriers of value. Improving sequences afford a continual series of positive departures (gains) from one's adaptation level; declining sequences provide a series of relative losses."

The conclusions cited above seem valid for actions that are sequential rather than single: "The differences that do prevail should instead perhaps be traced to different styles of mental bookkeeping, which will alone produce different degrees of impatience even with a common underlying rate of time preference. Any operation, custom, or habit that causes the stream of purposeful activity to fragment into a series of isolated choices, each involving a simple intertemporal tradeoff, and each unrelated to a larger plan, encourages impatient choices. Whereas the integral sequence frame, by fusing events into a coherent sequence, promotes concern for the future, thereby creating an appearance of negative time preference." (LOEWENSTEIN and PRELEC [1991, 351]). In a recent paper, LOEWENSTEIN and PRELEC [1993] elaborate the hypothesis on negative time preference. They indicate that the evidence so far is stronger for the existence of negative time preference when painful objects or events are involved (dread) than when the objects or events are attractive. The improvement order is interpreted as meaning that individuals do not want deteriorations, but rather an even spread of consumption over time. This is surprisingly similar to the main assumption of the life-cycle hypothesis.

ECONOMIC PSYCHOLOGY: EVALUATION AND OUTLOOK

The brief review of research areas in economic psychology does not do justice to the whole gamut of research interests in economics and psychology. Hopefully, it shows enough to indicate that there is a potential for fruitful interdisciplinary efforts. With respect to economics, the most accepted role for psychology is to furnish richer data which can be used to serve in testing economic models. The main and primary task of economic psychology is in my view to provide better descriptions of real economic behavior. This is similar to what SIMON [1986, xv-xvii] says: "At the level of the business firms and the consumer, classical theory gives few hints as to how real human beings make real decisions in a world that rarely provides them with the data and computational resources that would be required to apply, literally, the theory of the textbooks. We need empirically valid theories of how business organizations operate, of how investment decisions are actually made, of how the levels of salaries and wages are determined, and of the growth and sizes of business firms." This involves constructing empirical theory in the spirit of George Katona rather than to try to improve economic theory by attacking the rationality postulate, at least not in the short run. It does not preclude further explorations of the limits of rationality in real life, for example, looking at how compatible with individual goal hierarchies behavioral acts are. The objectives of economic psychology are then very similar to those of behavioral economics.

Improving the prospects for economic psychology as a separate field of study will, however, require the building an economic-psychological theoretical framework that to some extent can integrate ideas and results. Macroeconomic predictions have often failed during the last decades and there is disagreement about theories; somehow the theories do not in the public eye live up to their pretense. Some economists suggest that descriptions and explanations at

less aggregated levels than the macroeconomic level are necessary for arriving at better macroeconomic explanations and predictions. There is then a quest for something like the market segment concept used in marketing theory and marketing practice and familiar also in economic psychology.

The fundamental idea is that there are clusters of consumers (citizens) who can share certain characteristics while the clusters are distinct from one another. Clusters based on saving motives were mentioned above (WAHLUND and WÄRNERYD [1987]). In their study of taxpayers, WÄRNERYD and WALERUD [1982] distinguished between three clusters of taxpayers differing in their attitude towards tax evasion and in self-reported tax evasion. Knowing some important characteristics of each cluster (segment) gives a better understanding of potential reactions to tax evasion measures. Katona's ideas about the role of intervening variables, between macroeconomic stimuli and macroeconomic reactions show some similarity to the concept of segmentation. He distinguished between degrees of optimism-pessimism in society. This dimension can easily be interpreted in terms of segments—one composed of optimists and the other of pessimists. KATONA [1975] found differences between optimists and pessimists in reactions to a tax cut. Changes in the size of each segment can be followed over time through the interview surveys that are made in many countries. Reactions to economic and financial policy measures can be expected to vary between segments with different psychological characteristics.

I have said little about the differences in approaches and interpretations that despite the progress often characterize economists' and psychologists' attempts to deal with the interdisciplinary problems. Economists are, for example, used to working with specified models in mathematical form whereas psychologists tend more towards employing cruder, often verbal models. The design and interpretation of laboratory experiments differ somewhat between the disciplines (HEY [1992]). Concepts like expectation, attitude, risk perception and risk aversion are denotatively and connotatively different in the two disciplines (ARROW [1982]; SELTEN [1991]; SMITH [1991]).

Even when skillfully used by behavioral economists, psychology is usually given a minor role to play. It is given a service role and is not seen as a major means of progressing. Subjective data are at best treated as supplementary and are on the whole, in the mainstream economist's opinion, best to avoid as unreliable. When psychologists deal with economic problems their focus is normally on what psychology rather than economics can get out of the study. Researchers are in the first place interested in developing the field in which they have their basic training. Expeditions into other disciplines are undertaken on the sole proviso that the basic discipline profits from it. Psychologists tend to avoid economic variables that are important to economists and economists do not use psychology to its full potential. So there is room for a separate field of study in which economic and psychological thinking can be combined: economic psychology.

Rather than being a source of critique leveled against economics, economic psychology is in this sense a challenge to economics to the extent that the research can provide descriptions and explanations of economic behavior that are better at least for some purposes than those advanced by economic theory. For psychology, economic psychology as a separate field of study involves the study of a specific category of behavior, namely economic behavior, using also non-psychological variables and models that are derived from economics. It needs to be separated out from psychology since the study presupposes consideration not only of economic as well as psychological factors, but also some understanding of the economic research paradigm which takes some special training.

Viewed in this way, economic psychology will not seek direct confrontation with economics of the mainstream kind. Indirectly it may still become involved in arguments through the

descriptions provided. For example, many psychological studies indicate that economic incentives in some contexts are less important than specific non-economic incentives. SEN [1979, 101] bluntly states: "To run an organization *entirely* on incentives to personal gain is pretty much a hopeless task." Take the case of pollution. Many economists favor increases in costs of pollution to keep firms and people outside firms from polluting. On the basis of psychological research, some authors maintain that using economic disincentives in such cases entail consequences that are not wanted and that there may be non-economic incentives that could produce better results (see e.g. the review by CAPORAEL et al. [1989]; TOMER [1991])

CONCLUDING REMARKS

Research in economic psychology is carried out by economists and psychologists and by many researchers trained in management and business administration. In earlier centuries, thinkers could contribute to the development of both economics and psychology. Bernard Mandeville, Adam Smith, Jeremy Bentham, and above all, John Stuart Mill, all gave important insights to both disciplines. For the major part of the twentieth century, there have been little understanding and communication between the two sciences. The last few decades have again witnessed contributions to both sciences from researchers like George Katona, Herbert Simon, Daniel Kahneman and Amos Tversky, to name only the most outstanding among those. This may be interpreted as a sign of increasing convergence after, say, one hundred years of clear divergence.

The future of economic psychology will depend on whether there is a demand for its services. Macroeconomic psychology, in particular, has to prove itself. The crucial question is to what extent the results are seen as interesting and useful not only by researchers but also by practitioners in various positions. KEYNES [1936, 383-384] noted the importance to practical men of what economists say: "At the present moment people are unusually expectant of a more fundamental diagnosis; more particularly ready to receive it; eager to try it out, if it should be even plausible. But apart from this contemporary mood, the ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist." "...for in the field of economic and political philosophy there are not many who are influenced by new theories after they are twenty-five or thirty years of age, so that the ideas which civil servants and politicians and even agitators apply to current events are not likely to be the newest."

I have focussed on macroeconomic psychology since I think that this area is most in need of encouragement. After all, the usefulness of psychological research in matters pertaining to the micro level, especially the consumer choice of products, is well established. It is comparatively easy for a researcher to make a good career if s/he specializes in the microeconomic psychology of consumer behavior. There is a demand for such research from practitioners and from other disciplines relating to management. There is less demand for macropsychological research on economic behavior, even resistance to the whole idea. The ideas of some defunct economists may be an encumbrance not only to practitioners, but also to theoreticians. Who listens to a psychologist when s/he is talking about economic affairs? The answer is now that there is some listening and even requests for opinions and information directed to economic psychologists: there is some realization that psychological factors affecting economic behavior can be fruitfully studied and commented on not only by economists, but also by (some) psychologists. It is essential that there be a demand for more complex and thus interdisciplinary answers to economic questions and the insight that segments of the population, differing with respect to psychological properties must often be examined to answer apparently macro level questions.

REFERENCES

- AINSLIE, G. [1975], "Specious Rewards. A Behavioral Theory of Impulsiveness and Impulse Control," *Psychological Bulletin*, 82(4), 463 - 496.
- AINSLIE, G. [1992], *Picoeconomics: The Strategic Interaction of Successive Motivational States within the Person*. Cambridge University Press: Cambridge.
- AJZEN, I. [1991], "The Theory of Planned Behavior," *Organizational Behavior and Human Decision Processes*, 50, 179 - 211.
- AKERLOF, G.A. and W.T. DICKENS [1982], "The Economic Consequences of Cognitive Dissonance." *American Economic Review*, 72(3), 307 - 319.
- ALBOU, P. [1984] *La psychologie économique*. Presses Universitaires de France: Paris.
- ALHADEFF, D.A. [1982], *Microeconomics and Human Behavior. Towards a New Synthesis of Economics and Psychology*. University of California Press: Berkeley, CA.
- ANASTASI, A. [1964], *Fields of Applied Psychology*. McGraw-Hill Book Company: New York.
- ANTONIDES, G. [1988], *Scrapping a durable consumption good*, Doctoral dissertation. Erasmus University: Rotterdam.
- ARISTOTLE [undated/1976], *The Ethics of Aristotle. The Nicomachean Ethics*, Penguin Books: Harmondsworth, Middlesex, England.
- ARROW, K.J. [1963], "Utility and Expectation in Economic Behavior," pp. 724 - 752 in: S. Koch (ed.), *Psychology: Study of a Science*, Vol. 6, McGraw-Hill: New York.
- ARROW, K.J. [1982], "Risk Perception in Psychology and Economics," *Economic Inquiry*, 20, 1 - 9.
- ATKINSON, J.W. [1957], "Motivational Determinants of Risk Taking Behavior," *Psychological Review*, 64, 359 - 372.
- ATKINSON, J.W. [1964], *An Introduction to Motivation*, American Book/Van Nostrand/Reinhold: New York.
- BATCHELOR, R.A. [1986], "The Psychophysics of Inflation," *Journal of Economic Psychology*, 7, 269 - 290.
- BECKER, G.S. [1976], *The Economic Approach to Human Behavior*, The University of Chicago Press: Chicago IL.
- BIART, M. and P. PRAET [1987], "The Contribution of Opinion Surveys in Forecasting Aggregate Demand in the Four Main EC Countries," *Journal of Economic Psychology*, 8(4), 409 - 428.
- BLOMQUIST, H.C. [1983], "On the Formation of Inflationary Expectations: Some Empirical Evidence from Finland, 1979-1980," *Journal of Economic Psychology*, 4, 319-334.

BÖHM-BAWERK, E. von [1888/1912]. *Positive Theorie des Kapitaless*. Dritte Auflage. Zweiter Halbband. Verlag der Wagner'schen Universitäts-Buchhandlung: Innsbruck. (First published in 1888).

BORING, E. G. [1950], *A History of Experimental Psychology*, 2nd Ed. Prentice-Hall: Englewood Cliffs, NJ.

BROCKHAUS, R.H. Sr. [1982], "The Psychology of the Entrepreneur, pp. 39-57 in: C.A. Kent, D.L. Sexton, and K.H. Vesper (eds.), *Encyclopedia of Entrepreneurship*, Prentice-Hall, Inc.: Englewood Cliffs, NJ.

CALDERWOOD, G. and P. WEBLEY [1992], "Who Responds to Changes in Taxation? The Relationship between Taxation and Incentive to Work," *Journal of Economic Psychology*, 13(4), 735 - 748.

CALDWELL, B.J. [1986], "Economic Methodology and Behavioral Economics: An Interpretive History, pp. 5-17 in: B. Gilad and S. Kaish (eds.), *Handbook of Behavioral Economics*, JAI Press: Greenwich, CT.

CAPORAEL, L.R., R.M. DAWES, J.M. ORBELL, and A.J.C. van de KRAGT [1989], "Selfishness Examined: Cooperation in the Absence of Egoistic Incentives," *Behavioral and Brain Sciences*, 12, 683 - 739.

COATS, A.W. [1976], "Economics and Psychology: the Death and Resurrection of a Research Programme," pp. 43-64 in: S.J. Latsis (ed.), *Method and Appraisal in Economics*, Cambridge University Press: Cambridge.

COATS, A. W. [1988], "Economics and Psychology: A Resurrection Story," pp. 211-225 in: P. Earl (ed.), *Psychological Economics. Development, Tensions, Prospects*, pp. 211-225. Dordrecht, The Netherlands: Kluwer Academic Publishers.

COLEMAN, J.S. [1990], *Foundations of Social Theory*, The Belknap Press of Harvard University Press: Cambridge MA.

COWELL, F.A. [1992], "Tax Evasion and Inequity," *Journal of Economic Psychology*, 13(4), 521 - 543.

CURTIN, R. T. [1992], "An Interview with Richard Curtin," *ISR Newsletter*, Institute for Social Research, The University of Michigan, 17(3), 8, 10.

DANZIGER, K. [1990], *Constructing the Subject. Historical Origins of Psychological Research*. Cambridge University Press: Cambridge.

DAVIDSSON, P. [1989], *Continued Entrepreneurship and Small Firm Growth*. Doctoral dissertation, The Stockholm School of Economics: Stockholm.

de MARCHI, N. and M. BLAUG (eds.) [1991], *Appraising Economic Theories. Studies in the Methodology of Research Programs*. Edward Elgar: Aldershot.

EDGEWORTH, F.Y. [1881/1967]. *Mathematical Psychics. An Essay on the Application of Mathematics to the Moral Sciences*. Augustus M. Kelley Publishers: New York. Reprints of Economic Classics.

EDWARDS, W. [1954], "The Theory of Decision Making," *Psychological Bulletin*, 51, 380 - 417.

- ELFFERS, H. [1991], *Income Tax Evasion. Theory and Measurement*, Kluwer: Deventer.
- ELFFERS, H., H.S.J. ROBBEN, and D.J. HESSING [1992], "On Measuring Tax Evasion." *Journal of Economic Psychology*, 13(4), 545 - 567.
- ENDRES, A.M. [1988], "Subjectivism, Psychology, and the Modern Austrians: A Comment," pp. 121-124 in: P. Earl (ed.), *Psychological Economics. Development, Tensions, Prospects*, Kluwer Academic Publishers: Dordrecht.
- ETZIONI, A. [1988], *The Moral Dimension. Toward a New Economics*. The Free Press: New York..
- FISHER, I. [1930], *The Theory of Interest*, Macmillan: London.
- FLETCHER, G.J.O. [1984], "Psychology and Common Sense." *American Psychologist*, 39, 203 - 213.
- FLORENCE, P.S. [1927]. *Economics and Human Behaviour. A Rejoinder to Social Psychologists*, Kegan Paul, Trench, Trubner and Co. Ltd.: London.
- FORNELL, C. [1992], "A National Customer Satisfaction Barometer: the Swedish Experience," *Journal of Marketing*, 56, 6 - 21.
- FRIEDMAN, M. [1953], *Essays in Positive Economics*, University of Chicago Press: Chicago, IL.
- GROENLAND, E. A.G. [1989], *Socio-Economic Well-Being and Behavioral Reactions: A Panel Study of People Drawing Benefits from the Dutch National Social Security System*, Tilburg University Press: Tilburg, The Netherlands.
- von GRUMBKOW, J. and K.-E. WÄRNERYD [1986], "Does the Tax System Ruin the Motivation to Seek Advancement?" *Journal of Economic Psychology*, 7(2), 221 - 243.
- HAUSMAN, D.M. (ed.) [1988], *The Philosophy of Economics: An Anthology*, Cambridge University Press: Cambridge MA.
- HAUSMAN, D.M. [1991], "On Dogmatism in Economics: The Case of Preference Reversals," *Journal of Socio-Economics*, (20/3), 205 - 225.
- HAYEK, F.A. von [1978/1985], *New Studies in Philosophy, Politics, Economics and the History of Ideas*, The University of Chicago Press and Routledge & Kegan Paul Ltd: Chicago, IL and London.
- HESSING, D.J., K.A. KINSEY, H. ELFFERS, and R.H. WEIGEL [1988], "Tax Evasion Research: Measurement Strategies and Theoretical Models," pp. 516-537 in: W. F. van Raaij, G. M. van Veldhoven, and K.-E. Wærnyrd (eds.), *Handbook of Economic Psychology*, Kluwer Academic Publishers: Dordrecht.
- HEY, J.D. [1992], "Experiments in Economics--and Psychology," pp. 85-98 in: S.E.G. Lea., P. Webley, and B.M. Young (eds.), *New Directions in Economic Psychology. Theory, Experiment and Application*, Edward Elgar: Aldershot, Hants, England.
- HIRSCHMAN, A.O. [1965], "Obstacles to Development: A Classification and a Quasi-Vanishing Act," *Economic Development and Cultural Change*, 13(July), 385 - 393.

- HUDSON, J. [1989], "Perceptions of Inflation," pp. 77-91 in: K.G. Grunert and F. Ölander (eds.), *Understanding Economic Behavior*. Kluwer Academic Publishers: Dordrecht.
- HUNT, K. [1991], "Consumer Satisfaction, Dissatisfaction, and Complaining Behavior," *Journal of Social Issues*, 47, 107 - 119.
- HURSH, S.R. and R.A. Bauman [1987], "The Behavioral Analysis of Demand," pp. 117-165 in: L. Green and J.H. Kagel (eds.), *Advances in Behavioral Economics*. Vol. 1, Ablex Publishing Corporation: Norwood, NJ.
- JAMES, W. [1890/1983], *The Principles of Psychology*, Harvard University Press: Cambridge MA.
- JEVONS, W.S. [1871/1911], *The Theory of Political Economy*. 4th ed. Macmillan and Co., Limited: London. (First published in 1871).
- JOHNSON, M. and C. FORNELL [1991], "A Framework for Comparing Customer Satisfaction Across Individuals and Product Categories," *Journal of Economic Psychology*, 12(2), 267 - 286.
- JONES, L.V. [1959]. "Prediction of Consumer Purchase and the Utility of Money," *Journal of Applied Psychology*, 43, 334 - 337.
- JONUNG, L. [1981], "Perceived and Expected Rates of Inflation in Sweden," *American Economic Review*, 71, 961 - 968.
- JULANDER, C.-R. [1975], *Sparande och effekter av ökad kunskap om inkomstens användning. (Saving Behavior and the Effects of Increased Knowledge of Income Use)*, Doctoral Dissertation, The Stockholm School of Economics: Stockholm. (English abstract.)
- KAHNEMAN, D. and A. Tversky [1979], "Prospect Theory: An Analysis of Decision under Risk," *Econometrica*, 47, 263 - 291.
- KATONA, G. [1940], *Organizing and Memorizing. Studies in the Psychology of Learning and Teaching*, Columbia University Press: New York..
- KATONA, G. [1942], *War without Inflation. The Psychological Approach to Problems of War Economy*. Columbia University Press: New York.
- KATONA, G. [1975], *Psychological Economics*. Elsevier: New York..
- KATONA, G. [1979]. "Toward a Macropsychology." *American Psychologist*, 34, 118 - 126.
- KELLEY, H.H. [1992], "Common-Sense Psychology and Scientific Psychology," *Annual Review of Psychology*, 43, 1 - 23.
- KEYNES, J.M. [1936]. *The General Theory of Employment, Interest and Money*. Macmillan: London..
- KEYNES, J.N. [1917/1988], "The Scope and Method of Political Economy," pp. 70 - 98 in: D.M. Hausman (ed.), *The Philosophy of Economics*, Cambridge University Press: Cambridge.
- KLAMER, A. [1984], *The New Classical Macroeconomics. Conversations with the New Classical Economists and Their Opponents*, Wheatsheaf Books Ltd.: Brighton Sussex.

- LAKATOS, I. [1978], *The Methodology of Scientific Research Programmes*. Edited by J. Worrall and G. Currie. Cambridge University Press: Cambridge.
- LANE, R. [1991], *The Market Experience*, Cambridge University Press: Cambridge.
- LATSIS, S.J (ed.) [1976], *Method and Appraisal in Economics*. Cambridge University Press: Cambridge.
- LEA, S.E.G. [1978], "The Psychology and Economics of Demand," *Psychological Bulletin*, 85, 441 - 466.,
- LEA, S.E.G., R.M TARPY, and P. WEBLEY [1987], *The Individual in the Economy. A Survey of Economic Psychology*, Cambridge University Press: Cambridge.
- LEA, S.E.G., P. WEBLEY, and B.M. YOUNG [1992] "Economic Psychology: A New Sense of Direction," pp. 1-12 in: S.E.G. Lea, P. Webley, and B.M. Young (eds.), *New Directions in Economic Psychology. Theory, Experiment and Application*. Edward Elgar: Aldershot, Hants, England.
- LEWIS, A. [1982], *The Psychology of Taxation*. Martin Robertson: Oxford.
- LINDQVIST, A. [1981] "A Note on Determinants of Household Saving Behavior," *Journal of Economic Psychology*, 1(1), 37 - 59.
- LIVINGSTONE, S.M. and P.K. LUNT [1992], "Predicting Personal Debt and Debt Repayment: Psychological, Social and Economic Determinants," *Journal of Economic Psychology*, 13(1), 111 - 134.
- LOEWENSTEIN, G. [1987], "Anticipation and the Evaluation of Delayed Consumption," *The Economic Journal*, 97(September), 666 - 684.
- LOEWENSTEIN, G. [1988], "Frames of Mind in Intertemporal Choice," *Management Science*, 34(February), 200 - 214.
- LOEWENSTEIN, G. and D. PRELEC [1991], "Negative Time Preference," *American Economic Review*, 81(AEA Papers and Proceedings), (May), 347-352.
- LOEWENSTEIN, G. and D. PRELEC [1992], "Preferences for Sequences of Outcomes," *Psychological Review*, 100(4), 91 - 108.
- MACHINA, M.J. [1990], "Choice under Uncertainty: Problems Solved and Unsolved," pp. 90-132 in: K.S. Cook and M. Levi (eds.), *The Limits of Rationality*, University of Chicago Press: Chicago and London.
- MAITAL, S. [1982], *Minds, Markets, and Money*, Basic Books: New York.
- MANDEVILLE, B. [1732/1924], *The Fable of the Bees: or, Private Vices, Publick Benefits*. With a Commentary Critical, Historical, and Explanatory by F.B. Kaye. Vols. 1 and 2. Oxford University Press: London. (First published 1712 to 1732).
- MANICAS, P.T. [1987], *A History and Philosophy of the Social Sciences*. Basil Blackwell: Oxford.
- MARSHALL, A. [1890/1947], *Principles of Economics: An Introductory Volume*, 8th ed. Macmillan: London. (First published in 1890).

- MCCLELLAND, D.C.[1961], *The Achieving Society*, van Nostrand: Princeton NJ.
- MCCLELLAND, D.C. (1975), *Power: The Inner Experience*, Irvington: New York.
- MCCLELLAND, D.C. and D.G. WINTER [1969], *Motivating economic achievement*, The Free Press: New York.
- MENGER, C. [1871/1923], *Grundsätze der Volkswirtschaftslehre*, Hölder-Pichler-Tempsky: Vienna.. (First published in 1871).
- MILL, J.S. [1848/1985], *Principles of Political Economy: with Some of Their Applications to Social Philosophy*, Penguin Books: Harmondsworth, Middlesex.
- MUTH, J.F.[1961], "Rational Expectations and the Theory of Price Movements," *Econometrica*, 29, 315 - 335.
- ÖLANDER, F. and C.M. SEIPEL [1970], *Psychological Approaches to the Study of Saving*, Studies in Consumer Savings, No. 7, The Bureau of Economic and Business Research, University of Illinois: Urbana- Champaign.
- PARETO, V. [1909/1971], *Manual of Political Economy*, Augustus M. Kelley: New York.
- RADNITZKY, G. and P. BERNHOLZ (eds.) [1987], *Economic Imperialism. The Economic Method Applied Outside the Field of Economics*. Paragon House Publishers: New York.
- RAE, J. [1834/1905], *The Sociological Theory of Capital*. The Macmillan Co.: New York.
- RITZEMA, J. [1992], *An Extended and Behavioral Life Cycle Model*, Unpublished manuscript Dept. of Economic Sociology and Economic Psychology, Erasmus Universiteit Rotterdam.
- ROBBEN, H.S.J. [1991], *A Behavioral Simulation and Documented Behavior Approach to Income Tax Evasion*, Kluwer: Deventer.
- ROBBINS, L. [1935/1979] "The nature of Economic Generalizations, pp.36-46 in: F. Hahn and M. Hollis (eds.), *Philosophy and Economic Theory*, Oxford University Press: Oxford. (First published in 1935).
- ROBERTSON, T.S. and H.H. KASSARJIAN (eds.) [1991], *Handbook of Consumer Behavior*. Prentice-Hall: Englewood Cliffs, NJ.
- SCHACHTER, S., D.C.HOOD, P.B. ANDREASSEN, and W.GERIN [1986], "Aggregate Variables in Psychology and Economics: Dependence and the Stock Market, pp.237-272 in: B. Gilad and S. Kaish (eds.), *Handbook of Behavioral Economics*, Vol.B, JAI Press: Greenwich CT.
- SCHOLZ, J.T., K.M. MCGRAW, and M.R. STEENBERGEN [1992], "Will Taxpayers Ever Like Taxes? Responses to the U.S. Tax Reform Act of 1986," *Journal of Economic Psychology*, 13(4), 625 - 656.
- SCHÖNPFUG, W. [1993] "Applied Psychology: Newcomer with a Long Tradition," *Applied Psychology*, 42(1), 5 - 30.
- SCHUMPETER, J.A. [1954], *History of Economic Analysis*. Oxford University Press: New York.

SCITOVSKY, T. [1976], *The Joyless Economy: An Inquiry into Human Satisfaction and Consumer Dissatisfaction*. Oxford University Press: New York.

SCITOVSKY, T. [1986], *Human Desire and Economic Satisfaction. Essays on the Frontiers of Economics*, Harvester Wheatsheaf: New York and London.

SELTEN, R. [1991], "Evolution, Learning, and Economic Behavior," *Games and Economic Behavior*, 3, 3 - 24.

SEN, A.K.[1979], "Rational Fools: A Critique of the Behavioural Foundations of Economic Theory," pp. 87-109 in: F. Hahn and M. Hollis (eds.), *Philosophy and Economic Theory*. Oxford University Press: Oxford.

SEN, A. [1987], *On Ethics and Economics*. Basil Blackwell: Oxford.

SHEFRIN, H.M. and R.H. THALER [1988], "The Behavioral Life-Cycle Hypothesis," *Economic Inquiry*, 26, 609 - 643.

SIMON, H.A. [1986], "Preface," pp. xv-xvi in: B.Gilad and S. Kaish (eds.), *Handbook of Behavioral Economics*, Vol. A, JAI Press: Greenwich CT.

SKINNER, B.F. [1974], *About Behaviorism*. Alfred A. Knopf: New York.

SMITH, A. [1759/1982], *The Theory of Moral Sentiments*, Edited by D.D. Raphael & A.L. Macfie, Liberty Classics: Indianapolis IN. (First published in 1776).

SMITH, A. [1776/1982], *An Inquiry into the Nature and Causes of the Wealth of Nations*. Penguin Books: Harmondsworth, Middlesex. (First published in 1776).

SMITH, V.L. [1991], "Rational Choice: The Contrast between Economics and Psychology," *Journal of Political Economy*, 99(4), 877 - 897.

STROTZ, R.H. [1956], "Myopia and Inconsistency in Dynamic Utility Maximization," *Review of Economic Studies*, 23(3), 165 - 180.

STRUMPEL, B. (ed.) [1974], *Subjective Elements of Well-Being*, OECD: Paris.

STRUMPEL, B. (ed.) [1976], *Economic Means for Human Needs: Social Indicators of Well-Being and Discontent*, Survey Research Center, University of Michigan: Ann Arbor MI.

TARDE, G. [1902], *La psychologie économique*. Alcan: Paris. (2 volumes).

THALER, R.H. [1992], *The Winner's Curse. Paradoxes and Anomalies of Economic Life*. The Free Press. A Division of Macmillan, Inc.: New York.

THALER, R.H. and H. M. SHEFRIN, [1981], "An Economic Theory of Self-Control," *Journal of Political Economy*, 89, 392 - 406.

TOMER, J.F. [1991], "Social Responsibility in the Human firm: Towards a New Theory of the Firm's External Relationships," *Paper Presented at the IAREP/SASE Conference "Interdisciplinary Approaches to the Study of Economic Problems."* *Stockholm School of Economics*: Stockholm, June 16-19.

VANDEN ABEELE, P. [1988], "Economic Agents' Expectations in a Psychological Perspective, pp. 478-515 in: W.F. van Raaij, G. van Veldhoven, and K.-E. Wärmeryd (eds.), *Handbook of Economic Psychology*, Kluwer Academic Publishers: Dordrecht.

van RAAIJ, W.F. [1989], "Economic News, Expectations and Macro-Economic Behavior," *Journal of Economic Psychology*, 10(4), 473-493.

van RAAIJ, W.F. and H.J. GIANOTTEN [1990], "Consumer Confidence, Expenditure, Saving, and Credit," *Journal of Economic Psychology*, 11(0),

van RAAIJ, W.F., G.M. van VELDHOVEN, and K.-E. WÄRNERYD (eds.) [1988], *Handbook of Economic Psychology*, Kluwer Academic Publishers: Dordrecht.

van VELDHOVEN, G.M. and C. KEDER [1988], "Economic News and Consumers' Sentiment," in: *Proceedings from the 13th Annual Conference of the International Association for Research in Economic Psychology*: Leuven, Belgium.

WAHLUND, R. [1989], "Perception and Judgement of Marginal Tax Rates after a Tax Reduction, pp. 135-179 in: K.G. Grunert and F. Ölander (eds.), *Understanding Economic Behaviour*, Kluwer Academic Publishers: Dordrecht.

WAHLUND, R. [1992], "Tax Changes and Economic Behavior: the Case of Tax Evasion," *Journal of Economic Psychology*, 13(4), 657 - 677.

WAHLUND, R. and K.-E. WÄRNERYD [1987], "Aggregate Saving and the Saving Behavior of Saver Groups, *Skandinaviska Enskilda Banken Quarterly Review*, 3, 52 - 64.

WÄRNERYD, K.-E. [1988], "The Psychology of Innovative Entrepreneurship, pp. 404-447 in: W.F. van Raaij, G. van Veldhoven, and K.-E. Wärmeryd (Eds.), *Handbook of Economic Psychology*, Kluwer Academic Publishers: Dordrecht.

WÄRNERYD, K.-E. [1989], "On the Psychology of Saving: An Essay on Economic Psychology, *Journal of Economic Psychology*, 10, 515 - 541.

WÄRNERYD, K.-E. and R. WAHLUND [1985], "Inflationary Expectations," pp. 327-335 in: H. Brandstätter and E. Kirchner (eds.), *Economic Psychology*. Rudolf Trauner Verlag: Linz.

WÄRNERYD, K.-E. and B. WALERUD [1982], "Taxes and Economic Behavior: Some Interview Data on Tax Evasion in Sweden," *Journal of Economic Psychology*, 2(2), 187 - 211.

WEBLEY, P., M. LEVINE, and A. LEWIS [1991], "A Study in Economic Psychology: Children's Saving in a Play Economy," *Human Relations*, 44, 127 - 146.

WEIGEL, R.H., D.J. HESSING, and H. ELFFERS [1987] "Tax Evasion Research: A Critical Appraisal and Theoretical Model," *Journal of Economic Psychology*, 8, 215 - 235.

WINSLOW, E.G. [1986], "Keynes and Freud: Psychoanalysis and Keynes's Account of the "Animal Spirits" of Capitalism," *Social Research*, 53, 549 - 578.

ZULLOW, H.M. [1991], "Pessimistic Rumination in Popular Songs and Newsmagazines Predict Economic Recession via Decreased Consumer Optimism and Spending," *Journal of Economic Psychology*, 12(3), 501 -526.

Discussion Paper Series, CentER, Tilburg University, The Netherlands:

(For previous papers please consult previous discussion papers.)

No.	Author(s)	Title
9225	H. Suehiro	Robust Selection of Equilibria
9226	D. Friedman	Economically Applicable Evolutionary Games
9227	E. Bomhoff	Four Econometric Fashions and the Kalman Filter Alternative - A Simulation Study
9228	P. Borm, G.-J. Otten and H. Peters	Core Implementation in Modified Strong and Coalition Proof Nash Equilibria
9229	H.G. Bloemen and A. Kapteyn	The Joint Estimation of a Non-Linear Labour Supply Function and a Wage Equation Using Simulated Response Probabilities
9230	R. Beetsma and F. van der Ploeg	Does Inequality Cause Inflation? - The Political Economy of Inflation, Taxation and Government Debt
9231	G. Almekinders and S. Eijffinger	Daily Bundesbank and Federal Reserve Interventions - Do they Affect the Level and Unexpected Volatility of the DM/\$-Rate?
9232	F. Vella and M. Verbeek	Estimating the Impact of Endogenous Union Choice on Wages Using Panel Data
9233	P. de Bijl and S. Goyal	Technological Change in Markets with Network Externalities
9234	J. Angrist and G. Imbens	Average Causal Response with Variable Treatment Intensity
9235	L. Meijdam, M. van de Ven and H. Verbon	Strategic Decision Making and the Dynamics of Government Debt
9236	H. Houba and A. de Zeeuw	Strategic Bargaining for the Control of a Dynamic System in State-Space Form
9237	A. Cameron and P. Trivedi	Tests of Independence in Parametric Models: With Applications and Illustrations
9238	J.-S. Pischke	Individual Income, Incomplete Information, and Aggregate Consumption
9239	H. Bloemen	A Model of Labour Supply with Job Offer Restrictions
9240	F. Drost and Th. Nijman	Temporal Aggregation of GARCH Processes
9241	R. Gilles, P. Ruys and J. Shou	Coalition Formation in Large Network Economies

No.	Author(s)	Title
9242	P. Kort	The Effects of Marketable Pollution Permits on the Firm's Optimal Investment Policies
9243	A.L. Bovenberg and F. van der Ploeg	Environmental Policy, Public Finance and the Labour Market in a Second-Best World
9244	W.G. Gale and J.K. Scholz	IRAs and Household Saving
9245	A. Bera and P. Ng	Robust Tests for Heteroskedasticity and Autocorrelation Using Score Function
9246	R.T. Baillie, C.F. Chung and M.A. Tieslau	The Long Memory and Variability of Inflation: A Reappraisal of the Friedman Hypothesis
9247	M.A. Tieslau, P. Schmidt and R.T. Baillie	A Generalized Method of Moments Estimator for Long-Memory Processes
9248	K. Wärneryd	Partisanship as Information
9249	H. Huizinga	The Welfare Effects of Individual Retirement Accounts
9250	H.G. Bloemen	Job Search Theory, Labour Supply and Unemployment Duration
9251	S. Eijffinger and E. Schaling	Central Bank Independence: Searching for the Philosophers' Stone
9252	A.L. Bovenberg and R.A. de Mooij	Environmental Taxation and Labor-Market Distortions
9253	A. Lusardi	Permanent Income, Current Income and Consumption: Evidence from Panel Data
9254	R. Beetsma	Imperfect Credibility of the Band and Risk Premia in the European Monetary System
9301	N. Kahana and S. Nitzan	Credibility and Duration of Political Contests and the Extent of Rent Dissipation
9302	W. Güth and S. Nitzan	Are Moral Objections to Free Riding Evolutionarily Stable?
9303	D. Karotkin and S. Nitzan	Some Peculiarities of Group Decision Making in Teams
9304	A. Lusardi	Euler Equations in Micro Data: Merging Data from Two Samples
9305	W. Güth	A Simple Justification of Quantity Competition and the Cournot-Oligopoly Solution
9306	B. Peleg and S. Tijs	The Consistency Principle For Games in Strategic Form

No.	Author(s)	Title
9307	G. Imbens and A. Lancaster	Case Control Studies with Contaminated Controls
9308	T. Ellingsen and K. Wärneryd	Foreign Direct Investment and the Political Economy of Protection
9309	H. Bester	Price Commitment in Search Markets
9310	T. Callan and A. van Soest	Female Labour Supply in Farm Households: Farm and Off-Farm Participation
9311	M. Pradhan and A. van Soest	Formal and Informal Sector Employment in Urban Areas of Bolivia
9312	Th. Nijman and E. Sentana	Marginalization and Contemporaneous Aggregation in Multivariate GARCH Processes
9313	K. Wärneryd	Communication, Complexity, and Evolutionary Stability
9314	O.P. Attanasio and M. Browning	Consumption over the Life Cycle and over the Business Cycle
9315	F. C. Drost and B. J. M. Werker	A Note on Robinson's Test of Independence
9316	H. Hamers, P. Borm and S. Tijs	On Games Corresponding to Sequencing Situations with Ready Times
9317	W. Güth	On Ultimatum Bargaining Experiments - A Personal Review
9318	M.J.G. van Eijs	On the Determination of the Control Parameters of the Optimal Can-order Policy
9319	S. Hurkens	Multi-sided Pre-play Communication by Burning Money
9320	J.J.G. Lemmen and S.C.W. Eijffinger	The Quantity Approach to Financial Integration: The Feldstein-Horioka Criterion Revisited
9321	A.L. Bovenberg and S. Smulders	Environmental Quality and Pollution-saving Technological Change in a Two-sector Endogenous Growth Model
9322	K.-E. Wärneryd	The Will to Save Money: an Essay on Economic Psychology
9323	D. Talman, Y. Yamamoto and Z. Yang	The $(2^{n+m+1} - 2)$ -Ray Algorithm: A New Variable Dimension Simplicial Algorithm For Computing Economic Equilibria on $S^n \times R_m^n$
9324	H. Huizinga	The Financing and Taxation of U.S. Direct Investment Abroad
9325	S.C.W. Eijffinger and E. Schaling	Central Bank Independence: Theory and Evidence

No.	Author(s)	Title
9326	T.C. To	Infant Industry Protection with Learning-by-Doing
9327	J.P.J.F. Scheepens	Bankruptcy Litigation and Optimal Debt Contracts
9328	T.C. To	Tariffs, Rent Extraction and Manipulation of Competition
9329	F. de Jong, T. Nijman and A. Röell	A Comparison of the Cost of Trading French Shares on the Paris Bourse and on SEAQ International
9330	H. Huizinga	The Welfare Effects of Individual Retirement Accounts
9331	H. Huizinga	Time Preference and International Tax Competition
9332	V. Feltkamp, A. Koster, A. van den Nouweland, P. Borm and S. Tijs	Linear Production with Transport of Products, Resources and Technology
9333	B. Lauterbach and U. Ben-Zion	Panic Behavior and the Performance of Circuit Breakers: Empirical Evidence
9334	B. Melenberg and A. van Soest	Semi-parametric Estimation of the Sample Selection Model
9335	A.L. Bovenberg and F. van der Ploeg	Green Policies and Public Finance in a Small Open Economy
9336	E. Schaling	On the Economic Independence of the Central Bank and the Persistence of Inflation
9337	G.-J. Otten	Characterizations of a Game Theoretical Cost Allocation Method
9338	M. Gradstein	Provision of Public Goods With Incomplete Information: Decentralization vs. Central Planning
9339	W. Güth and H. Kliemt	Competition or Co-operation
9340	T.C. To	Export Subsidies and Oligopoly with Switching Costs
9341	A. Demirgüç-Kunt and H. Huizinga	Barriers to Portfolio Investments in Emerging Stock Markets
9342	G.J. Almekinders	Theories on the Scope for Foreign Exchange Market Intervention
9343	E.R. van Dam and W.H. Haemers	Eigenvalues and the Diameter of Graphs
9344	H. Carlsson and S. Dasgupta	Noise-Proof Equilibria in Signaling Games
9345	F. van der Ploeg and A.L. Bovenberg	Environmental Policy, Public Goods and the Marginal Cost of Public Funds

No.	Author(s)	Title
9346	J.P.C. Blanc and R.D. van der Mei	The Power-series Algorithm Applied to Polling Systems with a Dormant Server
9347	J.P.C. Blanc	Performance Analysis and Optimization with the Power-series Algorithm
9348	R.M.W.J. Beetsma and F. van der Ploeg	Intramarginal Interventions, Bands and the Pattern of EMS Exchange Rate Distributions
9349	A. Simonovits	Intercohort Heterogeneity and Optimal Social Insurance Systems
9350	R.C. Douven and J.C. Engwerda	Is There Room for Convergence in the E.C.?
9351	F. Vella and M. Verbeek	Estimating and Interpreting Models with Endogenous Treatment Effects: The Relationship Between Competing Estimators of the Union Impact on Wages
9352	C. Meghir and G. Weber	Intertemporal Non-separability or Borrowing Restrictions? A Disaggregate Analysis Using the US CEX Panel
9353	V. Feltkamp	Alternative Axiomatic Characterizations of the Shapley and Banzhaf Values
9354	R.J. de Groof and M.A. van Tuijl	Aspects of Goods Market Integration. A Two-Country-Two-Sector Analysis
9355	Z. Yang	A Simplicial Algorithm for Computing Robust Stationary Points of a Continuous Function on the Unit Simplex
9356	E. van Damme and S. Hurkens	Commitment Robust Equilibria and Endogenous Timing
9357	W. Güth and B. Peleg	On Ring Formation In Auctions
9358	V. Bhaskar	Neutral Stability In Asymmetric Evolutionary Games
9359	F. Vella and M. Verbeek	Estimating and Testing Simultaneous Equation Panel Data Models with Censored Endogenous Variables
9360	W.B. van den Hout and J.P.C. Blanc	The Power-Series Algorithm Extended to the <i>BMAP/PH/1</i> Queue
9361	R. Heuts and J. de Klein	An (s, q) Inventory Model with Stochastic and Interrelated Lead Times
9362	K.-E. Wärneryd	A Closer Look at Economic Psychology

P.O. BOX 90153, 5000 LE TILBURG, THE NETHERLAND

Bibliotheek K. U. Brabant



17 000 01133574 3