

Chapter published in: *Routledge Handbook of Behavioral Economics*, Roger Frantz, et al. (editors), 2016

George Katona: A Founder of Behavioral Economics

Richard Curtin
University of Michigan

George Katona was a founder of behavioral economics. Katona first published a broad outline and agenda for the development of behavioral economics in the 1940's (1942a, 1944a, 1945, 1946a, 1946b, 1947, 1951a, 1951b). Katona conceived behavioral economics as a discipline within economics that was primarily concerned with the human element in economic affairs. While some believe the adjective "behavioral" is implicit and unnecessary in the title of any social science discipline, Katona thought it was necessary to emphasize that the centerpiece of this research was human decision making whereas a significant portion of economic theory was concerned with the behavior of markets. Katona did not attempt to replace economic theory but to bolster its findings with new insights from a more complete and accurate account of economic behavior (Katona, 1951a, 1963, 1967a, 1972a, 1974, 1976a, 1980). Katona was an empirical scientist who believed that understanding economic behavior through careful observation was the best foundation on which to base advances in economic theory. That same approach has persisted for most other researchers in behavioral economics who have followed Katona (Rabin, 2002).

George Katona was my mentor, friend, and colleague. Following Katona's death in 1981, several articles appeared describing his life and scholarly contributions (Warneryd, 1982; Hosseini, 2011), including an article written by me (Curtin, 1984). These articles were written as intellectual biographies. While it is hard to completely avoid such details, this article will primarily assess the impact of the theories advanced by Katona on the subsequent development of behavioral economics. Founders of a scientific discipline can have a profound influence on its growth and maturation. This article will demonstrate that George Katona has had an enduring and extensive impact on the development of behavioral economics. To be sure, at times his theoretical insights and scientific methodology were the subject of intense debates during his lifetime. Those debates have reverberated over the years as the core principles that he advanced were repeatedly rediscovered by succeeding generations of researchers.

Katona viewed the scope of behavioral economics to include all human economic behavior: all types of consumer spending and saving behavior, entrepreneurship and all work related behavior including job choice and investments in human capital, all types of business behavior ranging from decisions on prices, output, investment, finance, and preferences and reactions to economic policies and programs by consumers as well as businesses. In addition, the analysis could be focused on the micro or the macro level. Behavioral economics in the last fifty years, as even a casual observer could appreciate, has grown to encompass all these fields and many more. One might assume that the coverage of most aspects of economic behavior would naturally be associated with an underlying theory that would be seen as a competitor to economics. Katona never had that intention. He felt that all disciplines required subdisciplines that specialized in specific areas. Insights from behavioral economics would naturally be incorporated into the disciplines of economics as well as psychology.

There was a critical difference between Katona's scientific approach and that of conventional economics. Katona focused on the rationality of the *process* of decision making, while economics was mainly concerned with the rationality of the *outcomes*. This same difference in focus was identified by Herbert Simon as procedural versus substantive rationality. Process or procedural rationality emphasizes the appropriate deliberation and decision processes, outcome or substantive rationality emphasizes the realization of the appropriate results. This difference in perspectives is deeply rooted in the disciplines of psychology and economics. To be sure, a decision could be seen as rational by psychologists as well as by economists, but that coincidence would be irrelevant since the ultimate objective of each discipline is to focus on the rationality of either decision processes or decision outcomes, but not both.

A corollary of this difference is whether attention is given to equilibrium or to the process of disequilibrium adjustments. Economics used equilibrium conditions to define the appropriate outcomes, but psychology's main focus is on how people learn and adapt to a constantly changing environment. Economic theory posits that people learn from their mistakes, so that their behavior will ultimately converge to the rational and optimum outcomes in equilibrium. Psychologists are more likely to believe that the divergences from rationality are a permanent feature of the human condition. Unfortunately, there are no behavioral observations that can convincingly reject either of these opposing views given the fundamental differences in their underlying theoretical perspectives. Katona did not believe it was useful to simply categorize deviations from orthodox economic theories as anomalies. He thought science was best served by specifying the conditions under which each behavioral response was likely to occur. In contrast, conventional economics has demonstrated a preference for more compact and tractable models, despite a long and growing list of documented anomalies.

There is another distinctive aspect of Katona's views compared with later scholars in behavioral economics: Katona's research agenda was problem oriented rather than discipline oriented. Katona's research was motivated by unresolved economic problems of his era, including hyper inflation as well as crippling deflation, massive job losses, and the evaporation of wealth and incomes, all of which he personally experienced before reaching his mid-30's. Katona believed that these complex and multifaceted societal problems required the addition of behavioral factors to conventional economic models. In contrast, the next generation of behavioral economists, what Sent (2004) called the "new" behavioral economists, were more likely to base their research on how decisions differed from theoretical predictions based on the standard rationality postulates. While their results could be used to address unresolved economic problems, the motivation for their research was theoretical rather than problem oriented. Katona's pragmatic approach was reaffirmed by Raj Chetty in his Ely Lecture on behavioral economics more than a half century later (Chetty, 2015). He argued that the starting point of behavioral economics was how to best resolve pressing economic problems, such as those Katona had addressed. Behavioral factors should be introduced insofar as they improved prediction and policy decisions. Comparable to Katona's earlier views, Chetty argued that as economics becomes more problem oriented and empirical, behavioral economics will play an increasing role in determining its future scientific development.

When Katona first formulated his theories on behavioral economics in the 1940's, the Great Depression had significantly challenged the orthodox macroeconomic theory. Like many of his contemporaries, Katona ideas were significantly influenced by the new theoretical approach advanced by John Maynard Keynes (1936). Keynesian theory provided what Katona viewed as a compelling explanation of how uncertainty and ambiguity influenced the expectations and decisions of economic agents. Keynes placed special emphasis on the decisions of business firms as well as how government

policy makers acted to determine the course of the national economy. Katona thought that Keynes had made a significant omission by not extending that same influence over the macro economy to the consumer sector. Indeed, Keynes proposed the “fundamental psychological law” which essentially assumed that consumers were passive responders to current income, and he completely dismissed the importance of consumer investment expenditures as a factor in shaping the course of the macro economy. Katona disagreed on both counts. He believed the consumer was a powerful and independent actor whose actions could influence whether the macroeconomy would expand or contract. While Katona’s views about the power of the consumer sector has found worldwide support when it came to economic policy decisions, conventional economic theory still views the consumer as a passive responder whose actions cannot spark a recession nor create an economic recovery. Katona long held that consumers had discretion in when and how much to spend, and these decisions could produce expansions or recessions. Consumption was not a passive, endogenous variable completely determined by the rational calculus of other economic factors.

Katona’s main theoretical contributions involved the acquisition of information and learning to form economic expectations, the importance of consumer optimism and uncertainty to the functioning of the macro economy, and the role of economic aspirations in determining longer term economic trends. Katona’s research led to a number of advances associated with behavioral microeconomics as well as behavioral macroeconomics. He documented through careful observation by the early 1950’s that the frame of reference and the context in which economic information is perceived determines its meaning, that all economic agents use relative rather than absolute reference standards, that psychological variables intervene between economic signals and responses to determine the behavioral outcomes, and that social influences on behavior are an inescapable part of economics. Most of these theoretical insights were advanced by Katona in the 1940’s and 1950’s. A half century later, his theories were still widely accepted by behavioral economists.

Another critical component of Katona’s contributions was his leadership in the development of the scientific infrastructure required for the robust measurement of economic behavior. When Katona began his research most of the required tools for the new scientific discipline had yet to be developed. Probability methods of sample selection and advances in statistics were needed to draw nationally representative samples that could provide estimates with known sampling variances; observation and questionnaire methods needed to be developed that could yield valid and reliable measures across all population groups; and machine tabulation and analysis methods needed to be devised (with Angus Campbell, 1946c and 1953c; 1949c; with Janet Fisher, 1950; 1951a; 1954c; 1957a; 1957d; 1957f). Katona and his colleagues at the Survey Research Center at the University of Michigan, including Rensis Likert, Angus Campbell, Leslie Kish, Charles Cannell, and James Morgan, acquired the skills and built the necessary infrastructure. After nearly three-quarters of a century, the Survey Research Center is still in the forefront of advancing the methodology and research on behavioral economics. Katona’s advances in theory and methods are so commonly accepted that his achievements represent the unquestioned scientific foundation of behavioral economics (Tobin, 1972).

Strength from Adversity

George Katona was born on November 6, 1901 in Budapest, Hungary, and died on June 18, 1981 in Berlin, Germany. Katona had a remarkable intellect. He was just 20 years old when he completed his PhD in psychology and won the Gauss Medal from the University of Göttingen. His early life was shaped by economic and political upheavals (Katona, 1972b; Curtin, 1984). His original plan was to get a

law degree and take over the law practice of his grandfather. When Bela Kun led a communist putsch and closed the University of Budapest, he switched to the University of Göttingen in Germany. After completing his PhD, Katona obtained a faculty position at the University of Frankfurt, and published an award winning monograph (Katona, 1924). The hyperinflation in the early 1920's in Germany forced him to seek additional employment, which he obtained at a bank. While employed at this bank, he was paid daily at noon and given a few hours to spend his salary before it became worthless. This experience prompted Katona to publish a paper on inflation as a form of mass hysteria in the *Frankfurter Zeitung*. This article was widely cited and demonstrated to Katona the potential contribution of psychology to the study of economic problems. Katona decided to move to Berlin to study economics, a discipline he soon mastered without the benefit of formal training. Gustav Stolper, who founded *Der Deutsche Volkswirt* (The German Economist), hired Katona in 1926 as an assistant editor, where Katona regularly published commentaries on the German economy. Katona also continued his research in Berlin on the psychology of perception and evaluation (1921, 1925, 1926, 1927, 1929, 1935) under the influence of Max Wertheimer, a founder of Gestalt psychology. Stolper and Wertheimer had a significant influence on the development of Katona's intellectual views.

The same pattern of political displacement and economic crisis was repeated once again in the 1930's. The *Volkswirt* was one of the first publications banned by the Hitler government, and caused Katona to immigrate to the United States in 1933. The Great Depression of the 1930's reaffirmed the importance Katona placed on the study of macroeconomics. Katona and Stolper formed a business in New York to provide investment advice to Europeans. Katona's involvement ended when he was sidelined by a three-year battle with tuberculosis. He used this as an opportunity to return to an academic life to continue his research on perception and learning. Katona obtained a Carnegie grant to conduct his research, which culminated with the publication of *Organizing and Memorizing* in 1940, a book that was widely recognized for its advances in theory and scientific methodology (1940, 1942b, 1942c). This research, combined with his prior studies on perception and evaluation of information, eventually became the foundation of his theories about how economic expectations were formed, how they changed, and how they influence the course of the macro economy.

The life course of Katona was again interrupted by WWII, and he was drawn back to his interests in the psychology of inflation. Katona gave lectures at the New School for Social Research on that topic and published an influential book in 1942 called *War Without Inflation*. This book marked the start of his lifelong efforts to develop a new interdisciplinary approach to the study of economic behavior. He was appointed in 1942 by Jacob Marschak of the Cowles Commission for Research in Economics at the University of Chicago to conduct studies of the reactions of businesses to price controls. This research was co-sponsored by the National Bureau of Economic Research. He related compliance or circumvention to both economic and psychological factors (1944b, 1945). Katona sent a draft of his chapter on survey methods to Rensis Likert, a leading survey expert at the U.S. Department of Agriculture. Likert offered a job to Katona to direct the first nationwide survey of ownership of liquid assets in 1946. At the end of the war, Katona, Likert, and Angus Campbell moved to the University of Michigan to establish the Survey Research Center. Katona's avowed goal when he came to the University of Michigan was to develop the theory and methods of behavioral economics. Katona became a Professor of Psychology and Economics and remained active until his death in 1981.

Psychological Foundations of Economic Behavior

Economic behavior is learned behavior and dependent on how people perceive and utilize information. The development of Katona's theories about how people learn was influenced by the Gestalt theories of Max Wertheimer and Kurt Lewin. The theory of information favored by economists is that the content of the individual elements defined its overall meaning. Katona held that this view was inconsistent with scientific observations about how people perceive and utilize economic information. Katona believed that perceptions of information taken in its entirety helped to define the meaning of its component parts, rather than the aggregation of the components defining the meaning of the overall perception. Although this Gestalt principle may have been controversial when Katona proposed it more than a half century ago, the fact that the perceived meaning of information is context dependent has since achieved widespread scientific acceptance across all social sciences. Everyone now recognizes that how information is framed determines its meaning.

The rise and fall of Keynesian economics closely parallels the controversy over the Gestalt principles. Keynes did not insist that macroeconomic theory be derived solely from microeconomic foundations of profit and utility maximization. Keynes believed that macroeconomics included some concepts that had no microeconomic representation, a position on which Katona agreed. By the late 1970's, however, the Keynesian view was displaced by the neoclassical consensus that held that micro foundations were paramount in defining macroeconomic theory (Lucas, 1972). The consensus favored this presumed principle of consistency despite the fact that a strictly applied principle of methodological individualism would eliminate a good deal of macroeconomic results that could not be reduced to their microeconomic foundations (Blaug, 1992). This difference in theoretical perspectives has yet to be resolved.

Context Sensitive Information Processing. The first assumption challenged by Katona was the notion that the same economic information, say on income or prices, would be interpreted in the same way regardless of the context in which it was perceived. Katona believed the frame of reference or context could give the same change in an economic variable a unique meaning. In an article published in 1944, Katona (1944a: 340) stated that "Viewing a situation or problem within different frames of reference may account for different reactions to the same economic situation and different answers to the same economic problem." Recent work has come to the same conclusion about reference dependent standards (Sudgen, 2003; Köszegi and Rabin, 2006; Farber, 2008). While people usually react to price or income changes in the manner expected by traditional economic theory, under certain conditions, people could react in a manner unanticipated by conventional economic theory. For example, although people may ordinarily react to escalating inflation in a defensive manner by postponing expenditures, under certain conditions, rising prices may cause more spending and advance buying. Katona argued that it was important to specify which conditions lead to one response and which to another response (1946b, 1949a, 1949b, 1951a, 1960a, 1964a, 1968a, 1968b, 1968c, 1975). Economists treated the perverse impact of "inflationary psychology" as an aberration. It was not a sufficient cause to modify accepted theory; indeed, such aberrations are specifically excluded from the equilibrium nature of economic theories. Katona thought that context dependent information processing was the standard response, and economic theory needed to be flexible enough to account for an event that had been repeatedly observed over the past century in economies throughout the world. He argued that describing a behavioral reaction as an "aberration" or due to "animal spirits" needlessly limits understanding of its causes and consequences as well as corrective policy reactions.

More than a quarter century later, Kahneman and Tversky (1974) advanced the same basic idea but were much more successful in showing how the framing of a problem had a significant influence on

people's perception of the information and the resulting decisions. They themselves framed their research in a way that proved more convincing to economists: they investigated departures from rationality caused by how framing influenced the decisions people make in response to an equivalent set of choices. Their experiments yielded convincing evidence that how decision problems were framed had a significant influence on choice outcomes. Perhaps the most important deviation from rationality was associated with a very common frame in economic decisions: whether the decision problem was framed as a gain or a loss. Kahneman and Tversky formalize these insights in Prospect Theory (1979), which has been widely adopted in behavioral economics. Ultimately, the anomalies Katona demonstrated were no more or less successful than those shown by Kahneman and Tversky in prompting a fundamental revision in orthodox economic theory. Nonetheless, the use of these insights have become commonplace as empirical studies have expanded to nearly every aspect of economic behavior.

Katona also held that frames of reference had an impact on how people learned about cyclical developments in the economy (Katona, 1951a, 1960a, 1964a, 1975, with Strumpel 1978, 1979). He hypothesized that people naturally use the stage of the economic cycle to direct their conscious awareness to ongoing economic developments. After a recovery turned into a robust expansion, people increasingly become less attentive to favorable economic news, and increasingly attend to potential negative trends. The opposite shift in attention-resources occurred near the end of a recessionary downturn. Katona described these shifts in the selective attention of consumers as partly reflecting the age-old maxim that "only what's new is news." Katona understood, however, that it is impossible for people to attend to every bit of economic news. Some mechanism was needed to provide a convenient means to quickly select which information deserved attention and which information could be ignored. Throughout Katona's life, such rational inattention was dismissed as an unreliable and unrealistic task since rationality was thought to require full and complete information. More recently, rational inattention has received much more robust theoretical attention by Christopher Sims (1998, 2003).

Intervening Variables. Katona did not believe there was a direct and unchanging link between a change in an economic factor and a behavioral response. Other variables intervened between the stimulus and response that could modify how economic agents actually behaved. The link between income and consumption is an example that Katona frequently used to demonstrate the importance of intervening variables. Initially he focused on exceptions to the Keynesian "fundamental psychology law" and later on evidence that was contrary to Friedman permanent income hypothesis. Most famously, Katona's hypothesis that economic optimism or pessimism was a critical intervening variable which determined macro trends in consumption was his most famed conjecture and most replicated finding worldwide. Katona theorized that a host of intervening variables conditioned the relationship between income and consumption, which at times opened a significant divergence between observed spending and the amount that would be expected based on the annuity value of wealth.

Perhaps the most common intervening variable Katona proposed was expectations. At the time, for example, most models estimated consumption as a function of income, both defined as current or past realizations. Katona thought that how people reacted to their current income was modified by how they expected their income to change in the future. Income expectations intervened and influenced the relationship between current income and consumption. In response, economic theory quickly included the direct influence of income expectations as a predictor rather than use the concept of an intervening variable. The same sort of incorporation into economic models can be said for other intervening variables, such as aspirations and social norms.

Katona believed intervening variables played an important role in shaping responses to changes in economic factors. Disregarding the role of these intervening variables was not a loss to pure theory, but it was a deterrent to a full understanding of economic behavior. That same conclusion was offered by George Akerlof some fifty years later. Akerlof (2007) argued that other intervening variables, namely social norms, were the missing element in macroeconomics. The inclusion of social norms was necessary to resolve neutralities, such as the independence of consumption from current income, or the independence of inflation and unemployment. Social norms could explain why consumption was not governed by permanent income, and social norms about nominal prices and wages could explain the correspondence of inflation and unemployment, for example. These social norms are manifestations of the economic environment that have evolved over many decades. The nature and function of what Akerlof call social norms are identical to what Katona called intervening variables. Indeed, Akerlof and Shiller (2009) used a wide range of concepts—using the Keynesian term “animal spirits”—to signify the impact from the same type of psychological antecedents on economic behavior that Katona called intervening variables. As Katona and later Akerlof and Shiller would emphasize, these intervening variables are shaped by economic as well as social factors.

Social Influences. The impact of social factors is perhaps the single most striking difference between directly observing how consumers make their economic decisions and how the theory of utility maximization describes that process. Conventional economic theory holds that people behave as if they were isolated on economic islands so that what other people prefer, consume, or earn had no impact on their own economic decisions. Indeed, orthodox economic theory is unique among all of the social sciences in the limited formal recognition it accords to the social nature of human behavior. Needless to say, it is not that economists actually believe social factors are unimportant, but that economic models can quickly become intractable if each individual’s utility is partly dependent on the outcomes achieved by every other person. But as Akerlof has shown, orthodox neo-classical theory is not consistent with empirical observation without assuming that social norms play a significant role in shaping economic behavior.

Katona emphasized social influences on perceptions and learning. Most social influences on behavior were well known before Katona applied them to the study of economic behavior, such as how group membership and reference standards affect preferences. The rise of social media and networking are likely to influence the formation of reference groups as well as the social influences on learning. Moreover, there is no need to highlight the fact that people acting in their roles as consumers, workers, or voters are likely to display a range of preferences and behaviors that are not fully consistent across their roles. Multiple and sometimes inconsistent motives are the norm. This meant that human behavior could not be described as either entirely rational nor completely capricious (Katona, 1953b).

Katona did note that the principle of methodological individualism was also a subject of debate in psychology. He used an older terminology, the molar (group) and the molecular (individual) to discuss the differences (Katona, 1951a). It is clearly true that only an individual can think, make a decision, and act; no group is capable of these tasks. Nonetheless, it is widely believed that at times the collective actions of groups of people cannot be surmised from summing what individual would do acting alone. Again, Katona used the principles of Gestalt psychology to assert that it is possible for not only the total to be different than the sum of its constituent parts, but the total can help to define its constituent parts.

While Katona never believed that other people’s opinions were the only or even the prime determinant of their optimism or pessimism, he did recognize that changes in economic expectations were

significantly influenced by other people's assessments. The social influences on people's expectations helped to produce a synchronized wave of optimism and pessimism that made the consequent changes in spending and saving behavior potent determinants of whether the economy moved toward expansion or contraction.

Formation of Expectations. Katona believed that there was no other concept that played a larger or more important role in shaping economic behavior than expectations. The importance of expectations as a determinant of behavior was largely missing in psychology (Newcomb, 1972). Katona believed that expectations had both cognitive as well as affective components, meaning expectations contained information about future states of economic variables as well as how people evaluated those expected outcomes. No one, Katona believed, could be indifferent about expected changes in their own income, job prospect, or cost of living. This combination of what change they anticipated and how they evaluated that expected change meant that people would be motivated to mediate their responses to economic signals to avoid losses or to achieve gains.

How expectations are formed has been long debated. Everyone agrees with the premise that economic expectations must be learned. Katona identified two forms of learning in his classic book *Organizing and Memorizing* (1940). The conventional explanation was that learning was accomplished by repetition or memorization. This nineteenth-century principle is now commonly referred to as learning by association. This theory was widely used as a justification for the primacy of past experience, with expectations formed by a process of extrapolation from past realization. The basic process was modified by many variants, such as differential weighting of past realizations and adjusting future expectations to account for past errors. All of these theories, however, meant that expectations would never be fully accurate predictors of the actual future outcomes (Curtin, 2010). Although most of these theories were couched as learning theories, by its complete dependence on the past, such learning would always produce biased expectations. While Katona believed many expectations were formed as a simple function of past realizations, not all expectations could be formed in this manner since Katona believed it defied the basic principle of rationality. Even ordinary consumers could take into account the impact of some change in the environment or economic policies on subsequent developments before it was reflected in market outcomes or official economic statistics.

Katona theorized that there was a second form of learning that was more powerful and flexible and not solely dependent on past experience. His experimental investigation of human learning and perception began with his doctoral dissertation in 1921 and this continued as his primary research interest over the next two decades. In his book *Organizing and Memorizing* (1940), Katona provided empirical support for another distinct form of learning due to an understanding of the organization or structure of the material. Katona found that this type of learning had high transferability to other similar situations. The greater transferability was based on understanding whole processes rather than memorizing specific associations. These insights had a significant influence on how he believed economic expectations were formed and how they changed.

Learning by organization and understanding was consistent with the formation of expectations that were not solely dependent on past trends. In addition, they could be more accurate by being based on an understanding of the relevant underlying factors. Instead of simply basing expectations on past results, Katona proposed in the 1940's that it would be more appropriate to directly ask economic agents about their economic expectations (1942, 1945, 1946a, 1947, 1951a). To be sure, Katona never believed that consumers had sufficient knowledge to form expectations about the vast majority of economic series that

are of concern to the profession. He did believe that for a select few economic series, consumers paid a good deal of attention. Among those of greatest concern to consumers were trends in income, employment, inflation, and interest rates. Moreover, Katona believed that for these economic variables, consumers were less likely to extrapolate past trends and associations.

The initial reactions by the economics profession to Katona's theories were to dismiss them as naive. Economists doubted that consumers had the ability to acquire, understand, and effectively utilize information to form coherent economic expectations. Nonetheless, expectations increasingly garnered attention by economists. Indeed, expectations soon became central components in Modigliani and Brumberg's life-cycle theory of consumption (1954) and in Friedman's permanent income hypothesis (1957). While in theory, expectations were hypothesized to be forward looking, in practice Friedman, for example, used averages of past income realizations to estimate future permanent income. The two essential ideas that Katona advanced were often denied: forming expectations were still viewed as dependent on past trends, and consumers were still thought to be incapable of forming realistic economic expectations.

John Muth (1961) used the methodological techniques pioneered by Katona to collect and analyze survey data on economic expectations. Based on his analysis, Muth proposed that economic agents did not simply extrapolate past changes but based their expectations on an understanding of the underlying economic theory. Muth proposed the same sort of learning that Katona had identified in 1940. He termed that learning process the rational expectations hypothesis. Economics has never been the same. By the early 1970's, Lucas (1972) criticized Keynesian theory for assuming that people reacted naively to economic policies—the position Katona had advocated thirty years earlier when he analyzed wartime price controls in 1942. Needless to say, Katona never believed in the rational expectations hypothesis, but he never believed that people were irrational either. One might have anticipated that Katona's theories and use of surveys to measure economic expectations would have finally convinced economists of the merits of his approach. It did not.

It should be no surprise that economics embraced the rational expectations hypothesis as it was the natural accompaniment of rational maximization of utility by consumers and profits by business. While each of these assumptions proved difficult to sustain empirically, it was the model's predictions rather than its assumptions that demonstrated its scientific merit. Although orthodox economists now judge the incorporation of the rational expectations hypothesis the most important innovation in economic theory in nearly the last half century (Mankiw, 1988), just as many would agree that as a practical matter the investigations of specific economic problems or issues is best conducted with more realistic assumptions (Katona, 1980).

Once economic agents were assumed to rationally form expectations that were equivalent to the results of economic models, most economists concluded that there was no reason to actually measure the expectations agents held. Katona's views fit between the initial reactions that observed expectations were uninformed noise and the later reactions that expectation were fully rational and identical to econometric predictions. The empirical data on the accuracy of consumer inflation expectations compared with the predictions of professional economic forecasters were unanticipated, to say the least. The year-ahead inflation forecasts of consumers were slightly more accurate than those of the economists (Gramlich, 1983; Baghestani, 1992; Thomas, 1999; Mehra, 2002; Curtin, 2010). Each time, the predictive ability of consumer expectations was viewed as an anomaly. No one, however, could offer a convincing

explanation of why ordinary consumers could match the skills, experience, and motivation of professional forecasters.

Aspirations. Katona intended the concept of aspirations to fill a gap in existing economic theory concerning economic growth. The orthodox theory of economic growth is dominated by the supply side: capital goods, technology, and labor productivity. It assumes an automatic and commensurate growth in the demand for goods and services. People's aspirations to consume more are assumed to be insatiable. The assumption that utility functions were defined by "given tastes and preferences" was always meant to include the latest and most advanced array of goods and services. Economists have long considered the determinants of "tastes and preferences" to be an inquiry more suited to psychology than economics, and more importantly, only influenced the specific products or services consumed by consumers, not the overall rate of economic growth. Katona disagreed and advanced a theory in the 1940's in which changes in consumers' aspirations could have an independent and significant impact on the overall rate of economic growth (Katona 1946a, 1951a, 1960a, 1964a, 1975).

In particular, Katona believed changes in aspirations had significantly influenced American's willingness to incur debt to achieve their consumption aspirations as well as to make additional investments in human capital and increase their participation in the workforce. These actions created substantial expansions in markets for a wide variety of goods and services that independently added to the pace of domestic economic growth. Moreover, the strong rise in material aspirations also increased the willingness of Americans to step-up their labor force participation rates, which also acted to increase the pace of economic growth. These factors also created differences in economic cultures across countries. For example, Americans became known for higher consumption and lower savings, while Germans were noted for higher savings and lower consumption (Katona et al., 1971a). Even to the present time, growth in the German economy is more dependent on exports given the insufficiency of domestic consumption compared with its productive capacity.

Katona conceptualizes aspirations as motives that instigate and direct economic behavior (1951a, 1953b, 1975). Aspirations were not distant dreams or unrealistic hopes; Katona viewed aspirations as reality based. The aspirations that provide the strongest behavioral motives are those that are only modestly different from recent accomplishments. Aspirations are not static, but continually change in response to accomplishment and failure. Changes in aspirations are also sensitive to contextual factors and the performance of other people and groups. A critical part of Katona's theory is that he hypothesized an asymmetric dynamic to changes in aspirations: fulfillment quickly gives rise to new aspirations, but failure does not immediately result in diminished aspirations. Failure initially sparks renewed efforts toward attainment. No one easily nor quickly gives up their aspirations. Aspirations are finally reduced only after prolonged frustration and failure. Declines in aspirations not only indicate that people judge the probability of failure higher than the probability of success, but that an unchanged aspiration will result in net losses in utility since maintaining those aspirations would misdirect behavioral decisions. Rational processing of feedback requires change.

This theory was largely ignored in the economic literature as irrelevant since material aspirations were always expected to increase. To be sure, some people may reduce their aspirations, but they would be more than offset by others that increased their aspirations. No one could imagine a coordinated reduction in material aspirations that could have a significant impact on economic growth, until secular stagnation challenged that view. Secular stagnation is usually defined by economists in terms of supply, an insufficiency of potential capital investments at current interest rates. Others have termed it an

insufficiency of demand that persisted despite a wide array of spending incentives. Katona would have suggested that the weakness in spending as well as labor force participation, aside from an aging population, was related to reductions in material aspirations. Aspirations that had been reduced due to reversals in income and wealth as well as lessened prospects for renewed personal financial advancement due to rising inequality. Whether the Katona hypothesis is correct or not is not the basic issue. Rather it is whether economics persists with a one-sided “supply” hypothesis or adds another “demand” hypothesis to the determinants of economic growth.

Behavioral Macroeconomics

Katona is widely known for advancing theories of behavioral macroeconomics. Macroeconomics became an established field of study following the 1936 publication by John Maynard Keynes on the *General Theory of Employment, Interest, and Money*. This book resonated with Katona since it was about solutions to the economic problems Katona had personally experienced. Katona agreed with the Keynesian emphasis on demand as the main determinant of trends in the overall economy, but disagreed with the belief of Keynes that consumers were passive actors in the macro economy. Keynes thought the primary determination of macroeconomic trends were the investment decisions of businesses as well as the government’s monetary and fiscal policies. The consumer was assumed to be a passive actor, mechanistically translating income into consumption. Keynes assumed firms made investment decisions based on their expectations about future economic prospects and rates of return. While firms were forward-looking and thus could influence future trends in the overall economy, consumers were backward-looking and thus had no influence on future economic conditions. Keynes thought this was due to what he called a “fundamental psychological law.” Consumers were simply automatons that mindlessly spend a certain portion of their income in good and bad times.

Katona argued that part of the Keynesian theory was based on flawed premises. The first was the assumption that investment spending by consumers was an unimportant cause of cyclical developments in macroeconomic conditions, especially when compared to business investment spending. The second was the notion that consumers did not command enough financial resources to vary the timing of their investment expenditures based on their own future financial prospects and economic expectations.

Purchases of homes, vehicles, and large household durables were common among consumers in the 1920's. Conventional economic theory treats these expenditures as investments as they have the same characteristics as business investments. These investment expenditures are typically excluded from “consumption” in empirical analyses. One might think that the aggregate size of consumer investments was completely dominated by business investments. In fact, the dollar size of consumer investments is slightly larger than the total investment expenditures of business. Even during the Great Depression of the 1930's, consumer expenditures for housing and durables accounted for 9.6% of total GDP compared with just 7.1% for business fixed investment. The same dominance of consumer investments over business investment was true in the 1940's and in subsequent decades up to the present time. Moreover, consumer and business investment spending over nearly the past century have exhibited similar cyclical patterns, including the degree of change from peak to troughs. Katona found no empirical justification for excluding cyclical variation in consumer investment spending as a determinant of economy-wide expansions or contractions. Instead, Katona challenged orthodox economic theory which still holds that consumer spending is endogenous and therefore not capable of causing a recession (Katona, 1951a, 1960a, 1964a, 1975).

There is no consensus among economists on the causes of recessions (Christiano and Fitzgerald, 1999). None of the usual suspects—monetary, credit, price, or technology shocks account for the bulk of the cyclical fluctuations. Nonetheless, consumption shocks account for a relatively large share of the cyclical fluctuations (Cochrane, 1994). Given this troublesome finding, several explanations have been proposed. The first is that the consumption shock reflects information known to the consumer but unobserved by macro models. Economists typically assume that consumers base their economic expectations on the public information releases of governmental agencies, that is, on the same sources of information used by economists. Consumers, however, may base their forecasts on the information that they possess about their own prospects, or what is usually termed private information. It is this information that can produce the aggregate shock (Cochrane, 1994). This line of reasoning is compelling, but it may not be germane. It is not the mere possession of private information that is at issue, but the synchronization of changes in private information across many consumers that produce recessions.

While Katona recognized the fundamental investment character of expenditures on homes, vehicles, and other durables, he also viewed these purchases as a means households used to adjust their precautionary savings. Postponing the purchase of a new vehicle or new appliance has little immediate impact on living standards (assuming the current vehicle or appliance is still in working condition) but has a large and immediate impact on household saving (as a result of the purchase or the incurrence of debt). It is commonplace for consumers to describe the purpose of the timing of their investment expenditures as a means to adjust their precautionary savings. This observation led Katona to challenge conventional theories that held that the pattern of consumption should be independent from the pattern of income. Indeed, Katona hypothesized that varying the timing of investment expenditures was the dominant method used by households to adjust the amount of their precautionary savings, usually done in anticipation of potential cyclical developments (Katona, 1951a, 1960a, 1964a, 1975). Some years later more plausible assumptions about the utility function were advanced that hypothesized that consumers could be expected to accumulate precautionary savings as a hedge against uncertainty (Kimball, 1990), and prospect theory can incorporate income uncertainty as a response asymmetry between positive and negative income changes (Kahneman and Tversky, 1979).

The second flawed premise has to do with the lack of consumer discretion. While it could be suggested that by writing in the 1930's, Keynes was unduly influenced by the Depression era hardships, purchases of homes, vehicles, and household durables were already widespread during the prior decade of the 1920's, with consumers often using credit to make these purchases. Katona emphasized the accumulation of financial assets by consumers in the 1940's gave them latitude in the timing of their spending decisions. Katona found the extent of financial assets held by consumers in to be quite large in 1946, reflecting a personal saving rate that exceeded 20% from 1941 to 1944. It was these holdings of liquid assets that sparked the interest of the Federal Reserve Board in sponsoring the first Survey of Consumer Finances in 1946 under the direction of Katona. The basic issue was what would consumers do with the large amount of liquid assets they had at their disposal. If consumers attempted to quickly replenish their stocks of household goods depleted during the Great Depression and WWII, inflation could rapidly escalate and pose a policy challenge for the Fed. While there was a spending spurt following the war, Katona found that consumers also placed a high value on financial security and maintaining their savings and reserve funds. Rather than dismissing the importance of consumer investments and ignoring the growing financial latitude of households, Katona was convinced that it was necessary to closely monitor their expectations for signs of potential change. Katona expressed this view by his 1960 book title *The Powerful Consumer*. A decade later, James Tobin (1972:55) agreed that "...once consumption is not liquidity-constrained it is a highly psychological variable."

Measurement of Consumer Sentiment

Katona added questions on the 1946 survey to measure the economic expectations and spending intentions of consumers. The Federal Reserve Board was uninterested in the economic expectations of consumers, but was convinced by Katona's argument that they were necessary to build rapport and encourage truthful responses. Interviewers could not show up on someone's doorstep and announce the Federal Reserve wanted to know how much savings they had accumulated. While the Fed accepted the rapport rationale, they made it clear to Katona that they were not interested in the results from the questions on expectations and intentions, but only on the hard numbers on the household's financial balance sheets. Needless to say, shortly thereafter upon the success of Katona's expectation questions, they became quite interested and requested early tabulations for which they were willing to pay extra (Morgan, 1972; Curtin, 2004).

In the 1950's there was a committee established under the auspices of the Federal Reserve Board to investigate the forecasting ability of Katona's measures of expectations (Smithies et al., 1955). The committee reasoned that for consumer expectations to have a creditable impact on macro economic trends would require the same data to predict spending on the micro level. The straightforward notion was that accurate macro predictions were simply the aggregation of relationships measured at the individual level. This is now known as establishing the micro foundations of macroeconomics, a principle also known as methodological individualism. Unfortunately, at the time of the evaluation, it was only possible to test the predictive ability of expectations at the micro level since just eight observations were available for the time-series tests. What the committee found based on an analysis of the panel data was that economic optimism or pessimism was unrelated to consumers' subsequent purchase behavior, but there was a relationship between purchase intentions and subsequent purchases. Although Katona considered intentions a subclass of expectations (about a person's own behavior), the panel data on individual responses did not convince him that it necessarily implied that expectations data would not be useful predictors of macroeconomic spending trends. Katona based his view on both methodological and theoretical considerations, with the importance of each of these factors depending on whether the tests were based on micro or macro data (Katona, 1957c, 1958b, 1959a, 1959b, 1960b, 1976b; Dechaux, 2015).

The methodological factors mainly involved measurement issues. In addition to measurement errors due to sampling and non-sampling factors involved in population surveys, accurate predictions of individual behavior required information on a wide array of factors. If the predictions were limited to the behavior of large subgroups or even the entire consumer sector, the idiosyncratic factors would often cancel out in the aggregate. The complexity of the estimation problem would be significantly reduced if the focus was restricted to only those factors that were expected to change among all or most consumers. The selected factors may only have a trivial impact on any one individual's decision, but if the factor changed in the same manner across very many people at the same time, it could still have a significant impact on the macro economy (Katona, 1960a, 1964a, 1975).

The theoretical issue was more contentious. Katona did not agree with methodological individualism. He believed that in some aspects the macro economy could not be considered the simple aggregation of its micro constituents. Katona thought that the macro economy can display characteristics

that are uniquely different than the sum of its micro units. While some economists agreed with this position, most still hold fast to the principle that all macro theory must be justified by its micro foundations (Lucas, 1972). This is true despite the fact that economic theory is guided by a comparable systemwide organizing principle, equilibrium. Equilibrium conditions are not properties of any of its micro participants but are only a property of the macro system itself. No simple summing of the economy's constituent parts can establish equilibrium. Only with the simplifying assumption of representative agents are they equivalent.

Katona also faced an empirical problem. Conventional economic models at that time used two additional simplifying assumptions that excluded the behaviors his theories were designed to explain. The first was the so-called "certainty equivalence" derived from the assumption of quadratic utility functions. This assumption meant that only the mean of the expected future income stream had an impact on current consumption decisions. The theory left no room for considerations of the potential impact of uncertainty about future income. The second simplifying assumption was that utility functions were additive and time separable. Based on this assumption, expenditures on vehicles, household durables, and homes were simply eliminated from the analysis since these expenditures do not fully represent current consumption but are more accurately described as investments (Curtin, 2004).

Perhaps the most interesting postscript to the debates of the 1950's is what has proven to be an effective leading indicator over the next half century. The presumed predictive ability of purchase intentions data was tested using large samples and with probability measures by the U.S. Census Bureau in the 1960's. These surveys were discontinued due to its poor predictive performance, although the debates it spanned were also contentious (McNeil, 1974; Curtin, 2004; Dechaux, 2015). In contrast, the approach advocated by Katona has not only survived to this day in the U.S. but has been replicated by six dozen other countries in every inhabited continent in the world (Curtin, 2005). In the U.S. as in most other countries, consumer sentiment measures are recognized as leading economic indicators based on their predictive performance (for a summary, see Curtin, 2005). Notably, the predictive performances of Katona's measures were at their very best at the most critical times: when the economy was about to turn from expansion to contraction, or visa-versa.

Prediction versus Understanding

Scientific advancement requires not just models that can accurately predict behavior, but theories that represent a comprehensive understanding of the underlying causal pathways. Science is poorly served, for example, by only knowing that a certain medication has a high probability of curing a disease. Scientific advancement requires an understanding of the exact mechanisms and causal structures involved. Economics has long been satisfied with only prediction. Katona believed that research should be aimed at advancing our understanding of economic behavior. While Katona insisted that accurate predictions were an indispensable means to test new theories, there was no substitute for understanding the factors that shaped economic decision making. This placed a critical emphasis on observing how people made actual decisions. Katona also thought that the realism of the model's assumptions acted as the best guide for the subsequent revisions that are necessary for scientific advancement.

Katona justly deserves recognition as a founding father of behavioral economics. The comprehensive agenda he envisioned for the field in the 1940's has proved as prescient as his creation of new methodologies to observe and measure economic behavior. His theoretical advances in understanding the human element in economic affairs have prompted even more sophisticated advances

in the quarter-century since his death. His cherished goal of creating an empirical discipline to improve the science of economics by focusing research attention on unresolved economic problems has surely been achieved.

Scientific Publications of George Katona

Experimentelle Beiträge zur Lehre von den Beziehungen zwischen den achromatischen und chromatischen Sehprozessen. *Zeitschrift fuer Sinnesphysiologie* 53 (1921), pp. 145-173

Psychologie der Relationserfassung und des Vergleichens. Leipzig, Germany: Barth, 1924.

Experimente ueber die Groessenkonstanz. *Zeitschrift fuer Psychologie* 97 (1925), pp. 215-251.

Experimentelle Untersuchungen ueber simultane und sukzessive Gesichtswahrnehmungen. *Psychologische Forschung* 7 (1926), pp. 226-256.

Eine kleine Anschauungsaufgabe. *Psychologische Forschung* 9 (1927), pp. 159-163.

Zur Analyse der Helligkeitskonstanz. *Psychologische Forschung* 12 (1929), pp. 94-126.

Color-Contrast and Color-Constancy. *Journal of Experimental Psychology* 18 (1935), pp. 49-63.

Organizing and Memorizing: Studies in the Psychology of Learning and Teaching. New York: Columbia University Press, 1940; 2nd ed., 1949. (Republished in 1967 by Hafner Publishing Company, New York. Also in Italian)

War Without Inflation: The Psychological Approach to Problems of War Economy. New York: Columbia University Press, 1942a.

The Role of the Order of Presentation in Learning. *American Journal of Psychology* 55 (1942b), pp. 328-353.

On Different Forms of Learning by Reading. *Journal of Educational Psychology* 33 (1942c), pp. 335-355.

The Role of the Frame of Reference in War and Post-War Economy. *American Journal of Sociology* 49 (1944a), pp. 340-347.

With Dickson H. Leavens. Price Increases and Upgrading. *Journal of Business* 17 (1944b), pp. 231-243.

Price Control and Business. Bloomington, Ind.: Cowles Commission and Principia Press, 1945.

Psychology Analysis of Business Decisions and Expectations. *American Economic Review* 36 (1946a), pp. 44-62.

With R. Likert. Relationship between Consumer Expenditures and Savings. *Review of Economic Statistics* 28 (1946b), pp. 197-200.

With A. Campbell. A National Survey of Wartime Savings. *Public Opinion Quarterly* (Fall, 1946c), pp. 373-381.

Contribution of Psychological Data to Economic Analysis. *Journal of the American Statistical Association* 42 (1947), pp. 449-459.

Effect of Income Changes on the Rate of Saving. *Review of Economics and Statistics* 31 (1949a), pp. 95-103.

Analysis of Dissaving. *American Economic Review* 39 (1949b), pp. 673-688.

Financial Surveys among Consumers. *Human Relations* 2 (1949c), pp. 3-11.

With J. A. Fisher. Postwar Changes in the Income of Identical Consumer Units. *Studies in Income and Wealth*, Vol. 13. New York: National Bureau of Economic Research, 1950.

Psychological Analysis of Economic Behavior. New York: McGraw-Hill, 1951a; paperback, 1963. (Also in German, French, Spanish, Italian, Japanese, and Yugoslav.)

Expectations and Decisions in Economic Behavior. In D. Lerner and H. D. Lasswell (eds.), *The Policy Sciences: Recent Developments in Scope and Method*. Stanford, Calif: Stanford University Press, 1951b.

With J. N. Morgan. The Quantitative Study of Factors Determining Business Decisions. *Quarterly Journal of Economics* 66 (1952b), pp. 67-90.

With E. Mueller. *Consumer Attitudes and Demand: 1950-52*. Ann Arbor: Survey Research Center, The University of Michigan, 1953a.

Rational Behavior and Economic Behavior. *Psychological Review* 60 (1953b), pp. 307-318.

With A. Campbell. The Sample Survey: A Technique for Social Science Research. In L. Festinger and D. Katz (eds.), *Research Methods in the Behavioral Sciences*. New York: Dryden Press, 1953c.

Economic Psychology. *Scientific American* 191(4). (1954a), pp.31-36.

With F. Mueller. A Study of Purchase Decisions. In L. H. Clark (ed.) *Consumer Behavior, I*. New York: New York University Press, 1954b.

Variability of Consumer Behavior. In L. R. Klein (ed.), *Contributions of Survey Methods to Economics*. New York: New York University Press, 1954c.

The Predictive Value of Data on Consumer Attitudes. In L. H. Clark (ed.), *Consumer Behavior, II*. New York: New York University Press, 1955.

With E. Mueller. *Consumer Expectations, 1953-1956*. Ann Arbor: Survey Research Center, The University of Michigan, 1956.

Attitudes toward Saving and Borrowing. *Consumer installment credit, Part II* (Vol. 1). Washington, D.C.: National Bureau of Economic Research and Federal Reserve Board, 1957a.

With S. Steinkamp and A. Lauterbach. *Business Looks at Banks, A Study of Business Behavior*. Ann Arbor: University of Michigan Press, 1957b.

Federal Reserve Board Committee Reports on Consumer Expectations and Savings Statistics. *Review of Economics and Statistics* 39 (1957c), pp. 40-46.

Public Opinion and Economic Research. *Public Opinion Quarterly* 21 (1957d), pp. 117-128.

Consumer Buying Habits: Analysis of A Ten-Year Study. *The Integrated Approach to Product Planning*. American Management Association Marketing Series No. 101 (1957e), pp.56-58.

- The Function of Survey Research in Economics. In Mirra Komarovsky (ed.), *Common Frontiers of the Social Sciences*. Glencoe, Ill: Free Press-Falcon's Wing Press, 1957f.
- Business Expectations in the Framework of Psychological Economics. In M. J. Bowman (ed.), *Expectations, Uncertainty, and Business Behavior*. New York: Social Science Research Council, 1958a.
- Attitude Change: Instability of Response and Acquisition of Experience. *Psychological Monographs* 72(10), Whole No. 463, 1958b.
- The Psychology of Recession. *American Psychologist* 14 (1959a), pp. 135-143.
- Repetitiousness and Variability of Consumer Behavior. *Human Relations* 12 (1959b), pp. 35-49
- The Powerful Consumer: Psychological Studies of the American Economy*. New York: McGraw-Hill, 1960a. (Also in German, Dutch, Italian, and Japanese.)
- Changes in Consumer Expectations and their Origin. In *The Quality and Economic Significance of Anticipations Data* (National Bureau of Economic Research). Princeton, N.J.: Princeton University Press, 1960b.
- Principal editor of annual volumes entitled *Survey of Consumer Finances*. Ann Arbor: Survey Research Center, The University of Michigan, 1960 through 1970.
- The Relationship between Psychology and Economics. In S. Koch (ed.), *Psychology: Study of A Science* (Vol. 6). New York: McGraw-Hill, 1963
- The Mass Consumption Society*. New York: McGraw-Hill, 1964a. (Also in German, French, Ditch, Spanish, Swedish, and Japanese.)
- With J. B. Lansing. The Wealth of the Wealthy. *Review of Economics and Statistics* 66(1), (1964b), pp. 1-13.
- Private Pensions and Individual Saving*. Ann Arbor: Survey Research Center, The University of Michigan, 1965.
- What is Consumer Psychology? *American Psychologist* 22 (1967a), pp. 219-226.
- Anticipations Statistics and Consumer Behavior. *American Statistician* 21 (1967b), pp. 12-13.
- On the Function of Behavioral Theory and Behavioral Research in Economics. *American Economic Review* 58(1), (1968a), pp. 146-150.
- Consumer Behavior: Theory and Findings on Expectations and Aspirations. *American Economic Review* 58(2), (1968b), pp. 19-30.
- With E. Mueller. *Consumer Response to Income Increases*. Washington, D.C.: The Brookings Institution, 1968c.
- Attitudes toward Fiscal and Monetary Policy. *Public Policy* 18(2), (1970), pp. 281-288.
- With B. Strumpel and E. Zahn. *Aspirations and Affluence: Comparative Studies in the United States and Western Europe*. New York: McGraw-Hill, 1971a. (Also in German, Dutch, and Japanese.)
- Consumer Durable Spending: Explanation and Prediction. Washington: Brookings Papers on Economic Activity, 1 (1971b), pp. 234-239.

- The Human Factor in Economic Affairs. In A. Campbell and P.E. Converse (eds.), *The Human Meaning of Social Change*. New York: Russell Sage Foundation, 1972a.
- Reminiscences. In B. Strumpel, J. N. Morgan, and E. Zahn (eds.), *Human Behavior in Economic Affairs: Essays in Honor of George Katona*. Amsterdam-New York: Elsevier, 1972b.
- Theory of Expectations. In B. Strumpel, J. N. Morgan, and E. Zahn (eds.), *Human Behavior in Economic Affairs: Essays in Honor of George Katona*. Amsterdam-New York: Elsevier, 1972c.
- Cognitive Processes in Learning: Reactions to Inflation and Change in Taxes. In L. Mandell et al. (eds.), *Surveys of Consumers 1971-72*. Ann Arbor: Survey Research Center, The University of Michigan, 1973
- Psychology and Consumer Economics. *Journal of Consumer Research* 1 (1974), pp. 1-8.
- Psychological Economics*. New York: Elsevier, 1975
- Economics as A Behavioral Science. In M. Pfaff (ed.), *Frontiers in Social Thought: Essays in Honor of Kenneth E. Boulding*. Amsterdam-New York: North Holland, 1976a.
- Persistence of Belief in Personal Financial Progress. In B. Strumpel (ed.), *Economic Means for Human Needs*. Ann Arbor: Survey Research Center, The University of Michigan, 1976b.
- With B. Strumpel. *A New Economic Era*. New York: Elsevier, 1978
- Toward a Macropsychology. *American Psychologist* 34(2), 1979
- Essays on Behavioral Economics*. Ann Arbor: Survey Research Center, The University of Michigan, 1980.

Bibliography

- Akerlof, G. A. (2007). The Missing Motivation in Macroeconomics. *American Economic Review* 97 (1), pp. 5-31.
- Akerlof, G. A., & Shiller, R. J. (2010). *Animal Spirits: How Human Psychology Drives the Economy, and why it Matters for Global Capitalism*. Princeton, N.J.: Princeton University Press.
- Baghestani, H. (1992). Survey Evidence on the Muthian Rationality of the Inflation Forecasts of U. S. Consumers. *Oxford Bulletin of Economic and Statistics* 54, pp. 173-186.
- Blaug, M. (1992). *The Methodology of Economics Or, How Economists Explain* (2nd ed.). Cambridge: Cambridge University Press.
- Chetty, R. (2015). Behavioral Economics and Public Policy: A Pragmatic Perspective. *American Economic Review* 105 (5), pp. 1-33.
- Christiano, L. J., & Fitzgerald, T. J. (1999). The Business Cycle: It's Still a Puzzle. *Economic Perspectives, Federal Reserve Bank of Chicago*, pp. 56-83.

- Cochrane, J. H. (1994). Shocks. *Carnegie-Rochester Conference Series on Public Policy* 41, pp. 295-364.
- Curtin, R. T. (1984). Curtin on Katona. H. W. Spiegel, & W. J. Samuels (eds.), *Contemporary Economists in Perspective* 1, pp. 495-522. New York: Jai Press.
- Curtin, R. T. (2004). Psychology and Macroeconomics. *A Telescope on Society: Survey Research and Social Science and the University of Michigan and Beyond*. In House et al (eds.). Ann Arbor: University of Michigan Press.
- Curtin, R. T. (2005). *Consumer Sentiment Surveys: Worldwide Review and Assessment*. Ann Arbor: University of Michigan.
- Curtin, R. T. (2010). Inflation Expectations and Empirical Tests. *Inflation Expectations*. Sinclair, P (ed.). New York: Routledge.
- Dechaux, Pierrick (2015). Proving the Existence of Macropsychological Phenomena? The Katona-Tobin controversy over the predictive value of attitudinal data. CES working papers, Université Panthéon-Sorbonne (Paris 1), Centre d'Economie de la Sorbonne, <http://EconPapers.repec.org/RePEc:mse:cesdoc:15011>
- Farber, H. S. (2008). Reference-Dependent Preferences and Labor Supply: The case of New York City Taxi Drivers. *American Economic Review* 98 (3).
- Friedman, M. (1957). *A Theory of the Consumption Function*. Princeton, N. J.: Princeton University Press.
- Gramlich, E. M. (1983). Models of Inflation Expectations Formation. *Journal of Money, Credit, and Banking* 15, pp. 155-173.
- Hosseini, H. (2011). George Katona: A Founding Father of Old Behavioral Economics. *The Journal of Socio-Economics* 40. McGowan School of Business, King's College.
- Tversky, A. & Kahneman, D. (1974). Judgement under Uncertainty: Heuristics and Biases. *Science* 185 (4157), pp. 1124-1131.
- Kahneman, D., & Tversky, A. (1979). Prospect Theory: An Analysis of Decision Under Risk. *Econometrica* 47 (2), pp. 263-292.
- Keynes, J. M. (1936). *The General Theory of Employment, Interest, and Money*. New York: Macmillan.
- Koszegi, B., & Rabin, M. (2006). A Model of Reference-Dependence Preferences. *The Quarterly Journal of Economics* 121(4), pp. 1133-1165.
- Lucas, R. (1972). Expectations and the Neutrality of Money". *Journal of Economic Theory* 4 (2), pp. 103-124.
- Mankiw, N. G. (1988). Recent developments in macroeconomics: A very quick refresher course. *Journal of Money, Credit and Banking*, 20(3, Part 2), pp. 436-449.
- McNeil, J. M. (1974). Census Bureau Programs to Measure Consumer Purchase Expectations: 1959-1973. *Bureau of the Census, U.S. Department of Commerce, Technical Paper* 36.
- Mehra, Y. P. (2002). Survey Measures of Expected Inflation: Revisiting the Issue of Predictive Content and Rationality. *Federal Reserve Bank of Richmond Economic Quarterly* 88 (3), pp. 17-36.

- Modigliani, F., & Brumberg, R. (1954). Utility Analysis and the Consumption Function: An Interpretation of Cross-Section Data. *Post-Keynesian Economics*. K Kurihara (ed.). Rutgers University Press.
- Morgan, J. (1972). A Quarter Century of Research in Economics. *Human Behavior in Economic Affairs*. In B. Strumpel, J. N. Morgan, E. Zahn (eds.). San Francisco: Jessay-Bass, Inc.
- Muth, J. F. (1961). Rational Expectations and the Theory of Price Movements. *Econometrica* 29 (3), pp. 315-335.
- Newcomb, T. M. (1972). *Expectations as a Social Psychological Concept*. In B. Strumpel et al (eds.).
- Rabin, M. (2002). A Perspective on Psychology and Economics. *European Economic Review* 46, pp. 657-685. Elsevier.
- Sent, E. (2004). Behavioral Economics: How Psychology Made Its (Limited) Way Back Into Economics. *History of Political Economy* 36 (4). Duke University Press.
- Simon, H. A. (1957). Models of Man: Social and Rational. *Models of a Man: Social and Rational*. New York: Free Press.
- Sims, C. A. (1998). Stickiness. *Carnegie-Rochester Conference Series on Public Policy* 49 (1), pp. 317-356.
- Sims, C. A. (2003). *Implications of Rational Inattention* 50, pp. 665-690.
- Smithies, A, et al. (1955). Consumer Survey Statistics: Report to the Subcommittee on Economic Statistics of the Joint Committee on the Economic Report. Washington.
- Sugden, R. (2003). Reference-Dependent Subjective Expected Utility. *Journal of Economic Theory* 111, pp. 172-191.
- Thomas Jr, L. B. (1999). Survey Measures of Expected U.S. Inflation. *Journal of Economic Perspectives* 13 (4), pp. 125-144.
- Tobin, J. (1972). Wealth, Liquidity, and the Propensity to Consume. In *Human Behavior in Economic Affairs: Essays in Honor of George Katona*. B. Strumpel, J. N. Morgan, & E. Zahn (eds.), pp. 37-56. Amsterdam: Elsevier.
- Warneryd, K. (1982). The Life and Work of George Katona. *Journal of Economic Psychology* 2 (1), pp. 1-31.