

## Expectations and the Macroeconomy

This book is about how people form economic expectations and how those expectations influence the performance of the macroeconomy. People's economic decisions are shaped by expected future changes in prices, wages, employment, interest rates, and many other economic factors. Expectations influence people's economic decisions – deciding whether to save or to incur debt, to invest in bonds or stocks, to rent or buy a home, to enter or leave the labor force, to acquire new work skills or to move to a new geographic to find work, as well as many other economic decisions. It was Plato who first explicitly identified the essential role of expectations in human decision making thousands of years ago. His observations have now become commonplace, echoed by ordinary citizens as well as central bankers. Moreover, the importance of expectations is hardly limited to economic decisions, as expectations represent an important consideration for a broad spectrum of human decisions, including voting and policy preferences, social choices, health decisions, and numerous other behaviors. Indeed, every social science has incorporated expectations into their theories of human decision making.

Despite the centrality of expectations to human decision making, there is no scientific consensus about how expectations are formed. The divisions across the social sciences are so wide and the differences are so deeply ingrained that a resolution would require a radical shift in one or more of the disciplines to achieve a consensus. The purpose of this book is to suggest a new interdisciplinary paradigm that could accomplish this task. A few of the suggested changes have already been tacitly accepted as necessary by some scholars, but none have yet been incorporated into conventional theory; other changes are more radical, and are likely to be resisted. To accept the need for a new paradigm, one must be convinced that existing views are critically deficient, and more importantly, that

the new paradigm helps to account for a broader range of observed economic behavior.

Perhaps a more basic conundrum that this new paradigm addresses is the gap between people's remarkable ability to substantially improve their material living standards and people's persistent failure to make rational economic decisions. How did societies achieve such rapid economic progress over the past few centuries when it is alleged that most people make their economic decisions without the required information, in the absence of interpretative skills, and without the ability to calculate the appropriate expectation? How could evolutionary forces have left people so incapable of making decisions that serve their best interests? Why must humans always be vigilant to avoid the corruptive influence of passion on reason when making their economic decisions? Why has reason never defeated passion? Some have simply ascribed the persistent lack of rationality as an essential and unchanging characteristic of human nature.

This book suggests a completely different answer, a new paradigm that recognizes that rational decisions are based on the full mental capacity of the human mind, including passion as well as reason. The most striking departure of this new paradigm is that rationality is no longer the exclusive property of conscious deliberation but that rational decision making is also due to nonconscious cognitive activities and guided by affective processes. In this new paradigm, passion is not the enemy of reason but its handmaiden. The orthodox assumption of optimal decisions requires exclusive dependence on rational expectations formed by conscious deliberation. This is not part of the new paradigm, although the accuracy of expectations is still viewed as the sole objective of the formation process. The benefit of the new paradigm is that it allows a more robust scientific understanding of why expectations are formed, how they are formed, when they are formed, as well as a new understanding of the influence that people's expectations have on the performance of the macroeconomy.

A critical element of this new paradigm is its recognition that economic expectations are inherently social phenomena. Economic theory favors disembodied markets, stripped of the fact that they represent the interactions of people's economic behavior. While economists think in terms of market outcomes, people think in terms of the actions and reactions of other people. Evolutionary developments have given the human brain the capacity to understand the situation of other people by verbal descriptions as well as by the more commonplace and effortless displays of emotion. People have learned to be especially concerned about potential threats and have learned that the best surveillance of the environment is done by groups of people who

face similar threats as well as opportunities. Experience has taught people to take precautionary measures at the first signs of danger, without waiting for confirming data from federal statistical agencies. Often, the dangers that these threats represent quickly disappear, offset by the natural heterogeneity of economic experiences across ever larger groups of people. At some times, however, social contagion responds to real or imagined threats and acts to coordinate simultaneous changes in expectations across ever larger groups of economic agents. These coordinated reactions are often associated with recessionary downturns or economic upturns, and on rare occasions, have persisted to such an extent that they have propagated sustained booms and subsequent economic busts. Such shifts in expectations, when unpredicted by economic factors, have long been thought to be anomalous and subject to quick reversal by market forces. The new paradigm holds that self-fulfilling expectations are not only possible, but occur with some regularity.

A primary objective of this new paradigm is to understand the dynamic functioning of the macroeconomy based in part on observations of its micro units. The chapters included in the first section of this book deal with how each individual forms their economic expectations; the second section deals with how expectations influence the course of the macroeconomy. The analytic goal is not to predict individual behavior; the goal is to understand how expectations influence the macroeconomy. This perspective differs from the assumption that, in order to have an impact on the macroeconomy, the expectations of a significant share of the population must change at the same time and in the same direction. The macro focus shifts the analysis from the behavior of any individual agent to the behavior of the entire economy.

The more important implication of this new paradigm is that it challenges the conventional view that macroeconomic conditions are uniquely defined by the aggregation of its micro foundations. Indeed, a critical characteristic of the new interdisciplinary paradigm is that it posits an essential degree of independence between micro and macro phenomena. Macro phenomena are neither more nor less than the sum of the micro units. Instead, it is hypothesized that expectations influence the performance of the macroeconomy that cannot be predicted by the simple summation of individually held expectations. This reflects the essential social dynamic of economic expectations. Various contextual factors shape interpretations and imprint macro expectations with a distinctive meaning, which acts to determine appropriate behavioral responses.

Proving the need for this new paradigm is a challenging and complex task. It is based on data drawn from longstanding surveys of consumer

expectations conducted in the United States and dozens of other countries. To the surprise of many observers, the data drawn from these surveys have proven to be remarkably accurate predictors of subsequent macroeconomic developments over the past half-century. Data from the University of Michigan's surveys have been included as components of the Index of Economic Leading Indicators for their ability to forecast recessions and recoveries. The data collected on consumer inflation and unemployment expectations have proven to be remarkably accurate, even as accurate as the predictions of professional forecasters. These results have always surprised scholars, a few of whom believed there was some hidden gimmick in the data collection process that was responsible for the accuracy of the results. How could ordinary consumers be so accurate? This was a difficult question to answer based on the widely accepted premise that economic expectations were the sole result of conscious cognitive deliberation. Every attempt to elicit knowledge about specific economic quantities, such as the rate of economic growth, inflation, or the unemployment rate, generally indicated that the consumer possessed little or no accurate knowledge about economic statistics. How could accurate predictions be based on inaccurate knowledge? Moreover, how could poorly informed consumers ever trump the expectations of professional economists in forecasting the course of the macroeconomy? Nonetheless, they have repeatedly done so to the chagrin of many scholars.

The starting point of this book is a rigorous assessment of conventional theories of expectations to determine their strengths and weaknesses. A new paradigm must be justified by adding strength in place of weakness, while at the same time, preserving the strengths of orthodox theories. The first section of this book will document the fault lines of conventional theories of expectations as well as the fundamental properties of the new interdisciplinary paradigm of why, how, and when economic expectations are formed. The second section extends the new paradigm to include how the economic expectations of consumers have an active and independent influence on the performance of the national economy. Conventional economic theory holds that consumers have a passive and dependent role in shaping trends in the macroeconomy; the behavior of consumers is simply a reaction to ongoing changes in incomes, prices, interest rates, and other economic variables. Rather than assume consumption is endogenous, the new paradigm holds that consumers play an active role in determining macroeconomic cycles. What follows is a preview of the major tenets of the new paradigm, leaving the detailed exposition to the subsequent chapters.

## FORMATION OF EXPECTATIONS

The rational expectations hypothesis perfectly matches all other aspects of orthodox economic theory. Consumers and firms were already assumed to rationally maximize their economic benefits, whether utility or profits, based on full knowledge of the alternatives. Perhaps the biggest surprise is that it took economic theory hundreds of years to formally extend the assumptions about rationality to the formation of expectations. To be sure, conventional theory holds that economic rationality represents a normative ideal, which is only fully achieved in equilibrium. Moreover, economists have debated whether rationality is a characteristic of individual agents or of market outcomes.

Economic rationality is not determined by how expectations are formed, but whether expectations accurately reflect the actual subsequent outcomes. Other social sciences, most notably psychology, define rationality in terms of how the expectation was formed, not by the ultimate accuracy of the expectation. Economics specifies the characteristics of the outcomes and ignores the actual formation process, whereas other social scientists argue that the only choice for people is to use a rational process when forming their expectations, regardless of the accuracy of the outcome.

This difference between defining rationality in procedural versus substantive terms reflects the underlying perspectives of each discipline. Importantly, this fundamental difference has meant that the empirical evidence assembled by each discipline has been incapable of rejecting the other discipline's position. As a result, most of the ensuing debates were framed in terms of the realism and relevance of the rationality assumptions made by each discipline. Behavioral economists adopted an essentially compromise position that held that the most productive approach was to investigate the limitations, or bounds on full rationality; namely, the ability to acquire the relevant data, the ability to interpret the data, and the ability to make the necessary calculations to form a usable expectation. There was agreement by all sides of the debate, whether economists, psychologists, or behavioral economists, that held that forming expectations was primarily dependent on the ability of agents to engage in conscious cognitive deliberations.

The empirical tests of the rationality assumption involved the central hypothesis that agents who have greater ability to acquire, calculate, and interpret economic data should also form more accurate economic expectations. Proxies for cognitive ability ranged from educational attainment to comparisons between ordinary consumers and professional economic forecasters. While the efficacy of years of formal education as

a proxy for cognitive abilities is questionable, no one could doubt that compared with ordinary consumers, professional economic forecasters had greater access to the required information, had routinely performed the necessary calculations, and knew how to interpret the data. Most of the published empirical findings revealed significant differences between the average levels of expectations among consumers and actual economic outcomes, and a wide dispersion of those differences across the population.

Biased levels and persistent heterogeneity have long been taken as proof that rationality was severely bounded by limitations in the cognitive abilities of consumers. However, most of these empirical findings involved static comparisons, examining differences in some economic variable at one point in time. Clearly, the most important aspect of expectations for macroeconomics is how they change over time; it is this information that influences how people need to adjust their economic decisions. To the surprise of many observers, time-series analysis has repeatedly found that the changes over time in economic expectations were both highly correlated across education levels and highly correlated with the corresponding objective economic data. Indeed, inflation expectations of the general population have been repeatedly found to match those of professional economists who specialize in forecasting. How could this be true if ordinary consumers were hopelessly outmatched in cognitive skills and expertise in interpreting data and the forecasting ability of economists? This has always been a very challenging finding. How could differences in cognitive performance only affect levels and not changes in economic expectations? The conventional theories had no mechanisms that could explain why the means could be biased but not how those means changed over time. This seeming inconsistency can be easily explained under the new paradigm.

### **A More Realistic Paradigm**

Economic theory posits that people form expectations only about factors that could be reasonably anticipated to affect their economic decisions. Orthodox economic theory is silent on whether people would even consider forming an expectation about the future state of a variable that had no impact on their economic decisions. The variable may be valued for other reasons, say to promote an informed citizenry or simply on the grounds of expanding one's knowledge, but expectations about social or political outcomes that had no potential impact on a person's own economic situation are properly excluded from economic analysis. Orthodox theory indicates that people should form expectations about the economic conditions that

they actually face. No reasonable theory could suggest that people should form expectations about every conceivable economic statistic, nor about national averages if they consistently faced a significantly different rate. Who could be considered rational if they based their expectations on the national unemployment rate when their skills were significantly different than average, or used the national inflation rate when the prices they faced in their community were quite different? These implications have often been ignored in empirical analyses, and, more importantly, these misinterpretations have constituted the basis for erroneous empirical conclusions. In particular, the use of a single or “representative” agent in conceptualizing empirical models has produced the misleading notion that agents actually face the national average inflation or unemployment rates. As a result, some analysts have misinterpreted the dispersion of expectations as an indication of irrationality rather than as a reflection of the variations in economic conditions that people actually face.

Without these interpretative flaws, it is easy to reconcile significant differences in the levels of economic expectations across individuals at one point in time with the finding that over time changes in expectations are highly correlated. Differences in expectations reflect differences in economic situations. To be a rational guide for economic decisions, expectations about future jobs and wage prospects should be different in absolute terms among low skilled workers compared with high skilled workers. The same is true for a wide range of economic indicators, including regional as well as other differences in the economic conditions people face in their own communities. Dispersion of expectations is a common fact of economic life. The mere observation that expectations differ from the figures published by national statistical agencies cannot be taken as proof of irrationality.

Given that most economic variables change in the same direction at the same time for most people, the observation that changes in expectations are similar across the population could be taken as an indication of rationality. For example, expectations about unemployment and wages, while consistently showing significant differences at any point in time due to variations in skills, tend to increase or decrease in unison over time. While the level of overall economic growth differs substantially by geographic location, expansions or contractions tend to affect all locales in a similar fashion. The overall implication of these findings is to increase our skepticism about the presumed evidence that limited conscious cognitive skills have created persistent bounds on rationality.

There are other aspects of conventional economic theory that have distorted the results of empirical research. A prime example is when

economic expectations are formed. Orthodox theory assumes that the primary instigator of forming or revising expectations is the availability of new economic information, which is typically released by governmental agencies on a regular schedule. The common practice has been to assert that it is the availability of new data on an economic statistic that sparks the formation or revision of expectations. Moreover, conventional theory has generally assumed that everyone will update their expectations on a wide array of economic statistics in order to be prepared to make whatever economic decisions may arise in the future. No cost–benefit calculations are usually cited, with the implicit implication that the benefits will always exceed the costs. It is often treated as comparable to an insurance model: the formation costs incurred are justified by avoiding the presumably much larger decision losses that may arise suddenly and without warning. People are therefore assumed to hold in memory a wide range of economic expectations, and recall specific expectations whenever they are needed. The full range of economic expectations would involve a substantial amount of time and effort to continually revise and update with each new data release by federal statistical agencies. Those costs are never considered, including the opportunity costs of using one’s mental faculties for other purposes.

Under the new paradigm, it is the need to make a specific economic decision that instigates the formation of the required expectations. It is the characteristics of the decision that enables people to judge the degree of accuracy that is required and hence an upper bound on the cost incurred to form the expectation. For example, people would be much more willing to invest in forming an expectation about interest rate trends if the decision was very sensitive to future interest rates. If the decision was quite insensitive, on the other hand, people may only be willing to invest much less, preferring to form a relatively broad “ball park” estimate. Conventional theorists, in contrast, would argue that only forming expectations after the need is identified would be inefficient and more costly, especially if the decision must be made without a prolonged delay. That explanation assumes that people only base their economic expectations on data provided by governmental agencies rather than including private data that reflects their own actual economic experiences. When this conjecture is subjected to rigorous testing, the general result is that private information is preferred for a broad range of factors that influence people’s economic decisions.

Conventional theories hold that the task of information processing and computations would overwhelm any individual, making the use of official data highly efficient, so much so that it outweighs any quibbles about its applicability to an individual’s situation. This presumption is based on the

limited capacity of conscious cognitive deliberation. The new paradigm recognizes that humans routinely process the vast majority of information nonconsciously, and can form expectations without conscious awareness. If people want to form expectations about the economic conditions that they actually face, it is likely that nonconscious processing would aid conscious deliberation in forming their own economic expectations.

### Full Mental Faculties

The most restrictive conjecture of orthodox theories is that conscious cognitive deliberation is solely responsible for forming rational economic expectations. In contrast, the new paradigm holds that the formation of expectations is an innate and automatic process based on conscious as well as nonconscious cognitive activity, with emotions serving as a motivational force. Forming expectations is an innate adaptive behavior. Expectations are automatically formed from the earliest to the latest stages of life. While it is natural for academic disciplines to theorize about the process, no discipline has delved into the fundamental evolutionary purpose of expectations. The new paradigm holds that expectations act as a means to maximize the potential of the human mind by minimizing needless drains on conscious deliberation by repeatedly forming expectations of common events. Expectations are viewed as critical to the efficient functioning of the human mind. Expectations allow the human mind to maximize the use of its most precious resource: conscious cognitive deliberation. Humans are exposed to a constant stream of information about their environment. The information easily overwhelms the capacity of the conscious mind, leaving nearly all of the information to be processed nonconsciously. Indeed, the nonconscious mind has the capacity to cognitively process information, to learn, and to form most expectations. As will be documented, these nonconscious processes account for the formation of rudimentary expectations by babies as well as the most accurate intuitions of experts.

Many critics of the rational expectations hypothesis have ignored the fact that accuracy is the dominant evolutionary rationale for forming expectations. It is this essential characteristic that enables human information processing to become more efficient as well as more effective. Indeed, accuracy is the only true rationale for forming and holding economic expectations. This is not equivalent to the unrealistic notion that every expectation is formed to be completely accurate; the intended degree of accuracy reflects a tradeoff between costs and benefits. The rational response is to not waste time and effort on a degree of accuracy that cannot

be justified by benefits derived from improved economic decisions. Learning how to maintain the accuracy of their expectations is accomplished by conscious and nonconscious cognitive processes. The higher the premium on the accuracy of an expectation, the more likely it will be based on conscious cognitive deliberation. Nonetheless, it would be a very rare instance in which an economic expectation was formed without being influenced in some crucial way by nonconscious processes.

Another characteristic of the new paradigm is a recognition that expectations are fundamentally context sensitive. This is another distinctive aspect of the new paradigm that sets it apart from conventional theories. Orthodox economic theory holds that expectations are context independent, meaning that exactly the same expectation exists regardless of the context in which it is elicited. An endless stream of experiments have been performed indicating that differences in context influence the elicited expectation. The so-called heuristic and biases approach that emerged was taken to indicate that expectations were not based on rational calculations. The new paradigm comes to exactly the opposite conclusion. It views expectations as context sensitive, and it is this sensitivity that makes expectations more useful decision guides. Moreover, the heuristic and biases approach simply ends the analysis with the presumption of irrationality. No attempt is made to determine how heuristics are formed, their accuracy, or their usefulness. Heuristics are simply the outcomes of nonconscious cognitive processes, and their widespread use may indicate that forming fully rational expectations was typically deemed too costly given the benefits involved. In this new paradigm, rationality only applies to expectations tailored for specific decisions. Rationality is a property of the decision.

### **Rationality Is Context Sensitive**

The most fundamental aspect of the new paradigm is its distinctive version of the rationality hypothesis. The new version does not conform to either the process view of psychologists or the outcome view of economists. To be sure, the new paradigm involves elements of rationality as a process as well as an outcome. The formation process, however, breaks free of the bounds of conscious cognitive deliberation to include the more dominant role of nonconscious, affective, and social influences on processing information relevant to the formation of expectations. While the accuracy of the outcome is still a prime objective of forming expectations, accuracy is never absolute, but only as precise as allowed by a cost–benefit calculation.