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Part I

Introduction

1

Introduction and Summary¹

Expectations and economic theory

The need for a theory

The problem of expectations is one of the central issues of economic theory. Every human action aims at a more or less distant future. Thus, expectations guide all action. For this reason, expectations matter in any economic argument. John Maynard Keynes (1936) helped to make expectations a separate and vital problem of economic theory. He explained unemployment as a product of deficient foresight. No one knows the future. F. A. Hayek (1937) argued that a tendency toward equilibrium exists only if “the expectations of the people and particularly of the entrepreneurs ... become more and more correct” over time. (1937, p. 45). “The only trouble,” Hayek lamented, “is that we are still pretty much in the dark about (a) the conditions under which this tendency is supposed to exist and (b) the nature of the process by which individual knowledge is changed” (1937, p. 45).

Much has been written about expectations since Hayek’s lament. And yet we are still pretty much in the dark. Keynes (1936, 1937) outlined a theory of expectations. Shackle (1949, 1972) and others have developed Keynes’ theory. It is rich in useful insights. I will draw on them in later chapters. But I will also argue that the fundamentals of the theory are deficient. The orthodox treatment takes a view exactly opposite to that of Keynes. With rational expectations, everyone knows the future. There is widespread dissatisfaction with the rational expectations hypothesis. Fundamental criticisms of it are widely accepted. But no clear replacement has yet come along. Fundamental work on learning and expectations has been done by a variety of very different authors. (A few of the more prominent examples are Arthur

1994a, 1994b, Bikhchandani *et al.* 1992, Binmore 1987, Choi 1993, Denzau and North 1994, and O'Driscoll and Rizzo 1996.) This work has not yet given us a complete theory with empirical implications.

Hayek identified a gap in our knowledge. In this book I propose a theory of expectations that helps to fill this gap. The theory explains the process by which individual knowledge is changed. My general theory leads to the theory of Big Players. The theory of Big Players identifies some of the conditions under which the tendency toward equilibrium exists. It has testable implications. My co-authors and I have conducted several tests. So far, the theory holds up. Like other efforts, my theory is incomplete. But it provides broad foundations for further work in the area, and I have drawn from it a reasonably broad set of empirical implications.

The meaning of “expectations”

The term “expectations” covers two different economic concepts. A theory of expectations should encompass both senses of the term. It is unfortunate that one word covers both concepts. But past usage dictates that both concepts identify “expectations.”

In its first meaning, expectations are expectations. In its second meaning, expectations are “as-if” rationalizations. Consider an American crossing the street in London. He knows perfectly well that Londoners drive on the left and that he must look to the right when he steps into the street. But when he does step into the street, he looks to the left. In one sense, he expects cars to drive on the left. If you ask him, he will tell you Londoners drive on the left. In another sense, however, he expects cars to drive on the right. He acts by habit, and cars driving on the right shaped his habits. The expectation is implicit in the action. He acts *as if* he expects cars to drive on the right.

A second example develops the point. My example will be treated more carefully in later chapters. In a stable environment, stock prices approximate present values. Traders have “rational expectations.” This claim does not imply that any one trader has good foresight. It means only that there is no systematic tendency for prices to overestimate or underestimate present values. Otherwise, unexploited profit opportunities would exist. Since profit opportunities are quickly exploited, stock prices are unbiased estimates of present values. The market acts *as if* the *representative agent* has rational expectations whether or not any real trader makes unbiased estimates of present values. In this case, an economist may not be interested in the thoughts of agents. He may be interested only in their actions and interactions.

An exogenous instability might corrupt the market process that keeps prices in line with present values. Traders will be aware of their uncertainty about the future. In their ignorance and uncertainty, they may imitate one another. They herd. The expectations of these uncertain traders are their thoughts about the future, namely the increased difficulty of forecasting. By assumption, the market no longer disciplines agents well. The economist must take some interest in the thoughts of agents.

The as-if expectations of the representative agent do not refer to the cognitive processes of real people. Such expectations are “acognitive.” The expectations invoked in a theory of herding refer to the cognitive processes of real people. Such expectations are “cognitive.” In all markets, whether “efficient” or not, both types of expectations exist. Both can be studied. Their relative importance, however, is not always the same. When the market discipline of profit and loss is severe, cognitive expectations may not have much influence on the overall behavior of the market. Acognitive expectations, and the processes that shape them, may be more important. When the market discipline of profit and loss breaks down, acognitive expectations may be of less interest. The mental processes shaping cognitive expectations may grow in explanatory importance.

The example of the American pedestrian in London shows that cognitive and acognitive expectations may be inconsistent. But this is not the general case. They are probably consistent most of the time. In either case, they will have a kind of coherence. A coherent story accounts for both types and for their degree of consistency. We can understand why the American pedestrian has conflicting cognitive and acognitive expectations.

Cognitive expectations are our ideas about the future. They are “subjective.” The “long-term expectations” of the *General Theory* are cognitive expectations. In this meaning, the economic concept of “expectation” is about the same as the common-sense meaning of “expectation.” Cognitive expectations emerge from processes of learning.

Acognitive expectations are implicit in our actions. They are “objective.” Rational expectations are acognitive, at least in some interpretations. In this meaning, the economic concept of “expectation” differs from the common-sense meaning of “expectation.” Acognitive expectations emerge from natural selection.

It may seem odd to describe rational expectations as “acognitive.” But defenses along these lines are common. Begg (1982), for example, invokes “economic Darwinism” (p. 63). He warns us not to take the

model “too literally” (p. 30). We are “proceeding ‘as if’ individuals” were very clever (p. 30). But the notion of rational expectations as cognitive is still quite common. For example, Sargent (1993) interprets rational expectations as “describing the outcome of a process in which people have optimally *chosen* their perceptions” (p. 7, emphasis in original). The failure to clearly distinguish cognitive and acognitive expectations has contributed to confusion over the correct interpretation of rational expectations.

A theory of expectations should encompass both types of expectations. It should include a theory of cognitive expectations and a theory of acognitive expectations. Any economic argument should be consistent with both theories. It should provide a reasonable account of both cognitive and acognitive expectations. In this sense, there should be coherence between them.

Distinguishing the two meanings of “expectations” has consequences

Distinguishing the two meanings of “expectations” in economics has consequences. The distinction leads us to recognize very different types of analyses that are both important to a theory of expectations. The first uses the “humanistic” notion of “*Verstehen*.” The second uses the “scientific” notion of “natural selection.” One must bring “humanistic” and “scientific” elements under one theoretical umbrella. A body of thought is “humanistic” if it rejects any reduction of human action to simpler non-human elements. In this sense, it may be said to respect the autonomy and dignity of man. A body of thought is “scientific” if it includes law-like generalizations.

The theory of cognitive expectations is closely related to theories of learning and to cognitive psychology. My principle sources in this regard are Alfred Schutz’s *The Phenomenology of the Social World* (1932) and F. A. Hayek’s *The Sensory Order* (1952a). Schutz’s work is not an exercise in cognitive psychology. Like cognitive psychology, however, it provides a description of “shared mental models” (Denzau and North 1994) and of learning. Hayek and Schutz offer something missing in many accounts of cognitive psychology, namely, “*Verstehen*.” *Verstehen*, or “understanding,” is the human ability to grasp what other people have in mind. (See Appendix 1.) We are skilled at guessing meanings even though the evidence is always inadequate to choose among competing possibilities. The *Verstehen* tradition is an important source of theories of interpersonal understanding. A theory of cognitive expectations must include a theory of interpersonal understanding.

Schutz's work was originally meant to defend the "Austrian" version of neoclassical economics (Prendergast 1986) and was a fundamental influence on Fritz Machlup (Koppl 2000a, Langlois and Koppl 1991).² Schutz's analysis of "anonymity" is fundamental to the theory of cognitive expectations. Hayek's work addressed a traditional problem in philosophy, namely the mind-body problem. His solution led him to a cognitive psychology with useful implications for economics. Because Hayek was first and foremost an economist, his theory of mind should be of special interest to economists who recognize the need for a cognitive element in economic theory.

In the right institutional context, the filter of profit and loss will select acognitive expectations that are highly adapted to the economic environment. Economic expectations will be relatively prescient. In some of these cases, the assumption of rational maximizing may be appropriate. In other contexts, however, natural selection does not yield approximations to optimal actions. Economic expectations will be less prescient. In such cases, the assumption of rational maximizing is inappropriate. The evolutionary environment determines the degree of "rationality" of outcomes and the prescience of expectations. Expectations will be more prescient in some environments than in others. My sources for the analysis of economic evolution include Alchian (1950), Hayek (1967a, 1967b, 1973), Langlois (1986b), Menger (1871, 1883), Schumpeter (1934), Adam Smith (1937), and Max Weber (1927).

A stable economic environment with atomistic competition tends to produce rational outcomes and prescient expectations. Lack of stability or atomism produces ignorance and uncertainty. Economic expectations grow less reliable. My empirical results address one way in which atomism may be reduced, namely, by the presence of a "Big Player." The presence of Big Players tends to produce "Keynesian" behavior in financial markets. This behavior includes herding. Stability and atomism encourages a more "neoclassical" result. The theory of Big Players draws on Keynes (1936) and others influenced by him, such as Scharfstein and Stein (1990). But it views quite differently the ignorance and uncertainty that produce herding. In Keynes' theory, ignorance and uncertainty are irremediable; herding is a consequence of liquidity. In my theory, ignorance, uncertainty, and herding are remediable consequences of the institutional environment of financial markets. They are always present in some degree, but policies and institutions influence them greatly.

A preview of some useful foundations for the theory

My theory brings together seemingly very disparate elements. It includes a theory of cognitive expectations and a theory of acognitive expectations. It includes “neoclassical” models of efficient financial markets and “Keynesian” models of herding. To bring all these elements together coherently, it is convenient to abandon the “neoclassical” model of utility maximization in favor of a version of rule following. In Chapter 5 I propose viewing any social action as a skilled performance subject to the publicly known rules of some *language game*. (Compare Koppl and Langlois, 1994, pp. 81–82.) A “language game” is “a set of rules about how to talk, think, and act in different situations” (Koppl and Langlois, 1994, p. 82).³ The language-games framework is a semantic convention that I believe may be useful for economists. It includes neoclassical maximizing as an important special case.

The rules of a language game may be viewed from three perspectives. First, they tell us what to think. This perspective gives us the agent-theory of the language game. Second, they tell us what to say. This perspective gives us the agent-rhetoric of the language game. Third, they tell us what to do. This perspective gives us the agent-practice of a language game.

The “subjective” theory of cognitive expectations studies the agent-theories of operative language games. The “objective” theory of acognitive expectations studies the agent-practices of operative language games. The value of the language-games framework is precisely that it allows us to distinguish, within one unifying framework, the objective and subjective dimensions of human action. Furthermore, it can correlate them with the rhetoric used by economic actors. McCloskey and Klamer (1995) argue that we should view economic actors as “rhetors.” A theory of agent-rhetoric is vital to the economic theory of ideology (Koppl and Langlois 1994).

The role of expectations in economics as a social science⁴

The theory of expectations I propose in this book grew out of an attempt to understand the problem of expectations as Ludwig Lachmann saw it. Lachmann first stated the problem of expectations that I have taken up. In his essay on “The Role of Expectations in Economics as a Social Science” (1943). Lachmann drew our attention to the need for a theory of expectations in which each person’s actions are animated by the spontaneous activity of a free human mind. I will call the problem of building a radically subjectivist theory of expectations the “Lachmann problem.”

It is not obvious how the Lachmann problem can be solved. How can I let the agents of my model be free and still predict anything – even within the model! We should take Lachmann’s radical subjectivism seriously. But if we do, we seem to fall into the horrible pit of open possibility with no ladder upon which to get out. This, we have been told, is nihilism.

I think there is a way out. We can combine the radical subjectivist’s attention to human thoughts with a more “objective” understanding of the evolution of rule-governed action. Doing so may permit us to correlate observable market conditions with certain properties of economic expectations. It may help us to learn when expectations will be more prescient and when less. It may help us learn when markets are driven mostly by fundamentals and when they are more subject to fad and fashion. This solution has been sketched above.

In his essay “The Role of Expectations in Economics as a Social Science” (1943), Lachmann mapped out a position from which he never deviated. It is this same position, for instance, that he adopted in an important essay for the *Journal of Economic Literature*, “From Mises to Shackle: An Essay on Austrian Economics and the Kaleidic Society” (Lachmann 1976). Lachmann called for a theory of expectations that goes beyond the efforts proposed by mainstream economists.

The “modern theory” of the 1930s had brought the “introduction of expectations” into economics (1943, p. 65). Some, Keynes among them, had treated expectations as “data.” Others had proposed to treat them as “variables it is our task to explain” (Schumpeter 1939, vol. I, p. 55 as quoted in Lachmann 1943, p. 66). Lachmann rejected both ways of treating expectations.

We cannot regard expectations as mere “data,” as given to us. We must ask “why they are what they are” (1943, p. 65). We are, indeed, “compelled” to seek out a “causal explanation” of economic expectations (1943, p. 65). Expectations, after all, are on a “somewhat different plane” (1943, p. 66) from the distribution of mineral deposits or the public’s preferences between movie directors. The distribution of expectations, unlike that of mineral deposits, is “largely the result of the experience of economic processes” (1943, p. 66).

But neither can we regard expectations as variables to be inferred from the “business situation.” Different interpreting minds will draw different inferences from the same “objective” data. Thus, “there will be as many ‘business situations’ as there are different interpretations of the same facts, and they will all exist alongside each other” (1943, p. 67).

Here we come to the dark heart of Lachmann's ideas on expectations. Expectations are not constant, or even changing, data impinging, as it were, from outside the economic process. They are interpretations. But interpretations differ in ways that defy prediction: "The absence of a uniform relationship between a set of observable events which might be described as a *situation* on the one hand, and expectations on the other hand, is thus seen to be the crux of the matter" (1943, p. 67, emphasis in original). We are thus obliged to view expectations as "economically indeterminate" (1943, p. 67). For Lachmann, "it cannot be emphasized too strongly" that attempts to test empirical hypotheses with historical data will be "quite useless" if they are "confined to the study of [the] relations between objective facts and expectations" (1943, p. 68). The best we can do is to render expectations "intelligible" by seeing in them a plan based on an interpretation of the facts of experience (1943, pp. 68–73). (I will come to a somewhat more optimistic conclusion.)

For Lachmann, "it is by reducing 'action' to 'plan' that we 'understand' the actions of individuals" (1943, p. 69). He infers from this that "it is the *subjective* nature of beliefs which imparts indeterminateness to expectations" but "it is their *mental* nature which renders them capable of explanation" (1943, p. 73, emphasis in original). He draws the further conclusion that economists must (in 1943) expand beyond "the subjectivism of wants" to embrace "the subjectivism of interpretation" (1943, p. 73). I take this to be the same position expressed in 1976 as the invitation to "extend" subjectivism from Mises to Shackle, from the subjectivism of "tastes" to the subjectivism of "expectations" (1976, p. 58). The theory of expectations whose absence Lachmann calls our attention to must embrace the "subjectivism of interpretation" (1943, p. 69). He later spoke of the "subjectivism of active minds." "The mental activity of ordering and formulating ends allocating means to them, making and revising plans, determining when action has been successful, all these are its forms of expression" (Lachmann, 1990, p. 37).

Lachmann has put a hard task indeed to economists. Expectations are to be neither data nor variables. They are to be endogenous, but not functionally related to observable facts. Rather than functional relations, we are to see in expectations subjective interpretations of facts whose meaning for future action is always more or less obscure.

A theory that satisfies Lachmann's call for a subjectivism of interpretations must satisfy three criteria. First, it must give expectations a place within economic theory. Second, the theory must be subjective in a strong sense: expectations are produced by active minds, each of

which is more or less unique. Finally, expectations must be endogenous to the market process.

The hard thing is to satisfy the second and third criteria simultaneously. Expectations may be right or wrong. Market efficiency depends crucially on the accuracy of economic expectations. If one doubts that markets tend to coordinate action, one may be inclined to think that expectations are formed through an essentially psychological process as in Keynes' Chapter 12. Greater faith in the market may incline one to think that expectations are indeed "rational" in a sense close to that of Lucas and Muth. But as I indicated earlier, both the New Classical and Old Keynesian approaches to expectations require one to choose in advance one's modeling strategy. One must decide *a priori* whether to represent expectations as "rational" and coordinative or as "psychological" and disequilibrating. The trick, I think, is to represent endogenously formed expectations in a way that skirts the unsatisfactory choice between *faith* and *doubt* in the coordinative prowess of markets. If we are stuck with an *a priori* choice between faith and doubt, an essential question of our discipline is not empirical or logical, but purely ideological. If the Lachmann problem can be solved, perhaps we can avoid this ideologically charged choice.

Outline of the theory

As I indicated above, I distinguish two kinds of expectations. Cognitive expectations are individual thoughts about the future. Acognitive expectations are propensities to act. I rely mostly on Alfred Schutz for my treatment of cognitive expectations. I rely mostly on F.A. Hayek for my treatment of acognitive expectations.

Schutz and the Lachmann problem

Schutz made a detailed study of how meanings are produced and distributed in society. He showed that we think in stereotypes. He called them "typifications." These typifications are always somewhat empty caricatures of the reality they represent. Some of them, however, are closer to reality than others. Some of our typifications of other people are very detailed. They contained many psychological particulars. Your typification of a loved one contains a rich psychological portrait of a unique individual. It is very "concrete." Other typifications are quite empty. Your typification of a "bus driver" does not represent any particular person. It contains a very thin psychological portrait. It is highly "anonymous."

Anonymous types help us to form reliable expectations. I explain how in Chapter 6, where I discuss “Anonymity and Reflexivity.” In the right situation, that of “closed reflexivity,” anonymity helps us form reliable expectations. You can reliably expect a bus driver to show up at the bus stop at the customary time and follow the customary route. You cannot reliably predict what unique individuals will do. No one expected Alexander to cut the Gordian knot.

The use of anonymous types helps economic actors make reliable predictions. Something similar may be said of economic theorists. Social scientists may be able to predict confidently the results of processes whose descriptions are given using only personal types of high anonymity. But when the description of a social process requires the use of some personal type(s) of low anonymity, the predictions of social science are more or less unreliable. This point is illustrated by three propositions discussed by Fritz Machlup (1936) in a paper intended to convey some of Schutz’s ideas to an audience of economists (the quoted passage has been discussed in Langlois 1986a and Langlois and Koppl 1991):

Statement (1): “If, because of an abundant crop, the output of wheat is much increased, the price of wheat will fall.”

Statement (2): “If, because of increased wage-rates and decreased interest rates, capital becomes relatively cheaper than labor, new labor-saving devices will be invented.”

Statement (3): “If, because of heavy withdrawals of foreign deposits, the banks are in danger of insolvency, the Central Bank Authorities will extend the necessary credit.” (Machlup 1936, p. 64)

The first statement is more reliable than the second and the second is more reliable than the third. Why? As we go down from the first statement, we reach ideal types of lower anonymity. Machlup explained that:

the causal relations such as stated in (2) and (3) are derived from types of human conduct of a lesser generality or anonymity. To make a statement about the actions of bank authorities (such as (3)) calls for reasoning in a stratum of behavior conceptions of much less anonymous types of actors. We have to know or imagine the acting persons much more intimately. (Machlup 1936, p. 64)

That greater intimacy implies a greater chance that the actor will surprise us by acting out of character. (Later in this chapter I will discuss

what Langlois calls the “system constraint” and its role in determining when to use anonymous types.) We cannot be sure the central bank authorities will extend the necessary credit. It is a good guess they will, but they may surprise us with an act of monetary restraint. We can be much more confident in the coming reduction of wheat prices. We can rely on an anonymous typification of the wheat farmer. We need non-anonymous typifications of the central bank’s high officials.

Schutz’s concept of anonymity helps us to understand how social order is achieved in spite of the subjectivism of active minds. We can cooperate with anonymous others precisely because of their anonymity. Typifications of high anonymity are thin descriptions of robotic creatures. We know that each real person is unique. But we rely on stereotyped pictures of anonymous others. To the extent that we can rely on anonymous typifications of others, we can ignore the idiosyncrasies of our fellow actors. Concrete and anonymous typifications of other people are different. The difference matters. It helps us to solve the Lachmann problem.

The Lachmann problem is the need to have a theory of expectations that builds on the idea that each person’s actions are animated by the spontaneous activity of a free human mind. The personal and interpretive quality of (cognitive) expectations spells trouble for any theory of expectations. We seem to require a detailed psychological portrait of each economic actor if we are to say anything at all about the market process. Moreover, each actor seems to require the same sort of psychological detail in his mental portrait of each of his fellow actors.

Schutz’s discussion of anonymity shows that we do not always need to rely on a psychologically rich picture of economic actors. Both economic actors and economists may sometimes forgo thick description in favor of thin description. When the observer or his subject requires reference to concrete typifications, we may not be able to say much about expectations. In that case, the results of the market process will be hard to predict.

In other words, the Lachmann problem is more acute in some contexts, less acute in others. When it is most acute, the market process will be hard to fathom and economic theory of limited predictive value. When the Lachmann problem is least acute, the market process will be more transparent and economic theory will have greater predictive value.

Hayek and the Lachmann problem

I have argued that sometimes thin description is good enough. The trick is to know when. On this point Schutz is silent. I think it is fair to

say that “radical subjectivism” has so far failed to tell us much about when economic actors might get along with anonymous types.

Perhaps we should not be surprised if radical subjectivism has not told us when thin description is enough. A radically subjectivist account would have to run in terms of the thoughts of economic actors. What we want to know is when those thoughts employ non-anonymous types. But a radically subjectivist account would have to begin with the thoughts of the agent. It is hard to see how a pure subjectivist could get beyond the circular claim that agents use thin description when they use thin description. What we seem to require is a set of “objective” conditions under which the “subjective” thoughts of agents may be represented as employing only anonymous types.⁵ Similarly, we need a set of objective conditions under which our own thinking as scientific observers may employ only anonymous types.

Consider again Machlup’s three statements. Statement (1) said that “If, because of an abundant crop, the output of wheat is much increased, the price of wheat will fall.” What is it that lets our reasoning be guided by anonymous types in this case? Why is a thin description enough? As Langlois and I have argued, it is the “system constraint” (Langlois and Koppl 1991, p. 92). The system constraint is the constraint imposed on individual action by the larger institutional system within which the action takes place. Imagine we have one or a few idiosyncratic wheat farmers or wheat traders. They may act foolishly or arbitrarily. These few oddballs cannot reverse the tide of events. If they try, they risk losses and banishment from the market. The large number of competitors involved and the discipline of profit and loss ensure that we may safely ignore any idiosyncrasies of behavior in the wheat market. Thin description will do for economic observers.

Now consider the positions of participants in the wheat market. If they are operating under a tight system constraint, their actions will be driven into approximate conformity with the underlying situational logic. Those whose actions stray too far from this logic will suffer losses that, if uncorrected, will drive them from the market. A tight system constraint produces a relatively high correspondence between action and circumstance. Under such conditions, we may represent the thoughts of agents as expressing the same correspondence; agents act as if they had prescient expectations. The condition that lets us represent agents in this as-if way is the tight system constraint. But this is also the condition that lets observers rely exclusively on anonymous types. When the system constraint is tight, economic actors forgo thick description in favor of thin description.

The market's evolutionary selection mechanism sometimes keeps anticipations in line, but sometimes does not. I identify two conditions that promote prescient expectations. The first is that the rules of the game of market competition are stable. The second is that competition is atomistic.

The rules of the game are stable when changes in them are small and infrequent. The rules that count here are both formal and informal. Indeed, the only formal rules that count are those that are enforced at least some of the time. Human habits are constantly changing piecemeal. Thus, perfect stability is impossible. But we can often say that the rules of the game are more stable in this market, less stable in that one.

Competition is atomistic when it is rivalrous. When each supplier considers his own actions to have an insignificant impact on the overall market, when there is little "rival consciousness" (Machlup 1952), then competition is atomistic in the relevant sense.

Under the conditions of stability and atomism, I will argue, evolutionary selection mechanisms of the sort Hayek analyzed will produce relatively high levels of economic efficiency. Stable evolutionary environments produce prescient expectations in the social world, goodness of fit in the biological world.

The evolutionary and Hayekian considerations of the present section may not seem to fit well with the phenomenological and Schutzian considerations of the previous section. In the Hayekian view, expectations are (mostly) dispositions to act. The Schutzian framework takes expectations to be thoughts. It is not immediately obvious that these are consistent perspectives. Some definitions may help to clarify the issues.

Fitting cognitive and acognitive expectations together

The "expectations" of economic theory are often acognitive expectations. We say that creditors "expect" zero inflation if they do not insist on an inflation premium. This "expectation" may be nothing more than the conformity to old habits and ways of doing business. Conceivably, some creditors might even have cognitive expectations of inflation. If they don't understand the effect of inflation on purchasing power, they won't ask for an inflation premium. The case imagined is not purely hypothetical. In 1997, an important Italian labor leader expressed concern over the government's low inflation target. Such low inflation, he objected, would reduce the purchasing power of workers' wages.

One must be able to give a reasonable account of the cognitive expectations animating the actions of economic agents. This is a kind of test. If your model requires that we imagine agents acting on unreasonable cognitive expectations, the model is unreasonable. If the cognitive expectations at work are reasonable, the model passes the test.

Acognitive expectations and cognitive expectations are distinct objects. On narrow logical grounds, any combination of them is possible. But it seems reasonable to suppose the two typically fit together. A theory of acognitive expectations without a correlated theory of cognitive expectations is tenuous. We may wonder if any plausible cognitive expectations could correlate with the posited dispositions. Rational expectations, for example, are an assumption about acognitive expectations. Traders act on average as if they had the true model in mind. The assumption is reasonable in some circumstances. But it is not reasonable to assume rational expectations when the implied cognitive expectations entail, say, superhuman powers of calculation.

A theory of cognitive expectations without a correlated theory of acognitive expectations is also dubious, and for a parallel reason. Without the latter we cannot be sure the posited cognitive expectations would really come to prevail. Expectations are, as Lachmann insisted, endogenous to the market process. If we do not correlate our understanding of cognitive expectations with a story of the emergence of acognitive expectations, we have to doubt that the imagined cognitive expectations would really survive the test of market competition. An example may clarify some of the issues. My example will also bring us to some falsifiable implications of my theory of expectations.

Big Players

Consider the operation of a modern asset market. Traders must anticipate future values at least passably well if they are not to be forced out of the game by losses. Profits will encourage those with unusually good foresight to keep at it. An evolutionary selection mechanism works to keep anticipations more or less in line with underlying asset values. If the filter works well, prices will stay close to fundamental values. If the filter works badly, prices may wander freely. Whether the filter works well or not is an empirical question.

Efficient market theories predict that market prices will reflect all available information. (Different kinds of efficiency correspond to different assumptions about what information is available.) An important implication of such theories (together with a few subsidiary assumptions) is that the past changes in an asset's price give no evidence

about the direction of future changes. In consequence, (and ignoring some complications about payouts) the expected value of an asset's price in any period is simply its price in the previous period. This property of the return series defines a "martingale." (A random walk is a special case of a martingale in which the higher moments are not expected to change over time. Statistical dependence in higher moments, as with GARCH models, does not violate the efficient markets hypothesis. See LeRoy 1989 for a review of basic issues.)

The statistical evidence for the efficiency of asset markets is strong enough to have persuaded many serious and competent judges. Others doubt. There are many apparent counter-examples. Some evidence suggests that observable market conditions help determine how efficient asset markets are. I review that evidence below and discuss it at greater length in later chapters. The degree of efficiency may be an endogenous variable.

According to the theory of "Big Players" discussed in Chapter 7, the order-giving properties of the filter of profit and loss are corrupted when "Big Players" derange markets. Yeager and I define a Big Player as "anyone who habitually exercises discretionary power to influence the market while himself remaining wholly or largely immune from the discipline of profit and loss" (Koppl and Yeager 1996, p. 368). An interventionist finance minister is our paradigm of a Big Player. But a Big Player may be any actor who combines three things: namely, the power to influence some market, a degree of immunity from competition, and use of discretion in the exercise of his power. Big Players corrupt economic expectations. In financial markets they encourage herding.

The point of the Big Players theory can be put in Schutzian terms. It is a matter of cognitive expectations. Big Players divert each trader's attention from underlying conditions of supply and demand towards the personality of the Big Player. It is hard to know what a Big Player will do. Market participants must base their expectations on a picture of the market in which a highly non-anonymous ideal type is prominent. But this picture is always more or less dubious. Thus, the overall reliability and prescience of economic expectations is reduced. In financial markets, traders come to have less confidence in their own expectations and relatively more confidence in the opinions of others. The importance of the non-anonymous type and the ignorance and uncertainty traders feel regarding the Big Player encourage them to follow the trend. Big Players encourage herding in financial markets.

The point of the Big Players theory may also be put in Hayekian evolutionary terms. The presence of Big Players destabilizes the evolutionary environment. Some actors in the market will have dispositions to act in ways that roughly correspond to the best available guess about the future. These are “fit dispositions.” Others will have dispositions to act in ways that are more distant from the underlying economic realities. These are “unfit dispositions.” Big Players make fit dispositions less likely to bring profits, more likely to bring losses. They make unfit dispositions less likely to bring losses, more likely to bring profits. Big Players make luck count for more, skill count for less. The dispositions guiding action will be less fit when Big Players derange markets. The overall reliability of acognitive expectations will be lower in the presence of Big Players. In financial markets, the disposition to follow trends is less likely to bring losses. The disposition to respond to fundamentals is more likely to produce losses. Traders who survive market competition under Big Players will have a higher average propensity to herd. Big Players encourage herding in financial markets.

Big Players also encourage “contra-herding.” Contra-herding is the tendency for one day’s movement in an asset’s price to be reversed the next day. When Big Players operate, it is hard to understand the meaning of a price change. Some will see a trend. Other will expect a “correction.” Some will follow the trend. Others will be contrarians. Herding and contra-herding will produce bulls and bears who will struggle over the price of the asset.

In the Big Players theory cognitive and acognitive expectations fit together. This complementarity is a strength of the theory. Other theories lack this complementarity. Keynes’s treatment of long-run expectations, for example, is about cognitive expectations. It is not clear, in his analysis, what institutional properties of financial markets encourage the perversities he identifies, and what properties discourage them. Keynes refers only to liquidity. Models with rational expectations refer, presumably, to acognitive expectations. They seem to imply that cognitive expectations are perfectly plastic, taking whatever form is needed to generate the predicted behavior. As Thomas Sargent has noted, rational expectations seem to imply that economic actors know with certainty the very structural parameters of the economy that econometricians can only estimate with uncertainty (Sargent 1993, p. 21). The examples of Keynes and rational expectations help to show that we should prefer economic arguments that combine and correlate plausible treatments of both cognitive and acognitive expectations.

Statistical evidence

Chapters 8–10 report on empirical tests of the Big Players theory. Chapter 8 discusses Koppl and Yeager (1996) and Broussard and Koppl (1999). Yeager and I studied an important episode in Russian monetary history using data collected by Yeager. Broussard and I applied a different statistical techniques to the same data. Chapter 9 discusses Koppl and Nardone (2001). Nardone and I propose a new set of statistical tools and apply them to Yeager’s ruble data.

Chapter 10 discusses Gilanshah and Koppl (2001). Gilanshah and I studied U.S. money demand from 1950 to 1990. In each of these studies the results were consistent with the Big Player theory. The results tend to support the theory.

Koppl and Yeager (1996) identify an important episode in Russian monetary history. Leland Yeager discovered the episode in question. Yeager gathered the exchange rates analyzed by Koppl and Yeager, Koppl and Nardone, and Broussard and Koppl. From 1856 to 1897 Russia had a paper currency, the “credit ruble.” The ruble was typically subject to frequent interventions from the office of the treasury minister. It was a dirty float. Nicolai Bunge was an exception. During his tenure as finance minister, the ruble was left to float freely. Bunge was a strict non-interventionist in the foreign-exchange market. His successor, Ivan Vyshnegradsky was an unusually vigorous interventionist. The period of these two finance ministers gives us an unusually clear case of a move from less to more Big Player influence. Figure 8.1 (p. 150) shows how the behavior of the ruble changed after Vyshnegradsky took office.

Yeager and I analyzed the data graphed in Figure 8.1. We used Mandelbrot’s R/S analysis. (My reasons for preferring the “classical” R/S analysis to Lo’s approach are given in Chapter 8.) R/S analysis can be used to test for herding (Ahmed *et al.* 1997, Kaen and Rosenman 1986). An increase in the “Hurst coefficient” indicates an increase in herding. The test indicates an increase in herding in the international market for rubles during Vyshnegradsky’s tenure as finance minister.

Broussard and I fit a GARCH model to Yeager’s ruble data. Figure 8.2 (p. 152) shows the price movements of the ruble under the two finance ministers. We show that GARCH effects are stronger under Vyshnegradsky than under Bunge. We argue that this result is evidence of both herding and contra-herding in the ruble. Recall that contra-herding is the tendency for one day’s movement in an asset’s price to be reversed the next day. Imagine an asset’s price rises for some reason. If no Big Player troubles the market, the price hike may be interpreted as fully reflecting some recent news. If a Big Player is influencing the

market, traders will be uncertain. Bulls and bears will react differently to the same event. If the bulls outweigh the bears, the next day's price movement will be in the same direction and may be of about the same size. If the bears outweigh the bulls, the next day's price movement will be in the opposite direction and may be of about the same size. Whether the bulls or the bears prevail, the next day's price may move by about the same amount. This implies statistical dependence in the second moment of the return series. GARCH effects grow stronger when Big Players induce herding and contra-herding.

Nardone and I find further evidence for herding and contra-herding. Following Crack and Ledoit (1996), we plot each day's return against the return of the previous day. Figure 9.1 (p. 165) shows the resulting "compass rose" pattern. The compass rose results from discreteness in the data. We devised a way to identify patterns in the compass rose other than those imposed by discreteness. We plot the number of points clustered about each ray against the angle of that ray. This gives us the "theta histogram" of Figure 9.3 (p. 169). A Monte Carlo technique lets us construct the theta histogram that would exist if returns were statistically independent. The resulting "bootstrapped histogram" may be compared to the "empirical histogram." Figures in Chapter 9 show the empirical and bootstrapped theta histograms for Bunge and for Vyshnegradsky. Statistical tests show that the null hypothesis of statistical independence cannot be rejected for the Bunge period. Statistical dependence is clearly present in the Vyshnegradsky period. This difference between the Bunge and Vyshnegradsky periods is evidence that Big Players encourage herding and contra-herding.

Gilanshah and I study U.S. money demand from 1950 to 1990. We argue that the money supply process was more subject to Big Player discretion after 1970 than before. We show that this difference implies more herding in money demand after 1970 than before. Herding can occur in the market for cash balances. A significant portion of money demand comes from firms. Firms often hire specialists in cash management. Cash managers may engage in herding if they follow the same set of professional advisors. Big Players encourage cash managers to follow the advice of outside experts.

An increase of herding in money demand will change the behavior of the residuals of an appropriately specified money demand equation. R/S analysis of the residuals should show an increase in the "Hurst coefficient" when herding increases. We show that precisely such an increase occurs after 1970. One reason for the recent instability of U.S. money demand is the recent instability of U.S. money supply.

The following chapters develop the argument of this chapter more carefully. Chapter 2 explains how the methodological ideas of Schutz and Hayek emerged from inter-war Vienna and the “Mises’ Circle” in which they both participated. The seemingly very different theoretical systems of Schutz and Hayek emerged from the same set of problems and the same very small circle of scholars. Schutz and Hayek were friends in Vienna and remained in contact until Schutz’s untimely death in 1960. The theories of these two Viennese authors are based on the same basic methodological position and are thus perfectly complementary.

Chapter 3 explains Schutz’s phenomenological psychology and his important idea of anonymity. (Discussion of Schutz’s theory of relevance is postponed until Chapter 6.) Schutz is known for combining the ideal type method of Max Weber with the phenomenological philosophy of Edmund Husserl. The result of Schutz’s synthesis is an unusually clear – and useful – picture of human action in society and of the division of knowledge in society.

Chapter 4 discusses Hayek’s theory of mind and his evolutionary economics. Hayek’s evolutionary approach to the study of man owes much to Armen Alchian’s famous essay on evolution (1950). It is also based, however, on an essay Hayek wrote in 1920 while still a university student. It combines elements from evolutionary biology with elements from the older Scottish Enlightenment tradition of social thought (Horwitz 1999). Hayek’s theory helps us to understand how the “lifeworld” Schutz describes could come to be and to have a relatively high degree of coherence.

Chapter 5 develops the language-games framework upon which I build my theory. As I explain there, the idea of language games comes from Wittgenstein (1958a, 1958b). It is doubtful, however, that my theory is “Wittgensteinian.” It has certainly been colored in some degree by his ideas. But I have not attempted to stay close to his views, and I have probably made arguments no Wittgensteinian would accept. The language-games framework provides room for both rule-following and the sort of directed cunning expressed by rational-choice models.

Chapter 6 presents the core elements of my theory of expectations. The theory might be described as “Austrian” because it relies heavily on Kirzner, Hayek, and Schutz. The concept of “language game” lets me reinterpret Kirzner’s entrepreneur as both Schutzian interpreter and Hayekian learner. The formation and adaptation of expectations is then embodied in the entrepreneurial agent. Chapter 7 presents the theory of Big Players and applies it to financial markets. Chapters 8–10 are devoted to statistical tests, as indicated earlier. Closing remarks are in a Coda.

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