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BETWEEN VIENNA AND CAMBRIDGE: THE RISKY BUSINESS OF NEW AUSTRIAN BUSINESS-CYCLE THEORY

ABSTRACT: *Tyler Cowen's "New Austrian" theory of business cycles is based on risk analysis and the assumption of rational expectations. This contrasts with the Old Austrian view, which questions the feasibility of measuring economic risk. Despite Cowen's admirable eclecticism, the way he applies risk analysis to business cycles suffers from serious inconsistencies, and his use of rational expectations is mistaken in the face of economic complexity—a phenomenon that was accurately understood by the traditional Austrians.*

The last quarter century has seen a proliferation of "new" schools of economic thought. New Classical Economics, New Institutional Economics, and New Keynesian Economics have all had a substantial effect on how economists think. Now New Austrian Economics arrives, in the form of Tyler Cowen's *Risk and Business Cycles: New and Old Austrian Perspectives* (London: Routledge, 1997). Cowen's New Austrianism shares with the more macroeconomically oriented New Classical and New Keynesian schools the assumption of rational expectations, and a desire to revise the ideas of an older school accordingly.

The result compares strongly with the New Keynesian effort, in that what results is something that departs radically from the "old

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school." Indeed, it may well be that the Old Austrian and Old Keynesian schools have more in common with each other than either has with their alleged new versions, which in turn have more in common with each other, and with the New Classical school, than they do with either of these older schools. But newer does not necessarily mean better.

The Austrian School on Business Cycles

The Old Austrian theory of business cycles grew out of the tradition that had developed in Vienna from the 1870s onward, beginning with Carl Menger, although he was less concerned with macroeconomics or business-cycle theory than later Austrian theorists were. Menger's follower, Eugen von Böhm-Bawerk, advanced the idea that capital represents the average period of production, a concept he developed in response to Karl Marx's argument that capital was not an independent (or socially legitimate) source of value. Böhm-Bawerk's temporal definition of capital strongly influenced Ludwig von Mises and thence Friedrich Hayek, who can be seen as having codified the Old Austrian business-cycle theory in the 1920s and 1930s, especially in *Prices and Production* (1931, originally published in German in 1928) and *Monetary Theory and the Trade Cycle* (1933). Hayek actively debated John Maynard Keynes over these matters during the Great Depression.

In these works, Hayek used the temporal perspective on capital to argue that mismanaged monetary policy triggers business cycles. Monetary authorities overstimulate the economy by expanding the money supply excessively, causing interest rates to fall too low. In contrast with Chicago-school monetarists of the Milton Friedman variety, Hayek held that the inflationary effect of this monetary expansion is not the chief culprit, although Hayek was no fan of inflation. The problem is that when the interest rate is too low, it distorts intertemporal prices, in effect pricing the future too high relative to the present. This distorts the intertemporal allocation of production by triggering a binge of overinvestment. Unsurprisingly, the markets eventually realize this and react by going in the opposite direction, pushing interest rates up and liquidating the excess stock of capital (and laying off employees who had worked with that capital stock). In short, the economy adjusts by experiencing a recession or even a depression. Mises had importantly

prefigured many of these arguments, at one point in the 1920s forecast-
ing the Great Depression in light of what he perceived to be overly ex-
pansionary monetary policy.

The Old Austrian explanation of business cycles, then, locates their
origin in overinvestment in long-term capital projects due to excessive
monetary expansion. Cowen tries to incorporate into this view mod-
ern theories of financial risk, with the emphasis shifting from temporal-
ity to the idea that *volatile* monetary policy increases riskiness, inducing
business cycles. Cowen sees the older approach as violating the assump-
tion that market participants' expectations are rational. The error that
Hayek and Mises presume that investors make in response to excessively
low interest rates—making too many long-term investments—displays
systematic irrationality. In Cowen's telling, by contrast, investors do not
make systematic errors in any direction; instead they react to changes in
the perceived riskiness of the environment. Monetary expansion that
leads in the short run to lower interest rates increases the instability of
the economy because it induces longer-term investments (as in the
older theory) that are riskier; as well, policy volatility magnifies the per-
ception of riskiness, reducing longer-term investments. Cowen recog-
nizes that this latter effect resemble Keynes's "liquidity preference,"
whereby perceived increases in "uncertainty" lead investors to hold cash
rather than investing it. The main link with the older theory would
seem to lie in the argument that longer-term investments are riskier,
which means that excessive amounts of them can destabilize the econ-
omy and throw it into a recession or depression when they need to be
liquidated.

For Cowen, the real sin of discretionary central banking is not over-
expansion per se, but unexpected policy variability. But since Cowen
quite reasonably assumes that a greater overall degree of monetary ex-
pansion is likely to coincide with unexpected shifts in policy, in essence,
he, like Chicagoans, favors monetary rules in order to reduce the
volatility facing entrepreneurs and other decision makers, especially
those contemplating the capital investments that determine the future
growth of the economy. In his view, recessions arise when market par-
ticipants, especially those making real capital investments, perceive risk
to have increased and thus lose their Keynesian "animal spirits"—their
willingness to invest.

Keynes on Business Cycles and Uncertainty

Keynes originally argued, against Hayek, that central banks have relatively little power and that the declines in investment seen during recessions arise from more deeply rooted factors, especially the animal spirits of those making capital investments. Whereas Hayek saw the economy behaving smoothly if only monetary policy would be "neutral," Keynes (1936) had no such confidence because he saw exogenous shifts of spending propensities triggering business cycles. In this respect, Cowen combines Hayek and Keynes.

However, on another matter, Keynes more closely resembles the Old Austrian perspective than he does either Cowen's New Austrian view or even, arguably, the recently fashionable New Keynesian view. This matter is the issue of risk that Cowen puts front and center as the key explanatory variable of business cycles. Cowen bases his view on modern financial theory, which assumes that measurable risk is traded off against expected returns by investors who maximize their utilities and possess rational expectations—meaning that they can, on average, accurately forecast the future. Such theories of risk are ultimately derived, through the writings of the Old Keynesian, James Tobin (1959), from Keynes's own work. Keynes argued that the animal spirits of investors would decline in the face of uncertainty. Tobin used this argument to develop modern theories of finance based on measurable risk. But neither Keynes nor the Old Austrians, such as Mises and Hayek, accepted the notion of *measurable* risk except in very limited cases—certainly not, as Cowen does, in understanding economic fluctuations..

There is much to be said for the Old Keynesian/Austrian view. However, I see the problem of ineluctably unmeasurable uncertainty as arising from the complex dynamics of the modern economy (Rosser 1999). Like Thomas Sargent (1993), one of the first economists to apply the idea of rational expectations to macroeconomics, it seems to me that complexity arguments provide a compelling critique of the rational expectations hypothesis. Given that Cowen makes this hypothesis central to his New Austrian theory, this critique creates a serious problem for his approach.

I shall consider this argument from several different perspectives in this essay. First I will examine the fundamental nature of risk and uncertainty in the Old and New Austrian and in some Keynesian perspectives. Then I will more closely inspect the details of how Cowen

uses the idea of risk to understand business cycles. Finally I will note that although Cowen's reinterpretation may have reduced the distinctiveness of the Austrian model, he has made a serious effort to overcome some apparent defects in the older approach, producing an innovative and open-minded analysis.

Risk and Uncertainty Revisited

If there is a fundamental criticism that an Old Austrian can make against Cowen, it may be that he has fallen into a widely believed error regarding the nature of risk. In making such a criticism the Old Austrian may well join forces with some of the Old Keynesians.[1] What the Old Austrians and Keynes share, along with Chicago's Frank Knight, is a fundamental appreciation for the role of unquantifiable uncertainty. This question leads us inevitably to contemplate the nature of their underlying views of probability theory.

In 1921 both Keynes (1921) and Frank Knight (1921) made similar, although not identical, arguments regarding the nature of risk and uncertainty. Both distinguished between that which was measurable, risk, and that which was not, uncertainty. Both of them emphasized as extreme cases such examples as rolling dice versus longer-run economic forecasting. Both emphasized the situation insurers face in their decision making, where measurable risk makes life much simpler than when one faces true uncertainty—in which case, the best one can do is to guess.

Mises (1963, 105–118) posits something like the same distinction, except that he assigns a considerably larger portion of the probabilistic (stochastic) universe to the category of unmeasurable uncertainty than do either Keynes or Knight. Mises distinguishes between "class probability" and "case probability." The former is the simplest possible situation. To use his example, if there are a certain number of winning tickets to be drawn (presumably with equal probability) out of a larger set of lottery tickets, the "class probability" of winning the lottery is measurable, although one can say nothing about the "case probability" of an individual gambler's chances of success.

Likewise, one can construct an actuarial table describing by different ages the overall mortality pattern of a given population, and by deriving associated probabilities, a life-insurance company can make money. But from such a table one can say nothing about the probability of an individual's death. Mises dismisses the mathematical representation of such

probabilities as adding nothing to an observer's knowledge of the individual's prospects. Although this may simply reflect his more general antimathematical stance, shared by many Austrian economists, the real heart of the matter is that an individual's circumstances are strictly specific and nonrepeating, so they cannot possibly be assigned any accurate probability.

Mises provides as an example the 1944 U.S. presidential election, noting various statements that one could have made beforehand about the probability of a particular outcome. If one predicts a priori that it is "nine to one" that Roosevelt will be elected, this is simply "metaphorical," having no similarity to the *class* probability—the quantifiable risk—from which insurers profit. Effectively, as the circumstances of a given election will happen only once, it is meaningless to talk about having ten such elections with Dewey winning one of them and Roosevelt winning the other nine. Mises (1963, 117–118) writes that

> praxeological knowledge makes it possible to predict with apodictic certainty the outcome of various modes of action. But, of course such prediction can never imply anything regarding quantitative matters. Quantitative problems are in the field of human action open to no other elucidation than that by understanding.

Thus, he argues, the economist can predict that a fall in demand will be followed by a fall in price, but not by how much.

Mises's protégé, Israel Kirzner (1997), documents how this view evolved through the work of such figures as G.L.S. Shackle (1972), with his vision of the constantly changing "kaleidic economy." The focus of Kirzner's discussion is not business cycles but the entrepreneurial discovery process. Following Mises, he sees this process occurring in an open-ended environment in which agents, afflicted with "sheer ignorance," experience surprise. Kirzner is more optimistic that the discovery process leads to a sort of convergent learning than are Shackle and others, who see the very process of entrepreneurial decision making as constantly redefining the environment and itself generating further uncertainty.[2]

Keynes's view is somewhat more complicated than that of Mises and his followers and is less concerned with the role of entrepreneurs, although sharing important elements, especially the idea that free will is a fundamental source of the unmeasurable uncertainty facing economic decision makers. In his *Treatise on Probability* (1921, 33), Keynes distin-

guished between four different possible cases, not just the two of Knight and Mises:

> There appear to be four alternatives. Either in some cases there is no probability at all; or probabilities do not all belong to a single set of magnitudes measurable in terms of a common unit; or these measures always exist, but in many cases are, and *must remain*, unknown; or probabilities do belong to such a set and their measures are *capable* of being determined by us, although we are not always able so to determine them in practice.[3]

The first alternative clearly corresponds most closely to Mises's "case probability" (although Keynes seems to be willing to grant the possibility of estimating probabilities in many cases that Mises would not). For Keynes, this kind of fundamental uncertainty relates to the distant future, when human actions can bring about substantial changes in the very nature of the economy and society—as through war, unforeseeable technological change, or systemic restructuring. Keynes's fourth alternative is Knight's potentially measurable risk, which Mises might allow rarely under the rubric of "class probability." The third alternative has been said (by Lawson 1988) to correspond more precisely to Knight's own concept of uncertainty. The issue is the distinction between objective and subjective views of probability, with Keynes holding a more subjective view than Knight's. With that in mind, even though the Old Austrians more frequently refer to Knight's view of uncertainty, it may be that Keynes's first alternative may be closer to their actual position.

The second alternative may be the most subtle of the four. The idea of noncomparability can take several different forms (Keynes 1921, ch. 3). Thus, a series of possible events may be ordinally ranked with respect to each other, but not cardinally ranked with respect to a greater or lesser probability of happening. Or a series can be similarly ranked within itself, even though no pair of events within it and within another series can be compared to each other even ordinally. Or there might be an event that is in both series and can be compared with every event in each series, even while no others can be. Thus, probability distributions, to the extent that they can even be described, may be multidimensional in some sense. This is a point to which we shall return when we discuss Cowen's view of risk, but for now let us note that examples might occur when one compares a "Gaussian" normal distribution, which can be characterized simply by its mean and variance, with one possessing

"skewness" (asymmetry) or "leptokurtosis" (fat tails). Thus, in comparing a normal distribution with a skewed one, the mean of the latter might be below that of the former, while its median and mode are above those of the former (which would equal the mean).

Hayek (1941, 400) appears to have noticed the similarities between his view of uncertainty and Keynes's:

> Neither risk nor liquidity can be adequately expressed as simple one dimensional magnitudes, since they are both of the nature of probabilities which can be sufficiently described only in terms of the properties of a frequency distribution. This means that, strictly speaking, it is not possible to arrange the various assets in a simple linear order according to the liquidity or risk attaching to them, and that some multi-dimensional arrangement would have to be used instead.

Cowen's New Austrian View of Risk and Business Cycles

Let us turn now to the specifics of Cowen's proposed theory of risk as a way of explaining business cycles. Six assumptions form the core of his argument. The first is that financial analysis shows that investment involves greater risk than consumption. The second is that a decline in the real interest rate will increase investment, ratcheting up risk for each investor (because of the greater riskiness of investment compared to consumption). Third, increases in investment risk for each entrepreneur lead to increases in aggregate risk. Fourth, riskier investments yield higher expected returns in equilibrium. Fifth, entrepreneurs have greater certainty about near-term returns than those in more distant periods. And the final assumption is that an exogenous increase in the real economic risk of investments will induce a contraction of investment, and thus, possibly, a more general economic downturn. The first four are Cowen's core assumptions, with the latter two amounting to working hypotheses.

These six assumptions interact with five possible sources of expansion that can increase the riskiness of the economy and therefore the likelihood of cyclical fluctuations. These are: a willingness to accept more risk due to an increase in animal spirits; a fall in interest rates due to increased savings or expansionary monetary policy; a broader easing of financial constraints; the removal or resolution of some economy-wide uncertainty; and an unanticipated rise in retained earnings from a

positive technology shock or a Keynesian-style demand shock. In contrast to the older Austrian view, Cowen recognizes the possibility that an induced increase in investment might actually generate a *sustainable* boom, but in the main he argues that more investment intensifies risk and volatility. Eventually one of the five sources of expansion turn around and investment, and the economy, contract.

That these five factors are likely to influence investment in the way Cowen suggests is reasonable. But we should look more carefully at his six assumptions.

The first, regarding the relationship between the riskiness of consumption versus investment, depends on consumption being immediate—a point that Cowen apparently realizes, as he later refers to "immediate consumption" (18) in this context. If consumption is immediate then it is not risky compared to investment, just as a bird in the hand is worth two in the bush. You know what you consume now, but you do not know what your investments will earn in the future.

But in reality consumption is not always immediate, and it is well known that purchases of consumer durables are sensitive to interest rates. One might argue that this is purely because of financing issues and not any riskiness inherent in the nature of consumption and investment due to their time patterns. But just as Cowen argues that nearer-term returns are more certain than farther-out ones, so, too, for the utility stream from a consumer durable. When one purchases such a good as a new car, there is considerable risk about the future stream of utility that it will generate. Is the car a lemon? How long will it function? Will my attitudes about it change? Might the appearance of newer models make me less happy with it?

One might reply that a consumption item at any given moment in the future will be associated with less expected risk than an investment at the same moment. But in fact, a fairly simple short-term capital investment might easily be less risky, by whatever measure, than a consumption purchase of an even longer time horizon. Thus, replacing a worn-out computer with a new and relatively similar one for one's business might easily be a less risky decision than buying a new car.

We shall not question that a decline in the real interest rate will tend to stimulate capital investment, despite the plethora of debates regarding the strength of that effect. However, it is not at all clear that such an increase in investment will raise the risk for each investor, much less for all investors in the aggregate. Indeed, this may be the weakest link in Cowen's entire argument, as the rest of it cannot proceed without it. If

greater investment does not increase risk for investors, then there is no reason why it should necessarily lead to an economic downturn.

Cowen quite reasonably infers from standard financial theory that there is a tradeoff between risk and rate of return. However, he makes a jump from this inference that is not justified. He argues that as the real interest rate falls, the additional investments provide higher yields than those made at the higher interest rate, leading to his conclusion of rising risk for all involved. (Cowen's argument entails the claim that the lower real interest rate will increase portfolio wealth and thus encourage risk taking, with a shift from safe consumption to riskier investment. He sees this shift as arising from mismanaged monetary policy rather than from capitalism per se, unlike many Keynesians.) This argument regarding the role of the interest rate involves several assumptions, not all of which necessarily hold.

The biggest problem is with the argument that the additional investments will have higher expected yields (presumably higher expected rates of return) than the earlier ones. It is actually quite reasonable to posit exactly the opposite. What is involved here is the demand schedule for investment—what Keynes called the marginal efficiency of the investment schedule. The usual story is that this reflects a prioritized ranking of potential investment projects. In this view, assuming equal risk for all such projects, they will be ranked in exactly the opposite way from what Cowen assumes, with those yielding the highest expected yields being carried out first, even in the face of high real interest rates. As the real interest rate declines, the projects with lower expected rates of return are brought on line as they become potentially profitable. In short, expected rates of return will decline as the interest rate declines. Of course the rate of return investors expect once the interest rate is included in their calculations will rise for all projects as the real interest rate declines, but this effect in no way reflects any change in risk, either for any individuals or in the aggregate.

Now of course Cowen is not assuming the equal riskiness of these potential projects; far from it. Without doubt, when potential projects are decided upon, both their expected risk and their rates of return will be factored in, perhaps in the traditional manner of assigning risk premia that adjust the expected rates of return downwards. But there is no reason whatsoever to expect that these risk premia will be so large for the projects with higher expected rates of return that the entire schedule will be effectively reversed from what it would have been in the case of equal degrees of risk for all projects. In reality, as one moves

down the priority ranking, one can say nothing about what the expected rate of return of the next project will be compared to that before it, other than that if its expected rate of return is higher, then so must be its perceived riskiness, and vice versa; and that all expected rates of return will exceed the real rate of interest. In effect, Cowen has mistaken an indifference curve for a demand curve. The famous risk/rate-of-return tradeoff is a question of the marginal efficiency of investment schedule—a question of demand.

This whole argument is further muddled by a related complication. Cowen assumes that the prioritized ranking of the potential projects is independent of the real interest rate. But a change in the interest rate will affect different potential projects in arbitrary and unpredictable ways relative to each other, given their various temporal patterns of expected return and risk. The schedule is not well ordered, even if one can assume that more projects will be undertaken as the real interest rate falls. Thus, the outcome may well depend on how the real interest rate changes. A gradual and smooth decline will bring forth a different order, and possibly even a different amount, of investment than will a sudden and sharp drop in the real interest rate to the same final level. In a world of complicated time patterns for net returns, things can get very messy.[4]

Finally, we have the problem that Cowen presents an oversimplified notion of risk, one that does not stand up well to either the Old Austrian or the Post Keynesian critique, much less the more high-powered approaches of modern financial economics. Of course, part of the problem is that he never clearly specifies what he means by risk other than by identifying it roughly with "volatility," although in the last chapter of the book he adduces some empirical studies to support his emphasis on variance in returns.[5]

In effect we are back to the noncomparability problem understood by both Keynes and Hayek. Certainly it is true that simple financial theory assumes unidimensional measures of "risk." But observers of financial markets increasingly understand that this is inadequate. In particular, it is now virtually a stylized fact of most asset markets that they exhibit "fat tails," reflecting the reality of "extreme events" (Loretan and Phillips 1994). Essentially, financial markets experience more severe crashes and more dramatic booms than would be predicted by a normal distribution. Empirical distributions of returns on most assets simply are not Gaussian normal and cannot be characterized just by their means and variances.

To properly account for "volatility" means accounting for more than just the variance of the distribution as risk. There are complications such as skewedness (the tendency for data to extend farther in one direction than in the other, as with income distribution) and leptokurtosis (the excess prevalence of extreme events in both directions, up and down). One potential project may have a lower variance associated with it than does another, but it may have a greater danger of some very extreme outcomes than does the other, making it seem riskier to the potential investor. Or the perceptive investor may well understand that there is no ranking based on something that can even be characterized as mere risk, although it may be possible to come up with a unidimensional measure out of some combination of the various moments. But such a combination itself may well depend on the real interest rate, as an investor may make different relative evaluations of everyday variance and infrequent extreme events as the real interest rate varies.

The Problem of Expectations

Central to this entire discussion is the question of expectations and how they are formed. Cowen exhibits an admirable willingness to incorporate ideas from other schools of economic thought into his theory, even at the risk of diluting the "Austrian" identity of his theory. But the key idea he imports into his critique of the Old Austrian view is that of rational expectations. Cowen's synthesis of Austrianism and rational expectations produces several problems.

The first is that it is not clear that he has consistently applied the rational-expectations assumption in his own analysis. He puts the Old Austrians in their place for assuming systematic biases in investors' expectations in the face of inflation arising from monetary expansion: it is implausible, he notes, to believe that they consistently overinvest, get burned when interest rates prove to be unsustainably low, and never figure out what is going on. Cowen suggests that their forecasting errors should instead balance out, such that sometimes they will underinvest out of an exaggerated fear of the future consequences of monetary expansion and, therefore, of an unsustainable boom. Not only that, but sometimes monetary expansion will succeed in a Keynesian kind of way in that the overinvestment will prove to be a self-fulfilling prophecy, a boom that successfully induces a higher rate of growth.

Keynes's is a world of multiple growth equilibria, where mutual con-

fidence works to move the system to a higher and better rationally expected state, although Cowen sees this as an increasingly fragile outcome, based on his argument that larger amounts of investment necessarily entail higher levels of risk sooner or later, leading eventually to cyclical fluctuations. Thus, despite the possibility of self-sustaining monetary booms, Cowen holds that unpredictable variability in monetary policy is the source of problems because it increases risk, which leads to fluctuations. This is the New Classical position. But the claim that expansionary monetary policy will lower the real rate of interest (cf. Butos 1993) sits uneasily with the perfect foresight posited by Cowen's rational-expectations extremism, which would imply no change in real interest rates, as people perfectly anticipate inflation attendant upon monetary expansion, adjusting the nominal rate of interest upwards. Cowen pays no attention to this possibility when he posits a decline in real interest rates arising from an expansionary monetary policy. Even without perfect foresight, however, the rational-expectations assumption implies that real interest rates would be as likely to rise as they would be to fall in the face of unexpected monetary expansion, as people would be as likely to overpredict the increase in the inflation rate as to underpredict it.

The hard fact is that Cowen presents no coherent theory of the real interest rate. He dismisses the "natural rate-of-interest" theory deriving from Wicksell and accepted by some of the Old Austrians in an earlier period (Cowen 1997, 95–96).[6] But he provides no clear alternative. He accepts that a variety of factors might influence real interest rates, from the marginal productivity of capital to monetary policy to the supply of loanable funds determined by savings. In the last of these cases, an exogenous but unexplained increase in the propensity to save presumably results in greater risk for the economy, as there is an increase in investment and a reduction of consumption. But an obvious explanation of a greater propensity to save may be an increase in risk aversion arising from fear of anticipated greater volatility in the economy. This would contradict Cowen's assumption that consumption is less risky than savings (investment). But in fact immediate consumption is risky in that it reduces the ability to consume in the future if future income is volatile. Much saving happens precisely for precautionary reasons, and increasing immediate consumption is rightly viewed by many people as risky behavior. (Such precautionary savings are placed in safe instruments, such as government bonds, rather than being used to purchase some You-Never-Heard-Of-It-Before dot-com stock with no revenue.)

More broadly, the most recent developments at the cutting edges of

macroeconomic theory have increasingly been calling the rational-expectations assumption into question, as symbolized by Thomas Sargent's (1993) acceptance of adaptive expectations in the face of the ineluctable complexity and unpredictability of economic phenomena. Now, skepticism regarding rational expectations in the light of complexity is a very respectable Old Austrian position that was espoused by Hayek (1967), even before rational-expectations theory was applied to macroeconomics by scholars such as Sargent. Indeed, the idea that entrepreneurs search for profit opportunities in an inherently unpredictable environment is a central notion of the Austrian school; as Mises (1963, 871) puts the point, "If it were possible to calculate the future state of the market, the future would not be uncertain. There would be neither entrepreneurial loss nor profit. What people expect from the economists is beyond the power of any mortal man."

It is profoundly ironic that just as some of the most influential advocates of rational expectations are moving in the direction of Mises and Hayek as well as Keynes, Cowen is rushing in the opposite direction and defending this movement by labeling it "New." Nevertheless, it must be admitted that his criticism of the standard Old Austrian assumptions regarding the nature of investors' expectations biases in the face of monetary expansions must be taken seriously. It is just that Cowen's use of rational expectations is itself neither especially consistent nor convincing.

The faults I have claimed to discover in Cowen's analysis are, of course, shared by many macroeconomic models. From the use of simplistic characterizations of risk to a persistent reliance upon the increasingly unbelievable assumption of rational expectations, it may be that Cowen is pursuing chimeras, but they are popular and widely accepted ones among economists.

Moreover, Cowen's open-minded attempt to link Austrian, Keynesian, and Chicago-school insights does not prejudge the evidence or bend it to predetermined purposes. On the final pages of the book (148–49), Cowen admits that "the results of this endeavor have been decidedly mixed. . . . None of these results . . . discriminates decisively in favor of risk-based (or traditional Austrian) theories as opposed to other potential business cycle mechanisms." Such willingness to face the facts squarely and forthrightly must be admired and respected.

It is unclear whether or not the theory that Cowen presents should even be called "Austrian," given its essentially eclectic nature. But then Cowen is hardly the first to apply a well-known label to a version so

revised that it may not merit it. The same has been done to the Old Keynesians and the Old Institutionalists. It is perhaps only fitting that the Old Austrians should have their turn as well.

NOTES

1. As already noted, Old Keynesians such as Tobin would not agree with this criticism of Cowen. More likely to do so would be "Keynes-Post Keynesians," most notably Paul Davidson (1994), who has vigorously argued that Keynes considered uncertainty to be ontologically unmeasurable.

2. Others who share Shackle's view on the convergence of entrepreneurial discovery include Lachmann (1976), who in turn influenced Joseph Salerno (1993) and Murray Rothbard (1994). Bryan Caplan (1999) dismisses this whole discussion in a manner similar to Cowen's, arguing that in all these cases one should simply assign probabilistic risk.

3. For extended discussions of these cases and their foundations and implications, see Rowley and Hamouda 1987, Lawson 1988, O'Donnell 1990, and Rosser 2001.

4. Ironically, Cowen (108–14) is aware of the underlying issue here and discusses it in connection with the Cambridge capital-theory controversies, which ultimately arise from the complexities of relative time patterns in net returns. Cowen argues that the issue is irrelevant to his discussion, because it deals with the problem of capital intensity, which he claims to have avoided by emphasizing the role of risk. But this is not so, as he has tied risk to the time horizon of an investment—effectively a measure of its capital intensity, following the Old Austrian emphasis on the period of production. It is exactly the ability to unambiguously rank the relative time horizons of investments that breaks down when their relative patterns of returns become complicated. Cowen denies the empirical relevance of capital-intensity reversal, but Albin 1975 and Prince and Rosser 1985 provide empirical examples. Rosser 1983 argues that the more serious issue associated with capital-intensity reversal is dynamic discontinuity.

5. In the last chapter of his book, Cowen cites Leahy and Whited 1996 in arguing that variance of returns predicts investment levels better than does covariance; he claims that this supports his view of risk and investment. Thus, he seems to dismiss the capital asset pricing model (CAPM) in favor of a simpler view, which may be empirically justified. But basic CAPM is hardly the only alternative.

6. There is no general agreement regarding what the "natural rate of interest" is, even among Austrians. Hayek thought it to be that which would arise from savings and investment made in the absence of any distorting monetary policy. But Mises saw it more as an equilibrium concept related to the capital structure. Other views have emphasized the real marginal productivity of capital and the rate that equalizes *ex ante* savings and investment. By no means do any of these opinions necessarily coincide.

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