A REALIST APPROACH TO EQUILIBRIUM ANALYSIS

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Economic science, as handed down to us from Menger and Mises, explains observed human behavior by referring to other features of the real world. Both the phenomenon to be explained and the explanation itself are thus strictly realistic—a charm and advantage of the Menger–Mises approach as compared to other approaches.

However, there are exceptions. The most blatant is the way Mises (1998, pp. 248ff.) conceived of the nature of equilibrium analysis. His account relies on an intellectual fiction, namely, on what he has baptized the evenly rotating economy (ERE). The ERE is admittedly unrealistic; it is an "imaginary construct" that has no—and can never have any—counterpart in the real world.

The present article offers an entirely realistic account of equilibrium analysis, thus closing a disturbing gap in economic science. We will argue that human choice involves a dichotomy of success and failure, and that equilibrium analysis is the method of explaining observed success by contrasting it to counterfactual failure, and observed failure by contrasting it to counterfactual success. This approach gives us the clue needed to reconstruct the role of equilibrium analysis within economic science and economic policy, and to discern the problems of applying it.

THE ESSENCE OF EQUILIBRIUM ANALYSIS

On a purely physical level, choosing means to select between competing projects, that is, between mutually exclusive ways of using our brains, bodies, and other objects that we control. We cannot pursue all of our goals at the same

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time. We have to decide between the realization of some *and* the postponement of other projects. Whatever we choose to realize through our action is bought at the expense of something else that, because of that very choice, cannot come into existence.

However, there is also a value-aspect of choice, and this aspect confronts the acting person with a problem. The fundamental fact is that the various alternatives do not have the same relative importance or value. Some are more important than others, even though this relative importance varies from one person to another and depends on the particular circumstances of time and place in which one and the same person makes his decisions. The acting person therefore has to identify to the best of his abilities the alternative that, under the given circumstances, is for him the *most important* one.

This identification process is future-oriented and, therefore, heavily speculative. For example, when buying stocks, one estimates the future prices of alternatives. Yet, even when buying a shirt, one not only has to determine which shirt is best now, but how one will value it in the future.

Now, subjectively—that is, as far as the mere opinion of the acting person is concerned—he always chooses the most important project. By the very fact that he acts in this manner rather than another, he "demonstrates" his belief that this action is better than any other he could have performed instead. *Ex ante*, then, his choice is always optimal.[1]

However, his subjective deliberation does not necessarily grasp what is *really* the most important thing for him to do under the circumstances. This applies both to the ends he chooses to attain and the means he chooses to realize them. The plain fact is that the beliefs guiding his choice of ends and means might be right—but they might just as well be wrong.

Often we find, *ex post*, that no other behavior would have been preferable to our chosen behavior. We then think we made the right choice, and call our action successful. Economists describe this phenomenon using more technical jargon. They say that the successful actions of entrepreneurs are based on "rational expectations," or that they stem from "perfect foresight." When *all* entrepreneurs act successfully, economists say they are "coordinated," or that the market is in "general equilibrium." All these expressions are synonymous in the sense that they refer to successful human action, as distinguished from action that is less, or is not successful.

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[1]The expression "demonstrated preference" is Rothbard's (1956). However, see also Windelband (1904, pp. 35ff.), Schumpeter (1908, pp. 64ff.), and Mises (1998, pp. 95, 102). In addition, see the analogous argument of Herbert Spencer (1970, pp. 75ff., esp. p. 79) for limiting the scope of political philosophy to the study of justice.

However, we find at least as often, *ex post*, that we should have done something other than what we actually did. Other actions would have been preferable. We then think that we made the wrong choice, and say that we erred.

This experience is, of course, familiar to all human beings. There is something like "right choice" (correct judgment, success), as opposed to "wrong choice" (error, failure), and it is meaningful to distinguish between them, for our subjective beliefs about the world do not always reflect the world as it really is.

This distinction is also reflected in the vocabulary of price theory. Economists have traditionally distinguished "market prices," established as a consequence of *ex ante* deliberations, from "right" prices (or natural prices, equilibrium prices, etc.). The former does not necessarily coincide with the latter. Market prices can be equilibrium prices, yet can also be—and are indeed most likely— disequilibrium prices, because of the ubiquity of error.

Error has many psychological faces that are difficult to grasp in exact terms. We call them whims, fancies, follies, greed, jealousy, illusion, etc. However, the economic aspect of error can be precisely circumscribed. Error is constituted by the fact that a person chooses to pursue a project that is less important for him than another project he could have pursued, but did not because of that very choice. In short, error is the failure of the choosing person to select the project most important for him. This point is not only common sense, but, as we have just seen, is rooted in praxeological bedrock—namely, in the fact that both success and failure are contained as possibilities in human choice. Not surprisingly, therefore, the distinction between success and failure is familiar to all equilibrium theories in economic science. And most of them even rely on the assumption that, under any circumstances, there is a best option in comparison to which all others are worse. As Frank A. Fetter said, "in any given set of conditions there is a best proportion in which to combine agents."[2]

Now, the crucial fact that needs to be emphasized is that our distinction is dichotomous. All human actions are either successes or failures. Either we could have performed a more important action, or no better alternative was available. Hence, any possible choice is either right or wrong, any possible action either a success or a failure.

[2]Fetter (1915, p. 130). Similarly, Hicks (1946, p. 255, n. 1) stated, about the assumption that the system of relative prices is uniquely determined: "If it is not justified anything may happen." See also Menger (1883, app. 6), Knight (1956, p. 164), Hicks (1965, pp. 24, 41), Nash (1950, 1951), Hahn (1973, p. 7), and Harsanyi and Selten (1988). For the view that there are several or multiple equilibria, see, for example, Hildenbrand and Kirman (1988), Billot (1995), and Creedy and Martin (1994). We will deal with this latter view below.

A casual reflection shows that everybody, in his daily life, makes ample use of this common-sense dichotomy of success and failure. Thus, we say things like, "I should have read Mises rather than Marx at the age of twenty-three," or, "he should have become a lawyer rather than a painter," or, "how good that we decided to go to this concert tonight." All such statements judge a real-world action in terms of an explicit or implicit reference to unrealized alternatives conceived to be either inferior or superior to the alternative that came to be realized. And, irrespective of whether the action under scrutiny is a success or a failure, we must necessarily apply *the same method* to describe what it is—in both cases, we must judgethe actual choice by reference to its counterfactual alternatives.

The foregoing everyday statements would not by themselves justify any closer examination of their logical structure. Yet, here they are relevant because that structure is identical to that which we encounter in quite sophisticated descriptions of factor pricing and income distribution on the market. In fact, as we shall see, *equilibrium analysis is nothing but the method we just outlined*. It describes what exists in the real world as being more or less important than what could have existed instead—from the standpoint of the acting persons involved. The difference between the application of equilibrium analysis in daily life and its application in economic science is merely a gradual one. The latter is more sophisticated, since it generally focuses on more remote implications of the fact that an observed state of affairs is either more or less important than the one that could have existed.

Consider, therefore, the fundamental theorem of the theory of production and distribution. It states that, in general equilibrium, the price of a factor of production (that is, the marginal income of its owner) is identical to that factor's discounted marginal value productivity (DMVP). All elements of this description refer to features of a particular state of affairs—one without entrepreneurial error. *If* no entrepreneur errs, the market is said to be in equilibrium. Furthermore, *if* the market is in equilibrium, the prices paid for factors of production, whatever they may be, are called the DMVPs of these factors. By contrast, if at least one entrepreneur commits an error, market prices will *ipso facto* differ by some amount from the DMVPs. These differences are called profit (if the marginal income is higher than it would have been in equilibrium) and loss (if it is lower).

Fundamentally, error on the market can occur here in either one of two directions. Either the factor under consideration—say, a truck—is paid less, or it is paid more than its DMVP. If it were paid less, there would have been an opportunity for arbitrage. Another entrepreneur could have bid this factor away and still profited from it. The very fact that this did not happen demonstrates that

an error occurred on the part of *other* entrepreneurs. As a consequence, our entrepreneur realizes a special kind of income, namely, profit. By contrast, if our entrepreneur paid more than the DMVP for the truck, his income would be negatively affected. It would be lower than it would have been had he paid a lower price. In this case, the error occurs on *his* part rather than on that of other entrepreneurs.

Let us emphasize that, just as in our examples from daily life, the above analysis does not touch on the question of whether the market actually is, or is not, in equilibrium. In fact, this question does not need to be answered to do what we have done: describe what market participants do as being, from their standpoints, more or less important than what they could have done.

We are now in a position to define equilibrium analysis. *Equilibrium analysis is the method of comparing actual behavior with its counterfactual alternatives in terms of success and failure.*

Applying this method, we can describe a common aspect in all imaginable cases of market behavior. There are indeed only three possibilities: (1) a factor is paid according to its DMVP, (2) it is bought for more, or (3) it is bought for less than its DMVP. That is, either there is no error at all, or an error occurs in one of the two directions of "too much" or "not enough."

Let us point out that this is not to say that the role of DMVP in equilibrium analyses of the market is to be a standard by which we define profit and loss. For it would be equally pertinent to say that the occurrence of profit and loss is the standard by which we define DMVP. The point is that equilibrium analysis does not give us a *picture* of "normal" reality; rather, it is a *method* to describe reality, and this method can be applied irrespective of what observed reality happens to be. Observed equilibrium can be meaningfully conceived of only by reference to errors that could be avoided, just as observed error can be understood only by reference to a foregone equilibrium. This putting-in-relation of what is and what could have been—in terms of success and failure—is what equilibrium analysis does.[3]

[3]The counterfactual nature of equilibrium analysis is the reason why equilibrium analysis, although it explains observed facts by relating them to other facts, is not empirical in the sense that all elements of the analysis (the behavior to be explained *and* the fact that explains it) can be observed. Since the explaining fact in equilibrium analysis is a foregone alternative, it cannot be observed. Our very knowledge of the existence of foregone alternatives is not derived from observations, but from acquaintance with the *a priori* nature of human action. All we can see, for example, is that a shop opens its doors one day, that people go in and out carrying commodities in one direction or the other, and that on another day the shop closes its doors forever and something else takes its place. These observations do not reveal whether the shop owner was forced to cease operations against his initial intentions (bankruptcy), whether he was forced to cease operations in accordance with his

A standard criticism of equilibrium analysis holds that it does not adequately reflect observed behavior. What such critics have in mind is that human action is often, is perhaps even usually, not in equilibrium—a pertinent observation which, however, misses the main point. It is true that human life is fraught with errors. Each time we choose to pursue an action other than the most important one we commit an error in the sense of economic theory. Yet this does not refute equilibrium analyses—quite to the contrary! We can analyze all instances of human error in the real world only because choice implies the possibility of success *and* failure. We could not even conceive of something like error without having in mind an alternative action compared to which an observed action could be erroneous. We could not identify a single instance of error in the real world if we did not presuppose the existence of a foregone success.

Hence, the applicability of equilibrium analysis does not at all rely on the question of whether the world actually is or is not in equilibrium. And whoever seeks to point out success or failure in any given situation inevitably applies this method because otherwise he could not grasp the success–failure aspect of life.

In conclusion, let us stress that equilibrium analysis is entirely realistic since all its constituent factual and counterfactual elements can be found in real human action. It does not postulate that human beings "normally" or "generally" do not commit errors. And while it is a method *for* the exact description of the observed real world, it is not itself such a description.

SOME PROBLEMS CONSIDERED

The Problem of Indifference

A possible objection to our approach could stress that human beings occasionally are indifferent as to their options, or that their decision making is sometimes "fuzzy" (Billot 1995). In this case there would be no genuine dichotomy between the best alternative, which we called success, and other alternatives, which are relative failures. And it would not be clear at all which meaning should be attached to the notion that alternatives differ in their objective importance.

Before we take a closer look at this contention, let us point out that it would also apply, in at least some sense, to all other approaches to equilibrium analysis. For even though the notion of indifference is an important element in

initial intentions (which might be a case of fraud), or whether he just retired. Our knowledge of what bankruptcy is, or fraud, or retirement does not stem from observations at all, but from our knowledge of such invisible features of human action as choice and intentions.

contemporary mainstream analysis of value and choice, it is no substitute for choice. The main purpose of stressing indifference is to provide the groundwork for a quantitative treatment of value. It does not replace the role of choice in the argument of equilibrium theorists. The fundamental fact is that one cannot make sense of equilibrium other than by reference to somebody correctly choosing one option rather than another. Hence, even if valid, the above contention would only lead to a limitation and reformulation of our results. Rather than saying that, "in equilibrium analysis that we contrast observed success with a foregone failure," we would have to say "we contrast a chosen action to a set of foregone actions (which might be equally desirable)." And we would have to admit that explaining success by referring to avoided failure, as well as failure by referring to foregone success, is only possible in the case of actions involving choices between superior and inferior alternatives.

This limitation and reformulation is superfluous however: it is futile to stress indifference as an objection to our approach to equilibrium analysis. The fundamental fact is that indifference is a *psychological* phenomenon. What economists have in mind when they refer to indifference, and what people mean when they acknowledge its existence, is a state of mind in which an individual contemplates two alternatives, but does not or cannot pick one because he finds them equally desirable. However, our argument does not rely on considerations about states of the human psyche, but on an analysis of human *action*. Whatever else might be obscure about action, there can be no doubt that if a given individual does something at a given moment, and what he does can always be distinguished from alternative things that he does not do. This is not to deny that a given behavior has various aspects, or that it could serve different purposes—for example, by taking a walk in the park, I can enjoy the landscape, think about indifference, and relax. What it means is that, as far as human action is concerned, all alternatives do not have the same status. Rather, one alternative is realized, while all others are not.

Genuine choice alternatives, which come to bear on action and not merely on the mind, are therefore categorically unequal. And genuine action—not the musing of the brain about action—is never indifferent. The very activity of feeling indifferent about two alternatives is itself an expression of preference: one *prefers* to indulge in indifferent feelings, thus foregoing alternative activities. It is therefore conceivable that an individual is in his mind indifferent about the alternatives he faces. However, it is impossible that he is indifferent about them in his actions. He always does something. And by virtue of the fact that he does A rather than B, he demonstrates that he is not indifferent as to these particular actions, but prefers the former to the latter.

The Problem of Multiple General Equilibria

Another aspect of the problem we just discussed concerns the possibility of multiple general equilibria. Consider the case of a husband and his wife watching television. The value scale of the husband is as follows:

(1) watch a football game with his wife

(2) watch a romantic movie with his wife

(3) watch the football game without his wife

(4) watch the romantic movie without his wife

The wife has slightly different preferences:

(1) watch the romantic movie with her husband

(2) watch the football game with her husband

(3) watch the romantic movie without her husband

(4) watch the football game without her husband

This scenario is characterized by two features that seem to contradict what we said about equilibrium analysis.

First, it is impossible that both husband and wife end up with what they most want—that is, that they reach *general* equilibrium. It thus follows that general equilibrium is not possible under all circumstances, for there are conditions that allow only for the contest of second- and third-best outcomes.

Second, there are several outcomes that seem to be ranked equally preferable. When the couple chooses to watch the football game, the husband realizes his first preference, his wife her second. When they watch the romantic movie, the wife realizes her first preference, her husband his second. Since there is no rationale to accord a higher importance to the wife's preferences than to the husband's—or vice versa—one could argue that both of these outcomes are equally desirable. We thus have a case of multiple general equilibria.

This argument is fallacious, however, for the same reason the reference to indifference is fallacious. The fundamental error is to conceive of value scales as purely psychic entities that can be analyzed independent of human action. Yet there is no such thing as value or a value scale detached from concrete action. And as far as concrete action is concerned, it is obvious that there never can be something like "multiple action," but only one action at any point in time. This action can be a relative success or a relative failure, as counterfactual equilibrium analysis will reveal, but, irrespective of whether it succeeds or fails, the only meaningful procedure is to first look at what people do, and then compare it to what they might have done.

Assume, therefore, that the couple watches the football game together. There is, then, no problem with explaining the husband's behavior in equilibrium terms: this common activity is his most preferred outcome. But what can we say about the wife? Is her activity not a relative failure since she would have enjoyed watching the romantic movie with her husband even more? Again, from a psychological point of view, this might be so, but this perspective does not concern us here. We are interested only in whether she has performed the best possible action under the given circumstances. Her husband watches football. Given this fact, the best possible action for her is to join him rather than watch the romantic movie in another room, on another television, alone.

But what if the couple had watched the romantic movie together? Would we not have to admit, for exactly analogous reasons, that this too is an equilibrium outcome, thus acknowledging willy-nilly the case for multiple equilibria? With this question, we are again in the realm of psychological speculation, and the only way to avoid this pitfall is, as we have said, to first look at what people actually do, and then compare that to the other alternatives. The assumed fact was that the couple *did not* watch the romantic movie. They watched the football game. If we accept this fact, we can explain their behavior with the help of equilibrium analysis. If we do not accept it, we throw ourselves into the realm of fancies, desires, and fantasies—the realm of poetry, not of science.

In light of these considerations, it also becomes obvious that all I-know-that-you-know-that-I-know-etc. paradoxes are not paradoxes of action (and therefore paradoxes for economic analysis), but paradoxes of psychological deliberation.[4]

It is true, for instance, that in social games like chess or tennis, the behavior of each player determines the success of both. Player A wants to beat player B, who wants to beat player A. The outcome of their game depends on the degree to which both anticipate the actions of the other. Now, a plan in which A seeks to account for the behavior of B can never be successful on *a priori* grounds since it is possible that B anticipates A's plan in his own plan. Yet, neither can B's plan be successful on *a priori* grounds, since A could engineer a still better plan that takes into account B's plan, and so on.

None of this has any effect on the fact that both A and B *do* something, and that, as a consequence of these actions, one of them will win and one will lose. No paradox can possibly appear that will impact this fact of action. And it is in

[4]It is no accident that one of the pioneers of game theory unearthed these problems with the famous "Holmes–Moriarty paradox." See Oskar Morgenstern (1928, p. 98).

light of this fact that we can again explain the behavior of both players in terms of equilibrium analysis.

Yet, do these games, which by their very design have winners and losers, not exclude the possibility of *general* equilibrium? As we shall see, this is not the case.

First, participation in the game is voluntary—otherwise, it would not be a game. And since participation is voluntary, one has always the choice between taking part in the game and not taking part in it. Persons who consider playing for the sake of winning (prize-seeking players) can therefore avoid games they are going to lose, and can do so under all conceivable circumstances as long as participation is voluntary. (There can be no general equilibrium involving only prize-seeking players, of course, for at least one of them would see his endeavors thwarted.)

Second, in the case of what one might call true players, a similar result obtains. The true player plays for the mere sake of playing. He wants to win not because he prefers winning to losing, but because this is how the game is played. In fact, he prefers "playing *and* losing" to "not playing at all"—that is, to all other activities. General equilibrium is therefore possible in this case as well.

The Problem of Objective Value

Comparing success and failure presupposes some criterion by which one can gauge whether a given action is "really" more or less important than an alternative action that could have taken its place. Yet, how is it possible, one might ask, to ascertain the *objective* importance of different projects? Although it seems a given that human beings choose—that is, exercise their subjective judgment—it is not at all clear how it is possible to distinguish alternatives that are objectively more important from those that are objectively less so.

There can be no doubt that this is a considerable problem. However, as we shall see in more detail below, this problem relates to the *application* of equilibrium analysis rather than to its conceptual framework as such. For our present purposes, it is entirely sufficient to make the general point that different alternatives *do* have different objective values, even if we cannot tell exactly what they are.

What we mean by saying that a choice alternative has an "objective" value is that its value does not depend on the choice itself, but on something else entirely. This something else could still be bound up with the choosing person—we only stipulate that it is different from the choice itself. For if the value of an alternative were to depend on choice itself, then everything we choose or

do would demonstrate not only that we *think* this action the most valuable one, but that it truly *is* the most valuable one. Each individual would then be in a perpetual state of equilibrium, and the only question left would relate to the scope and existence of general equilibrium.

However, the idea that each individual determines by his own choices what to him is more or less valuable is self-contradictory. He who chooses must from the outset presuppose that the projects he can realize can be ranked according to their objective importance. If he did not presuppose that one state of affairs were more objectively important than another, he could not choose at all. For if all projects were equally important to him, his choice would make no difference.

Moreover, the very notion of subjectivity is meaningful only if one presupposes an objective reality to which subjective value judgments refer. Something does not have high utility *because* we value it highly. Our valuing must be reasonable; it must assess the object's utility correctly. In other words, something is not (objectively) important *because* we think it is or want it to be. Our thoughts must be fitting and our wants rightly understood to gauge its real importance. Fasting twenty days per month, for example, will have certain effects on my body and character. If the bundle of effects that results from such fasting is really more important than the bundle of effects all other actions would produce, then fasting twenty days per month is the proper behavior. I then *rightly* prefer fasting, and if I preferred other actions we would have to qualify them as fancies that prevent more important action.

Man *can* succeed in choosing the most proper, most important action, and through his creativity can enlarge the realm of possibilities. However, it is not *because* he thinks an action the most important that this it is. Similarly, it is not *because* he considers an action to be just that it *is* just. Success on the economic level and justice on the moral do not depend on our intentions and wishful thinking, but on whether or not our action is objectively proper.

In light of these considerations, one understands that, in a way, it is wrong to represent economics as a subjectivist science. It is impossible to conceive of choice and value judgments without assuming the existence of an objective importance of options, even if this objective importance is valid only for one individual at one point in time, and even if it is difficult to discern objective importance in applied analysis.[5] A scientific treatment of objective value is

[5]The distinction between the subjective and objective importance of choice alternatives has a prominent if neglected place in the history of subjective value theory. Thus, Condillac (1795, p. 6) and Jevons (1965, p. 38) called the objective importance of a project its utility, distinguishing it from its subjective importance, which they called its value.

possible because this concept refers to an aspect of individual choice. However, as an emanation of choice, objective value is necessarily relative. There is no such thing as absolute value; whether subjective or objective. And both subjective and objective values are always bound up with individual human action.

Successful Action and Perfect Foresight Compared

It might be useful to extend the foregoing discussion by clarifying the relationship of successful action and perfect foresight, which has a long tradition in our science.[6] Many economists believe that, for equilibrium economics to be empirically meaningful, it is necessary to assume that market participants have "perfect foresight," "perfect knowledge," "perfect information," etc.

The fact that successful action in some sense implies perfect foresight should not convince us that we can overlook differences between the present approach and those of our predecessors. The great advantage of referring to successful action is that such reference does not imply the absence of uncertainty. Economists commonly believe that they have to offer reasons *why* human beings should have perfect foresight. Some argue that equilibrium refers not to reality, but to an imaginary state of affairs in which conditions no longer change, which therefore would bring about certainty. Others argue that market participants have rational expectations, etc. The offshoot of all such theories is that the possibility of error is banished from equilibrium economics. In equilibrium, man "knows" what will happen in the future.

This point of view has received a well-deserved and devastating criticism by G.L.S. Shackle (1972). If equilibrium deals with a world without uncertainty, he argued, it does not apply to our world.

By contrast, we have seen that it is realistic to refer to successful action in counterfactual equilibrium analysis. This analysis does not presuppose an unchanging universe or certainty, but can be applied to any instance of concrete human action simply because human action *can* be successful under uncertainty. Moreover, as we have argued, it is immaterial for economic science whether real action *is* successful because the notion of success is only a comparative element of our understanding of the world.

Let us pursue this argument further. The success of one's action depends crucially on a pertinent *judgment* of future data with which that intended action will be confronted. These data can never be *known* in the sense that they can be experienced. Any equilibrium construct that presupposes that human

[6]See, for example, Knight (1985, p. 76f.), Hayek (1928, p. 39), and Hicks (1946, pp. 6, 123ff.).

beings know all data is therefore unrealistic. However, economists do not have to make assumptions about what market participants know or expect, or about how they come to have the knowledge or expectations they happen to have.[7] The data, or given conditions of human action, are not given in the sense that they are known but in the sense that they exist independently of human action. Neither does "given" imply that all conditions are given *now*. Some conditions will be given in the future only, yet are and will be given in the sense that they are independent of our recognition and choices. Acting man can hardly know everything. He can, though, act successfully under all conceivable conditions since this means nothing but that, in any situation, he can choose the most important action.

One might object that it is contradictory to insist on freedom of choice while cherishing the notion that a market participant can correctly anticipate another's decisions. How can he do this? If others are truly free there should be no way for him to determine how they will choose.

However, determining and anticipating choice are two different things. In order to *determine* some future event, we have to know all the factors bringing it about. This is clearly not the case as far as human action is concerned. Yet we can *anticipate* human action without knowing any of these factors. We can even anticipate it by chance, for instance—and for this reason alone, successful action or equilibrium is possible under uncertainty.

It follows, then, that one needs to revise equilibrium economics, at least in some respects. However, it is our conviction that introducing the category of successful action does not necessitate any major adjustments of established doctrine. In particular, it does not necessitate a modification of the theory of profit and loss since this theory, at least in Mises's account, does not stress uncertainty (as distinguished from risk) and does not even raise the question of whether risk and uncertainty are subjective or objective notions. Instead, Mises casts his exposition of the nature of profit and loss exclusively in terms of entrepreneurial judgment and choice:

> What makes profit emerge is the fact that the entrepreneur who judges the future prices of the products more correctly than other people do buys some or all of the factors of production at prices which, seen from the point of view of the future state of the market, are too low.... On the other hand, the entrepreneur who misjudges the future prices of the products allows for the factors of production prices which, seen from

[7] In particular, economics is not based on a theory of the acquisition and communication of knowledge. See on this point Selgin (1990, p. 62f.), Hoppe (1996), and Hülsmann (1997).

> the point of view of the future state of the market, are too high. . . . Thus profit and loss are generated by success or failure in adjusting the course of production activities to the most urgent demand of the consumers.[8]

It is true that, for Mises and for many other economists, failure is a consequence of changing conditions. However, the point is that this issue can be treated separately. Whether success and failure have "causes," what the specific causes of success and failure are, and whether these causes are intelligible is one question. What profit and loss are is another. In respect to this latter question, we can state that our approach is perfectly congruent with established doctrine. And as far as the *causes* of success and failure are concerned, even if they were to exist, there is no need to identify them in equilibrium analysis, for it covers both equilibrium and profit and loss without regard to their possible causes.

The Meaning of Equilibration and Arbitrage

Since human action is either successful or in error, *there is no middle ground between equilibrium and disequilibrium.* Based on this observation, we can make two further inferences that have some relevance to the current debate.

First, one has to reject the fashionable notion of "equilibration," which implies a movement in time from a situation of disequilibrium to one of equilibrium. The fallacy of this notion lies in the attempt to understand equilibrium as a feature of the environment of action, rather than of action itself. As advocates of equilibration see it, human action transforms *its environment (or circumstances or conditions, etc.) and thereby brings this environment* into equilibrium.

However, equilibrium and disequilibrium are essentially features of human action, which includes as possibilities both error and success. Only in a derived sense are they features of the environment of action. For example, disequilibrium exists when Smith spends all of his income on present consumption and at the same time contracts with Brown to build him a house. On a purely physical level, these actions (Smith's consumption and Brown's building a house for expected payment) are not incompatible as demonstrated by the very fact that they are performed. It is only on the level of choices and intentions that contradictions exist between what Smith does and what Brown does and, consequently, it is only in light of *these* contradictions that the observed physical activities also appear contradictory.

If equilibrium and disequilibrium are essentially features of human action, it therefore follows that both are possible under *all* conceivable circumstances.

[8]Mises (1980, p. 109). See also Mises (1998, pp. 660ff.) and Rothbard (1993, pp. 464ff.).

At any point in time and at all places, action *can* be successful or in error. Conditions of action therefore can*not* play a role in the question of whether equilibrium does or does not exist. Yet, since action itself is either successful or erroneous—that is, since it is either in equilibrium or in disequilibrium, but never in an intermediate position—"equilibration" is a meaningless expression, a myth that has no place in economic science.

As a corollary, there is no such thing as "arbitrage *ex post*." One cannot import a past state of disequilibrium into a present or future state of equilibrium precisely because both equilibrium and disequilibrium are features of action, not the conditions there of. Action does not involve conditions of the past, only those of the present. Hence, error and equilibrium must also refer exclusively to present action. Insofar as an action is successful (and it *can* be at any time) this action can be described as arbitrage. Yet arbitrage, then, does not connote a comparison between a past and a present state of affairs, but a counterfactual comparison between a given successful action and an erroneous action that could have been performed instead.

A related reason for the impossibility of arbitrage *ex post* is that past errors create the very conditions under which present action takes place, and by reference to which present success and failure must be gauged. The idea that one can resolve past errors by choosing correctly in the present is therefore contradictory and meaningless (see Robinson 1973, pp. 362ff.).

Action and Conditions of Action

Let us develop the foregoing consideration further. The most common reason why past attempts to make sense of equilibrium analysis have failed can be stated in one word: consequentialism. Economists have not taken human choice as an ultimate given, but sought to explain it in more fundamental terms. They have not accepted success and failure as dichotomous elements of economic analysis, but have sought to present them as necessary corollaries or consequences of certain *conditions* of action. Let us briefly state why this is impossible.[9]

A state of equilibrium is characterized by the absence of error. If one claims, for example, that equilibrium is omnipresent, one has to explain why error cannot ever occur in reality. And if one claims that equilibrium merely tends to be achieved under certain circumstances, one has to prove that error cannot—or is less likely to—occur under these circumstances. In any case, one has to prove that error is invariably related to certain conditions of action.

[9]For a general critique of consequentialism and consequentialism in business cycle theory, see Hülsmann (1998, pp. 2ff.).

If we define choice as a "condition" of action, error is surely related to such a condition. It is a fact that we have to choose—and *this* condition of action never changes. However, it is important to realize that choice cannot be said to *cause* either error or correct judgments. Both success and failure are merely implied in choice as possibilities. In other words, whereas choice is the necessary condition for error, there is no sufficient condition for it: we neither err necessarily nor are able to err intentionally.

Hence, the crucial question is whether error depends on conditions of action besides choice. Only if this were true could one prove that equilibrium would realize itself. If we always choose correctly under certain conditions, equilibrium will be achieved whenever these conditions are present. Are there such conditions? The answer to this question is unambiguous. As long as human beings choose, there is no possibility of proving that we either *cannot* err or *must* err under certain conditions. The idea of a determination of error contradicts the very essence of choice.

Consider the widespread conviction that equilibrium analysis refers to an unchanging state of affairs. The underlying assumption is that there can be no error if conditions do not change. Error frequently occurs, of course, when acting persons have to confront changing conditions. But from the sole observation that one *has* erred in such a case, it does not follow that one *had to* err. Rather, we have to concede that a correct judgment is possible in any situation. Even if the conditions of action were in perpetual flux, we could not deny the possibility that market participants correctly anticipate future conditions. The much-discussed question of whether the real circumstances of action display regular features, or whether they change in a "kaleidic" manner, is therefore irrelevant for economic science.[10]

We see, therefore, that the concept of equilibrium can be meaningful only if it refers to an aspect of *action itself* rather than to a particular state of the *conditions of action*. Only as a category of action can it be given a clear-cut and meaningful definition.

UNDERSTANDING ARBITRAGE AND PSYCHIC INCOME

Let us now turn to the problem of applying equilibrium analysis. The comparative analysis of success and failure gives us a tool for the understanding of reality that is both realistic and *a priori*. We have seen that there is no need to prove that people do not or tend not to err, for such a proof is irrelevant for the

[10]The best introduction to the debate surrounding this question, and an excellent discussion of problems relating to equilibrium economics, is Selgin (1990). For our disagreements with Selgin, see the section entitled "Selgin's Concept of Subjective Profit," below.

applicability of equilibrium analyses. All possible cases are covered by the theory of equilibrium prices and its comparative counterpart, the theory of profits and losses. This view is realistic because success and failure are potential features of human action. And it is *a priori* because success and failure cannot be perceived on the basis of mere sense impressions and thus cannot be validated or refuted by observations. The problem of applying equilibrium analysis, then, is to*identify* instances of success and failure in the real world.

This problem of identification defies mechanical rules and generalizations. It is the problem of the specific *Verstehen* of historical investigations. Observation allows us to identify two cars running into each another, or a factory closing its doors, but one cannot see an accident or a bankruptcy. Identification of the latter requires understanding on the part of the historian, who must treat each case on its own. In other words, *every instance of success and error must be identified in individual historical cases*. One cannot single out some kind of action and claim that, in general, it is successful or erroneous. Rather, its success and failure must be determined by reference to the individual conditions in which it takes place. Saying "Hi, old chap!" might be the right thing to do when meeting a friend. It would most likely be wrong to do so when introducing oneself to a potential employer. Building a football stadium might be profitable in a prosperous society. It would most likely be a waste of resources if the society went to war and the population starved. To be sure, one cannot explain success and failure *as a necessary consequence* of the conditions of action. Introducing oneself to a potential boss, one*can* do the wrong thing and say "Hi, old chap!" even if we would qualify such behavior as either silly or pathological. Implied as possibilities in choice itself, success and failure are possible under all conceivable circumstances. Man *can* choose the most important of realizable alternatives, but*can* also fail to do so.

However, *once a choice is made*, its success or failure depend exclusively on the circumstances of the individual case. In other words, *before* a choice is made its success or failure is self-determined, and all other conditions of action are irrelevant. *After* the choice is made its success or failure depends exclusively on empirically given conditions. One has to look to see whether the chosen action was indeed the most important one among the realizable alternatives, or whether it rendered impossible the performance of a more important action. Only in the first case could we speak of success; the second would be failure. Applying our *a priori* equilibrium analysis, we make errors intelligible by comparing their implications to the implications of better courses of action that could have been taken. Or ,we make successful action intelligible by comparing its implications to the implications of erroneous actions that could have been taken.

Again, the important point is that equilibrium analysis can be applied only by reference to concrete conditions of the individual case. One has to identify other concrete actions that would have been possible and determine whether they would have been more important. In short, one cannot apply equilibrium analysis by reference to any *a priori* standards. The standard of comparison must be a concrete action that also could have been performed in the same concrete historical situation.[11] We will discuss the problems of identifying such actions in the remainder of this section.

The crucial problem in applying equilibrium analyses is a twofold lack of evidence that concerns both, the value scales of acting persons and the possibility of alternative actions.

These problems are particularly difficult to solve in Crusoe economies—that is, when one analyzes the actions of isolated persons. One can observe Crusoe's actions, but cannot observe his value scales or what he could have done instead of what he did. The only way to deal with such cases is to *guess* what he might have tried to do. Except for instances of what strikes us as pathological behavior, we will have to *assume* that he wanted to produce the effect his behavior brought about, thus assuming what is commonly called "rational" behavior on his part. Still in our interpretation of his behavior, we will sometimes suppose that he failed to pursue the most important project, namely, when we are convinced that he acted against his own rightly-understood interests. We then look at him as a mother looks at her child when it does something that strikes her as stupid, or as a benevolent dictator looks at his subjects when they behave in a manner he deems improper. We could also suppose that Crusoe has failed if *we* know of a better alternative action by which he might have tried to attain the same end that he supposedly attempted. Again, we assure the perspective of enlightened parents or of a higher civilization. There is only one way to establish some (although insufficient) evidence about Crusoe's value scales, namely by relating his currently observed actions to his past actions. If we *assume* that his value scales are by and large stable over time, we can interpret a change of behavior as a discovery of past error (but to be sure, it could also be interpreted as a change of value scales).

These cursory observations help us draw two preliminary conclusions. First, we get a glimpse of just how muddy the waters of such historical analysis

[11]The only other way to approach the problem would be to identify a kind of choice that is *inherently* wrong. The analysis of this kind of choice could run in purely theoretical terms (for such an approach, see Hülsmann 1998). The equilibrium analysis of all other choices must refer to empirical conditions.

are. Nothing is left of the clarity and apodictic certainty that characterized our theoretical exposition. Although we are certain that there is only one historical truth (because to assume otherwise would be contradictory), we cannot prove that we have captured it. Arguing our perspective on Crusoe's value scales and the alternatives he faced, we cannot refer readers to an objective basis they cannot circumvent. We can only try to understand, and try to make our understanding intelligible. Second, we also clearly see that all assumptions about stability of value scales, "rationality," *homo oeconomicus*, etc. are nothing but crutches for *historical* research. They have nothing to do with economic theory, entering the scene only when necessary to apply economic theorems to understand concrete reality. What economics has to say about equilibrium is apodictically true and, as we shall argue in more detail, highly relevant for a correct assessment of the political significance of profits. However, as far as our understanding of real-world action is concerned, equilibrium analysis merely gives us a few—although valuable—tools. These tools need to be complemented with empirical *ad hoc* assumptions that spring from our personal understanding of each case under consideration.

One can derive still further insight from the case of the Crusoe economy. One of the problems of applying equilibrium analyses, we have stated, is in establishing the value scales of the acting person. We can exclude one view of his value scales from the outset, namely his own view at the moment of decision. The reason, of course, is that at the time he is *convinced* he is performing the most important action. He does not err intentionally, and he could not do so if he tried. Even if someone consciously brought about a "failure," it would be no failure at all. The very fact that the action was intended to produce an ostensible failure implies that it was a success. For example, let us suppose that it is my intention to bring about a failure by jumping from the top of a skyscraper and smashing myself on the ground. If I am smashed, I have not proven that one can err intentionally, for it was my very purpose to be smashed. My action was successful. What we see here is that, as a phenomenon, error can occur only *ex post* an action (see Menger 1871, pp. 21ff.). If the effects of action did not spread in time, all would be present in the very moment of choice. There could be no difference between expectation and reality, we would thus always engage in the best possible action, and there could be no error.

Equilibrium analyses, therefore, cannot fruitfully be applied by referring to the acting person's *ex ante* perspective on his own value scales. However, once a choice is made, any person can meaningfully analyze this choice in equilibrium terms. One does not have to resign oneself to contemplation and wait for all the effects the choice will bring about. Both acting persons and

outside observers can criticize the choice, pointing out that it is not the most favorable that could have been made. Business observers in newspapers and journals, for instance, do this all the time. Instead of waiting for evidence of the error to manifest itself they anticipate it. This kind of critique is legitimate because error manifests itself *ex post* an action only insofar as it is a *phenomenon*, that is, only insofar as it is evidence of our senses. Objectively, however, error is always manifest in the very action that brings it about. From the sole fact that no acting person *thinks* he errs, one may not infer that there *is* no such thing as error or, to take a more specific example, that markets are always in equilibrium. Thus, error is revealed in *ex post* deviations between plans and reality. But these deviations are not errors themselves, only their manifestations. Error is *committed* in decision itself. As soon as a decision is made, that is, as soon as choice becomes an ultimate given, a legitimate critique can set in and offer recourse to the terms of equilibrium analysis.[12]

Now let us turn to the application of equilibrium economics to analyses of entrepreneurs in a market economy. The first thing to emphasize is that we are still interested exclusively in the success or failure of *individual* actions. It would be groundless to argue that the choices of other market participants determine which of our actions are right or wrong, for this does not affect whether our actions actually *are* right or wrong. General equilibrium is reached when all individuals choose what is for each the most important course of action. We do not have to bother with the question of whether general equilibrium is ever reached, however, as long as we are sure that it *can* be reached.

Fortunately, one can neglect the question of whether other market participants, consumers in particular, act according to their best interests. Their actions are data for the entrepreneur under consideration. He has to adapt his actions to prevailing conditions, and the choices of other market participants are part of these conditions. Analyzing the individual actions of entrepreneurs on the market, we enjoy the considerable advantage market action affords in yielding evidence for valuations and alternatives. When Jackson exchanges ten ounces of gold for Jefferson's car, we can infer that Jackson had the chance to keep his gold or sell it to somebody else, and that Jefferson could have kept his car and put it to other uses. Moreover, we know that Jackson valued the car more highly than the gold, Jefferson valued the gold more highly than the car.

[12]The impossibility of applying equilibrium analysis from an *ex ante* point of view also highlights the methodological division of the social sciences into a theoretical and an applied part. See, on this point, Salerno (1995, pp. 307ff.).

Most importantly, however, we know that action on the market determines several types of income, and that one such type is profit and loss. On the market, the error of an entrepreneur leads to monetary losses. The returns he realizes for his product do not cover what he paid for capital goods and interest. In other words, the prices he paid for his factors of production were excessive in comparison to his returns, which, in short, constitutes his error. Paying "excessive prices" means that he would have been better off not exchanging his property at all, or purchasing other factors of production and engaging in other enterprises. This way, he would have either realized higher returns, or avoided losses. Similarly, the existence of profits is also an infallible sign of error, for it demonstrates that *other* producers could have done better by engaging in the profitable activity. The existence of profit implies that some market participants would have been better off making other investments, just as the very existence of loss implies that it would have been wiser not to engage in this (or, eventually, any) market transaction. Moreover, it is clear that the market compares the action of the individual entrepreneur not only to the alternatives he considered when choosing, but to the alternatives constituted by the activities of all other entrepreneurs on the market. This is the market's ruthless quest for economic truth. Consumers constantly compare products of entrepreneurs by selecting only the most important ones.

Even on the market, though, evidence for success and failure is not absolutely clear cut. Even in the realm of money calculation, where the categories of wage rate, interest, and profit and loss are especially precious tools, one must *guess* the entrepreneur's value scales, as well as the alternatives he faced, to establish *which* part of his income is profit or loss.

Consider the case of two ice cream dealers selling the same product—which buyers also perceive as the same product—at different prices. The one with the higher income sells in front of a school, the other in front of an old-age home. Let us analyze the impact of value scales on this situation from two sides. First, suppose that the second dealer *hates* teenagers. In this case, as we shall see, his behavior might not involve error. Selling in front of the school would increase his monetary income, but reduce his psychic income, and it is the latter which counts. We might identify error on the side of *other* persons who could have sold ice cream in front of the school, thereby increasing their psychic income. We might also find that there is no other person who might successfully step in to sell ice cream in front of the school at a lower price. In this case, there would be no profit in the present dealer's monetary income. All of his receipts would be wages for his specific labor services.

Now suppose that the students love the present ice cream dealer. They will buy only his product, and would renounce ice cream altogether rather than buy it from someone else. Again, there might be no profit in his income, only wages. Without reference to the value scale of potential customers, one cannot tell whether an action on the market will represent profit or loss.

Let us now consider the problem of standards of comparisons. The central difficulty is in gauging whether other market actions would have been economically realizable. When analyzing the market, we enjoy advantages arising from the fact that the actions of other market participants sometimes provide the evidence necessary to solve the problem. Consider again the case of our two ice cream dealers. The fact that both sold the same product permits us to say that both could have sold at either place. We can tell the dealer selling in front of the old-age residence, "Look, you could have taken your car and sold in front of the school." Yet, again, this evidence does not enable us to make apodictical judgments, such as in the field of pure theory. For it is possible that no other dealer than the present one *could* sell in front of the school. (The present dealer might be the only one strong enough to defend himself against a gang of nasty schoolboys, for instance.) In this case, there would once again be no profits in his income, merely wages for his specific labor services. Thus, the fundamental difficulty is that we cannot provide clear-cut evidence to answer the question of what the person under consideration might have otherwise done. The very fact that he did what he did prevented him from performing other actions and thereby demonstrating what *he* might have done. There can be no empirical evidence for *his* specific alternatives, because there is no evidence for the counterfactual.

Apart from this problem, there are questions as to which kind of alternative action should form our base for comparing market actions. Should it be an action that the decision maker considered at the moment of choice, or should it be *any* better action, even one he did not think of when choosing? Consider the case in which two groups, while ignoring each other, exchange the same good at different prices. Is this a case of error, or not? According to Stephen Shmanske (1994, p. 210), "this market is only in disequilibrium with reference to some perfect information benchmark; this perfect information does not exist in the hands of the relevant actors in the market and, therefore, is irrelevant." Shmanske concludes that the market is in equilibrium—that is, that no error can be identified. Israel Kirzner (1985, p. 158f.), by contrast, sees here a case of disequilibrium. Who is correct?

Remember that we can use the distinction between success and failure as an analytical tool for comparison. It is obvious that, in the case cited above, the

group selling at a lower price *could* have sold at a higher price somewhere else. We *can* therefore meaningfully compare their actual actions to actions they did not consider when making the choice. This is a common practice of daily life. With the benefit of hindsight, we look at a choice and compare what has happened to what could have happened if we had made other choices. We might be able to "forgive" ourselves more easily if we look back convinced that we did not even think of other actions at the time. (As an outside observer, one of course has the additional difficulty of finding evidence that the alternative really was considered.) However, this does not change the fact that one *can* meaningfully compare past actions to alternative actions that were ignored at the time of the decision. A completely different question revolves around *which importance* should be accorded the errors we so identify. Everyone might judge for himself whether this kind of comparison is relevant or not.

In retrospect, one always finds evidence that puts past decisions in a new light. Although in many cases it might be difficult to say whether our past actions have indeed been successful, such difficulties do not at all invalidate the fact *that* there is always a best or optimal action. They often stem from the reality that not all effects of our actions have *as yet* become visible. We often have to wait to see whether our past judgment was or was not the best possible. If we wait long enough, we shall always be in a position to gather evidence to gauge whether or not we chose the most important action. For example, investments that at first seemed to be ruinous can eventually realize important returns. And even the most initially promising enterprise might go bankrupt because of unforeseen events. If, looking back, we find no fault with our past decisions, if we find that we always chose the best option possible, our life has been optimal. And if, in retrospect, we discover errors, we are only capable of identifying them because we can conceive of a better alternative that we could have realized instead.

The fact that the future might produce new evidence for and against the success of past endeavors implies that the standards of comparison by which we gauge such success are constantly being modified. What was formerly considered the best option now seems only second-best, or, in other words, wrong. We see it as wrong *now* because we realize that carrying it out prevented the execution of a more important alternative. What does this imply for the writing of history, as far as history is an application of economics? It implies that history must of necessity be "revisionist." It criticizes our old view of what was right and wrong in light of the new evidence. Although we always employ means that, in our *ex ante* judgment, realize the most important end, we sometimes discover *ex post* that another course of action would have been more favorable. We then see that our *ex ante* judgments deviated from what events

now show us was reality. This deviation is the manifestation of error. *Ex ante*, we always choose what we think is the most important option. *Ex post*, we compare what is with what would have been, and thereby discover our errors.

It would be groundless to object that this conception of success and failure is too restrictive, that it would lead to every plan being thwarted except that made by a clairvoyant or a very lucky planner. As should be clear from our foregoing discussion, equilibrium is nonetheless realistic, and nonetheless important for economic analysis, even if nobody attains it.

The purpose of the foregoing discussion was to highlight the intricacies of applying equilibrium analysis and to contrast it with the result that this kind of research can bring. Instances of proper applications can be found in investment newsletters and business reports as well as in biographies of business executives and other leaders. Let us emphasize that these applications do not add one iota to the *political* debate surrounding profit, income, and distribution, however. This is not because applications of equilibrium analysis refer to individual cases instead of to the economy as a whole, but because applications themselves teach us nothing about the nature of profit, but rather use this category as a tool. Theory, not historical applications thereof, must guide us in political decision making.

THE ANALYTICAL AND POLITICAL SIGNIFICANCE OF EQUILIBRIUM

Let us now briefly examine the analytical and political significance of equilibrium economics. As we shall see, our realist approach underscores precisely the views Mises held on the role of equilibrium in economic science.

First, let us recall that equilibrium analyses do not give more or less accurate pictures of reality. If this were their purpose, they would not be relevant to our understanding of the world. They are relevant because they enable us to understand our world through comparisons with the counterfactual, and because the counterfactual is implied in the choice under consideration. All human undertakings contain both success *and* failure as possibilities. Equilibrium analysis not only encompasses both the possibility of success and of failure, but *consists of* a comparison of the two.

Second, equilibrium analysis is only a *part* of economic science, and therefore must not be equated with it. One can discuss most issues of relevance to economic theory and policy on grounds other than those of equilibrium analysis. Virtually all issues relating to monetary theory and policy, for instance, can be discussed by reference to the nature of money, and inflationary schemes can be rebutted by pointing out, in various contexts, that more paper money does

not increase factors of production. Or, socialism can be criticized for lacking the *possibility* of monetary calculation (that is, independent of the question of whether monetary calculation always brings about equilibrium). The very existence of such other fields of analysis proves that equilibrium analysis is just one part of economic science.

What, then, is the specific task of equilibrium analysis? It is limited to—and necessary for—the determination of income streams on the unhampered market. Here it performs two important tasks. On the one hand, it enables us to determine the relative height of wages and interest. Without the notion of equilibrium, we would know only *that* and *why* labor services command a price on the market, and *that* and *why* rents paid for unit services of land and capital represent interest on the present value of these goods. Yet only equilibrium analysis shows us, for example, that interest must be uniform throughout the economy, or that wages correspond to the discounted marginal value product of labor services. On the other hand, equilibrium analysis enables us to distinguish a third kind of income, namely profit and loss. It shows that profit and loss represent a residual income, and that this income springs from error. These are the main theoretical propositions of this branch of economic inquiry.

The politically relevant implications that one can derive from equilibrium analysis concern schemes for income redistribution. Demonstrating the residual character of profits and losses, for instance, can be used to vindicate just such income. It is obvious that the entrepreneur who makes profits must not be blamed for low wages, for, without him, wages would be*even lower*. His profits spring from omissions of other entrepreneurs who could have realized higher incomes by bidding underpaid labor away from him.

Moreover, because profits and losses are the result of error, they cannot be "abolished" by government intervention. Irrespective of who controls the means of production—be it a central planning administration or private property owners—one cannot deny that they commit errors. Government interference may provide for a redistribution of profits and losses different from what would have been occurred on the free market. Burdening the taxpayers, government may help incapable entrepreneurs who otherwise would have had to pay for losses out of their own pockets. However, no government (or anybody else) can create schemes that preclude error, which is a fundamental feature of human nature.[13]

[13]Also, no government can "tax profits away." The distinction that equilibrium analysis establishes between profits and other kinds of income cannot be readily ascertained in the incomes of market participants. Looking at the annual income of a an opera singer, one

Many economists believe that equilibrium analysis not only serves to evaluate schemes for income redistribution but to evaluate institutional settings in efficiency terms. The idea underlying this view is that some institutions might be more able than others to bring about equilibrium. The former institutions are then said to be more efficient, the latter less so. Because the conditions of action determine success and failure—so the reasoning goes—the task of the economist is to identify the set of conditions that creates the best outcome, thus making the world safe for success and efficiency. This view has already been severely challenged.[14] Indeed, there are two decisive criticisms.

First, to act successfully means to act successfully under *given* conditions. Success is not an absolute detached from the environment of action. It is relative. Successful actions are those best suited to present and future conditions, *whatever these conditions are*. From this, it follows that equilibrium can exist under any institutional setting.[15] Equilibrium can exist in an individualist as well as a totalitarian society. By modifying the institutional setting in which human action takes place, one does not increase efficiency but the terms in which it is gauged. Thus, if an accountant spends his time watering his boss's flowers instead of doing his job, this might be highly efficient in a totalitarian system, but would be a waste of time in a free market. Watering the flowers in the first case, and abstaining from doing so in the latter, he could be said to act successfully in both cases. In this context, it can hardly be overemphasized that Mises's economic calculation argument, which claimed that socialism lacked the indispensable tool for a rational allocation of resources (namely, market prices), and which brought about the comparative evaluation of economic systems, was not cast in equilibrium terms. Mises argued that socialism *lacked* something present in capitalism, something indispensable to the allocation of resources. He did not argue that capitalism was more likely to reach equilibrium.

The profession did not choose to follow Mises, however, but pursued the efficient-outcome path to its logical dead end. Many economists will probably

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cannot tell which part of this money stream is "profit" and which is payment for his specific labor services. It is therefore not surprising that, when seeking to "tax profits away," the practical solution does not consist in taxing profits but in taxing income. Yet, in this case, the taxes become a part of the entrepreneur's costs of production , and are incorporated into h is calculations. And profits (and losses) remain what they were, namely residual income components that add to the so-calculated income.

[14]See, for example, Schumpeter (1908, pp. 196ff.) and Buchanan (1979 and 1969). The specific Austrian approach to the analysis of socialism and interventionism, moreover, is an implicit challenge to this widespread view.

[15]The only conceivable exception is, again, that these institutions are inherently erroneous. See footnote 11, above.

be unsatisfied with the way we presented equilibrium analysis, namely, as dealing with *individual* success and error. However, the comparative advantages of this approach are too obvious to be overlooked. It is both logically impeccable and meaningful to speak of individual success and error in any concrete historical setting. By contrast, it is not meaningful to speak of the "success" or the "efficiency of the system," since success and failure are categories of action, and action is always *individual* action.

It is meaningless to ascribe individualistic terms to some aggregate entity. There is, for instance, no such thing as an absolute scale of values by which economic progress or regress of society can be gauged. To perform economic calculations, we must compute market exchange rates (prices). Yet, this presupposes *two* owners who have *different* views about the good, lest no exchange would take place and no exchange rate could be established. How, then, could one possibly estimate the value of a single good from *one* point of view (the point of view of "society as a whole")? Indeed, this is entirely impossible.

Moreover, when it comes to money prices, what entrepreneurs calculate is the profitability of possible investments. These calculations serve to *compare* these investments with one another to identify the best course of action. No other meaningful use can be made of market prices.[16]

The second criticism of the attempt to apply equilibrium analysis to institutional settings in efficiency terms focuses on the consequentialism of this approach: the attempt to identify the institutional setting that brings about equilibrium presupposes that success and failure are consequences of the conditions of action.

This fallacy is strikingly present in all claims that equilibrium is omnipresent (which, politically, implies an economic justification of the *status quo*). Many modern economists, for whatever reason, have failed to notice that equilibrium analysis is essentially a *comparative* study, and that encountering economic error is an integral part of it. Instead, they have focused on the success-side of such analysis and interpreted it as a more or less faithful picture of the world. In their eyes, the more reality *conforms* or tends to conform to equilibrium, the more meaningful equilibrium analysis becomes.

As a consequence of this misapprehension, many economists tend to regard error as merely a disturbing feature of reality. They believe that the existence of error reduces the importance of equilibrium analysis. Therefore, they try to demonstrate that error is a minor phenomenon, and explain why this is so. All such attempts fail, and necessarily must, because one cannot

[16]For further discussion of the problems of economic calculation, see Hülsmann (1996, pp. 133ff.).

explain in a general way why error comes about. All who assume this line of reasoning fall prey to the consequentialist fallacy.

One can divide the various consequentialist views on equilibrium analysis according to the conditions from which equilibrium allegedly must follow. The most widespread assumption is that equilibrium ensues whenever conditions do not change any more.[17] Marshall assumes that equilibrium results when changes are sufficiently quick or sufficiently slow enough not to affect analysis (see 1920, p. 307), or when market participants can recontract (see p. 335). Other authors consider equilibrium the consequence of market participants enjoying rational expectations (see, for example, Miller 1984), or of error being negligible (see Walras 1988, pp. 11, 110; Edgeworth 1961, p. 12). Still others believe equilibrium characterizes a world lacking entrepreneurial activity (see Wicksell 1934; Schumpeter 1911); one that does not generate messages that cause

[17]The conviction that equilibrium implies an absence of change is and was common to most modern economists. Marshall (1920, p. 305), on the stationary state: "in it the general conditions of production and consumption, of distribution and exchange remain motionless." Clark (1925, p. 28) observed the following about the static state:

> It is conceivable that production might go on in an organized way without any change in the character of the operation. Men might conceivably produce to the end of time the same kinds of goods, and they might do it by the same processes. Their tools and materials might never change; and they might not alter, either for the better or for the worse, the amount of wealth that industry would yield. Social production can thus be thought of as static.

Fetter (1915, p. 130) wrote the following about equilibrium:

> Where this best proportion is attained, is a point of economic equilibrium in the sense that there is in the situation itself (and until some other conditions change, as invention, increased demand, etc.) no motive to change the proportion. In such a case the effort is made to repeat the process, to maintain just that proportion which has been found to be on the whole best.

Pareto (1966, p. 153) held that: "economic equilibrium is the state of affairs that would maintain itself indefinitely if there were no change in the conditions under which it is observed" (my translation). Böhm-Bawerk (1968, p. 412f.) speaks of "Dauerpreis" (permanent price) or "dauernder Stand der Preise" (permanent level of prices). Mises's (1935, p. 109) thoughts on the matter seem to be based on the Clarkian conception of a static state: "The static state can dispense with economic calculation. For here the same events in economic life are ever recurring." See also Mises's (1939, pp. 106ff.) statements about the "économie immuable." Speaking of the "evenly rotating economy," Mises (1998, p. 247f.) says that it is characterized by "the elimination of change in the data and of the time element. . . . All factors, including those bringing about the recurring disarrangement of the plain state of rest, are constant. Therefore prices—commonly called equilibrium or static prices—remain constant too." On the ERE, see also the section "On Mises's Evenly Rotating Economy," below. An interesting case is that of Hayek. In an early German-language paper, he (1928, p. 38f.) advocated perfect foresight or perfect knowledge as the condition necessary for equilibrium. Then, in the middle of the socialist calculation debate, Hayek (1935b, p. 212) apparently changed his mind: "We should not expect equilibrium to exist unless all external change had ceased." For a good overview of the manifold ways economists have conceived of static equilibrium, see Machlup (1963, pp. 13ff.).

agents to change their views and ideals (see Hahn 1973, p. 25); or one without market prices, which operate as road signs toward success.[18] A more recent instance of consequentialism in equilibrium analysis is the argument that markets dominated by big players will provide less reliable expectations (see Butos and Koppl 1993, pp. 302ff.).[19]

A CRITIQUE OF OTHER APPROACHES TO EQUILIBRIUM ANALYSIS

On Equilibrium Selection in Game Theory

Although game theory is a comparatively recent approach, it is useful to deal with it first. Its perspective on equilibrium analysis is different from all others in that its primary aim is not descriptive but prescriptive. Game theory sees equilibrium as the "solution" to a "game" that *should* be chosen by rational people taking part in it.[20]

This normative orientation is in itself an elegant solution to the crucial problem posed by the relationship between equilibrium economics and observed reality. Insofar as the purpose of economics is to enable an observer to *describe* reality, one must account for the relationship between economic theory and the observed real world. While all other traditional approaches to equilibrium analysis deal with this problem, albeit inadequately, game theoreticians consciously and elegantly sidestep it.[21] They neglect the question of how people behave and focus instead on how people should behave. They analyze constellations of human interaction (games) in order to unearth the

[18]For a critique of the road-sign theory as embodied in the contemporary Hayek–Kirzner theory of the market process, see Hülsmann (1997). On equilibration, see also Hicks (1965, chap. 2), who claimed that comparative statics consist in the comparison of "any basic process" and an "amended process."

[19]From these consequentialist fallacies one must distinguish imprecise uses of language. Thus, according to the young Hicks (1946, pp. 133ff.), the causes of error are inconsistencies of price expectations, inconsistencies of plans, incorrect forecasts of wants, and cases in which only second-best solutions are pursued from the outset. These are obviously not causes, however, but manifestations of error. The same fallacy is present in Hicks's (1946, p. 254) claim that instability is " explained" by the assumption that people start doing silly things like giving unlimited credit, etc. Similarly, the "conditions" of equilibrium that Hicks (1946, pp. 86, 197) enumerates are manifestations or characteristics of equilibrium.

[20]See, for example, Neumann and Morgenstern (1944), Nash (1951), Damme (1987), Harsanyi and Selten (1988), and Baird et al. (1994). Game theorists use the expression "rational" in its colloquial sense of "what a smart person would do" or "what is objectively suited to attain a given end." By contrast, Austrian economists cherish a subjective notionof rationality by virtue of which human beings always act rationally, since they believe that the means they employ are appropriate to their desired ends.

[21]Awareness of this problem can be found in works of the pioneers of game theory. See, in particular, Morgenstern (1928, 1934, 1935, 1937), and Neumann and Morgenstern (1944).

best strategy for each player, thus determining the likely outcome when rational players play them. As we have said, this is an elegant approach since, conceivably, an ideal can be right or wrong even if it does not correspond to anything that exists in the actual world—provided that it can, possibly, be put into action.

Before we set criticize the game-theory approach to equilibrium analysis, let us observe that it does not directly contradict the realist approach advocated in this article. We have dealt with equilibrium analysis here as a descriptive tool, primarily, and discussed its role in the theory of economic policy. We have argued, that in each setting, a unique equilibrium exists—a position also emphasized by several champions of game theory (in particular, Harsanyi and Selten 1988). And we were able to neglect the question of whether it is possible to determine the equilibria of concrete forms of interaction (games) *for all times* since the crucial point for us was that there simply be a unique equilibrium. One could be inclined to believe, therefore, that the two approaches are complementary. Game theoreticians could develop standard solutions for various constellations of human interaction, which we could then apply in counterfactual descriptions of success and failure in the real world.

Assessing the prospects of such a division of labor, we have to examine the question of whether games can be so formulated that they precisely describe real-life conditions of action. If this were not so, it would be impossible to discern to what degree the "solutions" of game theory are relevant to real human life. They would then be solutions just as any arbitrary utopia is a solution instead of in the sense that the best concrete alternative is a solution. The postulate that games be so formulated that they exactly fit corresponding features of the real world does not, of course, mean that a game must somehow reflect *all* features of the real world. Rather the question is whether its constitutive elements—that is, those from which the results of game theory derive—adequately correspond to certain real-world features of action. With this in mind, we will now examine the following constitutional elements of game theory: the number of players, strategies, and rewards.

There should be no problem as far as the number of players is concerned. A two-person game, for instance, is applicable to all situations in which two persons interact in the manner determined by the game.

The matter is entirely different when it comes to strategy, which in game theory is defined so broadly as to imply actions taken to attain a given end. The problem here is that game theory postulates the possible strategies of players as a given. More precisely, it postulates that in each game, all possible strategies are defined from the outset. This can take the form of an explicit statement

of each strategy (for example, confessing a crime or not confessing a crime) or a definition of the boundaries within which strategies might be chosen (for example, drawing any number between 0 and 1). Most game theory analyses found in the textbooks assume that there are only two possible strategies.

There are games in which all possible strategies can be defined at the outset—but, not surprisingly, only children or fools can play them for any considerable length of time. The characteristic feature of such engaging games as chess, tennis, or boxing is that they allow for the application of countless strategies unknown at the outset. And, when it comes to real life, there are unlimited possible but unknown strategies, for human creativity constantly overthrows old patterns, adding new strategies previously unimagined. This fact prevents the identification of something like a timeless solution to problems of human life. Game theory can handle only those strategies the analyst himself can imagine. Yet, when someone conceives of what nobody thought before, and puts these ideas into action, we would have to confine the former "solution" to the dustbin of history.

We encounter even greater problems once we turn to rewards. In most expositions of game theory, rewards are *physical* consequences of the various modes of interaction between players—for example, sums of money that player A receives when he performs action *x* and player B performs action *y*.[22] Game theoreticians make the (mostly tacit) assumption that these rewards are *per se* desirable (rather than being desired by a person), and that the degree of their desirability can be expressed in terms of their physical characteristics. For

[22] Some of the following arguments will focus on this type of exposition since it appeals to common sense and is largely responsible for the recent success of game theory. In the original exposition in Neumann and Morgenstern (1944), as well as in some strands of later literature, rewards are *cardinal utilities* that obtain as a consequence of the various modes of interaction. Most game theorists would probably deny that this approach is subject to the standard criticism leveled against the notion of cardinal utility, in particular the criticism that one cannot compare cardinal utilities of different persons (see Rothbard 1956). They would point out that cardinal utilities of rewards in game theory are derived from a purely ordinal ranking. The rewards are ranked, in the words of Baumol (1958, p. 666), "against an arbitrarily chosen imaginary lottery ticket which is used as a standard of comparison." The player is supposed to interpret each reward as a "compound lottery ticket" and to evaluate it "in terms of the probabilities of winning the ultimate prizes" (p. 670). However, first, a ranking in terms of some prizes quickly leads us back to physical rewards, and thus to criticism we will point out below. Second, this ranking does not encompass those rewards that are more highly valued than the total lottery prize, as well as those that are valued less than the participantion in the lottery. Third, any real-life lottery faces the following problem. Either the total sum of prizes is fixed beforehand—then it is *uncertain* whether the lottery can be successfully carried out, and the standard of our ranking is no longer fixed. Or the sum of prizes depends on overall participation in the lottery—then the standard is uncertain, too. Fourth, and finally, Baumol's utilities are gained through a purely intellectual exercise. Their empirical determination would require such a ranking to be actually carried out—but this would entail the problems we just mentioned.

example, 100 dollars is preferable to 80 because it is a larger sum, and one year in prison is preferable to ten because it is a shorter term, etc.

There are light years, obviously, between this way of evaluating players' strategies and the approach known as subjective value theory. But, since this is not the place to go into great detail, we will point out only a few of the most significant shortcomings of this approach.

First, it does not cover the overwhelming majority of cases in which the rewards are heterogeneous. This is no birth defect of game theory that could be remedied by improvements to the approach, but an essential feature that makes it what it is. In each game, all rewards must be of the same kind, for their ranking would otherwise would be too obviously arbitrary . It is plausible to argue that 100 dollars is always and everywhere preferable to 80. It is far less plausible to contend that 25 bananas are always and everywhere preferable to a rib-eye steak. For the same reason, game theoreticians take into account only rewards that most people find either desirable or undesirable, such as money or prison terms. It is plausible to assume that everybody likes money—any quantity of money—just as it is plausible that no rational person likes prison terms of any length whatsoever. It is far less plausible that everybody always and everywhere prefers more perfume to less.

Second, the game-theory view of physical rewards does not account for such widespread phenomena as charity. People who deliberately renounce a bigger sum of money in favor of a smaller one are branded as "irrational," which simply means that they contradict game theorists' preconceived notions of what it means to be rational.

Third, and most decisively, the strategies themselves are never considered part of the rewards—which they are in virtually all real-world cases. In game theory, rewards can only be events that happen as a consequence of players' actions. It is not allowed that a player prefers a given strategy for its own sake, say because it is beautiful or ethically satisfying. Engaging in scientific research because it is gratifying, of instance, is not allowed. Game theory considers any behavior rewarding only insofar as it yields a rewarding result different from the behavior itself. All other considerations are excluded—only instrumental reason is "rational."

Again, this is no accidental defect but an inherent feature of game theory's very enterprise. Homogenous rewards in game theory are to serve as standards by reference to which the heterogeneous strategies of players can be evaluated. Rewards must be homogeneous, for, otherwise, strategies could not be compared in the same terms. Strategies can never be homogeneous by virtue of the fact that they are different. If a strategy were desirable for its own

sake, it could no longer be compared to other strategies in terms of the same physical standard and the whole delicate edifice of game theory would crumble.

These considerations suffice to demonstrate that game theory does not and cannot reach its self-chosen purpose of selecting timeless equilibria. More generally speaking, game theory is unsuited for the scientific analysis of human action.[23] It is an intellectual pastime of university professors and their students that remains genuinely unrelated to the real features and problems of human life.

On Profits and Prices in Knightian Equilibrium

Past approaches to equilibrium analysis, insofar as they conceived of equilibrium as a tool for the descriptive analysis of the real world, suffered from one of two shortcomings. Either they were noncomparative—that is, constructed upon the idea that equilibrium analysis could only be relevant if and insofar as equilibrium was realized in the real world, or they were comparative, but did not identify the correct elements of comparison.

The latter deficiency is manifest in F.H. Knight's very influential view on equilibrium. In his seminal work *Risk, Uncertainty, and Profit*, Knight claimed that equilibrium is a feature of a world of perfect foresight. This world is characterized by the existence of risk and the absence of uncertainty. Because the market participants can weather risk, no profits or losses exist in such a world. By contrast, uncertainty prevails in the real world, and uncertainty defies perfect foresight. Therefore, we observe profits and losses.

This conception of the problem at hand was taken up by virtually the entire profession. It provides, in principle at least, the basis of the twentieth century's economics of profit and equilibrium. Knight's specific distinction between risk and uncertainty has since been challenged and modified, but his fundamental idea is still alive. The idea is to explain why, and under which conditions, there is error on one hand and certainty on the other, and to gain insight into the workings of our error-ridden world by comparing it to one of certainty.

[23] In a recent article, Nicolai Foss (2000) argues that game theory and Austrian economics are compatible and therefore well-suited for cross-fertilization. Foss claims that, from an Austrian perspective, the main insufficiencies of game theory are its formal character, its equilibrium orientation, and its assumptions about the knowledge players possess. Yet these difficulties can be resolved, and as a result, one should expect an improvement of both Austrian economics and game theory. However, even if we admit for the sake of argument that the Austrian approach is less formal than other approaches, that equilibrium plays no role in Austrian economics, and that knowledge, learning, and discovery are important Austrian themes, the gulf between game theory and Austrian economics is still unbridgeable. The whole program of game theory—selecting standard solutions—utterly fails, for it cannot cope with the fundamental facts of human life we have discussed above.

On Knight's lasting contributions, George Stigler (1985, p. x) writes the following:

> profit, which of course may be negative or positive, arises only when there is uncertainty in the outcome of the productive process. When and to the extent that events are predictable individually or *en masse*, they give rise only to wages or rents (including risk premia).

In the Knightian conception, profits and losses are ultimately bound up not with choice, but with the circumstances of action. It is not that man errs, but that events are "unpredictable." In short, uncertainty is a feature of the conditions of action that *imply* error. No equilibrium *can* exist in an uncertain world. Only in the never-never land of certainty could all opportunities for arbitrage be utilized and all profits and losses disappear. Accordingly, today's dominant interpretation of profits is that they are "the outgrowth of uncertainty" (Rothbard 1993, p. 465), whereas equilibrium is considered the outgrowth of certainty. Among economists, there are in this regard differences of opinion concerning only two questions: on the one hand, *which* conditions of action create certainty and uncertainty, and on the other, the universality of these conditions.

The offshoot of this view was a permanent separation of equilibrium from the real world. Equilibrium economics refers to the never-never land of certainty. It is only indirectly meaningful for our world, and it is still not clear exactly what "indirectly" means. Not surprisingly, this conception has proved fatal for the reputation of economics among the broader public, and for the development that our science has since taken. Laymen and students learned that economics dealt with equilibrium, but that equilibrium had nothing to do with our world. What conclusion could they possibly draw from such a view? It is not our task to rewrite the history of twentieth-century economics under the influence of Knightian nihilism. We have to deal exclusively with its analytical significance, and in this regard we have to make three points.

First, there is no such thing as a certain world that can be meaningfully distinguished from our real, uncertain world. Any world relevant to economic science is peopled by human beings, human beings are free to choose, and this this very freedom of choice that defies any attempt to determine "laws" of what they choose.[24] Lacking of such laws, everybody is confronted with the inescapable fact of uncertainty.

Second, there is no need to separate equilibrium from the real world. Equilibrium is constituted by successful action, and action *can* be successful

[24]See Rothbard (1997, chaps. 1–6), and Hoppe (1982; 1989, p. 112f.; 1993, chap. 7; 1995, pp. 36ff.).

under any circumstances. Therefore, one does not have to postulate that uncertainty is absent in equilibrium. We must phrase our arguments about equilibrium in a comparative manner, that is, by comparing it to the features of error, another potential feature of real action. This comparative approach to equilibrium economics is applicable to each instant of our real world.

Third, Knight's approach was not only vitiated by the assumption of perfect knowledge. His conception of equilibrium marked a return to the holistic approach of many of the classical economists. He did not address individual actions, but an "imaginary society" the members of which are "a 'random sample' of the population of the industrial nations of today" (1985, p. 76). He argued that theory modeled or represented an actual or imaginary society. As a consequence, he took recourse to those contestable assumptions that sometimes are used in historical research. Thus, he (1921, pp. 76ff.) assumes that each member of his imaginary society acts "in response to real, conscious, and stable and consistent motives, dispositions and desires," that "nothing is capricious or experimental," that he "controls his own activities with a view to results which accrue to him individually," that he "is to act as an individual only, in entire independence of all other persons," and that "productive operation must not form habits, preferences, or aversions."

If Knight were right, one would have to conclude that economics is much more restricted than it actually is. A student getting acquainted with economics via the Knightian approach must find a concept like profit, and the determination of the height of wage and interest rates is contingent to particular conditions—*very* particular conditions.

Yet, whereas these conditions might obtain under certain rare circumstances of time and place, Knightian "perfect equilibrium" also requires conditions that, like perfect knowledge, are *never* given. Thus, Knight (1985, p. 77f.) presupposes the "complete absence of physical obstacles to the making, execution and changing of plans at will"—that is, that there is "no cost involved in movement or changes," that "all the elements entering into economic calculation . . . must be continuously variable, divisible without limit," and that there prevails a "continuous, costless intercommunication between all members of society." These statements by an outstanding practitioner of economic analysis were instrumental in spreading the conviction that the meaning of economic doctrine depends upon just such assumptions. Yet their true purpose is to prepare a holistic (and completely unhistorical) model of reality.

Based on this account of economic science cannot answer the pressing political questions of mankind. To the question, "What determines my wage rate?" Knightians cannot just answer, "the discounted marginal value product

of your labor." They must also add the proviso, "*provided* that all goods are perfectly divisible, that you and all other members of society are rational and omniscient, and that neither you nor any person or good encounters physical obstacles." Is it any wonder that people do not listen to what economists tell them about the determination of incomes? Knight and his followers thus fall under the verdict of one of the great masters of our science, Jean-Baptiste Say, who wrote the following about such attempts to model reality:

> Such persons as have pretended to do it, have not been able to enunciate these questions into analytical language, without divesting them of their natural complication, by means of simplifications, and arbitrary suppressions, of which the consequences, not properly estimated, always essentially change the condition of the problem, and pervert all its results; so that no other inference can be deduced from such calculations than from formula arbitrarily assumed. (1971, p. xxviin)

On Mises's Evenly Rotating Economy

Mises's equilibrium construct, the "evenly rotating economy," is another instance of a comparative approach to equilibrium analysis that fails to identify the correct elements of comparison. Whereas in Knightian equilibrium acting man *knows* what will happen in the future, his colleagues in the ERE are, in Mises's (1998, p. 249) words, "soulless unthinking automatons." They do not act. They react—mechanically and uniformly—to conditions that manifest themselves again and again. The ERE is thus characterized by

> the elimination of change in the data and of the time element. . . . [It is] a fictitious system in which the market prices of all goods and services coincide with the final prices. There are in its frame no price changes whatever; there is perfect price stability. The same market transactions are repeated again and again. . . . The system is in perpetual flux, but it remains always at the same spot. It revolves evenly round a fixed center, it rotates evenly. The plain state of rest is disarranged again and again, but it is instantly reestablished at the previous level. All factors, including those bringing about the recurring disarrangement of the plain state of rest, are constant. Therefore prices—commonly called static or equilibrium prices—remain constant too.[25]

[25]Mises (1998, p. 247f.). Before Mises, Hayek (1928) had pointed out that equilibrium, or the state of rest, was an imaginary construction, that is, a tool of economic analysis and not a description of reality. In his eyes, prices are "the guides and regulators of all economic activities" (p. 34), and, since equilibrium therefore tends to be reached, equilibrium analysis makes it possible to summarize (*zusammenfassende Darstellung*) a great number of different tendencies in the economy (see 1928, p. 38). In a slightly different account of the function of equilibrium analysis, Hayek (1928, p. 39) claims that the results of equilibrium analysis are relevant only insofar as future changes in data are known (*bekannt sind*).

The ERE can avoid the uncomfortable assumption of perfect knowledge by postulating that the conditions of action do not change. The evenly rotating market participants are not omniscient. They do not have perfect knowledge of the future. What the ERE presupposes is that, *given any knowledge* of technology and of the particular circumstances prevailing in the market, there will be a tendency toward equilibrium as soon as circumstances and knowledge (a part of the conditions) stop changing. The result is a neat picture of the market process: If conditions stop changing, sooner or later only those enterprises most important under these conditions will survive. All other enterprises will be given up *because* there are other more important enterprises. All less important enterprises will in fact become unprofitable because the more important ones, which will realize higher receipts, will be able to pay higher factor prices, thereby ever increasing the costs of less important firms until they incur losses. Because nobody can incur losses indefinitely, sooner or later only the most important firms will survive. The economy will have arrived at its "final state of rest," and turns into an ERE.[26]

Mises claimed that the ERE is "both appropriate and indispensable" to analysis of the market process. More precisely, he found it necessary to treat "the problem of the relation between the prices of products and those of the factors required for their production, and the implied problems of entrepreneurship and of profit and loss."[27] But why is the ERE appropriate and indispensable for these endeavors? Mises's answer is highly significant. He sees the ERE as an instrument of a more general method of economic investigation. Its function is not merely to explain entrepreneurship and profit and loss, but to "comprehend in what respects the conditions of a living world in which there is no action differ from those of a rigid world. This we can do only by the *argumentum a contrario* provided by the image of a rigid economy."[28] He thus adheres to the Knightian method of contrasting our world with an avowedly unrealistic, imaginary construct.

Mises saw more clearly than Knight, though, that the idea of equilibrium is only one part of a comparative investigation. He was very conscious of the fact

[26]This view seems to have been current among Viennese economists of the 1920s and 1930s. See also Conrad (1936), Strigl (1934, p. 89), Rosenstein-Rodan (1927, p. 1206), and Weiss (1923, p. 16).

[27]Mises (1998, p. 249). In an earlier essay, he (1939, p. 110) wrote the following about the purpose of the ERE, that it is: "the study of the relationships that exist between prices and costs, and, consequently, of entrepreneurial risks" (my translation).

[28]Mises (1998, p. 251). Consider also Lindahl's (1939, p. 34) quite similar position: "we need the static structures as instruments of analysis. If we can state under what conditions the variables studied do not change, we can better understand the course of their actual fluctuations."

that the validity of economic theorems did not presuppose the fact that equilibrium exists. He clearly saw that the concept of equilibrium is but a tool of analysis. It does not matter whether conditions will ever be stable and, consequently, whether the ERE will ever be achieved. Its function is to serve as a standard of comparison from which we can derive insights about the implications of unstable conditions.

However, neither Mises nor any other advocate of the ERE has denied that this concept is rife with contradictions. One cannot imagine, for example, a demand for money in a world of certainty. It would be senseless for the market participants to hold a medium of exchange, for all exchanges could be effectuated in kind. Another problem concerns the fact that some resources can be depleted.

The crucial point, however, is that even unchanging physical conditions do not independently bring about equilibrium on the market. Equilibration toward the ERE is supposed to operate according to the view of the market process as outlined above: in time, only the most important firms will survive. It is important that, according to this view, firms driven out never come back, while firms later to be part of the ERE exist at the outset. The equilibration process uncovers which firms out of many are the most important. Only these firms survive in the equilibration process and arrive at the "final state of rest," which then reproduces itself endlessly, thus becoming an ERE. However, it must be noted that one must count the distribution of wealth among the supposedly stable conditions of action, and that the market process always leads to a redistribution. Whenever a firm is driven out of the market, its employees will have to work elsewhere, accepting lower wages. Other members of society, the immediate competitors of this firm, for instance, will realize higher incomes. (What will they do with the money? Are they already robots or is there still some entrepreneur in them? We find no statement in Mises as to when the persons living in this equilibrating world will become the automatons they are in the ERE. Let us suppose, for the sake of argument, that they are still entrepreneurs.) If these beneficiaries of the redistribution process do not use their increased income in precisely the same way as before, a new set of market conditions will obtain. Firms that before were among the most important will become submarginal. Firms that before incurred losses will become profitable. There is no reason to assume that the same firms will endure any economic process, even under stable, physical conditions. Therefore, the conditions under which the final state of rest is supposed to be established—namely, *stable* conditions—can never be given. The market process itself brings about continual change, it implies a constant need for readjustment. Under such circumstances, only the

successful actions of entrepreneurs can establish equilibrium. It might be this fact that prompted Mises to state that

> It is even out of the question to carry the imaginary construction of an evenly rotating system to its ultimate logical consequences. For it is impossible to eliminate the entrepreneur from the picture of a market economy.[29]

But if we cannot even reason conclusively about the ERE, of what use can it be to our understanding of the world?[30] What we see here is, in fact, another instance of the failure of consequentialism. Stable conditions do not imply the eradication of profits. Entrepreneurial judgment is required to make them disappear. More generally stated, it is an impossible undertaking to define equilibrium in terms of conditions of action. There is no discernible final state of rest upon which the economy might more or less automatically "converge."

The ERE thus contradicts itself. However, even if, for the sake of argument, we accept such a self-contradictory equilibrium construct, we still encounter another problem. For the ERE is not in harmony with Mises's general view on the nature of economic science. He claimed that economics is composed of synthetic propositions *a priori*, that is, propositions that are derived from unaided reason *and* directly applicable to the real world. Now, one can hardly pretend that the ERE agrees with this conception. It obviously does not hold true wherever there is human action, and could never be realized in a world of human beings. It is simply an arbitrary and unrealistic assumption.

Mises did not integrate equilibrium into his general *a priori* approach. He found it an uncomfortable but necessary crutch, a tool of thought, an "imaginary construction." The ERE was the second-best solution while a genuinely economic approach to equilibrium was lacking. This begs the question of why Mises adopted the ERE rather than another view of equilibrium. The answer might be found in the following statement (Mises 1998, p. 291): "If we want to construct the image of changing economic conditions in which there are neither profits not losses, we must resort to an unrealizable assumption: perfect foresight of all future events on the part of all individuals."

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[29]Mises (1998, p. 249). For a somewhat different perspective on the inconsistencies of the ERE, see Cowen and Fink (1985). As Salerno (1993; 1995, p. 306) points out, in *Mises's* view, the validity of economic theorems does however not depend on the possibility of reaching the ERE.

[30]As Cowen and Fink (1985, p. 868) point out in a related criticism, "if the ERE reflects everything that the world is not, introducing a change into the ERE and letting it work its way through the system cannot be a promising endeavor. At best, all such a procedure could be used for is to tell us how the real world doesnot react to change."

However, as we have seen, a sound equilibrium concept does not presuppose that individuals *know* the future, only that they *can* act successfully under any circumstances. This cannot be denied without contradiction. Moreover, equilibrium analysis does not presuppose an "image" of an economy in equilibrium throughout a given period. It refers to concrete individual actions, without regard to the rest of the economy. The possibility of successful action is a real feature of any human world, whereas the assumption of evenly rotating robots (of which the ERE is composed) is admittedly unrealistic.

Hence, the decisive consideration is that there *is* a genuinely economic approach to equilibrium. One does not need the ERE to analyze profits and losses. Basing equilibrium analysis on the categorical distinction between success and failure is in perfect harmony with Mises's view on economic science. In the approach outlined above, equilibrium is part of a comparison of two possible outcomes of action. Success and failure both refer to *human action,* and cover its entire range. Their distinction is both *a priori* and directly applicable to our understanding of any instance of human action in the real world.

On Hicks's Concept of Counterfactual Equilibrium

In one of his last works, Sir John R. Hicks defined equilibrium as "a condition in which all actors were taking all opportunities for gain that were open to them."[31] With this notion of such universally successful action at hand, characterized the "equilibrium method" as follows:

> A model of this kind [in which all market participants act under correct expectations] is not realistic; it makes no claim to be realistic. We are just to use it as a standard of comparison with the actual. For the historical application, at least, it is not inappropriate. We admit that in actuality, in "1975," things that were unexpected did happen, so that there was no such equilibrium during that year. But the model is to show us what *would have happened* if some cause had been different. . . . So the model can be, indeed should be, in equilibrium; though reality is not. (1979, p. 83)

Hicks thus clearly perceived that equilibrium analysis is counterfactual in nature. In his eyes, equilibrium analysis does not contrast a living and a dead world, but two living worlds.

This view is, however, defective in several important respects. First, in Hicks's eyes, equilibrium is by and large a (counterfactual) yardstick by which we evaluate the real world. He did not understand that equilibrium is part of a

[31] Hicks (1979, p. 78). Note that, according to this definition, equilibrium can prevail under *any* circumstances (see also p. 46).

larger whole—namely, equilibrium analysis—or that the latter is a method, as opposed to a mere standard of comparison. Not surprisingly, counterfactual analysis is for Hicks a one-sided affair. The ideal is ever the unrealized model of the theoretician. It *cannot* be realized on earth and identified as such by comparisons with inferior counterfactual alternatives.

Second, it is not entirely clear to what extent Hicks fell prey to the consequentialist fallacy. His statement, that the economic model's function is to show us what would have happened if "some cause" had been different obtains only if by "cause" he means human choice, and nothing but human choice.

Third, Hicks did not understand that the counterfactual comparison must be founded on *individual* actions. His view is of the year 1975 *as a whole*. Individual equilibria are impossible in this approach; in ours, they are not.

Fourth, as an offspring of this holistic approach, Hicks does not compare the implications of (successful as opposed to erroneous) *choices*. He compares the effects of expected *events* to the effects of unexpected events. At first glance, this might seem to be only an insignificant difference that refers to the point of view from which the comparison is performed. However, a closer look reveals that Hicks's approach makes it almost impossible to apply equilibrium analysis. For when analyzing a disequilibrium of the entire economy, it is not clear at all *which* cause would have had to be different to bring about equilibrium. Any *single* event that would have been different not only would have rendered some actions successful, but it would also have rendered other actions unsuccessful. Therefore, it would be impossible to discern something like the "overall" effect of a single event on the fulfillment of expectations. Only a simultaneous consideration of *all* events could lend significance to an "equilibrium of events" as a standard of comparison. Yet, even then, the counterfactual variation of a single event would be meaningless since it could be in equilibrium only with reference to all other factors.

As a consequence, this approach would be completely worthless in practice. Even if it were possible to construct equilibrium by referring to events instead of individual choice (which is not the case), one would end up comparing one totality of ideal events to another totality of real events only to state that they are different in almost every respect. What kind of "analysis" would this be? The general conclusion to be drawn from these considerations is that it is not only extremely difficult to define equilibrium by referring to conditions of action, but is an entirely worthless undertaking: it does not advance our understanding at all. By contrast, focusing our analysis on human choice, we arrive at clear-cut distinctions that, as we will see, apply to both historical analyses and political decision making.

On Selgin's Concept of Subjective Profit

Among the noncomparative approaches to equilibrium analysis, one can distinguish three primary groups.

The first is composed of those economists who claim that the economy is always in equilibrium. We addressed this group in our critique of consequentialist approaches that attempt to explain why and when equilibrium exists.

According to the second group, in which we find the ultra-subjectivists, applications of equilibrium analysis presuppose that acting man has knowledge of the future. Because this is not and can never be the case, equilibrium economics simply cannot help us understand the real world. We will deal with this view in the next section.

The third group attempts to establish a kind of middle ground between the two previous positions. These economists want to conserve the sound tenets of equilibrium analysis without, however, abandoning the notion of profit and loss, and without falling prey to ultra-subjectivist nihilism. Basically, there are two solutions within this middle-ground group. The first is the Hayek–Kirzner theory of the market process, an outstanding example of consequentialist reasoning (for a critique, see Hülsmann 1997).

George Selgin proposed the second solution in his important essay *Praxeology and Understanding*. According to his approach, profit and loss is an entirely subjective phenomenon that defies objective analysis. Selgin (1990, pp. 40–41) explains that:

> entrepreneurial profit opportunities in general are ephemeral phenomena, formed in the imaginations of enterprising people and *defined* by the very actions that "eliminate" them.
>
> It follows that praxeology must refrain from grouping the services of enterprising people according to "objective" standards, referring to earnings differentials as entrepreneurial profit. It instead assigns these differentials to the category "rent to labor services." Such rent may be said to include an element of profit only insofar as it actually gives rise to imitation by other individuals or to replication by the entrepreneur in question. . . . Every entrepreneurial action . . . begins with the subjective imagination of a profit opportunity (or belief that a loss may be avoided) and ends with the destruction of the imagined opportunity. This . . . is what praxeology means when it asserts that all action is "equilibrating," i.e., that action leads to the systematic elimination of profit and loss.

Let us begin our assessment with two minor remarks. First, the expression "profit gives rise to imitation or replication" seems to imply some sort of

consequentialist reasoning. But what Selgin delivers, in fact, is an essentialist definition of profit and loss. He clearly states that profit or loss is given only "*insofar* as it gives rise."

Second, Selgin's comes close to a contradictory *regressus ad infinitum*. For although profit and loss are subjective, this subjectivity refers to the interpretation of monetary surpluses. It is therefore in the earning differential of a *past* action that an entrepreneur sees a profit opportunity, which in turn "gives rise" to imitate or replicate this action. However, this past action must have been performed in light of a preceding interpretation, which must have referred to earlier earning differentials, and so on. There is a regress on evermore past actions and earning differentials. Clearly, at some point in the past, somebody must have initiated production for the market. There must be a logical stopping point for this regress. In Selgin's account of it, however, there is not. The first entrepreneurs cannot rely on past earning differentials because they are the very ones who had brought about the first earning differentials. However, this is not a very grave objection, because the important aspect of Selgin's definition is that profit and loss are *subjective*. They are emanations of the individual's arbitrariness and therefore do not require a foregoing interpretation of monetary surpluses.

The decisive shortcoming of Selgin's approach is its very subjectivity. What Selgin has done, in fact, is to define away both error and disequilibrium. In light of his definition, there *can* be no failure. Error is caught up in the subjective box of imagination. It is "ephemeral"; it peeks through only at the very instant of choice, and then only in the mind of the decision maker. But it cannot manifest itself in *ex post* reality. On the premises of Selgin's approach there can be nothing on the unhampered market but equilibrium.

As far as definitions are concerned, this procedure is unobjectionable. However, it is one thing to propose a definition and another to make it stick. Choice exists. Choice *does* imply the possibility of error. Erroneous action *has* real-world repercussions. Not only is it impossible to deny these facts, but everybody recognizes them daily. People look back on what they have done, or have not done, and say to themselves, "I should have done this rather than that." This goes unnoticed in Selgin's approach. As he has it, people think of other actions just before they make their choice. Whatever happens afterward is just reward for their labor services. This blurs the important difference between profit and loss as choice-dependent income (which can be arbitraged away), and income for the specific qualities of one's labor services (which cannot be arbitraged away).

And even if one were willing to cling to Selgin's definition, one could not fail to notice that it does not even begin to consider choice as possible error.[32] Attempting to fill the gap in equilibrium theory, Selgin only creates another void when trying to distinguish between the various forms of market income.

ON THE ULTRASUBJECTIVIST REJECTION OF EQUILIBRIUM ANALYSIS

Let us now deal with the subjectivist rejection of equilibrium economics. According to Shackle and Lachmann, the champions of ultrasubjectivism, equilibrium economics adds nothing valuable to our science. Their criticisms focus on the idea that equilibrium implies the absence of uncertainty. They believe that equilibrium analyses are useful only if equilibrium's existence can be proven, or at least appear possible to prove. Yet they also emphasize that no theory can explain why equilibrium exists or is even likely to exist in reality. From this correct observation they conclude that equilibrium is useless for economic analyses and, moreover, that economic science cannot be used for predictions.[33]

Though, it *is* possible, to conceive of equilibrium without renouncing uncertainty, and such a construct certainly adds something to our knowledge of the real world. The very existence of the approach we have outlined in this essay refutes the far-reaching claims of the advocates of ultra-subjectivism. And even if one denied the validity of this approach, one could not subscribe to their tenets. Even if a conception of equilibrium without uncertainty could not add to our understanding of real human action, it does not follow that there *can* be no realistic equilibrium economics. Shackle and Lachmann did not even attempt to explain why realistic equilibrium analysis is impossible from the outset. Yet it is precisely such an *a priori* proof that is required to justify their general claim. All they have done is point out the insufficiency of *past* approaches to equilibrium analysis.

This leads us to a concluding general interrogation about the significance of subjectivism to economic science. Is subjectivism one of its central features? To some degree, at least, the opinion that this is the case seems to rest on semantic vagueness. Indeed, the term "subjective" has two quite different meanings: (a) "arbitrary" and (b) "individual."

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[32]For a critique of the subjectivist denial of error, see Kirzner (1992, pp. 23ff.).

[33]See, in particular, Shackle (1972) and Lachmann (1994). Similar criticism is to be found in Kaldor (1972). A forerunner is Struve (1936, p. 522f.), who also mentions Simiand (1932, p. 93).

There can be no doubt that modern economics is a subjectivist science in the sense that it deals with *individual* actions. Starting with the writings of Menger, Jevons, and Walras, economists abandoned the *class* analysis of their predecessors. There were no longer capitalists, landlords, and workers buying and selling labor, land, capital, and consumer goods. But individuals buying and selling specific quantities and qualities of goods. With the help of the new marginal analysis it was possible to demonstrate for the first time that, ultimately, all prices paid on the market, as well as the structure of production, could be explained in terms of individual utility. However, utility was not conceived to be subjective at all. It was not a matter of individual arbitrariness, not something determined by choice. Neither Menger, Walras, nor Jevons believed that subjective decisions were the standard by reference to which prices could be explained.[34]

The new perspective was first and foremost the achievement of an analysis cast in terms of individual actions and specific quantities of goods. By contrast, subjectivism in the sense of arbitrary decision making or freedom of choice did not play a comparable role, at least in the initial phase of the marginal revolution.[35]

It was only later that economists became increasingly aware of the problems inherent in a "logic of choice." How can one even assume that choice is both free *and* subject to laws without running into inner contradictions? For economists working within the framework of the cost-of-production theory of value—that is, within the framework of Smith and Ricardo—this problem did not and could not exist. As they saw it, prices were objectively determined by toil and trouble, that is, by the cost of labor. Individual decisions did not interfere here at all. Obviously, what one wants to invent is irrelevant for the question of how much labor one *must* invest in order to produce a given commodity. Preference rankings, interpretations, and anticipations were also irrelevant in this regard. Choice could not determine value and prices.

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[34]See Menger (1871, p. 121f.) and Walras (1988, §50), in particular the passage "ces dispositions n'en existent pas moins." Jevons (1957, p. 38) advocates Say's definition of utility, as, the "faculté qu'ont les choses de pouvoir servir à l'homme." Jevons expressly refers to the distinction established Condillac established between utility and value. See ibid., preface to the second edition, p. XXVIII; Condillac (1795, p. 6). Characteristically, one of the first historians of the Austrian School, James Bonar (1996, p. 12), described the theory of value in Menger's *Grundsätze* as an "investigation of certain principles, fixed independently of individual will, which determine what makes a thing 'useful,' a 'good,' and a thing 'valuable' to me." See also Bonar (pp. 13, 26). Incidentally, Karl Pribram (1983, p. 612) argues that even the Scholastics had an equilibrium concept in the form of equivalence between actual value and intrinsic value, and Peter Struve (1936, p. 486) observes the notion of equilibrium price in Aristotle's *Nicomachean Ethics*.

[35]See, for example, the categorical statement in Rosenstein-Rodan (1927, p. 1210).

Compare this to the viewpoint of modern economists, who try to deduce the analysis of prices and the structure of production from the analysis of individual utility. The minor problem is to discern the objective character of utility. The utility of consumers' goods is as objective as the physical productivity of a machine. Neither can be discussed away by acting man. The major problem is inherent in the fact that all our actions *are* manifestations of choice. We know, to be sure, that neither the *rightfulness* nor the economic *success* of human action depends on human will. Yet we cannot dispute the fact that our actions *per se* are exclusively directed by subjective interpretations of our environment. This being so, how can one reconcile the notion that there are laws of human action, laws of market pricing in particular, with the existence and nature of choice? This is the fundamental problem of modern economics, and the purpose of this article has been to show how it could be solved in the case of equilibrium analysis.

CONCLUSION

Science seeks to explain objective facts by reference to constant relationships that link them to other facts. Yet economic science deals with human action, which is directed by individual choice, which seems by its very nature to contradict the notion of constancy. How can we reconcile the idea that there are laws of human action, that manifest themselves in market prices and the structure of production, with the idea that there is also freedom of choice? All modern discussions of the relevance of equilibrium economics revolve around this problem.

We have argued that there are constant relationships *in* choice itself—in particular, in the dichotomy of success and failure. Recognizing this fact paves the way toward a realistic equilibrium analysis, which consists in comparing an actual choice with its counterfactual alternatives in terms of success and failure. This approach underscores Mises's insight that equilibrium analysis deals only with a very limited range of phenomena—it is *only a part* of economic science. And, in distinct contrast to all previous approaches, it does not rely on fictions of the mind or unrealistic constructs. It is an integral part of a realistic science, a precious tool for the understanding of reality.

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