

**THE EFFICIENCY OF THE MARKET PROCESS:
AN EVALUATION OF THREE RECENT AUSTRIAN CONTRIBUTIONS**

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Three new books on the "market process" approach to economics are reviewed. Each uses Hayek's famous 1945 article to criticize aspects of modern economics and to further develop Hayek's own insights, particularly along the lines of Kirzner's theory of entrepreneurship. The topics considered are central economic planning, the economics of information and complexity, welfare economics and the economics of regulation. Underlying each of these is the question of economic efficiency. Each author considers a claim for the "efficiency" of the market economy as a whole based on the concept of individual plan coordination. Close scrutiny reveals that all such claims are bound to fail if by "efficiency" we mean an objective or logically derivable construct. On the other hand, the efficiency criterion, when based on defensible notions of subjective value, comes down to "preferred choice". The basis of that preference includes the usual arguments in favor of efficiency and that inform the market process analysis of the topics considered by our authors.

THE EFFICIENCY OF THE MARKET PROCESS

Introduction

The market system is usually thought to be responsible for increases in productivity and technological changes that have led to the development of an extraordinary variety of affordable consumer products, and that have generally enriched the lives of average people. It is to this that many of the defenders of free markets point. In a strongly intuitive sense the market economy is simply more "efficient" than any alternative system. This has become painfully obvious in recent years with the demise of almost all of the world's avowedly socialist economies. The collapse of socialism had been predicted by some economists from at least the 1920's, (for example Mises 1922) and the same insights which informed such convictions have been consistently carried over into a blanket condemnation of any form of central planning including piecemeal regulation, subsidization or any other form of "socialism writ small."¹

The economics profession at large, though mainly in agreement in judging socialism "less efficient" than markets, is considerably less unified over the question of the "mixed economy" - the need for different types of government activity to supplement the private economy. The question has been raised as to whether the insights that have been used validly to condemn "socialism writ large" do indeed carry over into all forms of government intervention (see for example, Friedman 1992, 113-142 and Gray 1989).

In much of the postwar period modern Austrian economists have been working on an approach to economics that has come to be called the "market process" approach. Three new books in this tradition have recently been published (Cordato 1992, Kirzner 1992 and Thomsen 1992).² Although they deal with somewhat different topics, each, in a very similar way, attempts to address the question of market "efficiency" in the contexts of socialism writ both large and small. This similarity is not coincidental. Both Cordato and Thomsen have explicitly drawn their insights from the extensive, but extremely consistent, work of Israel Kirzner (though, as we shall see, Cordato takes issue with his mentor on some conceptual points). Kirzner's work, in turn, has been consciously modeled on contributions of Mises and Hayek. His innovations relate to the activities of the entrepreneur in a market economy. In his work it is entrepreneurial activity that is responsible for the obvious "efficiency" of the market system.

The basic thesis of this paper can be stated as follows: While the authors' strongest arguments are those made against the inconsistencies of the neoclassical method, one must nevertheless feel somewhat uneasy at their attempt to develop a more appropriate gauge of efficiency by which to judge the market economy. It is not so much that the alternative normative criteria offered by our authors are absolutely wrong, as that, being inevitably

¹In the Mises-Hayekian analysis, socialism is intervention carried out systematically in all markets. It substitutes non-price and non-market allocations for pricing and market institutions. Particularistic intervention at the micro-level is socialism writ small...." O'Driscoll and Rizzo 1985, 141.

². The latter two works are the first two titles in the *Foundations of the Market Economy* series, edited by Mario J. Rizzo and Lawrence H. White.

less precise than the very concept of efficiency leads us to expect, they may be vulnerable to spurious objections. Even if it cannot be unambiguously shown that the market system is more efficient than any alternative system, this would not and should not deter its admirers. The search for an *overall* measure of economic efficiency may, indeed, be misplaced. The ultimate defense of the market, for better or for worse, will have to rest on strongly held convictions about its empirical performance, which, in turn, having been acknowledged, appeal to strongly held ethical convictions.

The Concept of Efficiency - It Is Not As Simple As It Seems

Efficiency is the virtue most consistently praised by economists. That should occasion no surprise, since efficiency and economy are practically synonyms. Both terms refer to the effectiveness with which means are used to achieve ends (Hayne 1991, 129).

The concept of efficiency is a deceptively simple one. On its face it appears to be a quantitative concept. It can be expressed as the largest output for any given input or more specifically as the largest *output/input* ratio. Its most obvious application is in physical processes, for example, "the ratio of the work done by a machine to the energy supplied to it" (Hayne 1991, 129). But its exclusively quantitative aspects disappear as soon as we realize that this definition is useless unless and until we identify "work done". And this depends on the kind of work we *value*. "Efficiency is inescapably an evaluative term...physical facts by themselves can never determine efficiency" (Hayne 1991, 130). It is more accurately expressed as *value of output/value of input*. Only processes whose inputs and outputs are subject to unambiguous evaluation (aggregation, measurement, etc.) are capable of being unambiguously evaluated according to the criterion of efficiency. The efficiency concept is crucially dependent on the concept of *value*.

Thus economic processes cannot always be judged according to this criterion. An obvious problem is the old one of interpersonal comparisons. For a single *individual, as judged by that individual*, the concept, indeed, has meaning in terms of the subjectively evaluated means and ends chosen by that individual. But for many individuals taken together, or for the "economy as a whole", the concept of efficiency has no obvious application. The neoclassical economists, realizing this, attempted to build such a concept of "social efficiency" as it related to individual efficiency and this forms the substance of modern welfare economics. Although the logical limitations of welfare economics are widely acknowledged, neoclassical economists continue to use its methods uncritically to investigate the normative properties of their models. These efforts rely on assumptions that allow one to make inferences about objective "social" outcomes from subjective individual evaluations. All three authors criticize the normative basis of modern neoclassical economics along roughly the same lines. They point out that the subjective character of *value*, and constructs that depend on it, like *cost*, render the usual neoclassical measures of (in)efficiency, and the policy responses they provoke, meaningless. This can be explained briefly as follows.

Efficiency understood to mean the maximization of some measure of "social wealth" or "social benefit" (given the means available to produce it) can also be thought of in terms of minimizing "social cost." These are equivalent concepts as long as we define costs or benefits in net terms; that is benefits can be thought of as negative costs. Then minimizing "social cost" will maximize "social benefit." This is the form in which many economists approach the question of policies designed to achieve efficiency.³ For example, in cases of so called "market failure", where one person's actions impose an external cost on another, which is not reflected in the market in any price, this cost could apparently be "internalized" by a judicious imposition of taxes and/or subsidies. The prototype example is the case of air pollution (see Lewin 1982). If a polluter imposes damage on another by emitting smoke, this is a cost of doing business which he (the polluter) is not bearing. The solution would appear to be to impose a tax on him equal to the value of the damage he causes and to compensate the victim with the proceeds.⁴ This, of course, assumes it is possible to measure such damage satisfactorily. The air pollution case is typical of a more general approach in which all government policies can be reduced to the correction of some "externality." Most such externalities are less obvious than smoke pollution. Even standard macroeconomic policies can be shown to be necessary because of the existence of obscure externalities. (For example, individual employers do not take account of the "costs" they impose on the economy when, taken as a group, they layoff workers.) So the approach may be summarized as that of "minimizing social costs by removing all externalities."

The main problem with this approach⁵ has to do with the concept of cost. Most, if not all, economists would agree that when the term "cost" is used it should refer to opportunity cost. The implications of a rigorous opportunity cost concept for much of modern economic theory would, however, be too devastating to bear, so that most theorists are thoroughly inconsistent when it comes to applying the concept of cost. (Opportunity) cost correctly understood refers to the *individual* decision making process.⁶ In making a choice every individual must weigh the perceived alternatives. The cost of choosing any one alternative is related to the estimated value of the opportunities sacrificed by forgoing all the others and may be expressed as the utility foregone on the next best alternative. From this perspective it follows that cost is borne exclusively by the

³Maximizing the ratio *value of output/value of input* is exactly equivalent to minimizing the ratio *value of input/value of output* as long as we are talking about the same inputs and outputs. Alternatively, we can think of maximizing *value of output - value of input* or minimizing *value of input - value of output*; this is more familiar as maximizing net benefits or minimizing net costs. (We ignore the question of discounting benefits and costs that occur over time).

⁴This is not the only, or arguably the best, solution. An alternative would be to make the polluter liable at law for the damage caused. A fuller discussion appears below in connection with Cordato's work. The discussion in the text here is for the purpose of examining the problem of "social cost" generally understood.

⁵Actually there are many problems. The one discussed in the text is the most fundamental and least acknowledged.

⁶The most rigorous treatment of this is Buchanan 1969. This work is an unjustly neglected classic in economics. See also Kirzner 1986b.

decision maker. It is inseparably bound up with the act of choice. A burden placed on me by actions taken by a third party that are beyond my control, is, strictly speaking, not my cost. To the extent that such a burden influences the actions of that third party it is his cost. Only when understood as choice influencing is cost a useful concept to economists. A consequence, that is a result of a previous choice, is irrelevant for economic analysis except to the extent that it influences current choices, that is, to the extent that it has an impact on currently perceived alternatives. It should also be apparent that cost is inherently subjective in two important respects. First, it manifests itself in utility terms, making it non comparable across individuals. Secondly, cost implies subjective expectations. It refers to the *perceived* alternatives; it relates to an *imagined* future. The alternatives at any point of time exist only in the mind of the decision maker, and although there may be some degree of consensus concerning hypothetical imagined future prospects, there almost certainly will remain some divergence of expectations. Thus, strictly speaking, cost cannot be measured by an outside observer.⁷

In a very restricted sense and in very constrained circumstances, the money outlays and market prices that we observe can represent costs. When the economy is in a full competitive equilibrium,⁸ implying, among other things, that there are no nonmonetary values unique to individuals involved in their choices and there is no uncertainty about future outcomes, then market prices will represent individuals' evaluations, at the margin, of the traded goods and services in terms of money. In the postulated conditions, these reflect the traders' preferences, even though expressed in money and not in utility, and can be used to interpret, explain and predict decisions. But these objective costs are the results of choices that occur in equilibrium (where plans and outcomes coincide). In any actual dynamic process, where the future is, in some respects at least, uncertain, expectations will diverge, some plans are doomed to fail and a strict application of the opportunity cost concept is thus bound to lead to the conclusion that costs are individual and private and cannot be "social." The social cost concept requires the summation of individual costs. This is impossible in utility terms. And, since individual costs might embody contradictory expectations, it is also meaningless. What are we to make of a number that is the sum of two subjective costs that are based on mutually exclusive states of the world? For example, suppose a highway displaces two video stores. One specializes exclusively in VHS the other in Betamax. Each store owner estimates the amount she is to be compensated on the basis of the revenue that would have been earned in that location had she not been forced to relocate to an inferior location. Both owners base these revenue estimates on the assumption that the predominant technology will be the one in which they specialize. Obviously, since VHS, in the event, won out, it would not have made sense to add the two estimates together to arrive at a measure of total costs. The same considerations apply with equal force to the equivalent concept of social

⁷Cost is also unrealizable. Once a choice is taken the hypothetical imagined future evolves into the *actual* future and the displaced alternatives cease to exist. There is no way to determine what alternatives were "real".

⁸Equilibrium is examined further in the next section.

efficiency. What are we then to make of those numbers in the popular press or in business conversations that purport to measure costs of national projects, like health care reform? At one level these are simply estimated future outlays (by the government) and ignore all of the non observed effects produced by additional taxes and regulations. But even if they attempted to include the "cost" of these things, the number would still be just one person's valuation of the costs to *others*. The same observations apply with greater force to the evaluation of the "benefits" of such a program.

The Market Process Paradigm

There is another way to think about efficiency; instead of thinking of it in terms of aggregate *outcomes* achieved, we could think about it terms of a *process* that renders *individual* actions more efficient.

We have already said enough to show that efficiency and equilibrium are closely connected. An *individual* is in equilibrium when he has no desire to change his situation. By his own assessment he could not do any better than he is doing. Obviously he is also being efficient. As long as feels he is using the means at his disposal to best achieve his ends, he is also maximizing the expected value of his ends relative to the value of his means. It should be noted that the concept of equilibrium depends very much on the time period one has in mind. An individual is in equilibrium over a period of time if, from the vantage point of the end of the period, he has no regrets; he has no reason to feel he should have acted differently, *given what he now knows*.⁹ In other words, the individual's plan is judged (by him) to have been successful. From the perspective of the *start* of the period an individual is said to be in equilibrium when his plan is consistent and coherent. Barring unforeseeable changes the plan will succeed.

Now, when we move from individual to *social (or general)* equilibrium (and efficiency) we must say that *each individual* must be in equilibrium. In other words, the economy is said to be in equilibrium only when each individual within it is in equilibrium, when each individual is fulfilling his plans and has no desire to change them. To conclude that the economy is in some way in equilibrium, or is operating efficiently, only has meaning (according to this approach) to the extent that the individuals within it are in equilibrium or are operating efficiently.¹⁰ But for all of the individuals in an economy to be in equilibrium over any period of time implies that their individual plans must be consistent

⁹The significance of the italicized phrase should be obvious. To say that an individual is in equilibrium over a period of time if, from the vantage point of the end of the period there is no reason to feel he should have acted differently, *given what he knew during the period*, is absurd. As long as we assume individuals act rationally (purposefully) we can attach no meaning to the assertion that an individual would have acted differently under exactly the same circumstances including what he knew at the time. The whole point about being in equilibrium is that nothing has occurred to change one's mind.

¹⁰Once again, it is obviously possible to think of a measure of efficiency that is based on some measure of aggregate outputs and inputs as viewed by some observer. It must be realized, however, that such a measure is no less subjective. It merely substitutes the observer's evaluation of outputs and inputs for that of the economic agents he is observing. Such an approach, though meaningful, violates the principle of methodological individualism.

with one another. Individual plans must be coordinated with each other if they are to be successful. Each individual plans within certain constraints - a budget, prices of the resources he will need, and so on. Among the things influencing these constraints will be the plans and actions of other individuals. If two individuals have plans that are, in their objectives or implications for resources usage, mutually exclusive, then at least one of them is doomed to fail and general equilibrium is disturbed. Thus, an equilibrium situation is described as one in which individual plans are fully coordinated. Each plan can be successfully executed. Means are exactly matched to ends.¹¹

Another aspect of equilibrium, understood as full coordination, is that it implies that individuals are able to achieve their freely chosen goals (within legal and physical constraints). There thus appears to be a fundamental consistency between the concepts of efficiency and freedom. The basic principle of individual autonomy is served by a system that tends to allow individuals to formulate and succeed in their plans. This consistency is simply a result of the use of individual values in deciding what should count as efficient. "The central idea, for an understanding of individual liberty, lies in the individual's freedom to *identify for himself what the opportunities are* which he may endeavor to grasp" (Kirzner 1992, 53)¹². So the achievement of full equilibrium, if it were ever possible, would also imply the achievement of a sort of maximum amount of freedom and autonomy, at least one consistent with the given distribution of resources among individuals.

The achievement of equilibrium as a practical matter is, however, recognized to be an extremely unlikely event. The market process is a process in time and the elapse of time inevitably brings with it the arrival of new information that is likely to cause a

¹¹This general approach was probably first clearly outlined in Hayek 1937. It has been variously endorsed by a number of eminent neoclassical economists, for example,

"...[Equilibrium refers to] those states in which the intended actions of rational economic agents are mutually consistent and can, therefore, be implemented." Hahn 1984, 44.

"...[Equilibrium is a] state where no economic agents have an incentive to change their behavior," Stiglitz 1987, 28.

Both of the above quotations appear in Thomsen 1992, 9. The traditional supply-demand equilibrium point is a case of "social" equilibrium. At the intersection of the supply and demand curves, the amounts the individuals respectively wish (plan) to supply to and demand from the market at the prevailing price are equal. There are no surprises or disappointments that lead to surpluses or shortages, which, in turn lead to price changes, etc. and necessitate plan revisions. Expressing equilibrium in terms of fully coordinated plans is a more general criterion, one that is clearly consistent with methodological individualism, and that incorporates the supply-demand criterion as a special case. Again Stiglitz: "the equality of demand and supply should not be taken as a definition of equilibrium, but rather as a consequence following from more primitive behavioral postulates." (Stiglitz 1987, 28). Cordato, at one point (51) makes a distinction between "equilibrating" and "coordinating". We will consider this further below.

¹². This quotation actually embodies more than the meaning suggested above in the text. It refers not only to the fact that an equilibrium situation is one that "maximizes" liberty to the extent that it allows individuals to achieve their freely chosen ends, but also, that in a market system, individuals can be thought to actually *create* those ends in a way that could not be done in any other system. This is an aspect of the "knowledge problem" to be addressed below.

revision of individual plans. Though individuals may be continually striving towards the attainment of equilibrium situations, they never get there before their plans are upset. But, *it is in the recognition of the fact that the market is never in equilibrium, that the market process consists*. Entrepreneurs are the ones who recognize and act on opportunities presented by the fact that inefficiencies exist. The recognition of these profitable opportunities is what Kirzner identifies as the essential entrepreneurial role. According to Kirzner, an entrepreneur is someone who notices hitherto unperceived opportunities for gain. One who is alert to such opportunities is thus likely to be a better entrepreneur than one who is not. These opportunities are diverse in nature.

Pure profit opportunities may offer themselves in three distinct forms....(a) as a result of pure arbitrage, buying and selling simultaneously at different prices; (b) as a result of 'intertemporal arbitrage' buying an item at a low price and selling it later at a higher price; and (c) as a result of a creative act of production, buying resources at low prices and selling a product innovatively created out of them later at a higher price. In each of these cases pure profit occurs because the market had not been fully adjusted to the possibilities it itself containedPure arbitrage tends to ensure the exploitation of all available opportunities for mutually profitable exchange; intertemporal arbitrage tends to avoid 'wasteful' intertemporal allocation ...; the entrepreneurship exercised in innovative production tends to generate technological progress. (Kirzner 1992, 50)

So, in one way or another, disequilibrium manifests itself as a price discrepancy that can be exploited for gain and is thus indicative of an inefficiency. And the market system carries within it the dynamic for the removal of these inefficiencies. In a remarkable simplification all entrepreneurial activity is seen as a variation of the same theme, that of "buy low, sell high".

The existence of unknown ignorance manifests itself in markets as unnoticed opportunities for pure profits. Such opportunities attract the alertness of entrepreneurs.... What the market process achieves, then, is *systematic coordination* of dispersed pieces of information (Kirzner 53, italics supplied).

It is the entrepreneur (or, at least, the successful entrepreneur) who is responsible for moving the market from less to more efficient situations by providing consumers with what they want. The entrepreneur coordinates uncoordinated situations. The three modes of entrepreneurial behavior, namely, pure arbitrage, intertemporal arbitrage and production, all create value (as judged by the parties involved). Value is always the existence of exchange and/or production. And it is the entrepreneur who facilitates exchange and production. Any policy, therefore, that inhibits this essential, but completely spontaneous, entrepreneurial function, necessarily inhibits economic development.

This picture of the alert entrepreneur as the creator of value is a compelling one. The connection between Kirzner's entrepreneur as an ideal type and the real world entrepreneurs one encounters is much closer than that of many other ideal types. The entrepreneur, as all purpose arbitrageur, is a real figure, ubiquitous in economic history. Without him the introduction of new products, new methods of production and exchange and new types of organization better able to serve the consumer, would not arise.

Someone has to have had the idea for every valuable development! But the ability to have the idea translated into practice is crucial both for its being adopted and, Kirzner would argue, *for its being thought of in the first place*. An institutional environment that rewards entrepreneurs for being alert is crucial for economic development. In this sense the market is an efficient system.

For more than thirty years Kirzner has investigated the role of the entrepreneur in the economy and has communicated his profound insights with admirable clarity. Over the period these insights have deepened and the area of application has widened. But the equilibrating, coordinating and *efficiency enhancing* entrepreneur remains the central imposing figure. So it is with his latest book. It is a collection of papers published between 1984 and 1992. Chapter 1 (of which more below) was written especially for this volume. We will focus on Part 3 (of 4 parts) entitled "Some new explorations in the Austrian approach" which is concerned primarily with what has come to be called "the knowledge problem". But even though they may deal with other topics, each of the thirteen papers (chapters) in this book has something to do with this central issue.¹³

*The Knowledge Problem*¹⁴

In 1945 Hayek published an article (Hayek 1945) that must be ranked as one of the most influential in economics. It has attracted the attention of economists of virtually every persuasion. Each of our three authors devotes, either directly or indirectly, much attention to it. Indeed, almost Thomsen's entire book may be said to be about the issues raised in this article. In many ways the article is an outgrowth of the famous socialist calculation debate, the debate about the feasibility of economic calculation in planned economies, and it still bears on that issue in a fundamental way. It is a development out of that debate and a precursor to further important developments (see Kirzner 1992, 113 in the chapter entitled "The Economic Calculation Debate: Lessons for Austrians").

In this article Hayek argues that *the* economic problem does not consist in achieving the best allocation of resources among the various means available, as though social means and ends were somehow given and known.

The economic problem of society is...not merely a problem of how to allocate 'given' resources - if 'given' is taken to mean given to a single mind which deliberately solves the problem set by these 'data'. It is rather a problem of how to secure the best use of resources known to any of the members of society, for ends whose relative importance only these individuals know. Or, to put it

¹³This is especially true of Part 1 entitled "The market process approach" which consists of two chapters. Chapter 2 ("The meaning of market process") is a very helpful, in depth exposition of the connection between the market process and equilibrium, while chapter 1 is a fresh attempt to tackle some thorny epistemological issues that we shall examine below. Part 2 ("The emergence of the Austrian view") contains five chapters on aspects of the history of economic thought and Part 4 ("Some related issues emerging from the Austrian approach") contain two chapters on conceptual issues - self interest and Lockean natural rights - that do not fit anywhere else.

¹⁴To the best of my knowledge this term was coined by Don Lavoie in Lavoie 1985.

briefly, it is a problem of *the utilization of knowledge* which is not given to anyone in its totality (Hayek 1945, 77, italics added).

[T]he unavoidable imperfection of man's knowledge and the consequent need for a process by which knowledge is constantly communicated and acquired [is]...an essential part of the phenomena with which we have to deal....[T]o assume all the knowledge to be given to a single mind in the same manner in which we assume it to be given to us as the explaining economists is to assume the problem away and to disregard everything that is important and significant in the real world (Hayek 1945, 91).

Hayek is, in the first instance, pointing out that information (and knowledge)¹⁵ is dispersed among individuals as part of their individual plans.¹⁶ There is no central plan. And, because all this knowledge could not possibly be had by any one single mind, there could never be a central plan. The market, through the price system, provides a process for using all the available, though dispersed, pieces of information as though they were all part of a single plan. Some theorists have seen in this the idea that the price system can be thought of as a sort of information pooling and processing device - a device for somehow overcoming the *complexity* implied by dispersed information. Prices act as information signals between people.

[I]n a system in which knowledge of the relevant facts is dispersed among many people, prices can act to coordinate the separate actions of different people in the same way as subjective values help the individual to coordinate the parts of his plan (Hayek 1945, 85).

He goes on to explain how a shortage of tin is reflected in a rise in its price that causes economic agents to economize on it in a way that does not depend on their knowing about the shortage or its cause. Prices induce the "right" response by sending the right signals.

It is not clear whether this is all that Hayek meant in this article. What is clear is that he was at the same time working out a view of the price system that goes

¹⁵I have elsewhere argued that a distinction should be drawn between "information" and "knowledge". The former consists of objective bits of data. The latter consists of subjective states of mind. That people share knowledge is only ascertainable to the extent that its effects (for example, the ability to do something - solve arithmetic problems, fix gadgets etc.) are objectively manifested. Many theorists, our authors and Hayek included, use the terms interchangeably.

For the sake of avoiding confusion, this book follows Machlup's ... suggestion not to distinguish between 'knowledge' and 'information' when referring to '*what*' people know or are informed about. Although ... many important distinctions can be drawn between these terms, ... these differences are not of much significance here (Thomsen 1992, 1, note 1).

Though this is not the place to pursue this, I would contend that this usage sometimes glosses over important insights. For example, Hayek's distinction between general and tacit knowledge ("the particular knowledge of time and place"(1945., 81)) would appear to be connected to this knowledge-information distinction (Lewin forthcoming).

¹⁶"The particular character of the problem of rational economic order is determined precisely by the fact that the knowledge of the circumstances of which we must make use never exists in concentrated or integrated form but solely as the dispersed bits of incomplete and frequently contradictory knowledge which all the separate individuals possess." Hayek 1945, 77.

considerably deeper than this and that this deeper view later formed the basis of much of his and other Austrians' (notably Kirzner's) subsequent work.¹⁷ This view will emerge in what follows below. But, at least one way of reading Hayek's article is that, if somehow one were able to collect and process all of the available *existing* information in one central spot (a feat that Hayek appears to think is impossible), one *could*, indeed, duplicate the results of the market system, or even more provocatively, one could achieve a social optimum (maximum efficiency) where the market might not. All seems to hang on the "costs" of collecting and processing the relevant dispersed information compared to the "costs" of allowing the market process to work.

Thomsen shows that this is the way that work in the neoclassical tradition has interpreted Hayek (Thomsen, chapter 3). Hayek seems to be saying that price changes provide both a signal and an incentive for correct actions, i.e. individual actions are coordinated through prices, and only through prices, because they obviate the need for individual economic actors to acquire the relevant information on which to act. Prices *substitute* for information. They are, in a sense, information *surrogates* (Thomsen, 41).

One context in which prices will indeed be perfect substitutes for detailed information is in the case of full competitive equilibrium, that is to say, in a situation where there are no market imperfections (no hidden "costs"), there is free economic competition, and all economic actions are fully coordinated. In this world there is no uncertainty and prices accurately reflect (subjective) relative scarcities. Then simply by *reacting* to price changes, individuals will provide the correct responses. Neoclassical economists reading Hayek naturally interpreted him in this way because the basic method they use is the equilibrium method. The economic world is investigated *as if* it were (somehow) in equilibrium where all prices accurately reflect relative scarcities and priorities.¹⁸ This then opens the door to an investigation of why a price system would be necessary at all and if an alternative system which simply made the necessary information available might not be preferable.¹⁹

While Hayek's article does seem to suggest that he was arguing that prices are efficient information surrogates, there is nothing in it to suggest that he thought that prices were *equilibrium* prices. This raises the interesting question of what information role *disequilibrium* prices play. How can prices that are in some sense "wrong" (that do not accurately reflect all individual plans) serve to coordinate individual actions? This is, in fact, the question on the Austrian economics research agenda and we will return to it below.

¹⁷Kirzner 1992, 113-115. "... in spite of its citation of Hayek's work ... the economics literature has regrettably failed to do justice to the full significance of that work." Kirzner 1992, 140.

¹⁸One well known and widely respected work that leans in the direction of this type of interpretation is Sowell 1980. See Thomsen 1992, 44-45, 58; Kirzner 1992, 148-149.

¹⁹A reading of Hayek, however, leaves very little doubt that he was not talking about a full equilibrium, complete information system. In particular, he makes the point that individuals possess special knowledge that cannot be communicated to a central planner (Hayek 1945, 83).

Some recent work in the neoclassical tradition has misinterpreted Hayek in yet another way.²⁰ In particular, Grossman and Stiglitz (Grossman 1989, Grossman and Stiglitz 1976, and the references in Thomsen 1992) have interpreted Hayek to be saying that prices can be understood as *summary statistics* of the information set relevant but not available to decision makers, who must then use prices to make inferences about the information set itself. It is a kind of implied (unconscious) sampling. Prices are not seen as information surrogates but rather as information *summarizers*. The question they then ask is - are prices "efficient" statistics in the sense that they convey all of the necessary information with as little noise as possible?²¹

Grossman and Stiglitz use this approach to derive some paradoxical conclusions, among which are that if Hayek is right (as they interpret him) and prices efficiently summarize all relevant information, then an equilibrium does not exist; and it is only if Hayek is wrong and prices do not and cannot efficiently summarize all relevant information, that an equilibrium exists.²² Further,

The result that only markets with noise will exist in equilibrium, and, therefore, that prices will not be perfect aggregators of information suggests to Grossman and Stiglitz that a 'central planner' with all the information can improve on the competitive equilibrium (Thomsen 36).

Thomsen shows convincingly that not only does this not capture what Hayek was saying, but that Grossman and Stiglitz are asking an irrelevant question. By comparing an equilibrium under central planning to equilibrium under a market system they assume that the central planner has all the necessary information (and then the only problem is how to provide the right incentives to individual economic agents). The real question, and the one Hayek was interested in, was "how could the central planner ever get the necessary information?" and since the answer to this is that he could not, how does the market system make use of all the necessary information when no one person has (or could have) it? Admittedly Hayek left the question of equilibrium vague. But we know from his

²⁰This work is in the area of "the economics of information" which treats information as simply another commodity that can be produced and sold according to its value. It, of course, does not deal with the undeniable fact that the value of information not yet acquired cannot be known with any certainty (not even probabilistically) because while information leads to knowledge, future knowledge can never (by definition) be known in the present.

²¹Using a statistical model, sampling from a stationary population, the question might be - are prices "sufficient" statistics? Do they efficiently summarize all of the available information?

²²Although we cannot pursue it here, the basic reason for this is that "if market prices reflect all necessary information, there is no incentive for anyone to engage in the costly activity of acquiring it because each trader could do equally well by observing the price, instead of purchasing the information. But then, of course, prices will not reflect information because it is not rewarding for anybody to collect it." (Thomsen, 32) Where, to begin with, prices do not reflect all necessary information, but are, in principle able to do so, individuals will have an initial incentive to gather information and to act on it. But then, in time, prices will come to reflect this information from which other individuals may profit. There, is therefore, a "free rider" problem resulting in less than "optimum" information gathering. Only where prices are intrinsically "noisy" (incorporate random elements) is an equilibrium possible with individuals gathering the "right" amount of information.

contemporaneous and later writings that, rather than assuming the economy to be in equilibrium, he was interested in how the economy moved towards or away from equilibrium. Indeed, to assume equilibrium was to ignore the very problems an economy had to solve.

To summarize, we might say there are at least four cases that have arisen in this literature: (1) prices are equilibrium prices and are information surrogates; (2) prices are equilibrium prices and are information summarizers; (3) prices are disequilibrium prices and are information surrogates and; (4) prices are disequilibrium prices and are neither surrogates nor summarizers, but perform other vital functions; prices are disequilibrium prices that suggest profit opportunities. It seems as though Hayek was working with case (3) with prices as information surrogates, but, Thomsen argues, the relevant case is case (4). It is this case that gives a deeper, more relevant meaning to the knowledge problem and it is in this form that it has been most fully investigated by Israel Kirzner. What Kirzner, building on Hayek²³, has done is to direct our attention beyond the information existing at any point of time to the larger totality of information, including both that information which is now available and that which might become available at some time in the future. The problem facing society is not merely how to use the available information in the most "efficient" way, but rather how to ensure that the most valuable information is *discovered* and used. Prices, by causing entrepreneurs to notice profit opportunities, in effect reveal information that was not and could not otherwise have been previously available.

The real problem is not so much dispersed information as it is ignorance. Ignorance exists when economic agents are unaware that there is something that they do not know that would be profitable to know. In the sense that they would later (from the vantage point of greater knowledge) *regret* not knowing it, they have committed a genuine error. Opportunities are "inexplicably overlooked."

Genuine error occurs where a decision maker's ignorance is not attributable to costs of search, or of learning or of communication (Kirzner, 189, italics removed).

The fragmentation of knowledge injects into the picture scope for genuine error resulting from utter ignorance (Kirzner, 190, italics removed).

At any point of time the market economy will embody ignorance in the sense that there is more to know than the totality of individuals will end up knowing. There are "unfathomed"²⁴ opportunities. Entrepreneurs do not assume that prices always accurately

²³Already by 1946 Hayek was arguing that the competitive process involved "a voyage of exploration into the unknown, an attempt to discover new ways of doing things better than they have been done before....all economic problems are created by unforeseen changes which require adaptation." (Hayek 1946, (a lecture delivered in May 1946). Hayek of course went on to develop a comprehensive view of "competition as a discovery process."

²⁴"One can generalize and correct Hayek's approach in full harmony with his intentions. Hayek's problem, in the late 30's, was how uncommon *existing* dispersed knowledge is utilized.... The more

reflect hard information about the world. Rather they see prices as constraints on their budget to be weighed in profit calculations. Prices and price changes have to be interpreted. For example, a price rise may be interpreted as permanent or temporary, may indicate a further impending rise or an immanent reversal. Entrepreneurs form opinions about the level of future prices in relation to present ones (Thomsen, 49, 59). These opinions will differ. It is out of differences in opinion that trade in assets arises. If prices always reflected all relevant information in an unambiguous way no profit opportunities would exist. All three modes of successful arbitrage activity involve "outguessing" or "knowing" more than others about what the "correct" prices as opposed to the market prices really are. In a sense, prices are information surrogates insofar as they provide entrepreneurs with *alternative* pieces of information, i.e. arithmetic numbers from which estimates of outlays and revenues can be made. The entrepreneur is not interested in the reason for the level or change in prices except to the extent that they may help in forming expectations of their future course. So, the entrepreneur takes prices as given in the sense that that is all that he has and he must try and put it to good use.

...[S]ome entrepreneur notice[s] (rightly or wrongly) a new opportunity for the use of tin, or the loss of one of its sources of supply. In either case he bids up the current price of tin to take it away from present buyers, in the first case to sell it at a profit to new users (or to use it profitably himself), in the second perhaps to resell it profitably in the (near or distant) future when the new scarcity of tin becomes noticeable. Of course, for this ... entrepreneur ... it *does* matter which of these two causes has made tin more scarce. But previous buyers of tin will very probably not need to know so many details about these causes once they face the higher price (although ... they would probably like to know some things, such as the expected duration of the price increase, to decide what adjustments to make). Faced with the higher price, the previous buyers may adjust ... by adopting some previously known (but less profitable) alternative, or ... , by discovering a previously unknown alternative that has become profitable with the new price of tin....

The economy of knowledge with which the system works is due not so much to the fact that information is summarized in prices but, rather, to a division of entrepreneurial labor caused by the fact that each individual 'disagrees' only with a few prices while 'accepting' all others. This happens because each individual's alertness allows him to discover only some of the many discrepancies existing in a disequilibrium market, inevitably leaving some for other entrepreneurs and, of course some unexploited. Each entrepreneur will concentrate on exploiting the price differences he has noticed, while accepting other prices unquestioningly. This entrepreneurial activity may bring the existence of a profit opportunity to the attention of some less alert entrepreneurs, whose competition will tend to whittle the profits away. In this way the process of adjustment takes place without any 'need for the great majority of [the users of tin] even to know where the more urgent need has arisen, or in favour of what other needs they ought to husband the supply'. The essence of Hayek's argument is preserved without having to rely on price-taking agents reacting to mysteriously modified prices (Thomsen 59-60).

fundamental problem is how to elicit implicit and not yet fathomed or accessed knowledge." Bartley 1990, 65.

In this way Thomsen recasts Hayek's original insights to conform to Kirzner's market process theory in a way close to that suggested by Kirzner himself.²⁵

In this view of the world, there is an irreducible element of uncertainty (real uncertainty as distinct from probabilistic uncertainty).²⁶ So, at any point of time, market participants do not know with any certitude what it is they do not know. They are ignorant about their ignorance. They often act on "hunches," on intuition. Sometimes they succeed, sometimes they don't. This is the market process.

From this perspective, what is problematic about socialist planning is that it cannot provide incentives for the *discovery* and use of valuable information. It is not only that the *existing* information could not be centralized and used profitably (although this too is extremely doubtful), but that the central planner could not possibly know what has not been discovered and could not discover it for himself. In other words, the problem a central planner would face is not confined to implementing the right incentives for the use of information once assembled; it is moreover and more problematically that much of the information necessary for a dynamic economy *only emerges as a result of the market process*.²⁷

²⁵With reference to Sowell 1980 Kirzner states, "To emphasize, as Sowell does throughout his work, that prices *summarize* economic knowledge ... is of unquestioned value. But this insight into the relationship between prices and knowledge ignores the far more important truth that it is the very *inadequacies* that cloud the manner in which these price-summaries express existing knowledge that create the market incentives for their modification." (148-149).

²⁶With probabilistic uncertainty (risk) all of the possible outcomes are unambiguously known. Real uncertainty involves the existence of unknowable outcomes. An obvious example is product innovation or technological advances. "Bayesian updating cannot provide an answer, for that ... is a process controlled by the agent's theoretical system, and cannot be used to replace it." Loasby 1991, 47.

²⁷Though the knowledge problem, as originally conceived by Mises and Hayek, and as expanded in recent years by market process theorists, is undoubtedly fatal to socialist conceptions of central planning, it was almost totally neglected in popular discussions on the issue. The question of establishing the right incentives, even in the absence of any knowledge problem (if one could imagine such a world) was given much more prominence. Either problem (the knowledge problem or the incentive problem) is sufficient to debilitate central planning and both exist. With characteristic clarity James Buchanan has written:

Even if the socialist state should somehow discover an oracle that would allow all calculations to be made perfectly, even if all preference functions are revealed, and even if all production functions are known with certainty, efficiency in allocation will emerge only if the effective decisions makers are converted into economic eunuchs. Only if such men can be motivated to behave, to make decisions in accordance with cost criteria that are different from *their own* can this decision structure become workable. This amounts to saying that even if the problems of calculation are totally disregarded, the socialist system will generate efficiency in results only if men can be trained to make choices that do not embody the opportunity costs that they, individually and personally confront (Buchanan 1969, 96-97).

We remind the reader that the concept of opportunity cost referred to here is the decision maker's assessment (knowledge?) of the value to him of the available alternatives given up. A central planner, using opportunity cost criteria, would thus have to have knowledge not only of all the relevant alternatives (including those not yet discovered), but also of their value to the individuals in question. Thus, if opportunity cost is both the relevant ingredient for social planning and the relevant motivator for individual action, then it contains within it both the incentive problem and the knowledge problem.

Kirzner's Entrepreneur

In Kirzner's view of the market process then, it is the entrepreneur who is responsible for noticing (and generating) valuable information. This information (which can always, in one way or another, be represented as a price discrepancy) is noticed because it suggests a profitable opportunity. Entrepreneurs who are more "alert" to such opportunities are more likely to see (discover) them. Some individuals are thought to have superior "entrepreneurial ability" than others have. "Ability" and "alertness" remain, perhaps of necessity, somewhat vague. Kirzner is, however, careful to specify the unique characteristics of entrepreneurship.

The entrepreneurial function must be sharply distinguished from that of the producer or manager. Though in practice successful entrepreneurs are often managers and producers, they coincidentally combine these two functions in one person. In principle they could be and often are found in separate people. The entrepreneurial function consists in providing the "vision", the insight as to what can and must be done. Once the opportunity has been revealed the entrepreneurial work is done. Implementing the vision may involve calculation, sequencing and so on. But, in so far as the opportunity is already perceived, the entrepreneurial aspect is over.

Enterpreneurship is thus "costless". Something which is "costly" can be bought or produced. Its presence requires a decision, a choice. A sacrifice must be made. As already explained, the (opportunity) cost of something is the value of what you consciously have to give up to get it.

In using any quantity of a scarce resource ... the decision maker is always viewed as choosing between alternative goals to which the scarce resource may be applied. The goal foregone is the cost of using the resource for its present purpose. In the use of entrepreneurial alertness, however, a decision maker never considers whether to apply some given potential alertness to the discovery of opportunity A or opportunity B [O]pportunities ... are either perceived or not perceived; alertness is not something about which a decision can be made *not* to deploy it.... To recognize that opportunity A exists need not preclude simultaneously recognizing that opportunity B exists (Kirzner 1980, 24).

Nevertheless, although entrepreneurship is not a resource in the usual sense, it is a function that is crucial to the market process and (as we have explained) one that can exist fully only within such a system.

The perception of entrepreneurship as something that is costless, spontaneous and crucial to the market system, raises some interesting difficulties. In particular it provokes the question: How does entrepreneurship arise? Where does it come from? It is basic to Kirzner's notion of entrepreneurship that it is not produced in the usual sense. Yet he wants to maintain that certain conditions (namely, free markets) facilitate its emergence. Can we then say that markets "produce" entrepreneurs?

One possible response is the assertion that entrepreneurship is intrinsic to human nature - not to the same degree in all human beings, but nevertheless a basic trait. The tendency

to "truck and barter" referred to by Adam Smith can be seen as a reflection of the basic (instinctual?) desire and ability to make a profit. Entrepreneurship then is not "produced" by the market system, it exists always, perhaps in a latent form, waiting to be tapped by the right set of conditions.

There is some considerable appeal in this approach. Casual observation of different social conditions across time and space suggests that a resilient entrepreneurial spirit resides eternal in the human breast. Indeed, it appears that it is not something that is confined to people of a certain culture, social background, education or any other acquired characteristic. People moving between societies (for example from non-market to market societies) often turn out to be outstanding entrepreneurs. But, if markets bring out the best of the latent entrepreneurial spirits, then in a meaningful sense one can "produce" entrepreneurs by creating markets or allowing their emergence. In principle, one can conceive of the decision making leaders of a society making a decision, *a choice*, to institute free market institutions at the expense of socialist ones or vice versa, thus opting for entrepreneurial emergence or suppression.

There is a second, more important, aspect of this problem. While clearly pure entrepreneurship cannot be produced or predicted, is entrepreneurial ability not related to certain characteristics that are produced? For example, is the ability to read and write necessary to perceive certain opportunities? What about arithmetic - the ability to calculate? Yet these abilities *are* produced. They are the products of a conscious investment decision in human capital. Furthermore, the *opportunities* that the entrepreneurs notice are crucially dependent on the type of social and economic organization that exists. Obviously, entrepreneurial ability is nothing without opportunities to notice. In the final analysis, whether or not we characterize entrepreneurship as a scarce resource, we recognize that it can be facilitated and nurtured by certain conditions. While individual opportunities obviously cannot be predicted, the emergence of valuable exchange and production opportunities (as a category) may be said to be more likely under some circumstances than others. And this insight is important for any evaluation of the market system. It is precisely because it cannot be "produced" in the usual sense, but only emerges under special institutional arrangements, that entrepreneurship and market prices are inseparably linked. Kirzner's view of the entrepreneur will be relevant to the discussion of some issues that follow below.

Entrepreneurship and Complexity

Hayek's 1945 article features's also in Thomsen's examination of the work of Herbert Simon. Simon has been working for four decades²⁸ on an alternative description of decision making. The decisionmaker in the real world faces bewildering complexity. For Simon, complexity refers to the number of things that need to be known in order to make an objectively rational decision. The information exists, but because the decision maker cannot process it all, rationality is "bounded."

²⁸Thomsen has eighteen separate references for Simon dating from 1955 to 1984 and his work continues.

[I]n any realistic description of the environment of a human decision maker, the variables and information to which he might attend (and to which he must attend to satisfy the strict requirements of rationality) are innumerable (Simon 1984, 47-8).

And

[T]he capacity of the human mind for formulating and solving complex problems is very small compared with the size of the problems whose solution is required for objectively rational behavior in the real world (Simon 1957, 198).

Human beings thus engage in a kind of maximizing behavior in which they satisfy "bounded rationality" rather than full rationality. That is to say, they use a variety of simplifying devices, one of which is deciding to limit their attention to a subset of information that they can handle. This has been called "satisficing."²⁹ At the social level "markets and hierarchies" are seen as simplifying devices. Hierarchies are here understood to include firms in the private sector as well as governmental organizations. Thomsen notes that Simon cites Hayek's 1945 article as support for his (Simon's) view that individuals in the market economy satisfice rather than optimize and that market prices provide the information they need to do so (Thomsen 1992, 75). Thomsen sees this as yet another misinterpretation of Hayek, one that leads to an incorrect understanding of the real properties of the market process.

For example consider the following passage from Simon:

Market processes commend themselves primarily because they avoid placing on a central planning mechanism a burden of calculation that such a mechanism, however well buttressed by the largest computers, could not sustain. They conserve information and calculation by making it possible to assign decisions to the actors who are most likely to possess the information ... that is relevant to those decisions (Simon 1981, 41).

As Thomsen points out, Simon's problem is not the knowledge problem identified above (namely, that the necessary information only *emerges* with the market process and the incentives it provides). Simon's problem is a computational one. It is a problem relating to the processing of *existing* information. Indeed it is a problem of *too much* information rather than one of insufficient or inappropriate information. All the ingredients for an objectively rational decision exist, the kind of decision an omniscient observer would make. The problem is that it is impossible to process it all. So, whether decisions should be made by central planners or by individuals depends on who can process the information better. In some situations the advantage lies with the former.³⁰

²⁹See Thomsen 1992, 70-71. “‘Satisficing’ simplifies the agents' choice problem by having them look for an alternative that is satisfactory, or good enough, rather than best, or optimal. Instead of having the individual scan through all the available alternatives, satisficing requires him only to search until he finds one that, in Simon's words, meets his ‘aspiration level.’” (Thomsen 1992, 70). Thomsen notes that Simon “is not precise about how this aspiration level is formed” (71).

³⁰Thomsen 1992, 75-76. “The central planner, from Simon's perspective, is ignorant only in the sense that, because of the complexity of the problem he faces, he cannot take some facts into account at all. But

For Thomsen, not surprisingly, the name of the game is to establish that Simon's assessment of the market system suffers from deficiencies similar to those exhibited by neoclassical economists dealing with equilibrium situations. In particular, Simon seems unaware of the phenomena of sheer ignorance and error in a world characterized by non probabilistic uncertainty. Thomsen does not deny the existence of 'bounded rationality' i.e. the fact that in the modern world individuals face a bewildering number of complex facts and must, necessarily, attend to only a limited subset of them in order to make decisions. Rather, he takes issue with the implications Simon appears to draw from this for market systems in general and points to his neglect of the knowledge problem as the source of error. Complexity is a problem for Simon's decision makers in a way that is not relevant to Kirzner's entrepreneur.

[T]he type of ignorance Simon sees as due to complexity and the ignorance to be overcome by Kirzner's entrepreneurial discovery are different. Whereas Simon is dissatisfied with the omniscient agent of equilibrium economics only when it is applied to complex situations (i.e. situations with too many elements to be considered for an optimal result), Kirzner's entrepreneur is necessary even in the simplest situations. (Thomsen 1992, 76)

In the market process approach, ..., facts, even if they are few and simple, have to be noticed, discovered, by alert, active agents. (Thomsen 1992, 77).

Whether or not Thomsen's interpretation of Simon is correct, his examination of Simon has forced him to consider the question of the relationship between entrepreneurship and complexity in a way that has never been done before.³¹ In so doing Thomsen makes some interesting, and apparently original, assertions.

What complexity does is increase the likelihood that instances of 'sheer' ignorance will happen, making a discovery process even more necessary. It is not that the number of facts will become so unmanageably large as to saturate a human mind, but that *it becomes much more probable that many facts will not be noticed at all* (Thomsen 1992, 77, italics supplied).

From the market process point of view, complexity only increases the likelihood that useful knowledge will go unperceived, thus making entrepreneurial abilities even more necessary than under hypothetical simple situations (Thomsen 1992, 83).

What Thomsen seems to be saying is that the sheer amount of information (facts to be known) is a determining factor in how many opportunities are in fact noticed. In a complex world, one characterized by a multitude of facts to be known, there are likely to be more profitable opportunities to be discovered. With more opportunities to notice, the

given a simpler task, such as smaller interventions in a market economy, most of his knowledge problem would presumably vanish, enabling the planner to make a beneficial contribution." (81)

³¹"[T]he specific relationship between complexity and the knowledge problem has probably not been considered before as explicitly as here, where the bounded rationality interpretation has made some clarification necessary" (Thomsen 1992, 84).

proportion of opportunities noticed may go down. Then again, it may not! Thomsen does not really seem to have provided a basis for the italicized statement above.

The issue is even more clouded when Thomsen considers the work of Richard Nelson who has extended Simon's concept of bounded rationality to situations of change. Change is characterized by the arrival of *new* information over time. According to Nelson, markets are valuable because they are "quick on their feet": they respond and adapt more quickly than central planners. But markets may respond incorrectly and so planning, of one form or another may be valuable (Thomsen 1992, 100-102).³² Thomsen's criticism of Nelson is the same as his criticism of Simon, namely, that Nelson is ignorant of the knowledge problem.

The main feature of the market system is not that it is 'light on its feet' because it is a decentralized system. It is primarily that prices, through the creation of profit opportunities, spur entrepreneurial discovery of much previously unknown knowledge. It is not so much that the market is quick to respond to perceived change but, rather, that it is better able to lead to the discovery of changed circumstances and of the most appropriate responses to them (Thomsen 1992, 105).

As with Simon, we hesitate to conclude that Nelson has completely overlooked the profit function and its relationship to change. However, Thomsen persuasively asks what the *source* of the new information characterizing change in Nelson's system is. As will be indicated below, in a changing world, entrepreneurs are both responders to and generators of new information. There is an internal, though unpredictable, dynamic to the market system of which Nelson seems to be unaware.

Nelson's version of bounded rationality seems to introduce a new meaning into the term "complexity." In a complex world of Nelson's variety, one characterized by change (the constant arrival of new facts), there *are* likely to be more profitable opportunities emerging over time. With more opportunities to notice, the *proportion* of opportunities noticed may go either up or down.

This is significant for the essential nature of entrepreneurship considered above. Let us follow Kirzner in asserting that entrepreneurship is an innate, latent, intrinsic ability and not a scarce resource. We would still want to claim that entrepreneurship manifests itself in different ways depending on the institutional structure and also depending on the presence or absence of other factors conducive to its manifestation. For example, as already mentioned, the ability to do arithmetic would appear to be conducive to the perception of a profit opportunity. How could it not be when such opportunities are presented in the form of price discrepancies? If arithmetic, why not other more involved

³²Though most of Thomsen's book is concerned with an evaluation of markets as an alternative to large scale central planning, the chapter on Nelson contains an interesting discussion of other forms of planning, like decentralized planning, including market organizations (firms) as well as non market organizations (governmental agencies). Thomsen points out that *the choice of organizational type and structure* are as much subject to the knowledge problem as any other choice and that at least market organizations are chosen subject to profit incentives in a competitive environment while no such constraints inhibit state institutions (Thomsen 1992, 108-115).

abilities? For example, when we talk about a complex world, we are surely talking about a modern world characterized by complex technologies. Complex technologies are technologies that require some specialized (difficult?) training to be understood. Someone possessing at least an intuitive understanding of these technologies would be in a much better position to notice a profitable opportunity that involved their use than someone who did not. Desktop computers, cellular phones, handheld calculators, VCRs, antibiotics, contact lenses, etc. would all mean nothing to a would be entrepreneur from the fifteenth century. Without special education he would not only not know how to use them, he certainly could not formulate a plan to market them. True, he could still engage in simple pure arbitrage where he noticed a price discrepancy, even if he didn't know why people wanted the goods. But any more complicated form of entrepreneurship, especially that involving production, would be beyond his comprehension.³³

As Kirzner has pointed out, entrepreneurship is really essential to economic development as we understand it, that is, as involving technological change (Kirzner 1992, 50). Technologically advanced economies are economies that produce technologically advanced products, (in addition to providing traditional products - e.g. food - in a technologically advanced way) products that are valuable to consumers because they make their lives easier, more interesting or otherwise better. Entrepreneurs, who understand enough about both the technology underlying these products and the context in which they are used, are responsible for their production and sale. But, the point is, such an understanding must be there. A complex economy is also one where entrepreneurs understand more. There may be more opportunities to notice but the ability to notice is greater. The likelihood of an opportunity being noticed may well be higher.

In an important way opportunities are complimentary in nature. A market in computer software is dependent on the discovery and production of the computer. The exploitation of one opportunity very often (most often?) gives rise to others. This is the nature of economic development. Profitable opportunities, though unpredictable, depend upon each other in ways that need to be understood by those who perceive them. Though we should be grateful to Thomsen for his interesting and provocative treatment, it would appear that there is more work to be done on the relationship between entrepreneurship and complexity.

Regulation and the Market Process

³³ After I had written this I came across the following quotation:

For many years, Arnold Weinberg chose to build up GEC's reserves against an uncertain technological future in the form of cash rather than by investing in the creation of technological capabilities of unknown value. This policy, one might suggest, appears more attractive in a financial environment where technology can often be bought by buying companies than in one where the market for corporate control is more tightly constrained; *but it must be remembered that some, perhaps substantial, technological capability is likely to be needed in order to judge what companies are worth acquiring, and to make effective use of the acquisitions.* Loasby 1991, 32, italics added.

Understanding the market process and its relationship to the subjectivity of value, the knowledge problem, and the nature of entrepreneurship leads one to an appreciation of the difficulties that a central planner faces. Especially in the light of recent events in Eastern Europe, the Austrian contribution to the debate about socialist planning has come to seem much more relevant and persuasive. But, at the same time, it has become less urgent. For the meantime socialism as a practical basis for economic policy is in undeniable retreat. The Austrians have always maintained, however, that the same principles that doom socialist planning apply with equal force to all forms of economic regulation. Thomsen touches on this briefly (108-111) and Kirzner has treated the question in other works, (Kirzner 1963 and 1979) but Cordato's book addresses the issue directly.

Regulation should be understood to encompass a variety of activities designed to modify, influence or control market outcomes. This includes, for example, the activities of government agencies in setting standards, setting prices and imposing and collecting taxes, as well as the activities of the courts in determining output levels and damage awards. The neoclassical (public welfare) approach to regulation of all kinds proceeds from the generic basis that regulation can "make things better." The market process, if left to itself, will exhibit various shortcomings ("market failures") that need to be corrected. In order to correct these failures one requires not only an efficiently functioning legal system, but direct government action in some crucial areas, such as the environment, employment and national security. This approach, of necessity, assumes that the regulator somehow is able to identify outcomes that are "better" (more efficient) than current ones and knows how to get there. There is an implicit denial that the regulator faces an insoluble knowledge problem. As he is an island of planning in a sea of market activity, it is thought that his knowledge problem is mitigated. After all, the regulator can use estimates of value based on market prices. This is the approach, in general terms, that neoclassical economists have followed.

The current situation (without regulatory action) is judged inferior to an attainable optimum. It is not a "Pareto optimum". A Pareto optimum exists whenever any change in the current situation (or current mode of operation, for example, configuration of property rights) will harm at least one person (by her own assessment). By implication outside of a Pareto optimum it is possible to make at least one person better off while making no one worse off.³⁴ Also, reaching a Pareto optimum implies the maximization of some measure of value since it is subject to the constraint that no one be made worse off. A move to a Pareto optimum is a Pareto improvement and must imply some increase in utility. A move involving a Pareto improvement is sometimes called an "efficient" move. On its face it seems like a worthy standard for policy. In particular, it embodies a type of Wicksellian unanimity principle; a potential loss for any one person could veto a proposed change. But in this literal form it is also a death warrant for any economic policy, since the likelihood of identifying potential losers from any proposed change is very high. So its

³⁴But, it should be noted, there are an infinite number of Pareto optima, one corresponding to each distribution of a given value of wealth among the population.

strict application would result in the conclusion that the status quo is always "efficient." As a result, neoclassical economists do not use the principle literally. Rather, they base the justification for policy upon the identification of changes that involve *possible* rather than *actual* Pareto improvements. Regulation is justified if it results in enough value improvement that the gainers *could* compensate the losers. Holding policy makers to the standard of *potential* Pareto improvements is obviously much less restrictive.

This modified Pareto standard is the basis on which all of the voluminous neoclassical literature on regulation is developed. However, regulation in the narrow sense of regulatory agencies imposing taxes and controls, has been effectively criticized by Ronald Coase and others who have pointed out that very often the courts can arrive at more Pareto appropriate solutions than regulators (Coase 1960, Posner 1977, Demsetz 1972). All they need to do is establish and enforce appropriate property rights. The debate about agencies versus property rights is quite involved and cannot be profitably surveyed here,³⁵ but the principles involved have already been developed above. The Austrians are really outsiders to this debate but, to an extent, they favor the Coasian approach over any form of regulation. Cordato reaffirms this position using familiar market process arguments.

To fix ideas Cordato proposes the following distinctions (75). Situations involving potential "market failure" can be characterized as exhibiting either positive or negative externalities. Negative externalities are negative effects that occur as an incidental result of the actions of a third party (external costs) like air and water pollution. Positive externalities are positive effects that occur as an incidental result of the actions of a third party (external benefits) like a neighbor's lighting that lights up one's alley and reduces crime. (A further distinction can be made according to whether the external effects affect many or only a few people. For positive externalities, when the effects are widespread we have a "public good" situation. A public good is a good whose benefits accrue to many (all) like sunshine, or national defense - if provided to one it is automatically provided to all. Public goods result in the problem of the "free rider" - no one has an incentive to produce a public good if each believes someone else will produce it or if the individual benefit is insufficient to cover the production costs.) Situations like these can also be characterized as either policy relevant or policy irrelevant. According to the market process position the only policy relevant situations are those involving the violation of basic property rights. As we shall explain, this implies that only negative externalities *may* require a policy judgment. On the other hand, according to the neoclassical position, all situations involving externalities are policy relevant. In particular, whenever a potential Pareto improvement exists, there is a rationale for regulatory policy and the content of the debate (among neoclassical economists) is about which type of policy is best.

Until Coase's contribution neoclassical welfare economics proceeded on the basis that the correct policy was formulated by identifying policy relevant situations and

³⁵Such a survey can be found in Lewin 1982.

designing direct interventions (like taxes and subsidies) to correct them.³⁶ Coase raised the intriguing question: If a potential Pareto improvement exists, why do the affected parties not negotiate a mutually beneficial deal voluntarily? For example in the case of smoke pollution, the amount that smoke pollution victims are willing to pay to reduce (eliminate) the pollution is, by definition of a potential Pareto improvement, sufficient to persuade the polluting factory to go along. Why does it not happen? The short and obvious answer is that the *costs of transacting* such a deal are prohibitive, particularly if there are a large number of pollution victims. (Another possible answer is the existence of "wealth effects" - the victims may not be able to afford the contract even if it would benefit them in utility terms. Wealth effects are characteristically ignored in neoclassical economics.) What Coase did was to shift the focus of the debate towards transactions costs. In the absence of transactions costs all potential Pareto improvements would be negotiated away and every situation would be a Pareto optimum.³⁷ So the prime explanation for less than optimal situations is the existence of transactions costs. This is particularly true of situations involving large numbers of victims or beneficiaries (public goods type situations), since the costs of transacting are likely to rise with the number of transactors involved. The neoclassical policy program arising out of this involves the assumption that where transactions costs are high the state, in one form or another, can approximate the outcome that would have been achieved in the absence of transactions costs. For example, this "efficiency" approach to a legal solution of a pollution type problem would be: Award the right to whichever party would have been prepared to buy it in the absence of transactions costs (see generally Posner 1977). And to arrive at such a judgment the court could use observable market prices as an indicator of the private evaluations of various alternatives.

Cordato points out that using the Coasian framework in this way to provide legal resolutions or, indeed, any other policy prescription, is subject to the same general knowledge limitations as central economic planning. There is no way to know what economic agents would have done in the absence of transactions costs. Furthermore, individual agents have special knowledge that could never be made available to the fact finder (the court or government agency). As explained earlier, some knowledge only becomes available *as a result* of the market process and entrepreneurial discovery. Supplanting that process will inhibit the emergence of that knowledge. In order to act on the basis of the least "social" cost the fact finder would have to project future "costs" and

³⁶In technical terms the name of the game was to design policies to remove any discrepancies between marginal *private* costs (benefits) and marginal *social* costs (benefits). Enough has already been said to establish the bankruptcy of this approach since costs, as normally understood by economists, can never be "social."

³⁷In fact, in the absence of transactions costs, and if we are able to assume that the effects of changing distributions of wealth and income are small, the actual configuration of property rights would not matter. So, for example, if we assume there is only one pollution victim, a laundry, then it would not matter to the final outcome whether the right to pollute were given to the factory or the right to be free of pollution were given to the laundry. In either event an optimal solution would be costlessly negotiated. This result is known as the Coase theorem.

this involves projecting the future course of technology - an obvious impossibility. In any case, as emphasized above, cost is inseparable from the decision maker. The regulator cannot presume to know individual opportunity costs.³⁸

All types of economic regulation suffer from the same essential knowledge problem. Regulation presumes that the regulator can identify a hypothetical optimum and impose the necessary regulation to achieve it. As a practical matter, the concept of transactions costs becomes a catch-all for anything that cause the trades that people actually make to differ from the ones the regulator thinks they ought to make. The regulator is essentially replacing the private valuations of the market participants with his own.

It is illegitimate for economists, qua economists, to normatively evaluate the motives behind the preferences. The actors' value scales must be taken as given. To suggest that consumers really prefer something other than the market outcome is to substitute the values of the economist for the revealed values of the market participants. (Cordato 1992, 21)

In particular, where public goods are concerned economists have often argued for subsidies and public production. Examples are education, health care and flood protection. But from a market process perspective, "[T]here is no basis from which to argue that 'not enough' of the good or service is being produced. Not enough compared to what? (Cordato 1992, 19).³⁹

Transactions costs, if they exist, are just another type of cost (part of the decision makers' opportunity costs) and are unavoidable obstacles to choice. And even if the regulator wanted to use private market values, he would face insuperable problems. The prices that the regulator sees in the unregulated market sector are not equilibrium prices, as a Coasian framework would have to assume. As explained earlier, they do not summarize or reflect all necessary information from which values can be calculated by a disinterested observer. Rather they are disequilibrium prices that provide interested parties with incentives to pursue profitable opportunities.

The argument against regulation proceeds, in the first instance, from an analysis of the practical limitations to which human beings in a dynamic, uncertain world are subject. The market process perspective denies the existence of any identifiable optimum position to use as a basis for economic regulation or economic policy of any kind. So, Cordato may have pointed out, although the general framework of neoclassical welfare economics may capture the intuition of the way in which some ordinary citizens think about economic regulation, namely, as a way to "make things better", it cannot be used as a description of the way in which regulators actually proceed. Regulators, themselves, must surely know this at some level or another. One strongly suspects, therefore, that a more accurate description of what regulators are actually doing is captured in the approach of the public

³⁸For a comprehensive critique of the "efficiency approach to the law" see Lewin 1982, and Rizzo 1980.

³⁹Cordato points out that, in this respect, Hayek parted company with his fellow Austrians, notably Mises and Rothbard. Hayek argued that "government may have to step in where the market fails to supply service" Hayek 1979, 44. Among such services he included defense, education, roads, and flood protection (Cordato 1992, 24).

choice literature. Rather than pursuing some elusive social welfare optimum, regulators are most likely responding, in their own interests, to the competing special interest groups to whom they owe their existence. So, just as with central planners, in addition to the knowledge problem, regulators also face an incentive problem.

Cordato is, however, careful to note that Austrian (market process) economics has at least one thing in common with the neoclassical approach. That is the view that the existence of negative externalities constitutes a policy relevant situation. But the reasons for this differ between the two schools of thought.

This is not argue that negative externalities do not cause problems for a market economy which are similar to those discussed in Pigouvian [neoclassical] welfare economics. Both specific prices and the economic calculation based on them will be altered in the presence of negative externalities. Mises called these altered prices 'deceptive' (Mises, 1966, 658) and pointed out that 'some people choose certain modes of want satisfaction merely on account of the fact that a part of the costs incurred are debited not to them but to other people' (1966, 656). What is absent from this discussion (and from Rothbard's) is any reference to an optimal price/output combination that the free market 'fails' to produce. This stems from their rejection of the static state of Pareto optimality as a normative benchmark for economic analysis. Problems that arise from external costs show evidence that the economic system is 'failing'. This failure, though, is due to the fact that certain aspects of the system are *not* consistent with free markets, rather than because they are. If the necessary conditions for a free market process are not present then the market process cannot be blamed for the outcome....[T]hese conditions include both clearly defined and strictly enforced property rights (Cordato 1992, 16-17).⁴⁰

What makes negative externalities a problem then is that they indicate a hole in the necessary institutional backdrop for a smoothly functioning market process. The market process paradigm very clearly includes the necessity of certain institutional conditions, among which are private property and laws to enforce them.⁴¹ In order to respond effectively (profitably) to price discrepancies, entrepreneurs must be able to assume that those prices refer to tradable entities. From this perspective, negative externalities are in the same category as theft. "Negative externalities result in resources being allocated by non owners, either because ownership rights are not being enforced or because they are not clearly defined" (Cordato 1992, 17).⁴² In specifying this institutional framework it

⁴⁰The references here are to Mises 1966.

⁴¹This raises the interesting problem with regard to the estimation of damages to be awarded to victims of property rights violations. While the Austrians avoid the need to estimate relative hypothetical valuations in the process of defining and enforcing property rights, as is required by a Coasian framework, once property rights have been violated and a legal system is in place, designed to make the aggrieved plaintiff whole, the necessity to estimate what the latter would need to be made whole cannot be avoided. To my knowledge, the principles that one would need to follow in order to do this from a market process perspective have not been addressed. See however Lewin 1982, 225.

⁴²Rothbard writes: "The problem of 'external costs' ... is a consequence of failure to enforce fully the rights of property....Hence external costs (e.g., smoke damage) are failures to maintain a fully free market, rather than defects of that market." Rothbard 1962, 94, quoted in Cordato, 16. It should be noted that an aspect of Cordato's book that is not dealt with here is his criticism of and later use of Rothbard's theory of

would appear to be impossible to avoid starting from a normative position. And Cordato, in addition to providing the reader with a useful survey of Austrian views on issues in welfare economics, devotes considerable space to the development of what he regards as a more satisfactory normative basis of the market process than has hitherto been provided.

Value and Values

It has already been explained why traditional notions of efficiency must be rejected by market process theorists. The question then becomes whether there are alternative and more satisfactory characterizations of the efficiency of the market process (and, by implication, of the market system). Kirzner and Cordato propose such an alternative (though Cordato disagrees to some extent with Kirzner's characterization) and Thomsen is notably more hesitant. As explained above, Kirzner has identified the strength of the market process as its ability to coordinate individual actions.

...[T]here is a sense where one form of societal organization can be termed 'more efficient' than another. For example, a market economy ... is unquestionably more 'efficient' than a system of self-sufficient individual 'economies,' because *each individual* shows by his voluntary participation in the market that he is better off under the former than the latter. Thus, each individual finds he can more efficiently solve his own economic problem by cooperating with other individuals through division of labor and the market. Any form of voluntary social cooperation emerges only because *each* participant seeks in this way to further his *own* goals. If he participates in a social system of any kind, he does so in the interests of his own efficiency; his participation is a method of solving his own economic problem.

We will be speaking of the efficiency or inefficiency of a social system in this sense. We are not invoking the notion of a society having *its* goals in any sense apart from the goals of the individuals making up the society. Efficiency for a social system means the efficiency with which it permits its individual members to achieve their several goals (Kirzner 1963, 35, italics in original).

In this way, Kirzner has consistently argued, we should look to "the concept of 'coordination' as offering a normative yardstick consistent with ... subjectivist and methodologically individualist insights" (Kirzner 1992, 184-5). He adds that, "Hayek's emphasis on the dispersed character of knowledge appears to provide not merely a definitive critique of the standard Paretian welfare economics, but also the basis for an alternative normative yardstick, one thoroughly consistent with the tenet of methodological individualism" (*ibid.*185).

The economy is more efficient when each individual's actions are, by his own judgment, more efficient. When an entrepreneur notices a price discrepancy that was formerly overlooked, he replaces some ignorance with knowledge. Thus, by removing price discrepancies (in the broadest sense), the entrepreneur not only moves the economy closer toward equilibrium (in the sense that at least *that* price disequilibrium has been removed), he also adds to the profitable use of knowledge in the economy by facilitating

demonstrated preference as an alternative to the neoclassical foundations of welfare economics. For a complete treatment see Prychitko 1993.

the coordination of individual actions. “[T]he market process is understood to provide a systematic set of forces, set in motion by entrepreneurial alertness, which tend to reduce the extent of mutual ignorance Equilibrium is indeed never attained, yet the market does exhibit powerful tendencies towards it” (*ibid.* 5).

This framework has been variously criticized, ironically mainly by those sympathetic to the market process approach. Thomsen notes:

One issue that needs additional study is the determination of what entrepreneurship can be said precisely to achieve, given that 'equilibration' may not be a wholly satisfactory description....profit opportunities may not always stimulate the discovery of courses of action that are 'correct' from an omniscient perspective. Instead, they may be incentives for coordinating individual plans even when some of these plans may be mistaken....This feature may explain why markets, without ever reaching something like equilibrium, still seem reasonably orderly. And it suggests that 'equilibrium' may be profitably substituted by some other term for the description of the degree of plan coordination achieved by a market system (Thompson 1992, 122).

Similarly Cordato argues:

there are some areas of vagueness that suggest underlying problems with the use of plan coordination as a general standard for efficiency and social welfare. (Cordato 1992, 49)

A vagueness in applying Kirzner's efficiency standard to the issue of externalities arises with regard to certain kinds of negative third party effects that do not involve conflicts in the use of property. That vagueness, I would argue, stems from a weakness in the coordination standard itself. This weakness involves discoordinating activities that ... are an inherent part of the market process. For example, in the competitive process it is often the case that the activities of one entrepreneur will disrupt plans that have been made by his competitors. If entrepreneur A discovers a less costly way to produce and sell a widget, he may disrupt the plans of his competitor, entrepreneur B, who has missed this opportunity This activity would be coordinating with respect to the plans of A and the consumers, but discoordinating with respect to plans made by B (*Ibid.* 50).

[Kirzner] argues that, because of the incentives that are created by the system of profits and losses, even this type of plan discoordination will tend to be minimized in a competitive process. Entrepreneur B will be encouraged to revise his plans as his errors are exposed and losses are incurred. In other words, there would be no reason to make this type of plan discoordination the object of public policy.... The fact remains that the activities of entrepreneur A had third-party effects that were discoordinating i.e., that disrupted what otherwise would have been the coordinated plans of B with respect to his customers.... [this] suggests that the emphasis on coordination as an appropriate welfare standard may be misplaced (*Ibid.* 51).

Cordato believes that the market process can be described as equilibrating but not coordinating. “[W]hile knowledge improvements may be equilibrating, in that, *ceteris paribus*, they move us closer to a world of 'perfect knowledge' they may not always be strictly coordinating” (*Ibid.* 51).

Accordingly, Cordato suggests his own standard. "I will argue ... that the reasons why this entire [market] process is efficiency enhancing in not because it is coordinating at every point in the process, but because it has led to a situation where knowledge is being more fully utilized" (Ibid. 52). This alternative standard Cordato calls "catalectic efficiency". A catallaxy refers to what we normally think of as the economy as a whole, but the term emphasizes that it is a spontaneous and not a planned order. The usual term "economy" connotes planning in an efficient way and can only apply to individuals.

The efficiency of a catallaxy can be judged by the extent to which it promotes economic efficiency. In other words, it is to be judged by the extent to which the catallaxy encourages individuals existing in a social context, to pursue their own goals as consistently as possible....The institutional setting that will best facilitate the use and discovery of information, the appropriateness and relevance of which can only be known by those who need to discover and use it....[and] the institutional setting that will allow individuals to gather the necessary physical resources [is the market system] (Ibid. 62-63).

Cordato's rejection of Kirzner's coordination standard essentially revolves around the fact that "coordination" is not an additive concept. One cannot balance the *amount* of discoordination that occurs in one part of the system against the *amount* of coordination that occurs in another part of the system in order to come up with what Kirzner frequently refers to (in one way or another) as the *degree* of coordination. Coordination, since it has to do with individual plans and their success as judged by the planners, must have its meaning in subjective perceptions. Plans are coordinated to the extent that they succeed (are judged profitable). Might they have not been even more successful as a result of alternative decisions?⁴³ Comparability of plan successes and failures across individuals is precluded by strict adherence to methodological individualism and the existence of disequilibrium. For similar reasons, it is impossible to say whether an economy is tending towards or away from overall equilibrium when some actions are disequilibrating. Cordato's alternative replaces coordination with knowledge and consistency.

The efficiency problem ... is one of achieving the desired goal or set of goals by the *most consistent* use of means possible. For the individual efficiency depends on the extent to which his actions, the means employed, are consistent with the goals or ends that are hoped to be accomplished....The efficiency of an individual's activities will improve as he obtains more knowledge that is relevant to his particular situation (61, italics added).

Insofar as Cordato must use consistency as an additive concept his standard would appear to suffer from exactly the same deficiencies that he identifies in Kirzner's. How is one to

⁴³The meaning of the term coordination is subject to some ambiguity. Thomsen points out that the degree of coordination, understood as coordination of *actions* rather than coordination of *knowledge* is arguably higher in command organizations, like armies or hierarchies, than in market type organizations and that the relevant type of coordination is the latter. (88-92). But what distinguishes the market system is that it facilitates the discovery and use of (new) information, not merely that it facilitates the coordination of (existing) information. For Kirzner's system coordination must thus be understood more broadly than usual if it is to serve his purposes.

balance the greater plan consistency (success) achieved by one individual against the greater inconsistency (failure) experienced by another? And there is another important point. Cordato's normative standard rests on the assumption that the market system generates more *relevant* knowledge (one suspects he means information) than any other system. The simple additivity of information is called into question. Not all information is equal. Information has to be evaluated. Some "incorrect" information is generated and must be compared to "correct" information. More work needs to be done on the meaning and nature of information and knowledge in market systems, especially in "open ended universes"⁴⁴ of the kind that Cordato is explicitly analyzing.

Kirzner's normative standard has been criticized by some theorists ("radical subjectivists") who believe it is incompatible with such a universe. Open ended universes are intrinsically indeterminate (unpredictable). They embody true novelty. Kirzner builds what he considers the best possible case against himself (1992, 12-17). He quotes Loasby who notes "... the possibility that the entrepreneur will generate, rather than correct error" and asserts that in the same way as we cannot prove that scientific processes must produce true knowledge, so also "it is inherently impossible to use Austrian methods to prove that planning cannot work" (Loasby 1989, 161). Kirzner explains, "The very open-endedness of the entrepreneurial economy precludes, it appears, any support, from a subjectivist understanding of that economy, for the notion of a systematic tendency towards market equilibrium and coordination." (1992, 14). He quotes Kregel "There can be no tendency to equilibrium based on a relation between expectations and the objective data of what the consumer will demand and the price he will pay which describes the conditions of equilibrium because the incomes available to consumers will be determined ultimately by the very decisions taken by entrepreneurs on the basis of these expectations....Expectations themselves determine the objective facts of the conditions of equilibrium" (Kregel 1986, 160). And Kirzner (interpreting Kregel) again: "To the extent that entrepreneurial activity itself *creates* the future which entrepreneurs wish to anticipate, it seems idle to judge the social optimality of such activity against the yardstick of that objective future" (1992, 16, italics original).

The most recent criticism along these lines comes from James Buchanan and Victor Vanberg: "There is, in our view, a fundamental inconsistency in Kirzner's attempt to integrate the innovativeness of entrepreneurial activity into an equilibrium framework - by modeling it as *discovery* of 'erroneously overlooked opportunities'" (Buchanan and Vanberg 1991, 175, italics original).⁴⁵ They compare recent work on "non-linear systems"⁴⁶ in biology, mathematics and other social sciences to the market process and to the insights of radical subjectivists like Shackle and Wiseman. They contend that since the future is inherently unpredictable (it is, in fact, non-existent) Kirzner's account of the entrepreneurial process cannot be correct. In particular, they object to the

⁴⁴The reader is reminded that this phrase occurs in Cordato's title.

⁴⁵Kirzner is obviously aware of a possible tension along these lines as evidenced by the following statements "[The market process] is an ongoing *process of creative discovery*" and "[E]ntrepreneurial activities that win profits are indeed creative acts of *discovery*" (Kirzner 1985, ix-x, italics original).

⁴⁶"Nonlinearity means that the act of playing the game has a way of changing the rules." Gleick 1987, 24.

characterization of the entrepreneur as a discoverer of error who tends to propel the economy as a whole towards equilibrium (understood as coordination). And they object to the assertion that, since the market economy can achieve greater coordination of plans and, by implication, a greater degree of satisfaction of consumer preferences, than any other system, it is the most "efficient" possible system. Buchanan and Vanberg point out that the use of the term "error" implies that there is an objective future against which the actions of individuals can be measured. Kirzner describes the entrepreneur as "seeing" or "noticing" an intertemporal price discrepancy as though future prices already existed in the present. But if the future does not yet exist (is in the process of being *created* by current entrepreneurial actions) there can be no tendency towards an equilibrium state understood as an independently existing situation. They suggest that economic analysis should proceed more in terms of evolution than in terms of equilibrium (Buchanan and Vanberg 1991, 174-178).

Chapter 1 of Kirzner's book is a lengthy reply to the radical subjectivists. While he concedes the relevance of their insights and even the validity of some of their finer points, in the main, he reaffirms his convictions. He insists that the very possibility of engaging in economic analysis requires that we recognize certain economic regularities and that market process economics provides a "middle ground" between the world of complete foreknowledge of neoclassical economics and the world of unbounded possibilities of the radical subjectivists.

the rapidity and unpredictability of ... changes is not, in general, so extreme as to frustrate the emergence of powerful and pervasive economic regularities. It is because these changes are frequent enough to ensure perennial disequilibrium that we need to understand the nature of equilibrating forces. It is because of the possibility, at least, of a benign limit to the volatility of these changes that these equilibrating forces do, at least sometimes, manifest themselves as unmistakable economic regularities. The scope of and possibility for a relevant economic science depends ... on recognizing not only the variability of economic data but also the extent to which the coordinating properties may be able to make themselves felt in spite of this variability (*Ibid.* 5-6).

And Kirzner insists that the notion of entrepreneurial error is a valid one even in an open ended world. "[D]ecisions [which] turn out to have been unsuccessful *in retrospect* at least ... are seen to have been mistakes" (24, *italics added*). In a very real sense there are people who are better able to anticipate the (as yet nonexistent) future (even as they, in part, create it). These people of superior entrepreneurial abilities create value for themselves and others and contribute toward the overall efficiency of the market process.

To go further into these matters would be to risk deep philosophical waters and inappropriately lengthen what is already a long discourse. However, while it may be readily conceded that Kirzner's use of language has, at times, invited a charge of inconsistency in so far as it appeared to deny the open endedness of the entrepreneurial process,⁴⁷ it nevertheless seems as though his use of the term "error" in his description of the

⁴⁷Kirzner: "This writer has often talked as if alertness is able to identify *existing* opportunities for future profit. Purists, in both linguistic usage and philosophical consistency, may certainly be excused for

entrepreneurial process is justified. It must be understood as an individual backward-looking judgment. True, it is not the same as an error committed in solving a mathematical problem, where agreement as to what constitutes a mistake is universal. It is an error in the sense that the entrepreneur judges that a superior course of action, of which he may not have been aware, did in fact exist. As such it is unverifiable. It is counterfactual. But as a motivator of action it is nonetheless compelling.

The connection between error and "efficiency" (as referring to the economy as a whole) is, however, another matter. As indicated earlier, this author finds Kirzner's account of the entrepreneurial process persuasive both as a description of the market process in which we live and as a factor (*the factor*) separating the market process, with all its creative dynamism, from centrally planned systems. As a *logical* matter, however, Kirzner's critics would appear to be pedantically correct in insisting that the term "efficient" cannot be applied to the economy as a whole if we are to consistently apply notions of subjective value and all that that implies in terms of open ended futures.

The matter may be stated simply as follows. We recall that the concept of efficiency refers to a ratio of the form *value of output/value of input*. Thus, any efficiency evaluation would have to be able to specify both the inputs and the outputs and the values to be attached to each. In this form it comes as no surprise to realize that when people refer to the efficiency of something they frequently have different things in mind and that, strictly speaking, the concept can only reliably be applied to individual plans. Across individuals there will be irreconcilable differences in opinions about the consequences (outputs) and of the ingredients (inputs) of any contemplated alternatives and the individual evaluations of these (even if there were, by chance, to be agreement) would be noncomparable. It is hard to see how efficiency can be applied as an aggregative concept.

If there were a simple, objective way to apply it that had widespread assent, the effort currently expended to establish the efficiency of market processes and the inefficiency of nonmarket (government) processes would hardly be necessary. It is generally agreed that electric power is more efficient than steam power because there is widespread agreement on the components of the efficiency measure used, namely, the physical properties of the process and the values attached. But when contemplating specific economic policies no such agreement exists. For example, discussions about the efficiency of liberalizing trade in accordance with the NAFTA flounder over disagreements not only about the consequences of such liberalization, but also as to how they should be evaluated. *Any* standard of efficiency will have that problem. From the point of view of standard Pareto criteria we have to balance the gains of winners against the losses of losers. From the point of view of "greater" coordination, we have to realize that there will be some losers whose plans will be frustrated by the liberalization. Entrepreneurs attempting to take advantage of the new, more liberal trade situation will pursue perceived opportunities. *A priori* we cannot be *sure* that failures won't dominate successes.

expressing unhappiness with such loose or metaphorical use of language in regard to the non-existent future. But the economics of the situation surely depends not a whit on the validity of this use of language" (1992,26, n14).

Kirzner is aware of all these arguments and considers an extended example of entrepreneurial action under *discoordinated* circumstances, that is, where opportunities are incorrectly perceived (Kirzner 1992, 29-34). That fact that he sticks to his assertions about the efficiency of the market system suggests that he must mean something different from the strict notion of efficiency pursued here. When we say that the market system is more efficient than a planned system, surely what we are saying is that in our assessment (applying and evaluating all that we know about the alternative systems) it is to be preferred. When we say that market arrangements are more efficient than regulatory arrangements, surely what we are saying is that in our assessment (applying and evaluating all that we know about the alternative arrangements) that market arrangements are to be preferred. When we say that free international trade is more efficient than restricted international trade, surely we are saying that in our assessment (applying and evaluating all that we know about the alternatives) free trade is to be preferred. In other words, we are applying individual notions of efficiency - our (*the evaluators'*) notions. In fact, some reflection reveals that any efficiency judgment of this kind must be an individual judgment and must relate to individual plans broadly construed.

The use of any value construct like the efficiency concept implies *a choice*. Efficient compared to what? And choice implies opportunity cost. The same characteristics that are present in a decision maker's everyday choice situations are present in his evaluation of different economic systems and alternative economic policies. Only with the latter (choices involving systems and policies) the value that he attaches to the expected outcomes and inputs *include his values* (in the sense of moral values) as well. To see this more clearly, we may say that every choice is conditioned by a set of goals and beliefs. (Belief here refers to what the decision maker believes he knows, not to what he believes is morally right. The latter is to be included in his goals. The more strongly held the beliefs the closer they become to 'knowledge' where knowledge is defined as 'true belief.') A judgment that the market system is more efficient rests on the conviction that certain things happen in a market system and that they are valuable in the broadest sense. To be specific, defenders of the market system are motivated both by their convictions that it results in what we normally think of as "prosperity" (not that *everybody* is *always* prosperous) and that the "freedom" and "autonomy" which result in market systems are good things, things that have a high *value* for us. Similarly their aversion to regulation and central planning (assertions of inefficiency) is based on convictions that they often prove counterproductive and, in any case, reduce freedom, autonomy and creativity. These judgments cannot avoid, as is clear from Kirzner's arguments, both values in the broadest sense and empirical (historical) judgments. This makes them no less compelling. Included in these empirical judgments would be the observation that the market process does, indeed, exhibit a high degree of stability, in the sense that it usually does not lead to social disintegration as a result of disappointment of plans, but rather exhibits a high degree of social cohesion in its ability to *peacefully* absorb large changes. In fact, while the future is indeed open ended and fraught with possibilities and opportunities, the

institutional structure, the norms and conventions in which actions occur, must be stable and *predictable* if any action is to be successful, indeed if any planning is to occur.⁴⁸

The inability to use the concept of efficiency as an objective, unambiguous standard or to logically *prove* that the market process in some sense tends to be equilibrating, does not mean the denial of economic regularities that allows us to practice economic science. Mises, who pioneered the concept of the market process entrepreneur, while maintaining that there are no constants in economics,⁴⁹ was emphatic that economic laws are universal and unassailable. What he meant was that while history always results in unique non repeatable events, it (history) is understandable in terms of certain universal, constant aspects of human nature. In particular, human beings are always trying to achieve preferred situations. If we understand their purposes we can understand their actions. And if we understand their purposes we can predict a pattern of responses to various policies. For example, the imposition of a minimum wage, if it does anything, alters the terms on which employers and employees may trade and must result in less employment *than would otherwise occur*. This assertion stands whatever else is happening in the economy and whether or not the economy can be said to be tending towards equilibrium.⁵⁰ Similarly, removing restrictions on international trade will certainly expand the value of trade, and, while it may result in individual losses to those subjected to the greater degree of competition, will stimulate entrepreneurs to *discover* new avenues for trade that will result in gains to others.

Whether we choose to describe situations in terms of efficiency norms or not, these three works attest to the importance and growing acceptance of a market process understanding and evaluation of the economic system. Discarding the inevitably imprecise notions of efficiency should not diminish the value of the market process approach.

⁴⁸The remarks in this paragraph suggest that justificatory arguments for social systems are unavoidably "utilitarian" and "consequentialist" in nature - understood in the broadest possible way. See Yeager 1985, 259-294.

⁴⁹"In the sphere of human action there are no constant relations between any factors.... no measurement and no quantification [is] possible." Mises, 1962 , 62.

⁵⁰In terms of supply and demand analysis, failure of the *ceteris paribus* conditions to hold, implies that the position of the curves is indeterminate and the level of employment unestimateable. Nevertheless, we can be certain that wherever the curves are the minimum wage cannot result in higher levels of employment and that, if it has any effect, since it reduces the attractiveness of certain employees it will result in less employment.

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