AN ESSAY ON THE ORIGIN OF
THE RATIONAL UTILITY MAXIMIZATION
HYPOTHESIS AND A SUGGESTED MODIFICATION

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Reason is, and ought only to be the slave of the passions, and can never pretend to any other office than to serve and obey them.
[Hume, (1739) 1976, 415]

The rational utility maximization hypothesis (RUMH) is part of the core of modern Neoclassical economics. It is concisely defined by George Stigler who says:

There are three characteristics of a rational consumer:
1. His tastes are consistent.
2. His cost calculations are correct.
3. He makes those decisions that maximize utility. [1967, 52]

A rational individual will calculate correctly and act in accordance with those calculations. Reason will dominate emotion.

According to Joseph Schumpeter, the RUMH goes back at least as far as François Quesnay. As we shall see, the RUMH did not become the dominant view in economics until much later, but it is interesting to note Schumpeter’s observation:

Quesnay did not make any attempt to prove it. It did not seem to him to stand in need of explicit proof. He manifestly thought that if every individual strives to realize maximum satisfaction, then all individuals will ‘of course’ achieve maximum satisfaction. The fact that one of the best brains of our science could have been content with such an obvious non sequitur is indeed food for thought: low standards of rigor and sloppiness of thinking have been worse enemies of scientific economics than has been political bias. [1954, 253]

Stigler nevertheless defends the RUMH on the basis of “introspective evidence,” and then writes,

Introspective evidence will never convince a skeptic, and perhaps the only remarkable thing about introspection on utility maximizing is that virtually every economist has found it convincing over so long a period. Ultimately, however, the empirical validity of the implications of utility-maximizing theory support its use. [1967, 55-56]

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The empirical evidence on rationality, however, is not as supportive as Stigler implies. There is a large and growing body of experimental evidence which calls the assumption of rationality into question. This evidence is the topic of a survey article recently published in the *Journal of Economic Literature* (Corliss, 1996). Experiments demonstrate that individuals consistently violate the RUMH, suggesting that economists may have assumed too much about human abilities. As Richard Thaler puts it,

> The assumption that everyone else can intuitively solve problems that an economist has to struggle to solve analytically reflects admirable modesty, but it does seem a bit puzzling. Surely another possibility is that people simply get it wrong. [1992, 2]

Kenneth Arrow points out that "we have the curious situation that scientific analysis impedes scientific behavior to its subjects. This need not be a contradiction, but it does seem to lead to an infinite regress." [1980, 301]

Another defense of the RUMH is to argue that it is not empirically testable [Boland, 1981; Caldwell 1983]. The contention is that the RUMH is an untestable metaphysical assumption. As Lawrence Boland writes,

> A statement which is metaphysical is not intrinsically metaphysical. Its metaphysical status is a result of how it is used in a research program. Metaphysical statements can be false but we may never know because they are the assumptions of a research program which are deliberately put beyond question. [1981, 1034, emphasis in the original]

He goes on to note,

> the existence...of a metaphysical statement in any research paradigm is not a psychological quirk of the researcher. Metaphysical statements are necessary because we cannot simultaneously explain everything. There must be some exogenous variables or some assumptions...in every explanation whether it is scientific or not. [ibid., 1035a]

Boland argues that the RUMH is one of the exogenous, metaphysical assumptions of modern orthodox economics. If this is true, then we have deliberately put beyond question something that Schumpeter called an obvious non sequitur.

How did this state of affairs come about? This essay will contend that most Classical economists did not assume that people are completely rational. The RUMH did not become a central part of economics until mathematics became a primary tool of analysis. This was not a coincidence, as the change in method led to the ascendancy of the RUMH. Finally, a modification of the RUMH is suggested.

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**THE CLASSICAL ECONOMISTS**

The Classical economists were heirs to an intellectual tradition that stressed the central role of the passions in human behavior [Hirschman, 1977]. Hence, most Classical economists have a view of human nature that has roots for both passion and reason. Adam Smith, for example, implies in several places that people often allow themselves to be overwhelmed by their emotions. In *The Theory of Moral Sentiments* Smith notes that a person’s own passions are very apt to mislead him, sometimes to drive him and sometimes to seduce him to violate all the rules which he himself, in all his sober and cool hours, approves of. ([1759] 1976, 237)

Moreover, Smith contends,

> When we are about to act, the eagerness of passion will seldom allow us to consider what we are doing, with the coward of an indifferent person. The violent emotions which at that time agitate us, discolour our views of things; even when we are endeavoring to place ourselves in the situation of another...the fury of our own passions commonly calls us back to our own place, where every thing appears magnified and misrepresented by self-love. [ibid., 177]

This view is also present in *The Wealth of Nations*. For example, Smith comments on the success of lotteries, which, in his view, depends on people acting irrationally by overestimating their chances of winning ([1776] 1976, 562). Elsewhere Smith describes the process by which the feudal lords, in the transition to capitalism, bartered away their privileges for things as frivolous as diamond buckles. Smith concludes that "for the gratification of the most childish, the meanest and most sordid of vanities, they gradually bartered their whole power and authority" [ibid., 418].

To be sure, Smith *does not* believe that the behavior of most people is wildly irrational most of the time. He simply recognizes that human beings are governed by more than reason alone, and this is reflected in his analysis.

One of the pillars of Classical economics in the Malthusian population thesis. Thomas Malthus argues that most people are unable to control their passions, and consequently the population will grow up to the limits of the food supply. Hence, due to a lack of moral restraint and foresight, the masses will bring about their own perpetual poverty.

Malthus explicitly rejects the notion that people are, as he put it, "merely intellectual" ([1798] 1976, 82). Malthus believes that humans are complex beings, governed by emotions and bodily desires as well as by reason. Responding to William Godwin, who argues that "Man is a rational being" [quoted in Malthus, (1798) 1976, 88], Malthus writes,
The cravings of hunger, the love of liquor, the desire of possessing a beautiful woman will urge men to actions, of the fatal consequences of which, to the general interests of society, they are perfectly convinced, even at the very time they commit them. Remove their bodily cravings, and they would not hesitate a moment in determining against such actions. Ask them their opinion of the same conduct in another person, and they would immediately repudiate it. But in their own case, and under all the circumstances of their situation with these bodily cravings, the decision of the compound being is different from the conviction of the rational being. [ibid., 88-9, emphasis added]

Thus, a central tenet of Classical economics depends on the assumption that people are not completely rational.

David Ricardo accepts the Malthusian population thesis and therefore, implicitly, endorses its view of human behavior. Ricardo provides another example of less than rational behavior in his discussion of what is now called the Ricardian Equivalence Theorem. David Ricardo demonstrates that for a given level of government spending, financing the expenditure through taxation is financially equivalent to financing it through debt ([1821] 1951, Vol. 1, p. 244-5; [1820] 1951, Vol. 4, p. 166). He goes on to explain, however, that people do not always behave accordingly. They suffer from short-sightedness and prefer debt to taxes ([1820] 1951, Vol. 4, p. 166). Ricardo, like other Classical economists, does not assume strictly rational behavior.

One prominent exception to this view among Classical economists is Jeremy Bentham. Bentham argues that "Nature has placed mankind under two sovereign masters, pain and pleasure" ([1789] 1907, 1). He then contends that people are rational ("calculating") in their pursuit of pleasure and avoidance of pain. Bentham recognizes the existence of emotion and passion, but argues that they do not interfere with rational calculations:

As to the proposition that passion does not calculate, this, like most of these very general ancillary propositions, is not true. When matters of such importance as pain and pleasure are at stake, and these in the highest degree (the only matters, in short, that can be of importance) who is there that does not calculate? Men calculate, some with less exactness, indeed, some with more: but all men calculate. I would not say, that even a madman does not calculate. [1854, 414]

Bentham's pain and pleasure calculus is the foundation of modern utility theory (Walsh, 1987, 772). Yet this observation raises a question: If Bentham's view did not dominate Classical economics, when and why did it become so central to Neoclassical economics?

John Stuart Mill gave the profession a nudge in the direction of rationality by making a case for focusing on man's conduct only as it pertains to acquiring wealth. He explicitly accepts the idea that people possess the necessary reasoning abilities to make the proper choices and he ignores all but three human characteristics: the desire for wealth, aversion to labor, and positive time preference. As Mill puts it, Political Economy does not treat of the whole of man's nature as modified by the social state, nor of the whole conduct of man in society. It is concerned with him solely as a being who desires to possess wealth, and who is capable of judging of the comparative efficacy of means for obtaining that end. It predicts only such of the phenomena of the social state as take place in consequence of the pursuit of wealth. It makes entire abstraction of every other human passion or motive, except those which may be regarded as perpetually antagonising principles to the desire of wealth, namely, aversion to labour, and desire of the present enjoyment of costly indulgences. ([1836] 1967, 321-2, emphasis added)

Mill's position sounds like a modern optimization problem: Each individual strives to "obtain the greatest quantity of wealth with the least labour and self-denial" [ibid., 323].

The ideas of Bentham and Mill were sustained by a variety of 19th century writers. Prominent among these was William Jevons, who, together with Karl Menger and Leon Walras, is credited with being an originator of a new approach to value theory in economics, one based on marginal utility. It is precisely at this juncture that the RUMH begins to take center stage in economic analysis.

THE MARGINALIST REVOLUTION

In the introduction to his book, Jevons writes that "the theory which follows is entirely based on a calculus of pleasure and pain" ([1871] 1970, 91). He acknowledges his debt to Bentham, saying that "the words of Bentham on this subject may require some explanation and qualification, but they are too grand and too full of truth to be omitted" [ibid.].

What sets Jevons apart from earlier followers of Bentham is his systematic application of the pleasure-pain concept to value theory. In order to do this, he employs mathematical tools. While others had previously used mathematics in economics, Jevons was correct in noting that in his day, "mathematicians and political economists have hitherto been two nearly distinct classes of persons" [ibid., 44]. (It is worth noting that Irving Fisher concurs with this view. He writes that "Before Jevons, all the many attempts at mathematical treatment fell flat... Thus the mathematical method really began with Jevons in 1871" ([1890] 1936, 109).)

In the preface to the second edition of his book, Jevons justifies his use of mathematics by directly comparing economics to the physical sciences:

But as all the physical sciences have their basis more or less obviously in the general principles of mechanics, so all branches and divisions
of economic science must be provded by certain general principles. It is to the investigation of such principles - to the tracing out of the mechanics of self-interest and utility, that this essay has been devoted. The establishment of such a theory is a necessary preliminary to any definite drafting of the superstructure of the aggregate science. (1879: 1970, 56)

Newtonian mechanics is based on the premise that the physical world follows laws of motion which are regular and mathematically predictable. By comparing economies to the "general principles of mechanics," Jevons is implying that humans exhibit the same predictability of behavior. This is why Bentham is so important to him; if all of human behavior can be reduced to a simple pain-pleasure calculus, human behavior does become predictable. Thus Jevons goes on to argue,

I contend that all economic writers must be mathematical so far as they are scientific at all, because they treat of economic quantities, and the relations of such quantities, and all quantities and relations of quantities come within the scope of mathematics. [ibid., 52]

Ten years after Jevons's book appeared, Francis Edgeworth published Mathematical Psychics, subtitled, "An Essay on the Application of Mathematics to the Moral Sciences." In this work, Edgeworth also makes a case for the application of mathematics to economics, and goes so far as to say that "the profoundest thinkers would have thought more clearly upon Social Science if they had availed themselves of the aid of Mathematicians" (1881, 117). High on his list of "profound thinkers" is Jeremy Bentham, whom Edgeworth refers to as "the great Bentham" (ibid.). His debt to Bentham is enormous, because Edgeworth, like Jevons, applies the mathematical tool of calculus to Bentham's conceptual pleasure-pain calculus.

In order to apply mathematics to consumer behavior, one must assume a certain predictable regularity of behavior. Hence Jevons and Edgeworth replace the complex view of human nature of Classical economics with Bentham's view of people as rational pleasure machines. Edgeworth is quite conscious of this shift, writing that "the conception of Man as a pleasure machine may justify and facilitate the employment of mechanical terms and Mathematical reasoning in social science"[ibid., 15, emphasis in the original].

Edgeworth does not go so far as to assume that every single individual is rational. Instead, he appeals to the laws of statistics:

The idea of reducing human actions to mathematical rule may present itself to common-sense as absurd... It should be understood, however, that the new method of economical reasoning does not claim more precision than what has long been conceded to another department of science applied to human affairs — namely, statistics. It is now a commonplace that actions such as suicide or marriage, spring-

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ing from the most capricious motives, and in respect of which the conduct of individuals most defies prediction, may yet, when taken in the aggregate, be regarded as constant and uniform. The advantage of what has been called the law of large numbers may equally be enjoyed by a theory which deals with markets and combinations. [ibid., 1889, 486-7]

Hence, Edgeworth implies that there is no need to assume that every individual is always rational because average behavior is rational.

Other early advocates of the mathematical method followed Jevons and Edgeworth in their use of mechanical metaphors. Irving Fisher even goes so far as to construct a complex mechanical device which uses water-levels to illustrate relationships among income, prices, and marginal utilities. He provides photographs as well as detailed schematic drawings of the device, and illustrates his mathematical results by referring to the machine (Fisher, 1892, 1926). No more proof is needed to illustrate Fisher's acceptance of the analogy of a human being to a (pleasure) machine.

Vilfredo Pareto also defends the use of mathematics in economics by making the analogy to the laws of mechanics. He argues,

Pure economics has no better way of expressing the concrete economic phenomenon than rational mechanics has for representing the concrete mechanical one. It is at this point that there is a place for mathematics. The problem of pure economics bears a striking likeness to that of rational mechanics. [1897, 490]

Once again, the RUMH provides the regularity of behavior required to make the analogy work.

By now it should be apparent that the growth in popularity of the RUMH coincided with the growing use of mathematics in economics. This fact suggests a methodological difficulty. While the application of mathematics to the economics of production was certainly appropriate because of the existing assumptions that laws of production follow physical (and hence regular and predictable) laws, the extension of mathematics to consumer theory required a change in assumptions. Specifically, the broader view of human nature held by most Classical economists was replaced by the narrow view espoused by Bentham. In order to apply a new method (mathematics), a new assumption was adopted (the RUMH). Yet it would seem that when the choice of method dictates the assumptions, the tail is wagging the dog. Method should follow assumptions, not the other way around. One cannot discard observations about emotion, limited reasoning ability, and other aspects of human behavior simply because it is methodologically inconvenient to include them. As a leading modern methodologist, Mark Blaug put it, "all motives, rational or otherwise, that are shown to be significantly related to economics ought to count in economics." [1983, 550].

The integrability debate is implicitly an attempt to address this complaint by providing a precise statement of the minimum necessary assumptions needed to make
the RUMH works. The central issue is as follows: Beginning with a utility function and given income and prices, one can derive a demand function by working through the standard maximization problem. In reality, however, we cannot observe a consumer's preferences directly; the best we can do is to observe a demand relation. So how do we know that observed consumer choices represent maximizing behavior? As Hal Varian poses the question, "Is there necessarily a utility function from which these demand functions can be derived?" (1973, 100)?

The issue was mentioned in passing by Fisher (1892) 1936, 88-9, but the discussion really began when Vito Volterra, a mathematician, reviewed Pareto's Manuale d' Economia Politica (1906). Pareto had "solved" the problem for the case of two goods, and then ignored it when discussing three goods. Volterra pointed out that while the two-good case is always solvable, the same cannot be said for three or more goods (Gandolfo, 1987, 817). Pareto subsequently sought a general solution, but his work was marred by mathematical errors (Georgeo-Roogens, 1935, 707) and an excursion into a discussion of "open and closed cycles of consumption" which was "hopelessly confused" (Samuelson, 1950, 362).

The task was taken up by other economists, and much work was done, especially in the 1930s (Allen, 1932, 1938; Georgeo-Roogens, 1935, 1936; Hicks and Allen, 1934; Hicks 1939). Hendrik Houthakker (1930) finally solved the problem by applying Samuelson's new revealed preference theory. His insight was to see "that the problem of integrability arises only because of an incomplete statement of assumptions; no real generality is lost by supposing revealed preferences to be semi-transitive instead of only asymmetric" (ibid., 173). He then demonstrates that "separate continuity assumptions" (ibid., 161) all that is needed is what Paul Samuelson later termed the "strong axiom of revealed preference." This axiom reads:

If A reveals itself to be "better than" B, and if B reveals itself to be "better than" C, then C reveals itself to be "better than" D, etc., then I extend the definition of "revealed preference" and say that A can be defined to be "revealed to be better than" Z, the last in the chain. In such cases it is postulated that Z must never also be revealed to be better than A. (Samuelson, 1950, 370-1, emphasis in the original)

This allows one to draw inferences about the entire indifference map from local observations.

The requisite continuity assumption is the requirement that utility functions are twice differentiable (Katzen, 1987, 878). Nicholas Georgeo-Roogens considered this assumption to be somewhat "delicate," but justified it as "the mathematical interpretation of the regularity of human behavior" (Georgeo-Roogens, 1936, 548). Clearly, the mechanical analogy is still present. What is worse for the RUMH, however, is the repeated experimental finding that people display intrinsivity (Conlisk, 1986, 670). This is akin to a stake through the heart for the strong axiom of revealed preference. One might therefore conclude that

the RUMH is just plain wrong, and should be abandoned. Indeed, such ideas "are not uncommon topics of conversation" (Pfeffer, 1960, 172).

A SUGGESTED MODIFICATION TO THE RUMH

Ironically, experimental economics also provides some good news for the rationality assumption. In fact, the experimental evidence on market (as opposed to individual) behavior is quite supportive. As Charles Pfeffer reports, "If one looks at experimental markets for evidence... pessimism is not justified. Market models based on rational choice principles do a pretty good job of capturing the essence of very complicated phenomena" (1990, 172). Vernon Smith summarizes the evidence by saying,

- What these and many hundreds of other experiments have shown is that (1) prices and allocations converge quickly to the neighborhood of the predicted rational expectations competitive equilibrium, and (2) these results generalize to a wide variety of posted-price, sealed bid, and other institutions of exchange, although convergence rates tend to vary. (1991, 880)

What is going on here? How can individual behavior frequently "violate the canons of rational choice" but yet markets still "serve up decisions that are consistent (as though by magic) with predictive models based on individual rationality" (ibid., 894)?

Over thirty years ago Gary Becker suggested that one does not need magic to resolve this paradox because "market rationality is consistent with household irrationality" (1962, 8). He analyzes two non-rational decision rules, impulsiveness (defined as decision-making "by the throw of a multidisized die" (ibid., 5) and inertia ("wherever possible, households consume exactly what they did in the past" (ibid., 6)). For both cases he demonstrates that, holding real incomes constant, the average household will consume less of a good when its price rises. Hence negatively sloped demand curves — what he calls the fundamental theorem of traditional theory — can be derived from specific non-rational behaviors.

Dharmraj Gode and Shyam Sunder test Becker's "impulsiveness" decision-rule in a double-auction experimental market. They show that such a market

- can sustain high levels of allocative efficiency even if agents do not maximize or seek profits. In its first-order of magnitude, allocative efficiency seems to be a characteristic of the market structure and the environment; rationality of individual traders accounts for a relatively small fraction ... of the efficiency (1993, 120).

In other words, market performance may be largely independent of participants' decision-making rules! "Adam Smith's invisible hand may be more powerful than some may have thought" (ibid., 196).
So far economists seem reluctant to embrace such a radical conclusion. Becker himself has been a strong proponent of the RUMH. Others, less enamored with the RUMH, have suggested alternative, non-random decision rules but have failed to explain how irrational individual behavior is consistent with rational market outcomes. Conklin (1986) provides an extensive reference list of such efforts. Worth special mention, however, is an article by Bossel and Thaler (1989).

Thomas Ruesch and Richard Thaler divide people into two groups, rational and "quasi-rational," which means behavior that is regular but not rational. They argue that the existence of quasi-rational agents will affect market price, and provide an illustration where the law of one price is violated. This result turns on the fact that arbitrage was not possible in their theoretical model or in their illustrative market (dishwashing liquid).

There is, however, a way (other than Becker's) to reconcile irrational individuals with rational markets. This approach is suggested by the work of Robert Forsythe et al. (1992) related to the Iowa Presidential Stock Market (IPSJ). The IPSJ is a computerized double-auction market in which the final value of the shares depends on the percent of the popular vote garnered by candidates for President of the United States. In the run-up to the actual election, participants in the market can buy and sell shares in the candidates, and this activity determines share prices at any given time prior to the election.

The IPSJ predicted the actual vote shares of the candidates more accurately than the major opinion polls. This is despite the fact that Forsythe et al detected a significant amount of "wishful thinking" about particular candidates which they labeled "judgement bias." The key in this case was the presence of arbitrage. As Forsythe et al put it,

[In our study] the efficiency of the market depended not on the average trader, but on what we call the "marginal trader," a trader relatively free of judgment bias who consistently bought and sold at prices very close to the equilibrium price (1992, 1143).

This point is reiterated at the end of their paper, where they write,

Measures of judgment bias produced by social scientists invariably are measures of average behavior. But, as the old-time religion has it, market clearing prices are set by marginal, not average behavior, and it is for this reason that the Hayek hypothesis is robust. [ibid., 1161, emphasis in the original]

This suggests that as long as arbitrage is possible, markets function quite well even if the average trader does not act rationally. All that is required is a relatively small group of traders who do act rationally.

This marginal-trader argument "has a long tradition in economics, appearing in several guises as the argument demanded, but the hypothesis has rarely been made operational" [ibid., 1157, emphasis added]. The time has come to operationalize it.

The marginal trader hypothesis can be invoked to allow a modification of the RUMH. In particular, for the case of markets where arbitrage is possible, the RUMH should be modified so as to assume that only a small group of market participants is rational. Models based on this weaker assumption would function as well as those which assume everyone is rational, yet would not run afoul of the experimental evidence which suggests that in fact many people do not behave rationally. Moreover, the modified approach employs a less restrictive assumption about the distribution of rationality and hence should be preferred for its parsimony. 14

Limiting the assumption of rationality to only a subset of market participants would explicitly recognize that every human trait is not distributed evenly across the population. We take this for granted with respect to things like height, weight, athletic ability and intelligence. "Rational economic man" requires a special combination of reasoning ability and emotional self-discipline. To suggest that only some people meet these requirements is only to acknowledge reality. 15

One major question arises concerning the welfare implications of the modified RUMH. In neoclassical theory, competitive market equilibria have definite normative characteristics. In particular, the two welfare theorems posit a link between competitive equilibrium and Pareto efficiency. 16 How are these theorems affected by the modified RUMH?

Much work remains to be done in this area, but some light has been shed on this question by Andrés De Palma et al. (1994), who construct a model in which individuals have only limited information-processing capacity. They assume that people behave rationally, but, given the information-processing limitations, can "make errors in comparing marginal utilities" [ibid., 420]. While this is not formally the same as assuming that some consumers are less than rational, it is easy to see that if people are not strictly rational, they too could "make errors in comparing marginal utilities." De Palma et al conclude that under these circumstances, the two welfare theorems can fail [ibid., 430].

If this is true, then deviating from the RUMH could take away the two welfare theorems. One could no longer argue that a competitive equilibrium is "better" than some other result on the basis of Pareto efficiency.

This, of course, does not mean that markets would have nothing to recommend them. It simply means that they must be defended on other grounds, such as their instrumental value. For example, the historical evidence strongly suggests that market systems, in the long run, provide for higher rates of growth in material living standards than other known systems. 18 From a practical standpoint, markets appear to be the best resource allocation devices we have. An admission that they are not necessarily Pareto efficient should not trouble us.

Such a pragmatic approach may trouble those who prefer the pronouncements of pure theory. Yet the heresy that Pareto efficiency may not always be a good thing has already taken hold in some areas of economics, such as in the so-called "New Growth Theory." This theory argues, for example, that market power, which violates the assumptions of competitive equilibrium (and hence Pareto efficiency), may actually enhance growth. [Romer, 1994, 14]
It is, of course, too soon to tell where all of this might lead. Nevertheless, it is difficult to dispute Paul Romer's statement: "I am convinced that both markets and free trade are good, but the traditional answer that we give students to explain why they are good, the one based on perfect competition and Pareto optimality, is becoming untenable" [ibid., 19].

NOTES

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1. There is some debate about whether the assumption of rationality is normative or positive, i.e., is about how people should behave or about how they do behave? Bitter [1980], for example, contends it is a normative assumption. This paper will treat it as a positive assumption, agreeing with Brennan that "Certainly, within neoclassical economics, which is where rational choice theory receives its most extensive application, rationality is seen almost exclusively as a premise from which propositions about human behavior can be derived; hardly at all as an ethical ideal for which agents should strive" [Brennan, 1999, 81].

2. Hirschman [1977] demonstrates that an ability to sense political and economic thinkers in the antinomies preceding Classical economics was how to tame or harness human passions. One strand of this thought, of central importance to economics, is the idea of employing the passion of greed (xenia) to oppose and bridge the lust for glory. This was attractive to many thinkers, as avarice, properly channelled, might be made useful to the state while the pursuit of glory typically led to destructive wars.

3. See Hirschman [1977], especially page 103, on this point.

4. More precisely, the present value of the stream of taxes needed to pay the interest on the debt is the same as the one-time lump-sum tax which would have been required to avoid the debt altogether.

5. Note that Beckham does not go as far as Nihag. Beckham allows for people to calculate with varying degrees of ex-actness, and hence does not assume that everyone's calculations are correct.

6. Blaug contends that this is the passage in which the concept of "economic man" is born [Blaug, 1985, 80].

7. Included on this list would be Longfield, Dupont, Guenon, Jennings, as well as Leveson, Menger and Walras [Blaug, 1983, 320].

8. Haim Baruti also demonstrates this point in a previous issue of this Journal. From 1838 (the year Cournot published his Researches into the Mathematical Principles of the Theory of Wealth) to 1871, mathematical writings in economics appeared at the rate of about one per year. From 1871 to 1890 (the year Marshall published his Principles), the rate increased to six per year. From 1890 to 1900 the rate was 16 per year [Burch, 1989, 6].

9. This idea is sometimes forgotten, and modern articles and textbooks are full of theories based on the assumption that every agent is rational. In the elaboration of the Marginalist revolution, the strongest form of Bentham's view was adopted, i.e., it was assumed that "even madmen calculate."

10. The marginalist revolution in the RUMC reminds one of Machiavel's complaint about the philosophers who "conceive men not as they are but as they would like them to be" [quoted in Hirschman, 1977, 13].

11. This problem came to be known as the integrability problem because prior to the development of revealed preference theory, the mathematical solution to the problem involved the integration of one or more differential equations [Kanam, 1964, 38]. Conceptually, it begins with local observations and joining them together (integrating them) into a conceptual whole (an indifference map). As Samuelson described it, "If the little slope elements are made very small and very numerous, our mind's eye sees them as joining together into a one-parameter family of contours" [Samuelson, 1956, 360].

REFERENCES


WHY THE EX-COMMUNIST COUNTRIES SHOULD TAKE THE "MIDDLE WAY" TO THE MARKET ECONOMY

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INTRODUCTION

Most economists, in advising on the economic transition of the former Communist countries have argued for an immediate move to a fully privatized free-market economy: This paper argues that such a goal is inappropriate. Rather, it is in these countries' interests to follow a "middle way," centered on free markets, but accommodating considerable public ownership and a "social market." These policies are similar to those implemented in Korea, Japan and Germany.

The virtue of a middle way is to be more compatible with existing institutions and culture. Institutions vary widely, as indicated by differences among the United States, Japan, and Western Europe [Clague and Rausser, 1990; Kees, 1990; Thompson, Ellis, and Wildavsky, 1990]. A society needs to take these specific institutions into account when adopting economic policies, just as it would take into account its skills, educational levels, natural resources, and factories. Each can then co-evolve (Murroul, 1995b).

The formerly communist countries have institutional histories and cultural traditions, I shall try to show, that are only compatible with some forms of market institutions.

The paper first argues that a market economy needs two core elements: first, free markets and second, private property rights based on law. Nevertheless, a genuine middle way can exist. The paper emphasizes two elements of such a middle way. First, while firms must be independent, owned by shareholders and responsible for making a profit, ownership can include local, provincial and national governments, worker groups, banks, and such social institutions as pension and insurance funds. Second, markets, as social institutions, require regulation to develop effectively. A society without accepted norms and laws for market behavior must evolve efficient and accepted private contracts and norms of behavior, with regulations that provide guidance and security.

The case for such a middle way is supported by its success in many countries, including Austria, Germany's "social market" economy, Sweden, Canada, Japan and Korea. The problems of "shock therapy," seen for example in Poland, indicate that trying to do "everything at once" is really impossible. It is less of a shock for a formerly communist society to move to a middle way than to a highly laissez-faire society.

When examining the ex-communist countries, we should distinguish between culture, which represents shared values, attitudes and expectations, and institutions, organized structures that constrain people's actions and reinforce values and expectations.