Discussion Paper

by

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on

Naomi Moldofsky's

THE UNIFICATION OF SCIENCE THROUGH THE ECONOMIC APPROACH
FACT OR FICTION?

1. Introduction

Naomi Moldofsky rejects in her paper the economic approach applying the theory of "maximizing behaviour" or of "rational choice" starting from given ends and constraints. She rejects, too, the use of equilibrium analysis as an adequate method to explain reality. Instead, Moldofsky, following in the footsteps of Hayek and Mises opts for the co-called "Austrian" or "neo-Austrian"[1] approach "which views rationality as human action" (p.4) under uncertainty, action which leads to many unintended consequences, out of which grows a spontaneous and complex order with its own rules and institutions furthering rational human action.

I am very sympathetic to the latter approach, but I believe that Moldofsky's presentation of the two economic methods leaves many open questions. First, does the presentation provide a fair picture especially of the first method and are the two methods or their proponents really as far apart as suggested? Secondly, what consequences follow for our subject, the "Unification of Science Through the Economic Approach" if we should come to the conclusion that Moldofsky's interpretation has to be rejected as a one-sided statement concerning the methods applied by economists?

We will try to answer these questions in the two following sections. The paper will be concluded by a short summary of our own position.

2. The Two Methods of Economics: A Different Interpretation

Let me first state that the two methods of economics compared by Moldofsky are not as clearly separated as asserted, have often been used alternatively by some authors and are both helpful to understand certain aspects of reality. The necessity to use both approaches is closely related to the complexity of the object of economics, and the importance of uncertain and unpredictable future changes in the environment including un-

predictable actions of other individuals, which are a consequence of the capability of human beings to learn, to invent and to innovate.

Human action is the more adequate to reach its goals, the better the understanding of the surroundings and the prediction of future events. The theory of maximizing behaviour and of static equilibrium has been developed partly to understand and to predict environmental changes. In doing so it was supposed to help first individual decision making, secondly to bring about or to maintain an adequate economic constitution, and third to develop rational economic policies of government agencies. In many respects this endeavour has proved to be successful, even if expectations have often been exaggerated.

Consider some examples in which this kind of equilibrium theory is applied. Assume that government introduces a minimal price for cotton above the price ruling in the market. (See Figure 1). Then the theory of maximizing behaviour predicts that, given perfect competition and a stable equilibrium an oversupply of cotton leading probably either to rationing of supply or supportive buying by the government will be the consequence. Now, a wealth of evidence from many countries shows that this and similar predictions have been highly successful in spite or perhaps even because of the rather abstract and simple assumptions. Of course, even in this simple example uncertain changes of supply are at work. Weather is unpredictable and influences harvests. Unknown future innovations in agriculture like better fertilizers or machines may increase supply. A change in the size and composition of the population or of tastes may change demand, etc.

In spite of this, qualitative predictions of this kind have done very well vis-à-vis reality. We can even move a step further. If we know that weather follows a constant probability distribution we can predict that this parameter does not have long-run conse-

Figure 1
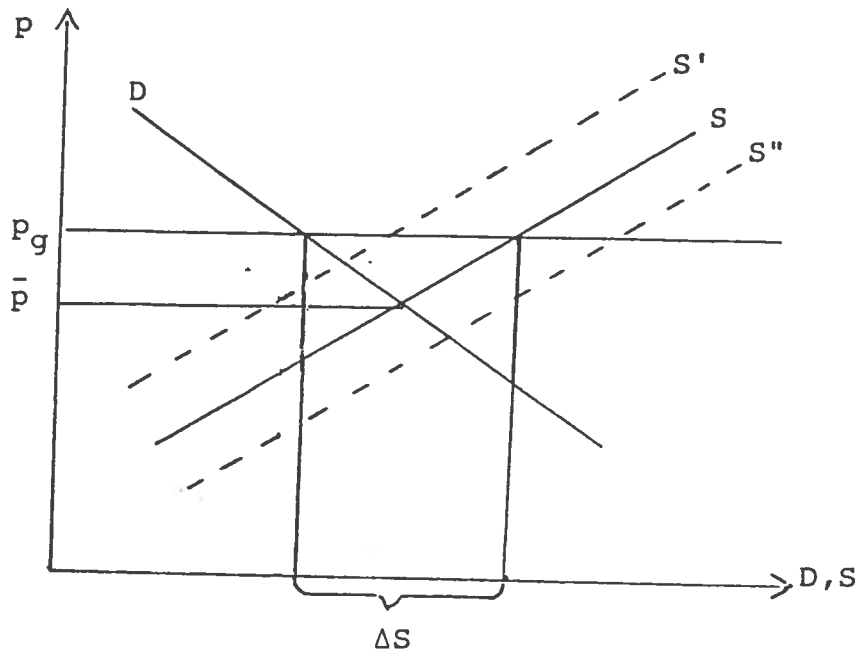
p   Price
D   Demand
S   Supply
$\bar{p}$ Original Equilibrium Price
p_g Minimal Price Fixed by Government
ΔS   Excess Supply

quences for the annual surplus ΔS. Further, if we know that weather has been poor for some weeks, we can treat this as a parameter shift changing S to S' for this year so that reduction or even a removal of the short-run surplus can be predicted. Similarly, a better fertilizer can be treated as a parameter shift moving S to S" suggesting an increased permanent surplus.

Several conclusions follow from this example: First we are not mainly interested in general equilibrium theory. We are interested in partial equilibrium theory and this only to consider the consequences of parameter shifts leading either to new equilibria which can be compared to the old one (consequences of bad weather or of better fertilizer) or to out-of-equilibrium situations (introduction of the minimal price). In other words, we are not interested mainly in statics but in comparative statics. Secondly, events (i.e. parameter shifts) following a constant probability distribution can be easily incorporated into the analysis. Thirdly, preference changes can be taken into account in the analysis in the form of parameter changes, if we know their direction. E.g., if advertising would cause consumers to change their preferences in favour of cotton, this would lead to an upward move of D. In this sense the ends of individuals need and have not been taken as given. It is only because these changes cannot be easily predicted - as quite correctly stated by the Austrian approach - that they can presently at best be taken into account as parameter changes. Finally, and again quite in agreement with the Austrians, we have to be modest concerning quantitative predictions. Demand and supply functions are influenced in a more or less stochastic way by many parameter changes so that predictions from recently estimated demand and supply functions must necessarily be often misleading for the future.

Before extending the remarks on the merits and demerits of "rational choice" theory, let me first present a few more examples.

The simple Quantity Theory of Money and the Purchasing Power Parity Theorem $M \cdot V = P \cdot T$ and $P = E \cdot P*$ respectively,[2] have stood the test of empirical evidence quite well[3] as propositions valid in the long run (sometimes ten years or more). With flexible exchange rates, moreover, the proposition that an under-

valuation will result if a country expands the money supply more rapidly than another country, and that this undervaluation vanishes with either a relative stabilization of the money supply or in the last phase of hyperinflation, has also stood the test of attempts of empirical falsification[3]. Of course, the evidence shows quite clearly that people do not have rational expectations and that they are not well-informed in the beginning of an inflationary process, but that they learn and adapt better and better to the situation. This is quite in accord with Austrian subjective theory, but it does not contradict a theory of maximizing behaviour restricted by limited and changing information influenced by the history of the system. And though the specific reactions of individuals are different, general patterns can very well be detected and be predicted. Moreover, quantitative estimates may well be important in spite of their limited reliability because they allow to comprehend the order of magnitude in question.

A final example shows that even exact quantitative relationships can be predicted in several cases. The interest parity theorem formulated by Kenyes and known to some practitioners much earlier states that $\frac{1}{t} \frac{E_t - E_o}{E_o} \approx i* - i$ [4], and has been found to agree even quantitatively very well with reality, if one takes into account transaction costs of no more than 0.25%. Note that this relationship holds each day for all freely convertible currencies. But the theorem assumes profit maximization, perfect competition and equilibrium in spot and forward exchange markets and in money markets.

Judging from these and other examples I and probably Mrs. Moldofsky, too, would be very reluctant to discard this kind of economic approach. It is thus not suprising that it has been used again and again by adherents of the Austrian approach. It is perhaps not by chance that the interest parity theorem was very skilfully used rather early by the Austrian-Hungarian

Central Bank when it intervened in the foreign exchange markets[5].

But an additional reason exists for using the maximizing approach, even sometimes totally excluding quite unrealistically uncertainty, risk and learning on the part of individuals. For it can be useful to abstract from these and other complicating factors to be at all able to explore the possible consequences of other important factors. This strategy has, e.g. been used in Austrian Capital Theory by Hayek, who has very skilfully applied a model of a centrally planned economy with perfect information to deduce some results of intertemporal capital theory[6]. Bernholz, Faber and Reiss have recently followed this approach[7]. To mention another example, Barone, Mises and Hayek have all used results of abstract general equilibrium theory to cast light on the (unfulfillable) informational requirements of a centrally planned economy[8].

Finally, I would like to state that first, theoreticians following the maximizing approach have certainly not overlooked the problems of uncertainty. Oligopoly and game theory have necessarily been much concerned with these problems and also with disequilibrium. If dynamic disequilibrium theory has not developed satisfactorily this has been to a large part a consequence of inherent difficulties stemming from the complexity of problems. The same is a reason why most economists have regrettably taken individual ends as given. One has to stress that only few economists would follow Becker and Stigler in assuming that ends or preferences are in fact absolutely stable over time. It is thus revealing that Moldofsky, when she speaks of the competing neo-Austrian approach, draws the following conclusion:

"The selection of ends is thus beyond the scope of science; it is not open to judgement regarding its rationality. Ends are, therefore, treated as data to facilitate the analysis of human action, whereas means are always open to assessment in

relation to the ends sought". (p.20) No doubt, most economists using the maximizing approach would heartily agree.

Let us sum up. I agree with Moldofsky that the "maximizing approach" to economics, if we can call it that, leaves many important problems unanswered and shows far-reaching gaps. The problems concerning individual action under uncertainty, expectation formation, gathering and handling of information, learning and the dynamical behaviour of the system in disequilibrium have not been adequately treated and the related problems not been solved, though they have not been totally neglected. But as Moldofsky stresses herself, part of these problems cannot be solved because of the complexity of the system and of unpredictable human creativity. It is just because of these facts that the very general and unspecific Austrian approach to the problems of economics provides valuable complementary insights. But it has been, I hope, convincingly argued that many substantive results and predictions can be won only within the framework of "traditional" theory. These results are mostly of an only qualitative nature, but a few stable quantitative relationships do exist and others are helpful to gain an understanding of the orders of magnitude implied. In contrast to Moldofsky I believe that further progress can be made, even concerning the formation and change of individual preferences[9].

3. Conclusions for the Unification of Science

In discussing the potential of economics for the unification of science, economists should be rather modest. But I regret to say that Mrs. Moldofsky has been somewhat too modest. Since her approach to economics has been shaped by the so-called neo-Austrian theory of rational action and of unintended, complex feed-back systems, her understanding of the potential of economics for unification is necessarily confined by these limits.

Now I subscribe to the view that economics does, or could in fact, comprise all "human action as a rational, problem solving activity, spontaneous order (complex phenomena) as the outcome of the interrelationship of such action, and evolution as the process through which such phenomena emerge" (p.46). I agree also to the conclusion that economics has, because it is concerned with these problems, unifying capabilities for all sciences, since they are human efforts and if they are concerned with complex phenomena or evolution. But I deny strongly that there can be no other applications of economics. In fact, the successful application of "traditional" economics in other fields would seem to provide empirical evidence to the contrary.

The theory of maximizing behaviour can be applied in all situations in which actors try consciously or unconsciously to reach certain ends under given constraints. It can be applied, moreover, in all cases in which entities act as if they tried to act rationally, i.e. to reach certain ends as well as possible. Let us begin with the latter case. I do not know whether physical or chemical changes can or could ever be pictured as if certain actors existed who rationally pursued certain ends under given constraints. But if neo-Dawinian theory is correct in its statement that stochastic changes of genes (i.e. mutations) and natural selection have led and still lead to a survival of the fittest[10], then one would expect that genes (or living beings) act in a given period as if they were maximizing their rate of reproduction given the constraints of their environment. This would imply, moreover, the development of equilibrium between the members of different competing or complementary species, since prey and predators as well as competitors for resources all belong to the constraints set by the environment. Changes of the environment like changes of the climate, but also a major advantageous mutation in one of the species would upset the equilibrium among them and lead to a new equilibrium, if the ensuing dynamic process is stable. Thus such changes

can be treated as parameter changes and the values of the original and the new equililibrium be compared. We realize at once that all this corresponds closely to the maximizing behaviour postulated in economics and the static and comparative-static analysis used by it. It follows that an application of economic methods of this kind in biology and vice versa, does not postulate an interchangeability of the bumblebee with acting man (p.18), but the validity of the neo-Darwinian theory of biological evolution. This view does not deny, on the other hand, that evolution cannot be predicted, just because, besides other uncertain changes, mutations are unpredictable. Further, the dynamic path followed by a biological system after such changes should be very difficult to predict by dynamical models, apart from a general understanding of a number of different possible patterns of development.

Let us turn next to consciously planning, acting, learning, inventing and innovating man and thus enter the realm of cultural evolution. We all know that cultural evolution leads to much more rapid changes and development than biological evolution. But inventions and innovations are nearly as unpredictable as genetic mutations. So are many of their consequences as well as their survival value. Not much can probably ever be said about the exact dynamic development following these changes. Here all the notions of neo-Austrian economics about the nature of emerging complex systems and their general nature apply. But does this imply that no predictions of a more specific nature can be made, that no theorems are vaid? I believe we have shown the contrary in the last section. Of course, laws or theorems of economics apply to a social environment, created but not planned by man, which can be changed by man. It follows that these laws or theorems are only applicable if the postulated social environment is present. The Quantity Theory of Money, e.g. refers only to a market economy with money, the theorem asserting an undervaluation of a more rapidly inflating currency

to a regime of flexible, but not fixed exchange rates etc. Thus the object of social research does change in contrast to that of physics and chemistry, but not to biology, where extinct species may have been or are the object of research. In passing let us note that the greater part of uncertainty in the social system is just a consequence of human inventiveness, which however in the past has enabled man to achieve a better and better control of his environment. Thus if no inventions of new and better goods would take place, future markets would easily be developed for all these goods and the risks and uncertainties of long-term investment and consumption decisions be largely removed. But would we really prefer an environment like that of, say, 150 years ago, if it were stabilized by the absence of invention and innovation?

But let us return to our main subject and ask ourselves whether Moldofsky is right in asserting that "non-market areas are not open to economic analysis; to put it even more strongly, there is no non-market economics". (p.16) It should be obvious that I strongly disagree with this view, even if it may be true that the possibilities of economics in handling these areas may be more limited because of some of the reasons mentioned by Moldofsky. But a theory and its applications should be judged by its success to explain empirical phenomena. And here some impressive results have been reached during the last decades. In politics, starting with A. Downs[11], valuable insights have been gained. Thus the tendencies of direct democracy and of two-party systems to move towards the political center (i.e. the wishes of the median voter) have been theoretically deduced from general assumptions implying rational behaviour. An empirical substantiation for direct democracy has been given, e.g. by W. Pommerehne for more than 100 Swiss municipalities.[12] Politico-economic models of the business cycle have been developed and been successfully tested.[13]

M. Olson has been able to explain under what conditions interest groups can be formed and be maintained.[14] The economic theory of log-rolling has been able to explain empirical patterns observed years ago in the US Senate,[15] etc.[16]

Turning to sociology and anthropology, let me mention as examples George Homans' theory of the small group[17] and Peter Blau's theory of social exchange.[18] Both authors are sociologists and remind us that economic models can and have been developed and applied to different fields not only by economists. In psychology Thibaut and Kelley have developed theories that are very similarly structured to those of economics or game theory, but have made some progress in developing rational choice theory in a way to explain individual satisfaction and dissatisfaction.[19] Kaufmann-Mall, a psychologist, has moved even further in trying to apply the rational choice theory of economics to explain the formation and change of individual preferences.[9]

Let me conclude this section by pointing out that most of the extensions of "rational choice" theory of economics to other fields than the market economy start from the statement that exchange does not take place only in markets. Politicians strive for power, influence and income and have to win in democracies majorities of voters to obtain the wanted positions. To secure the support of voters they exchange, as it were, benefits provided or promised by the state against votes. In small groups (primary groups), love and affection are exchanged for help and assistance. Norms are introduced or maintained since they reduce transaction costs. Members of parliament exchange votes among each other to get specific legislation furthering their constituencies, etc.

It may be true that it is sometimes difficult to operationalize these concepts and to make meaningful statements about exchange rates, their changes and the consequences thereof. But on the whole, social scientists have been successful in doing

so and it remains to be seen how far the "rational choice" and "social exchange" approach can be fruitfully applied. Here, as everywhere, the proof is in the eating. A number of competing theories capable of refutation should be welcomed by all of us.

4. Concluding Remarks

In this comment several points have been elaborated:

1. The difference between the "neo-Austrian" and the maximizing behaviour" or "rational choice" approaches in economics are not as far-reaching and as clear-cut as stated by Moldofsky. Both are rather complementary. Since this view is widely shared by John Gray I have not dealt explicitly with his papers.

2. The consequences following the neo-Austrian economic approach for the potential of economics for the unification of sciences can be accepted.

3. Since the use of the rational choices approach leads to valuable insights and has often predictive power for qualitative and sometimes even for quantitative results, this approach should not be discarded until it can be substituted by a better one.

4. The rational choice approach can be and has been successfully applied to fields in which there are actors who either strive to act rationally or who behave as if they were acting rationally.

5. The uncertainty inherent in the forces causing biological and especially cultural development often precludes or limits the possibility of prediction on the part of economic analysis.

Footnotes

1) Many different definitions of "Austrian" and "neo-Austrian" economics exist. E.g. the definition used by many people when they speak of "Austrian" or "neo-Austrian" capital theory often diverges considerably from the concept used by Moldofsky. These discrepancies are not surprising since already the Viennese Austrian school showed a wide pattern of sometimes conflicting approaches. Some of its members like Menger and Böhm-Bawerk contributed with the development of marginal utility theory to the theory of maximizing behaviour.

2) M stock of money in circulation; V velocity of money circulation, P price level, T volume of transactions; P* foreign price level, E exchange rate in terms of domestic money. Volume of transactions T and - in the long run - velocity of money are usually taken as constant. Then we get a theorem assrting that

$$P = \frac{V}{T} \cdot M,$$

i.e. that the price level moves proportionally to the amount of money in circulation in the long run. A somewhat more complicated approach postulates that

$$\frac{1}{V} = f(i,\pi^e), \quad \frac{\partial f}{\partial i} < 0, \quad \frac{\partial f}{\partial \pi^e} < 0, \text{ and that}$$

$$T = aY, \quad a > 0.$$

Here i means the rate of interest, π^e the expected rate of inflation and Y real national income. Putting these new assumptions into the above equation one gets

$$M_D = \frac{T}{V}P = aYPf(i,\pi^e)$$

which is now interpreted as a money demand function.
Setting money supply M_s equal to M_D

$$\frac{M_s}{P} = aYf(i,\pi^e)$$

which is supposed to be valid not only in the long run but
also in the short run. Note that π^e is an expected magni-
tude which can not be exactly predicted, so that already
because of this the short term consequences of an increase
of M_s on P, too, cannot be exactly and correctly predicted.
In the long run, however, i and π^e will usually follow a
stable stochastic pattern, so that the simple Quantity
Theory of Money, corrected by the longterm development of
real national income, Y, is reasserted.

3) Compare Peter Bernholz: Flexible Exchange Rates in Historical
Perspective. Princeton Studies in International Finance
No.49, Princeton University, Princeton (N.Y.), 1982.

4) E_o spot, E_t forward exchange rate (for contracts maturing
after t years), i domestic, i* foreign interest rate for
money market instruments maturing in t years. A simple deri-
vation of the interest parity theory can be found in Einzig
(see footnote 5), chapter 11.

5) Compare Paul Einzig: A Dynamic Theory of Forward Exchange.
Macmillan, London,1962, chapter 34.

6) F.A. Hayek: The Pure Theory of Capital. Routledge and Kegan
Paul, London, 1930.

7) P. Bernholz, M. Faber and W. Reiss: A General Two-period
Neo-Austrian Model of Capital. Journal of Economic Theory,
vol. 17, 1978, pp.38-50.

8)   See F.A.Hayek (Ed.): Collectivist Economic Planning, 1935.

9)   Compare Klaus Kaufmann-Mall: Kognitivhedonistische Theorie
     menschlichen Verhaltens. Zeitschrift für Sozialpsychologie,
     Beiheft 3, Hans Huber, Bern-Stuttgart-Wien, 1978.

10) See Richard Dawkins: The Selfish Gene. Oxford University
     Press, 1976.

11) Anthony Downs: An Economic Theory of Democracy. New York,
     1957.

12) W.W. Pommerehne: Institutional Approaches to Public Ex-
     penditures: Empirical Evidence from Swiss Municipalities.
     Journal of Public Economics, vol.9, 1978, pp.255-280.

13) Bruno S. Frey: Politico-Economic Models and Cycles. Journal
     of Public Economics, vol.9, 1978, pp.203-220. William D.
     Nordhaus: The Political Business Cycle. Review of Economic
     Studies, vol.42, 1975, pp.169-190.

14) Mancur Olson: The Logic of Collective Action, Cambridge
     (Mass.), 1965.

15) Peter Bernholz: On the Stability of Logrolling as a Stochastic
     Game. Public Choice, vol.33, 1978.

16) For a critical review of the Public Choice literature see
     Dennis C. Mueller: Public Choice, Cambridge University
     Press, Cambridge-London-New York-Melbourne, 1979.

17) George C. Homans: Social Behavior: Its Elementary Forms.
     Routledge and Kegan Paul, London, 1961.

18) Peter M. Blau: Exchange and Power in Social Life. Wiley, New York, 1964.

19) J.W. Thibaut and H.H. Kelley: The Social Psychology of Groups. Wiley, New York, 1959. A critical discussion of the developments in the fields of sociology and of anthropology is offered by Anthony Heath: Rational Choice and Social Exchange. A Critique of Exchange Theory. Cambridge-London-New York-Melbourne, 1976.