Econometrics and the Welfare State

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1. INTRODUCTION

Some of you here in this distinguished audience, and perhaps many of my colleagues who are not present, might say that the title I have chosen for this lecture is a strange and artificial construction. What has the abstract topic of econometrics to do with the very practical problems connected with the operation of a welfare state? In the course of this presentation I shall try to the best of my ability to demonstrate why I think it is not too farfetched to see some connection between the two fields.

To do this I have, unfortunately, to take you on a detour into the evolution of econometrics. I do this not in order to write the history of econometrics, but in the hope of giving some weight to the conclusions that I will draw towards the end of this lecture.

This detour may have a by-product which may be of some interest. I have often been asked, even by scholars on a very high level, whether econometrics is not a rather abstract and dry branch peripheral to the science of economics in general. I think I have a fairly convincing negative answer to such a question. At least five of those scholars who have previously received the prize for which I am now here, have made it a central part of their research to show that without econometrics in the center of economic research, the science of economics might not have reached beyond the stage of general talk, without really useful results. I shall get back to this in the course of my lecture.

I should perhaps make a final introductory remark before I go on with my presentation. In the following I shall often use the word "I" instead of "we". I should really use "we" because I certainly do not have any exclusive claims on results that I may mention in this lecture. When I say "I" it is to protect my fellow econometricians from being responsible for what I may say in the way of presenting results or for the, perhaps subjective, judgments I am going to offer.

2. HOW IT ALL BEGAN

Roughly speaking, it all began in the late nineteen-twenties and early nineteen-thirties. This statement would be much too superficial from a historian's point of view. But as I said, I am not going to try to write the history of econometrics.

The status of general economics was more or less as follows. There were lots of deep thoughts, but a lack of quantitative results. Even in simple cases where it can be said that some economic magnitude is influenced by only one causal factor, the question of how strong is the influence still remains. It is usually not of very great practical or even scientific interest to know whether the influence is positive or negative, if one does not know anything about the strength. But much worse is the situation when an economic magnitude to be studied is determined by many different factors at the same time, some factors working in one direction, others in the opposite directions. One could write long papers about so-called tendencies explaining how this factor might work, how that factor might work and so on. But what is the answer to the question of the total net effect of all the factors? This question cannot be answered without measures of the strength with which the various factors work in their directions. The fathers of modern econometrics, led by the giant brains of Ragnar Frisch and Jan Tinbergen, had the vision that it would be possible to get out of this situation for the science of economics. Their program was to use available statistical material in order to extract information about how an economy works. Only in this way could one get beyond the state of affairs where talk of tendencies was about all one could have as a result from even the greatest brains in the science of economics.

The work of quantifying economic interrelations was taken up with great enthusiasm and the volume of quantitative results grew very rapidly.

There could be no doubt that the future of economic science depended in a most important way upon the possibilities of such measurements as I have briefly indicated. I may mention that another prize winner, Paul Samuelson, has made this extremely clear although approaching the matter from a different angle. He has showed that we need quantitative information, not only to predict a possible state of affairs of an economic community, but also to be able to say something about whether such a possible state of affairs would remain stable over time.

I hope this brief sketch, although highly inadequate, may serve as a background for the next chapter of econometrics I am going to touch upon.

3. DIFFICULTIES

There were many scholars, first of all Ragnar Frisch, who began to see dangerous pitfalls in the attempts to draw information about economic interrelationships from observed data. The most formidable among these difficulties were connected with the old-time enemy of statisticians; the phenomenon of so-called spurious correlation. This expression refers to the danger of drawing hasty conclusions about cause and effect from observed connections between two or more economic variables. Ragnar Frish used to imprint his warnings on this point upon his students by giving the following horrifying illustration. It can be observed that there is a high positive intercorrelation between the number of flies on the western coast of Norway and the number of tourists visiting that region. From this observation it is probably not a very good idea to try to promote tourism by breeding more flies. But the phenomenon of spurious correlation has a more intricate form which is often much harder to discover. If we have what we think is a good and reasonably well-founded theory of some interrelation within a group of economic variables, and the observed facts do not seem to contradict such a theory, we may still be misled, because the same apparent interrelation may often be produced by many different models of economic structures.

On this basis Ragnar Frisch was also to some extent critical of Jan Tinbergens extensive numerical work. Personally, I think Tinbergen saw most of the pitfalls and avoided them in his actual work, while perhaps he did not write so much about the subject in a general way as did Ragnar Frisch.

For my own part I was lucky enough to be able to visit the United States in 1939 on a scholarship. (For reasons beyond my control the visit lasted for about 7 years, but that is another story.) I then had the privilege of studying with the world famous statistician Jerzy Neyman in California for a couple of months. At that time, young and naive, I thought I

knew something about econometrics. I exposed some of my thinking on the subject to professor Neyman. Instead of entering into a discussion with me, he gave me two or three numerical exercises for me to work out. He said he would talk to me when I had done these exercises. When I met him for that second talk, I had lost most of my illusions regarding the understanding of how to do econometrics. But professor Neyman also gave me hopes that there might be other more fruitful ways to approach the problem of econometric methods than those which had so far caused difficulties and disappointments.

During the nineteen-forties I had the good fortune of being invited to the Cowles Foundation at the University of Chicago to work with an eminent staff of econometricians, statisticians and mathematicians. We worked hard on the task of trying to find more powerful and acceptable methods of doing econometrics, and to find some more general principles. In particular, we faced two groups of problems.

The one type of problems, seemingly paradoxical, grew out of a rather intricate consequence of successful economic theory. Strangely enough, the fact is that if an economic theory, an economic relation, is a good theory, true to reality, it may not be possible to quantify it by using data from the economy of which that relation is a part. This is the so-called "problem of identification". Tjalling Koopmans devoted himself to this very difficult subject and organized extensive research to try to clarify the issues involved.

The other group of problems to be attacked was how to find satisfactory methods of actually measuring those economic relations which it could be meaningful to confront with facts (after the question of identification had been cleared up). The staff of the Cowles Commission set out on extensive work also on this group of problems, assisted by some of the worlds most eminent capacities in mathematical statistics.

Some people have said that all these efforts directed towards finding general principles of econometric research may have led to suppressing actual numerical work to produce quantitative results for practical use. There are certainly at least two very important exceptions to this being true: the extensive efforts of measurement carried out by Richard Stone and Lawrence Klein. And there are the fundamental econometric works by Milton Friedman and Franco Modigliani to improve upon the Keynesian consumption function.

4. RESULTS

What was actually the result of all these efforts to improve upon methodology? In 1957 I had the honor of being invited to give a presidential address before The Econometric Society. My subject was to try to evaluate the status of econometrics at that time.

To some extent my conclusions where in a way negative. I drew attention to the—in itself sad—result that the new and, as we had thought, more satisfactory methods of measuring interrelations in economic life had caused some concern among those who had tried the new methods in practical work. It was found that the economic theories which we had inherited and believed in, were in fact less stringent than one could have been led to think by previous more rudimentary methods of measurement. To my mind this conclusion is not in itself totally negative. If the improved methods could be believed to show the truth, it is certainly better to know it. Also for practical economic policy it is useful to know this, because it may be possible to take preventive measures to reduce uncertainty. I also mentioned another thing that perhaps could be blamed for results that were not as good as one might have hoped for, namely economic theory in itself. The basis of econometrics, the economic theories that we had been led to believe in by our forefathers, were perhaps not good enough. It is quite obvious that if the theories we build to simulate actual economic life are not sufficiently realistic, that is, if the data we get to work on in practice are not produced the way that economic theories suggest, then it is rather meaningless to confront actual observations with relations that describe something else.

If I were asked today for an evaluation of the kind I have mentioned, I would probably use almost the same words, but I would give them a more drastic content. I have had plenty of time to think about the matter since the time when I gave the address that I have just mentioned. With your permission I shall take the liberty of presenting to you some of the speculative thoughts that I have formed to myself in the period that has elapsed. I want to underline that if there should happen to be something of value in these thoughts, I have arrived at them through my work with econometrics.

5. ECONOMETRICS A USEFUL INSTRUMENT FOR ECONOMIC POLICY?

Let me start with a brief general remark which I shall not elaborate further upon. It concerns a discussion we sometimes hear, about what is the more important, so-called basic science or so-called applied science. I do not think this discussion is very fruitful, but I may perhaps be allowed to mention that since research today is a very costly affair, something that millions of people have to pay for, it is not unreasonable that we should give people some hope of progress to their benefit.

I should add that when I say "welfare state" in this lecture I do not think of this concept only in the narrow Western sense. By a welfare state I mean any society where the final objective is the economic well-being of its people, in the short run as well as in the long run.

We sometimes hear that it is an illusion to hope for accurate economic laws and findings that could compare with those we have, for example, in astronomy. In itself that is really not so disturbing provided we do our best to find what there is to be found. But there is another more fundamental difference between the world of social life, especially the world of economics, and that of astronomy or other physical disciplines. The difference is this: Provided we do not want to become too philosophical, the important fact in this connection is that a society or, more particularly, the economics of a society is in fact governed by rules that are themselves a product of man. Actually it is the hope of most people that a society does not have to remain forever the way it happens to be at present. We can do something to make it better in some sense or other. And societies have changed and are continuously being changed by various measures of economic policy. This fact has an important consequence for the question of what we should actually mean by a realistic economic theory. Briefly a realistic theory in the world of economics is a theory that describes or simulates any economic society that would be feasible under some economic policy. Therefore a passive description of what we happen to see around us at the moment is not enough. The task of econometrics from the point of view of human welfare is to try to extract from past data useful

information for whatever economic society it should be found desirable to reach for. Let me hasten to clear up one thing in this connection. The question of what is the good society cannot be settled by any mathematical tricks. At least as long as there are different opinions among people and groups concerning what they think is the best society. If we did not know it before, Kenneth Arrow has showed this in an irrefutable way. But as people connected with scientific research we are in a way bound to work on the basis of the axiom that information and enlightenment are to the benefit of mankind. Here is where the role of econometrics comes in, together with many other kinds of research. Its usefulness is based on the belief that even if we cannot settle disputes between conflicting interests, we can at least try to remove those causes of conflict that are due to lack of information and knowledge.

I believe that econometrics can be useful. But as I have said, the possibility of extracting information from observations of the world we live in, depends on good economic theory. Econometrics has to be founded on theories that describe in a reasonably accurate way the fashion in which the observed world has operated in the past. I also mentioned, perhaps in a slightly immodest way, that I think existing economic theories are not good enough for this purpose. I have not said that I think existing economic theory is useless. In fact I believe it will represent indispensible building-blocks for a more general theory if we can ever hope to find one. I have of course no hope of being able to contribute to anything explicit in the direction of what such a general theory ought to be like. In this connection I come to think of what Darwin said in his Origin of Species. He said modestly, "After five year's work I allowed myself to speculate upon the subject". Not possessing brain capacity at such a level I could say that I have allowed myself to speculate on my subject for thirty years. Drawing on your patience I shall present a few thoughts for what they may be worth.

I think it is not unfair to describe a major part of existing economic theory in the following way. We start by studying the behavior of the individual under various conditions of choice. Some of these conditions are due to the fact that the individual has to have contact in his economic affairs with other individuals. We then try to construct a model of the economic society in its totality by a so-called process of aggregation. I now think that this is actually beginning at the wrong end. Consider this: In the world today there are more than five billion people. If they should try to live without being members of some society, I suppose most of them would be dead in a few weeks. There is of course the old moral question of whether the individuals are there for the sake of society, or vice versa. I think the question is meaningless in the world we live in today. Putting it in a somewhat demagogic way I would say that without society there would be practically no individuals, and without individuals there would of course not be any human society. This observation has nothing whatever to do with any thoughts in the direction of a totalitarian view as opposed to an individualistic view.

Speaking very briefly and along very broad lines, I think that economic theory could make progress by an approach within the following framework.

Starting with some existing society, we could conceive of it as a structure of rules and regulations within which the members of society have to operate. Their response to these rules as individuals obeying them, produce economic results that would characterize the society. As the results materialize they will stimulate the political process in society towards changing the rules of the game. In other words, the results of the individuals in a society responding in a certain way to the original rules of the game have a feedback effect upon these rules themselves. From the point of view of economic theory and of econometrics it is meaningless to consider these rules of the game, formed by the feedback effect I mentioned, as independent variables. Such a view would imply, implicitly, that there is some super dictatorial power that runs economic policy and uses the response of the people in that society as information for how to maintain or change the society.

I feel that these ideas, if they are worth anything must have been in the minds of capacities beyond anything that I could hope to measure up to. So what I have done is to present to you something that I think I have learned from others. I hope that all those who have taught me what little I think I know will forgive me for not digging up extensive references in this brief lecture.