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LEIF JOHANSEN'S CONTRIBUTION TO PUBLIC ECONOMICS

Agnar SANDMO

The Norwegian School of Economics and Business Administration, 5035 Bergen-Sandviken, Norway

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The sudden and unexpected death of Leif Johansen at the early age of 52 is a great loss to economics and to his many personal friends throughout the profession.[1] The range of his interests was extremely wide, and he made important contributions to several fields. His width of interests and perspective was one of his major contributions to public economics — the part of his work on which this appreciation concentrates. Indeed, 'public economics' itself, as a term for what was previously known as public finance, was introduced in his 1965 textbook. Moreover, a large part of what he wrote — perhaps all — was inspired by a concern for problems of public policy.

1. Public economics: Microeconomic aspects

Leif Johansen's first major contribution to public economics was his 1963 article on the Lindahl theory of public expenditure. The original contribution by Lindahl (1919) had long been considered a classic, but its ideas had not been well related to the modern theory of public goods as formulated by Samuelson (1954). Johansen's concise mathematical and diagrammatic formulation made it clear that Lindahl's analysis could be interpreted in two different ways, first as a positive theory of political–economic equilibrum in a model explaining both the level of public goods supply and the distribution of the tax burden, and second as a normative model of the equitable distribution of taxes as payments for public goods.

[1]Born in 1930, Leif Johansen graduated from the University of Oslo (with the degree of cand. oecon.) in 1954 and obtained the doctor's degree (dr. philos.) there in 1961; for his doctoral dissertation see Johansen (1960). Apart from the year 1958–59 which he spent at Cambridge University, he was associated with the University of Oslo for the whole of his academic career. He was appointed professor of economics in 1965, succeeding Ragnar Frisch on the latter's retirement. Among numerous professional tasks he was co-editor of this *Journal* from its beginning in 1972.

On the normative side he was careful to point out that practical applications of the Lindahl system need not be particularly equitable. Consider the case of two individuals A and B who have the same preference ordering over one private and one public good and initially the same disposable income. Assume further that the public good is inferior: a lump sum transfer of income from A to B will then increase the share of taxes to be paid by A. Johansen pointed out that the possible[2] inequity of this outcome was due to the fact that the optimal distribution of income was determined on the basis of marginal rather than total utilities. This point has later been taken up in modern critiques of utilitarianism [see e.g. Sen (1973)].

On the positive side Johansen's interpretation of the Lindahl model is in terms of a bargaining process where individuals and groups trade off disposable income against public goods supply. He notes that although the resulting equilibrium is somewhat analogous to a competitive equilibrium with private goods, during the process of bargaining individuals cannot, strictly speaking, take the tax shares as given; a problem similar to that of explaining disequilibrium behaviour in the competitive model. Conspicuously absent from this part of his analysis is a discussion of agents' incentives for correct revelation of their preferences. He does refer to the analogy of the two-person case with the theory of bilateral monopoly, where the solution is usually considered to be indeterminate in the economic sense and to be ultimately established on the basis of the parties' bargaining strength, etc., but the free rider problem as such is not considered explicitly.

It is hard to believe that this omission was due to the writer's lack of awareness of the problem, and in later publications Johansen (1977, 1981) in fact declared his belief that too much attention had in fact been given to it. His reasons are partly empirical: If the free rider problem were really as important as suggested in the theoretical literature, there ought to be ample empirical evidence for it, whereas in fact most people do not seem to consider it as a serious problem for public decision-making. He suggests several explanations for this. On the one hand individual honesty may be such a strong social norm that people do not in fact misrepresent their preferences even when it would be to their own advantage to do so. But the main reason for his sceptical attitude towards the importance of the free rider problem is that in reality decisions about public goods are not taken by some process of direct democracy, but indirectly by people's elected representatives, who, in a difficult position between their political opponents and their own electors, have no obvious incentives to misrepresent their preferences. The argument is set out in some detail in Johansen (1977, pp.

[2]This example is taken from Johansen (1965, pp. 136–37). The conclusion is cautiously formulated, and the analysis is not spelt out in full detail; it is, for example, not taken into account that a redistribution of income might also change the optimum supply of the public good. See the comments on Johansen's analysis in Samuelson (1969, p. 105).

149–150). This attitude also led Leif Johansen to take a sceptical view of the various mechanisms which in recent years have been proposed with a view to providing individuals with incentives for the correct revelation of preferences for public goods; see his 1981 review of Green and Laffont (1979). However, as demonstrated in his later work on bargaining (see section 3 below), the point was not that he wished to down-play the game theoretic aspects of the interaction between the public and private sectors. He was fully aware of these, but he felt that the free rider problem was not the most important.

Leif Johansen's textbook *Public Economics* (1965) came out some years before the modern revival of the field, which can perhaps be said to have begun around 1970. Like earlier writers Johansen took a broad view of the field to include also problems of stabilization policy. Although the tendency in modern texts and courses has been to leave these problems aside for specialized treatment in macroeconomics, the broad view may come back into fashion once developments in microbased macroeconomics have been integrated with the analysis of taxation and public expenditure.

The book bears the marks of being based on a course of lectures. The reader who looks for a well balanced treatment will find that some important topics are barely sketched while others are treated in considerable depth. Johansen had the needs of his Oslo students primarily in mind, and he selected his topics with a view to the other parts of the students' curriculum. This probably explains the absence of some of the basic theory in the sections on individual behaviour, particularly in regard to labour supply and saving. The book is much more than a standard text, however. It is characterized everywhere by the author's own reflections on the theory that he presents. He is never content with merely presenting the theory, but always adds his own comments on its relevance and usefulness. This accorded well with a view which he often expressed to the effect that economists should spend more time explaining both to others and to themselves exactly what they were doing and why they were doing it.

Of particular interest at the present time is Johansen's treatment in the book of the normative theory of taxation. This was not a subject that was usually paid much attention at the time, and it is therefore noteworthy that he allocates a total of 17 pages to this problem. Naturally, this chapter is not written along the lines that one would choose today. There are actually two models of optimal taxation in the book. In the first there are only two goods, and on the basis of analysis of a one-consumer economy Johansen concludes that the best tax system is either direct income taxation or indirect taxation of the two consumer goods at a uniform rate. On closer examination it turns out that this result is due to a – somewhat implicit – assumption of inelastic factor supply, and a more complicated model with three goods is then considered. Here he establishes the conclusion that a tax levied on a commodity which is inelastic in demand is non-distortionary. He also considers, with reference to Hicks (1948), more general versions of the Ramsey–Pigou elasticity rules, particularly that goods whose demand or supply elasticities are particularly low should be taxed at high rates, noting that 'In my opinion the traditional proofs for the rule in this form are too partial to be entirely satisfactory' (p. 316). Although it is not clear from the context whether he is simply referring to the partial equilibrium consumer surplus argument, or whether he had the more general analyses of Boiteux and Ramsey in mind, the formulation of the problem in welfare economic terms is very much in the spirit of optimum tax theory, as it emerged in the public economics literature during the seventies.

In addition to Leif Johansen's many English language publications, he also wrote and published extensively in Norwegian. These papers are naturally of a different kind than the ones that he prepared for international publication. They are typically oriented towards concrete policy issues and often take the form of critical surveys of the literature. Of particular interest in the present connection is an unpublished report, written for the Planning Division of the Ministry of Finance in 1967, on the social rate of discount. Here he derived the social discount rate from a model of optimal economic growth. This kind of exercise has now appeared many times in the literature, but Johansen's treatment is notable both for its thoroughness with respect to details in the theoretical argument and its good sense for what are the important problems in practice. Thus, he considers in some analytical detail the axiomatic foundations for a time-additive utility function with a constant impatience factor, and he considers a series of models in which there are constraints on the total amount to be invested.

2. Public economics: Macroeconomic aspects

Most of the macroeconomic material covered in *Public Economics* is fairly familiar. 'The models are most of them well known and much used in theoretical economics, and it is left to theoretical economics to discuss these theories thoroughly; this is not considered the task of public economics' (p. 6). Nevertheless, there are several points where the discussion moves beyond the standard textbook treatment. One is in the consistent use of the Tinbergen (1952) targets-instruments approach to elucidate constraints on stabilization policy. Another is the detailed analysis of models in which private investment is constrained either by the availability of credit or by profits. This is of course a type of problem which has been getting increased attention in recent years with the work that has been done on fix-price models.

Many of the topics treated in the book were later taken up for more detailed discussion. The targets-instruments approach was discussed in Johansen (1974a) and extended to the case of uncertainty. He showed there that the Tinbergen conclusions about the relationship between the number of instruments and the number of targets did not in general hold once uncertainty was introduced into the model. A related problem was the optimal use of forecasts in policy decisions, which was discussed in two articles in this journal [see Johansen (1972) and Hersoug and Johansen (1975)]. The starting point for these papers is the observation by Milton Friedman (1953) that attempts to stabilize the economy may actually be destabilizing, given imperfect information on the part of the policy-maker. The problem posed by Johansen is: Given the probability distribution of forecasts, what is an optimal choice of policy instruments when the optimality criterion is a quadratic function of the target variables? He shows that under certain assumptions the optimal policy can be characterized as one of certainty equivalence: The non-controlled variables should enter the optimization model only through their expected values, and the optimal choice of policy instruments can then proceed as under certainty.

The problem of uncertainty is also prominent in Leif Johansen's 1975 paper on automatic stabilization. In a simple Keynesian model a proportional income tax will be stabilizing because the marginal tax rate reduces the multiplier in comparison to its level before tax. Johansen shows that this conclusion is not very robust once uncertainty and dynamics are introduced. On the stochastic side he introduces both the expected value and the variance of national income as measures of stabilization and shows that under very simple assumptions it is possible that the tax rate can lead to changes in the two measures which go in opposite directions. As far as dynamics is concerned, stabilization is now concerned with the whole time path of national income, and the effect depends crucially on the assumed lag structure of the model.

The general tone of these contributions is characteristic of Leif Johansen's approach to economics. On the one hand he is careful to point out the limitations of simple models and stresses the complications that arise as the models are generalized and extended in the direction of increased realism. On the other hand he is never content with concluding that reality is more complicated than implied by simple models. By studying particular cases he attempts to throw more light on the real problems that the model is designed to analyze; the result is that the reader's economic intuition is preserved in going from the simple to the more general.

3. Planning, markets and bargaining

The title of Leif Johansen's two-volume[3] work *Lectures on Macroeconomic Planning* (1977–78) may be somewhat misleading. Many economists obviously think of macroeconomics as having to do with short-run

[3]A third volume was in preparation at the time of his death.

stabilization policy or at least as being concerned with highly aggregative models. In that sense the *Lectures* are hardly specifically concerned with macroeconomics, and a better characterization of the contents would be 'economy-wide planning'. The book is very much a survey of the main problems encountered in economic planning, and also of the literature, where Johansen shows his wide knowledge of both Eastern and Western contributions. Large parts of the book are concerned with problems that are central to the concerns of public economics in a more narrow sense, e.g. his reflections on the relationship between welfare economics and planning,[4] on the role of incentives, and on centralization versus decentralization.

Another notable feature of the book is the frequent use of concepts from game theory to elucidate the problems of economic planning. Johansen's interest in game theory seems to have arisen in the early seventies. It first appeared in published form in an article published in Norwegian (1974b), where he wrote, 'In my opinion, game theory provides the best conceptual framework and the best methods for formulating, understanding and analyzing social problems.' Of his attempts to follow up this statement, perhaps the most interesting is his discussion of 'the bargaining society' in Johansen (1979). In this article he notes that discussions of alternative mechanisms for the allocation of resources typically concentrate on the two polar cases of central planning on the one hand and the market mechanism on the other. He then points out that in modern economies an increasing role is played by various types of bargaining, the nature of which can only be understood in terms of game theoretic concepts. After having listed a number of arguments why the outcomes of the bargaining process should not be Pareto optimal, he summarizes these by saying that 'bargaining has an inherent tendency to eliminate the potential gain which is the object of the bargaining' (1979, p. 520). The conclusion bears some resemblance to recent discussions of the phenomenon of rent-seeking. Johansen does not, in this article, draw any further policy conclusions from this observation, remarking only that 'this does indeed raise a serious problem concerning the way in which our societies and institutions are organized'. However, it seems clear that he did not, as many others have done, see the restoration of the market mechanism as a way out of the problems besetting many modern mixed economies. As a means of overcoming the inefficiencies associated with prisoners' dilemma types of equilibria, he had a much stronger belief in public sector planning.

4. Views on research methodology

One of the most prominent features of Leif Johansen as an economist was his great openness of mind and his tolerance and encouragement of

[4]For an interesting discussion of the relevance of Arrow's impossibility (or possibility) theorem for economic planning, see Johansen (1970).

alternative approaches to the understanding of economic reality.[5] This attitude led him repeatedly to stress the need for economic theory to be concerned with problems which are of practical importance and for theorists to present their results in such a way that they can be understood and digested by a large part of the profession. In his recent review of Kornai (1980), he noted that many of the concepts used in the book were unfamiliar to Western readers, but that the author had given priority to realism and relevance rather than to theoretical elegance. He concluded that 'For economics as a whole, the most fruitful development will be through a process of interaction between different approaches, provided that they are not so highly specialized that they fail to be able to communicate and interact' [Johansen (1982, p. 494)]. Public economics is lucky to have been among the fields which benefited from Leif Johansen's combination of a great originality of mind and a gift for communication and interaction.

[5]As a co-editor of this *Journal* Johansen always took the view that it ought not to become concentrated on particular theoretical specializations, but be open to a wide range of alternative approaches.

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