3 Information and Incentives in Designing Non-wasteful Resource Allocation Systems

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INTRODUCTION

Economists are not always willing to confine themselves to the analysis of what exists, because they regard the economic structure as subject to conscious modification, by legislation as well as other techniques. If one is willing to consider such modifications, one must study their feasibility, and it becomes natural to develop a set of criteria by which to judge their desirability.

On the one hand, one may take the organizational structure as given while considering alternative policies admissible within such a structure. In economics, the problem of choosing income tax rates might be an example of such policy choice within the existing structure. On the other hand, the choice between a free market and one subject to price controls and quantity allocations would exemplify a situation in which the economic structure itself becomes the variable of the problem. It is the latter type of choice that involves 'the designer's point of view', in the sense that in making the choice one is in the position of someone designing the economic organizational structure.

As we proceed to develop suitable categories for analysing organizational structure, it is well to note that such analysis is based on a fundamental, and yet subjective, distinction. The underlying distinction is based on what the designer considers as given (this is, in general, called environment) and what he regards as something he can tinker with (this is what, in general, we call the mechanism). Whether a specific feature of reality

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(e.g. a set of laws) is to be considered in the category of givens or subject to modification by the designer is, of course, subjective. Depending on where the line is drawn, different normative theories of organizational structure will result.

What would qualify as a mechanism and which mechanisms would be considered ‘superior’, or even feasible? One could, of course, get by without formalizing what one means by a resource allocation mechanism. But it is then impossible to determine to what extent the various desiderata implicit in the past debates are compatible with one another, or what the ‘trade-offs’ are among them. Also, in searching for alternatives to known mechanisms for non-classical situations (indivisibilities, increasing returns, externalities, public goods), it helps to have a rigorous formulation of what a resource allocation mechanism is and which of its features are desirable.

It is the function of a resource allocation mechanism to guide the economic agents (producers, consumers, bankers, and others) in decisions that determine the flow of resources. It is natural to demand that the mechanism should guide the agents towards actions that are at least feasible, and even that requirement may be difficult to satisfy. Yet in classical welfare economics we require more than feasibility, namely, such attributes as efficiency or optimality. After decades of meanderings, we are fairly clear on our options — from efficiency in production (as defined by Koopmans), through optimality (introduced by Pareto under the label of maximum ophelimity), to the maximization of a social welfare function (as defined by Bergson, Samuelson, and Arrow). From our point of view, these different attributes have an important feature in common: they are defined independently of the mechanism. An optimality criterion that presupposes a particular mechanism cannot serve as a legitimate criterion for comparison with other mechanisms.

Specifically, whether an allocation is or is not optimal depends on its feasibility and on the individual preferences, with feasibility determined by the individual endowments and the technology. The individual endowments, the technology, and preferences, taken together, are referred to as the environment. More generally, the environment is defined as the set of circumstances that cannot be changed either by the designer of the mechanism or by the agents (participants).

The basic set of performance requirements for processes to be considered are that they be non-wasteful, unbiased, and ‘essentially single-valued’. Whether the requirements are or are not met by a given process depends on the environments in which it is asked to operate. The environments that have the properties stated in the classical welfare economics theorems are, naturally, called ‘classical’. Thus ‘classical environments’ are free