Methodology of Non-Experimental Economic Research (I): On the Foundations of Non-Intendedly Empirical Theories

Even if the ultimate cognitive goal of theoretical physics is to explain physical reality, one may claim that the body of theoretical physics comprises a wide network of interrelated individual physical theories some of which do not have as their immediate goals the explanation of empirical physical structures. As we pointed out in 5.2, the theory of perfect gas contributes, indirectly and in concert with other theories, to our understanding of actual gases even if what this theory immediately explains is the perfect gas model, and such a model is not an empirical structure. In isolation, in a very direct way, the theory of perfect gas cannot be said to be an ‘empirical theory’ in the sense discussed in Part III.

Moreover, if it is true that non-empirical theories do occur in physics, although sparingly, economics typifies the case of a discipline with empirical goals whose theoretical body consists of a network of theories a substantial number of which are not empirical. We have already referred to the case of some normative or prescriptive theories. In this and the next chapter we focus instead on those theories which have all the appearances of explanatory empirical theories but which cannot be characterized as empirical economic theories in the sense of Part III, not because their cores of empirical claims lack empirical models, but rather because they lack such cores, that is, because they were built without explicit intendedly empirical models in mind. We first encountered these theories in the context of the taxonomy developed in Part II.

We shall claim in this and the next chapter that the prominent place non-intendedly empirical theories occupy in economics is a direct
methodological consequence of the discipline's predominantly non-experimental nature. It is the aim of this chapter to contribute to the clarification of this issue. Later on, in Chapter 12, we refer to a sample of such theories to illustrate their nature and cognitive function.

In readings on the methodology of science, especially but not only in those with a principal focus on the problems of the physical sciences — see, for instance, Morgenthaler (1961) — one often finds a description of the scientific method as an approach which consists of a sequence of procedures involving the following steps: (1) close observation of the phenomenon; (2) construction of a theory which explains the observations; (3) prediction of observables from the theory using deduction; (4) performance of experiments to test the validity of the theory.

In principle, there is nothing wrong with such an account. However, a closer look at the actual practice of scientific research in general, and economic research in particular, might well suggest that it is too simplistic in two important respects: first, in relation to its description of the relation theory–data in at least the case of more general theories — see Part III of this study — and, second, for its omission of any reference to the methodological consequences of the cases when step (4) is not available.

Relating step (4) of the above account to one of the characteristics of economics and to two of the emerging methodological consequences, we would like to stress the following three facts. First, as long as the expressions 'experiment' and 'experimental method' are given their classical, restrictive meaning — more on this point in the following pages — economics has been, at least until the present, overwhelmingly non-experimental. Methodological consequences of this feature of economics have been, second, the very existence of econometrics as a non-experimental method of empirical research and, third, the development of a very extensive simulation research methodology. This last point is the main subject of the following discussion.

11.1 ECONOMIC EXPERIMENT, EXPERIMENT SIMULATION AND SIMULATION EXPERIMENT

To have a suitable benchmark at our disposal, we examine first the classical meaning of the expression 'scientific experiment'. Stemming from the natural sciences and adopted by the philosophy of science, it is the one we shall strictly adhere to in this study. Next, we compare this meaning with other uses and meanings given to the expression in recent economic literature. Prominent among these diverging uses and