CHAPTER 14

RECOMMENDATIONS FOR FURTHER WORK

Sections

14.1 Further Work in the Field of the Dissertation

The rigor of the derivation of causal statistics should be increased by one level. The dissertation presents a mathematical derivation of causal statistics. The next step is to employ symbolic logic to carry out this deductive process. The logical derivation should originate from primitives, defined only in the meta-language; the definition of a well-formed formula in the object language; an axiom system; and rules of inference.

As suggested in Section 13.3, a sensitivity analysis could be performed on the universal model of discrete causal macromathematics, equations (11-5). Such an analysis could tell us the degree the results of the application of applied mathematics are in error, due to the dissatisfaction of axioms and assumptions upon which equations (11-5) and applied mathematics are based.

14.2 Further Work in the Field
of Causal Statistics

The first step in the causal statistics project, after completing the dissertation, should be the application of some of the elementary concepts of causal statistics. Non-experimental data should be analyzed using extant formulations of causal statistics; path analysis, econometrics, and the Simon-Blalock approach. The applications should reach the limits of and go slightly beyond these formulations.

After this simple application, causal statistics should be operationalized beginning from the universal model of causal statistics. For example, the following topics are some that should be investigated: the problem of causal identification of the universal model; the utilization of over-identification; the handling of under-identification; the general theory of causal parameter estimation; the use of approximate specification equations; the application of causal statistics in quasi-experimental and imperfectly experimental research; the aggregational analysis of separate empirical research studies; assumption analysis via aggregational analysis; decomposition analysis; the handling and use of associative terms; Bayesian causal statistics; nonparametric causal statistics; the integration of causal statistics with analysis of variance, factor analysis, and spectral analysis;

sensitivity analysis, the development of a causal statistics algorithm.

The next stage should be the computerization of causal statistics. In computerizing causal statistics a computer program should be written to enable empirical researchers to easily obtain causal analysis of their data. The program should be written in such a way that even non-mathematically inclined researchers will be able to employ these techniques and, yet, maintain their insight into and understanding of the results. In fact, contrary to most programmed statistical packages, the application of the Causal Statistics Program should increase the researcher's understanding of (1) his data and results and (2) the assumptions involved.

The causal statistics program will be written so that the empirical researcher will build his own statistical model to fit his specific study, by carrying on a dialogue with the computer. The initial formulation of causal statistics is very general; therefore the computer will request of the researcher certain information and assumptions to specialize the formulation to the one which best fits the particular phenomena under investigation. It may be that, based on the researcher's specifications, the problem of causal inference is unsolvable (e.g., the system of simultaneous equations may be underidentified). In this case the computer will so inform the researcher and tell him

what the problem is and one or more ways by which it can be corrected.

Following operationalization and computerization, causal statistics should again be employed for analysis in an empirical study. This application should be broad in scope, testing the new constructs developed in the operationalization stage and also the Causal Statistics Program.

At this point the logical derivation, discussed in the previous section, should be performed.

During the time that all the above research is being carried out papers should be published keeping others in the field informed.

Finally, when the causal statistics project is completed, an organized, coherent presentation of the field of causal statistics should be written. It is planned that this presentation will take the form of a book, of which the proposed table of contents is given in Table 1-1.