

istics of the system as defined by economic variables. A distinguishing feature of industrial dynamics models is their use of information-feedback loops. Such loops exist when the conditions of a system lead to a decision that results in an action which affects the conditions of the system and hence future decisions. Closely associated with information-feedback loops are various amplifications and delays present in the system. Amplifications occur when the effect of an initial change in one variable is magnified at some other point in the system. Delays occur when the full effect of a particular change is distributed over several time periods. In general, the industrial dynamics approach shows how the structure of a system, policy decisions, and time delays in decisions and actions interact to influence the variables which affect industrial performance.

III. BASIC MODEL

Simulation involves four basic steps: (1) defining the problems or issues to be analyzed, (2) constructing a mathematical model of the system, (3) testing and refining the model, and (4) applying the model [6]. These steps are by no means independent. For example, if the model does not adequately generate the observed behavior of the system, further refinements become necessary. Thus, the development of a simulation model is an iterative process which involves retracing these four basic steps until a satisfactory mathematical representation of the system is found. The basic model presented in this section is the outcome of many such interactions.

Several criteria guided the development of the basic model. In view of the objectives of this study, the model was designed to generate returns to milk producers, processors, and retailers. Primary emphasis was placed on milk production and utilization and the level of prices and costs at production, processing, and retail levels. Data limitations necessitated a high level of aggregation. While the model considers separately the behavior of producers, processors and retailers, it makes no distinction between types of producers, processors and retailers although two types of processors were identified in the analysis of integration. Since the area under investigation is southeast Florida, the parameters of the model were chosen to represent the conditions in that area whenever possible. To simplify the structure of the model, no attempt was made to account for the relatively small movement of milk in and out of southeast Florida. Finally, the initial values and parameters of the model are based on market conditions during the 1966-69 period.