

sense that the model allows for the element of chance in addition to asserting specified relationships among the variables. Given certain specified inputs, probabilities of occurrence for various events can be specified. Utilizing the services of a high-speed electronic computer, the model can then be used to investigate the problem under consideration (i.e., to project pension income and asset distributions for a future aged population).

The details of this model and previous research findings have been reported upon elsewhere.³ Before proceeding further, however, they will be summarized:

1.1 *The life process model*

In order to project pension income and assets of the retired aged, it is necessary to construct a "life process" model which will permit those activities of individuals to be simulated which have an important influence on pensions and assets. These activities can be divided into the following four categories:

- (a) Demographic.
- (b) Work force and earnings.
- (c) Pension status.
- (d) Asset accumulation.

A large sample of persons in the U.S. population, who were, in general, between the ages of 45 and 60 in 1960, is aged 20 years, using the simulation process.⁴ At the end of 20 years, these people are age 65 or over and represent the aged population in 1980. Naturally not everyone in 1960 between 45 and 60 can be expected to live at least 20 years. Hence the first life process activity considered in the simulation model is death. A probability of death for each particular year is specified for individuals based on their sex, race, and age. A random drawing from the associated probability distribution is used to determine whether an individual will die or live that year. Similarly, probabilities are specified for other possible occurrences built into the model—labor force exit and entry, job change, pension coverage, vesting, periods of unemployment, etc.⁵

Each possible "occurrence" specified in the model is treated in a manner similar to the live-die occurrence—each person being considered in turn. By sequential handling of the various occurrences it is possible to make the consideration of any one occurrence dependent on occurrences which had been handled before it. Once 1 year's simulation is completed, the individual, if he had survived, is aged another year and the process immediately repeated. This continues until the year 1980 is reached (i.e., completion of 20 "passes" in the computer). After all individuals have been processed, the resulting sample popu-

³James H. Schulz, "The Future Economic Circumstances of the Aged: A Simulation Projection, 1980," Yale Economic Essays, vol. 7 (spring 1967), pp. 145-212.

⁴The basic data used are from the "one-in-a-thousand sample," a set of tapes produced by the U.S. Bureau of Census which contains separate records (including demographic, work force, and income information) of a 0.1 percent sample of the U.S. population as recorded in the 1960 census. See "One-in-a-thousand Sample Description and Technical Documentation," U.S. Census of Population and Housing: 1960 (Washington, undated). The subsample used for the simulation consisted of 33,680 persons.

⁵For example, the probability that a nonwhite female of age 50 would die in year 1961 was specified as .011. A random number generator was used to generate a number between 1 and 1,000. If the number generated were greater than 11, the individual was considered to live through the year. Conversely, if the random number generated were 11 or less, the individual was considered to have died in that particular year.