

Figure 2-108 Run 2-23: constant family size norm of 3

only of the model but of the real system as well, then two conclusions can be drawn. First, further research should concentrate on the determinants of social family size norms because they may be more important than other variables in determining the accuracy of future models. Second, population policies will be most effective if they can be directed toward this sensitive variable. Even a small shift in the real social costs and benefits of raising children may produce a large (but delayed) response in population growth rates.

Run 2-24 (Figure 2-109) shows the effects of an increase in the delay time of the socially determined family size norm adjustment from 20 to 50 years. An increase of this magnitude has only a small quantitative effect on the model output; this run is very similar to Run 2-16.

In Run 2-25 (Figure 2-110) the effect of income expectation on desired family size is removed from the model by setting the family response to social norm FRSN to 1.0. The resulting birth rate is considerably higher, and it rebounds faster after the year 100 than it did in previous runs. This income expectation loop appears to be moderately important in determining the response of the population system to economic reversals, and it has a significant effect on the quantitative value of the population growth rate. However, the model behavior is not as sensitive to small changes in the FRSN table function as it is to the SFNS function.

In Run 2-26 (Figure 2-111), the compensatory multiplier from perceived life expectancy CMPLX is increased to represent the assumption that parents overcompensate for high child mortality by bearing more children than the actual mortality risk would necessitate. The birth rate is higher throughout the run, and the death rate is also somewhat higher because the faster population growth rate depresses the

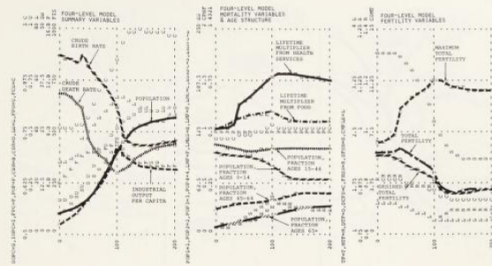


Figure 2-109 Run 2-24: increased social adjustment delay

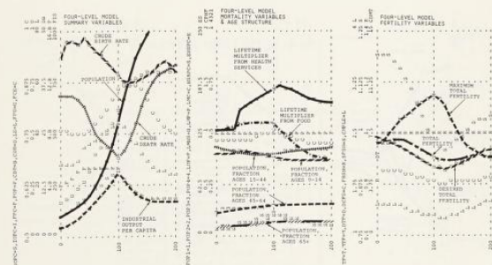


Figure 2-110 Run 2-25: no income expectation effect

increase of food and health services per capita. Again, the behavior mode is not greatly different from that of Run 2-16.

The delay in perception of changing mortality risks LPD is decreased in Run 2-27 (Figure 2-112) from 20 years to 10 years, allowing birth rates to be adjusted more rapidly to compensate for possible child mortality. The shorter delay time produces a slightly smaller population in the year 200; otherwise, it has very little effect on the model output.