

## CHAPTER 4

# A Perspective on Agriculture until 2000: The Reference Scenario

### 4.1. Specification of the Reference Scenario

The reference scenario described in this chapter is basically a “business as usual” scenario. Past policy regimes, as embodied in the price transmission regressions, are continued in this scenario.

Apart from government policies, the other main exogenously prescribed variables in the system are population growth rates and some additional variables (to be discussed below) for the models of the CMEA, China, and country groups.

Population growth rates for all countries are prescribed exogenously based on the UN medium forecast (ILO, 1977). Labor participation rates are also taken from the ILO projections. This means that the time path of total labor force in a country is exogenously prescribed and does not change from scenario to scenario. It should, however, be noted that the allocation of total labor between agriculture and nonagriculture is still endogenous and responds to relative prices and incomes. For the model of India, which distinguishes rural and urban populations, both these are exogenously specified.

The overall growth of the world economy is an important attribute of a scenario. Agriculture is highly dependent for its performance on the development of the overall economy. This dependence is particularly high over the longer term, when not only demand plays its role, but also movements of production factors between agriculture and other sectors as well as technological developments have a profound impact on agricultural production.

Growth rates in most of the national models of the BLS are endogenously determined based on a savings function that depends only on GDP. However, for the simpler models of country groups, which together represent nearly 20% of the economy of the world, the central supply tendencies, for both agriculture

and nonagriculture, are based on the middle scenario (scenario B) specifications of the FAO study *Agriculture: Toward 2000* (FAO, 1981a). The supplies, however, do adjust to the development of world prices; the demands also respond to world prices.

The models of the CMEA and China (which, in any case, do not liberalize agricultural trade in any of the scenarios) reflect the practice of the centrally planned economies of setting human consumption targets. Thus, these targets and some stipulated self-sufficiency ratios are analogous to the prescription of policies in other models. These may be considered as exogenous specifications. However, they are not varied across scenarios.

The reference scenario is a *projection* rather than a *forecast*. A *forecast* is a scenario and its outcome that are considered most likely to occur. A *projection*, on the other hand, is based on a number of assumptions, and in principle one can choose to project on any suitable set of assumptions, not necessarily the most probable from the point of view of their joint occurrence, even if one can specify such a joint probability distribution. Thus, one does not say what is the likelihood of the actual occurrence of the scenario. In this sense, the reference run is a projection into the future up to 2000 of the model system. This is not to suggest that the assumptions on which it is based are implausible. Indeed, the reference run is based on a model:

- (1) Whose individual components were thoroughly validated.
- (2) That was calibrated so as to be consistent with historical data.
- (3) That incorporated policies as understood and translated by the authors into a form easily introduced in the model (i.e., in the form of price transmission regressions, with suitable modifications for anticipated policy changes).
- (4) That was adequately tested to ensure that *a priori* unlikely and bizarre results did not emerge.

For reasons of exposition, growth rates of the economies, price developments, and changes in production structures and trade patterns are discussed in turn. The reader should, however, keep in mind that these developments are the outcome of simultaneous processes and decisions. Only for clarity are these variables discussed one after the other.

## 4.2. Growth Performance over 1980–2000 in the Reference Scenario

The reference scenario, which is designated by R0, provides a comparable view of overall economic growth in the world in relation to recent historical experience. The growth rates of some important aggregates are shown in *Table 4.1*.