## Questions for Review

1. In the Solow growth model, a high saving rate leads to a large steady-state capital stock and a high level of steady-state output. A low saving rate leads to a small steady-state capital stock and a low level of steady-state output. Higher saving leads to faster economic growth only in the short run. An increase in the saving rate raises growth until the economy reaches the new steady state. That is, if the economy maintains a high saving rate, it will also maintain a large capital stock and a high level of output, but it will *not* maintain a high rate of growth forever.

2. It is reasonable to assume that the objective of an economic policymaker is to maximize the economic well-being of the individual members of society. Since economic well-being depends on the amount of consumption, the policymaker should choose the steady state with the highest level of consumption. The Golden Rule level of capital represents the level that maximizes consumption in the steady state.

   Suppose, for example, that there is no population growth or technological change. If the steady-state capital stock increases by one unit, then output increases by the marginal product of capital MPK; depreciation, however, increases by an amount δ, so that the net amount of extra output available for consumption is $MPK - \delta$. The Golden Rule capital stock is the level at which $MPK = \delta$, so that the marginal product of capital equals the depreciation rate.

3. When the economy begins above the Golden Rule level of capital, reaching the Golden Rule level leads to higher consumption at all points in time. Therefore, the policymaker would always want to choose the Golden Rule level, because consumption is increased for all periods of time. On the other hand, when the economy begins below the Golden Rule level of capital, reaching the Golden Rule level means reducing consumption today to increase consumption in the future. In this case, the policymaker's decision is not as clear. If the policymaker cares more about current generations than about future generations, he or she may decide *not* to pursue policies to reach the Golden Rule steady state. If the policymaker cares equally about all generations, then he or she chooses to reach the Golden Rule. Even though the current generation will have to consume less, an infinite number of future generations will benefit from increased consumption by moving to the Golden Rule.

4. The higher the population growth rate is, the lower the steady-state level of capital per worker is, and therefore there is a lower level of steady-state income. For example, Figure 7–1 shows the steady state for two levels of population growth, a low level n_1 and a higher level n_2. The higher population growth n_2 means that the line representing population growth and depreciation is higher, so the steady-state level of capital per worker is lower.

Figure 7–1
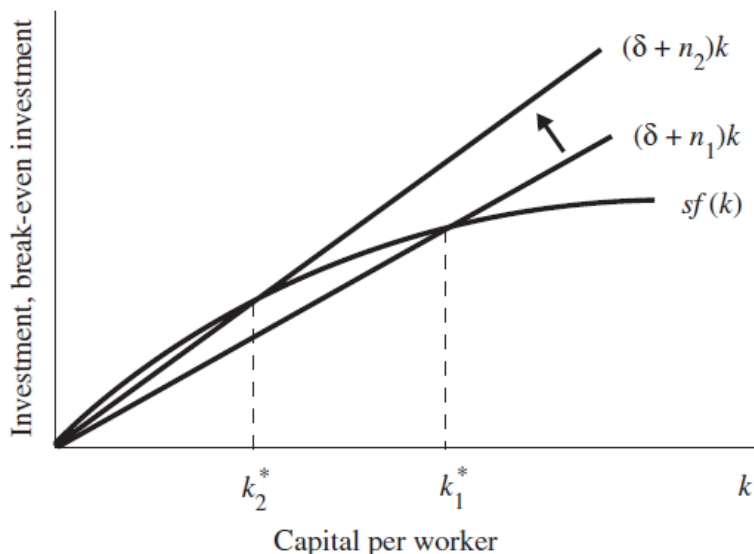
The steady-state growth rate of total income is $n + g$: the higher the population growth rate n is, the higher the growth rate of total income is. Income per worker, however, grows at rate g in steady state and, thus, is not affected by population growth.