SECTION 7.2 DETERMINANTS OF ECONOMIC GROWTH

- **Productivity** is the amount of goods and services a worker can produce per hour. Productivity growth economic growth is a complex process involving many important factors, no one of which completely dominates.
- There are several factors that nearly everyone agrees have contributed to economic growth in some or all countries: 1) Growth in the quantity and quality of labour resources used (human capital); 2) Increase in the use of inputs provided by the land (natural resources); 3) Growth in physical capital inputs (machines, tools, buildings, inventories); 4) Technological advances (new ways of combining given quantities of labour, natural resources, and capital inputs) allowing greater output than previously possible.
- Labour is needed in all forms of productive activity. But an increase in labour input does not necessarily increase output per capita. If the increase in labour input results from an increase in population, per capita growth might not occur, because the increase in output could be offset by the increase in population. However, if a greater proportion of the population works (that is, the labour force participation rate rises) or if workers put in longer hours, output per capita will increase—assuming that the additional work activity adds something to output. Qualitative improvements in workers (learning new skills, for example) can also enhance output. Indeed, it has become popular to view labour as **human capital** that can be augmented or improved by education and on-the-job training.
- Abundant **natural resources** also can enhance output and a limited resource base is an important obstacle to economic growth. Resources are, however, not the whole story. The natural resource base can affect the initial development process, but sustained growth is influenced by other factors.
- There is nearly universal agreement **that physical capital** formation has played a significant role in the economic development of nations.
- **Technological advances** stem from man's ingenuity and creativity in developing new ways of combining the factors of production to enhance the amount of output from a given quantity of resources. It involves invention and innovation. **Innovation** is the adoption of a new product or process. New technology, however, must be introduced into productive use by managers or entrepreneurs who must weigh their estimates of benefits of the new technology against their estimates of costs. Thus, the entrepreneur is an important economic factor in the growth process.

- Technological advances permit us to economize on one or more inputs used in the production process. It can permit savings of labour, as occurs when a new machine is invented that does the work of many workers. It can also be land (natural resource) saving or even capital saving. For example, nuclear fission has permitted us to build power plants that economize on the use of coal, a natural resource. The reduction in transportation time that accompanied the invention of the railroad allowed businesses to reduce the capital they needed in the form of inventories. Because goods could be obtained quickly, businesses could reduce the stock kept on their shelves.