the two behavior patterns discussed in this section: exponential growth in total output, and shifting composition of that output.

Growth in GNP and GNP per Capita

In economic data compiled by the World Bank (IBRD 1970), only one country with a population greater than one million people—Yemen—reported a declining gross national product over the period from 1960 to 1968. Fifteen other countries exhibited a declining GNP per capita because their populations were growing faster than their GNPs. The populations of these sixteen countries totaled about 170 million people, less than 6 percent of the total world population. The other 106 countries for which World Bank data are available were at the same time exhibiting growth in GNP per capita at rates up to 19 percent per year. Although there are numerous problems in deriving these statistics, particularly in evaluating output that is not traded for any currency, the overall pattern in the world today appears to be growth in both per capita and total GNP. Figure 3-1 illustrates the recorded growth in GNP per capita for seven nations that may be considered typical.*

Common Evolution in the Composition of GNP

For purposes of international accounting, national GNP statistics are subdivided into mutually exclusive, collectively exhaustive categories. The most commonly used scheme for subdivision is that based on the International Standard Industrial Classification (ISIC) scheme. The nine major ISIC categories are listed in Figure 3-2, along with the nine major subdivisions of the third ISIC category, manufacturing.

By aggregating national data from the ISIC categories in various ways, economists have found similarities in the way the economies of different countries evolve over time. One study divided GNP into three sectors: primary production, industry, and services (Chenery and Taylor 1968). In their study Chenery and Taylor defined the primary sector to include agriculture, mining, forestry, and fishing products; the industry category to include manufacturing, construction, and other material products; and the service category to include all banking, health care, insurance, and other intangible products. When the fraction of GNP in each of these three sectors was related to the total GNP per capita of the country at several points in time during the growth of the economy, a common pattern of evolution was found for all the countries studied: as the total GNP per capita of a country increases, the fraction of the GNP derived from the primary sector declines, the fraction of product from the service sector rises slowly, and the fraction from the industrial sector rises rapidly.

When a country's GNP per capita is between 50 and 100 dollars per year, 50–60 percent of the total GNP is derived from the production of raw materials and food, 10–15 percent arises from industrial production, and the remaining 25–40 percent is

*The wide disparity among growth rates as exhibited in Figure 3-1 indicates that the absolute gap in GNP per capita between the currently industrialized countries and the currently nonindustrialized countries is widening. It has been estimated that the gap in average incomes between the rich and the poor countries was about 1,900 dollars in 1964 and 2,400 dollars in 1970 (Benoit 1972). While the existence of this widening gap does influence international relations, World3 employs globally aggregated data and does not explicitly address this important characteristic of international development.

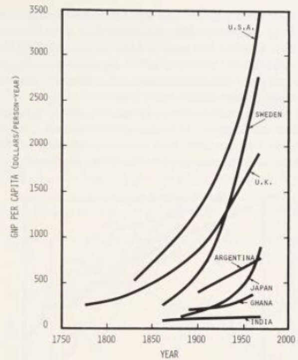

Figure 3-1 Growth in GNP per capita for seven nations
Source: Kuznets 1971.

Code	Classification and Description
1	Agriculture, hunting, forestry, and fishing
2	Mining and quarrying
3	Manufacturing
31	Manufacture of food, beverages, and tobacco
32	Textile, wearing apparel, and leather industries
33	Manufacture of wood and wood products, including furniture
34	Manufacture of paper and paper products, printing, and publishing
35	Manufacture of chemicals and chemical, petroleum, coal, rubber, and plastic products
36	Manufacture of nonmetallic mineral products, except petroleum and coal
37	Basic metal industries
38	Manufacture of fabricated metal products, machinery, and equipment
39	Other manufacturing industries
4	Electricity, gas, and water
5	Construction
6	Wholesale and retail trade, restaurants, and hotels
7	Transport, storage, and communication
8	Financing, insurance, real estate, and business services
9	Community, social, and personal services

Figure 3-2 International Standard Industrial Classification
Source: ISIC 1968.