The economics of the mineral industry has been a topic of considerable interest since before the turn of this century. Starting in the early 1900s economists began to study the rates at which we consume minerals. The general conclusion was we were depleting our natural resources at too fast a rate. During the depression, when people had other priorities, interest in mineral use slowed. However, interest in the subject increased dramatically during the period after WWII. This was a period of time when producing nations attempted to organize so they could limit the supply of a specific resource. Limited success was accomplished by the copper, tin, and aluminum producers but the oil producers were to become a very powerful cartel. OPEC had eventually turned economic power into political power and this brought on a tremendous amount of study in mineral economics.

Since approximately 1965, work in the area of mineral economics has grown geometrically. Economists are currently very concerned with the optimal rates of depletion for our nonreplenishable natural resources. One of the major reasons for the increased concern is that many of the countries that took part in the Industrial Revolution of the late 1800s and early 1900s are now mature. Economic growth has slowed and many of the countries' populations are still increasing. Also we are running out of the high-grade, easy-to-mine mineral deposits. High-grade deposits of the world are now located in the developing countries and minerals accounted for approximately 44% of the total exports for these countries. The U.S. is in somewhat of a dilemma. We want to insure adequate supplies to maintain a rate of growth that satisfies our population growth and high standard of living, but cannot compete economically in our mineral sector of industry. To add to the pressure of their cost advantage, these developing countries are often not concerned with profits. Some, in fact, even take losses. They do this for two reasons. One is that they want to keep their people employed rather than be a welfare state. Two is that they need to generate foreign currencies to pay for the development of their nations. We have the technology and they the raw materials. This pattern of the association of rich, easy-to-mine deposits with overall national economic growth and then the subsequent slowing of growth with the exhaustion of these deposits seems to be the trend.

Another reason for a resurgence of interest in mineral economics is the social attitude that has developed. People have become very aware of the environmental effects of mining. Two common examples are the visual pollution of mine dumps and the scars of open pit mining left on the land surface. Also in many cases a small town is completely dependent economically on a single mine. Often these small towns are destroyed when the mine closes or, during a recession, has an extended layoff. The economist concerns himself with balance between a healthy mine, its depletion rate, the town's people, and the social costs involved.

Over the course of the last two decades government intervention through regulation and taxation has increased dramatically. Regulation has been primarily either environmental or safety in nature and sometimes it has been forced conservation. These problems are delicate and social choices must be made. The effects of taxation, however, is one of the major areas mineral economists are concerned with. Taxes often accrue out of social goals but the firm adjusts economically to maximize the present value of its profits. Mineral taxation is almost as old as the mines.
themselves. One can realize this simply by looking at the works of Adam Smith and David Recardo. This two men often spoke of taxation on the metal mines of gold and silver. Taxation can change plans a mine may have made by shifting production forward or backward, making production larger or smaller, and can induce or prevent high-grading. Taxation on the mineral industry is used primarily for the generation of revenue. The government needs money to provide services to the general public and taxing the output of a mine is very easy to administer. Some states also feel they should tax the mining industry because the benefit derived, in the long run, from the raw materials often does not remain in the state and the state has lost something that is nonreplenishable. The issue of taxation is an important one and one that mineral economists are currently studying.

Finally an issue that incorporates all of the previous ones and others not mentioned is the uniqueness of the mineral industry. Minerals are exhaustible and only a finite supply exists. This lends the mineral industry characteristics all of its own. The most obvious is how fast do we wish to deplete our resources? Production in the present means less production in the future. Environmentalists and often politicians try to slow down production and conserve. They think in terms of future generations and their needs. Others take a stance where exploration, technology, and recycling will dictate the future.

Exploration is a form of growth and some economists treat minerals like a fishery or forest. Others rely on technology to improve the efficiency of a process or to develop substitutes. A famous substitution made in the 1950s was the transition to the use of taconite for hematite. The high-grade "Red Ore" (chiefly hematite) was becoming exhausted. Underneath it existed what seemed to be a virtually limitless supply of taconite at the mine site has become so efficient that the "Red Ore" now is unwanted.

The last possibility mentioned for supplying future generations are adequate supply of minerals is recycling. Americans generate some 2,000 pounds of solid wastes per person, including, for example, 250 tin cans per person per year. The whole economy takes in about a billion tons of minerals, food, and forest products each year. Much of this waste is buried and lost. If extensive recycling existed, a great deal of this lost waste could easily be reused.

Providing for future generations is important but economists usually incorporate that variable into the analysis numerically using social or user costs. Social costs are often only an estimation to account of the negative externalities of present production (pollution, ghost towns, etc.). They are added to the private costs to bring the total mar- ginal cost of production in line with the marginal revenue. Firms are made accountable for all costs of production and consumers are then compensated directly or specific taxes are applied to the firm and then the revenue is used to clean the environment.

The productive capacity of industrial society is utterly dependent on natural resources. The rise of the U.S. to its present position of strength and influence has been as much a function of its rich endowment of minerals and mineral fuels as it has of the ingenuity, energy, and inventiveness with which these resources have been put to use. Without which the manufacturing and service sectors of the economy cannot survive. Natural resources provide the foundation for our entire economic system – and no structure can exist without a sound foundation.