

## IX

The next two chapters concern the special tax treatment of mineral industries and represent my contribution to the debate surrounding such treatment. Probably the main thrust of this contribution is to call attention to the influence of special tax provisions on the amount of resources allocated to the affected activities and to the losses in economic efficiency which this entails. My focus in both articles represented a departure from the standard critique of percentage depletion and related preferential provisions affecting minerals. This critique can be summarized as follows: the big mineral enterprises and particularly the big oil companies get rich at the expense of the U.S. Treasury (or of taxpayers in general). In response to such attacks, the companies in question have regularly cited data comparing their rates of return on invested capital with those prevailing in other industries to show that their rates of yield did not differ much from the average. This rebuttal served at least to blunt the force of the standard critique and to generate legislative changes which, far from narrowing the scope and the force of special tax provisions, tended over time to extend these privileges to an ever-wider set of minerals. Starting from percentage depletion for oil and gas in 1926, coal, metals, and sulphur were added in 1932; fluorspar, rock asphalt, and ball and sagger clay came into the list in 1942; other additions were made in 1944, 1947, and 1951 (when even sand, gravel, slate, and stone came to be included); and finally, in 1954, percentage depletion treatment was extended to "all other minerals," with some stated exceptions.

The position that I have taken is to accept more or less at face value the industry's contention that their rates of return on capital are not out of line. Under these circumstances the effects of the incentives do not work themselves out in exces-

sive profits, but rather in excessive amounts of resources being dedicated to the affected activities. My purpose, then, is to measure the degree of implied subsidy that the special tax provisions provide. My first effort at this (Chapter 11, which appeared in a Congressional tax compendium titled *Federal Tax Policy for Economic Growth and Stability* (Washington, D.C.: Joint Committee on the Economic Report, 1955), was based on relatively crude data, and its estimates, at least for oil and gas, are superseded by those of Chapter 12, which was published in the *Proceedings of the Second Energy Institute* (Washington, D.C.: The American University, 1961). I have for this reason omitted the mathematical appendix to Chapter 11, material which is reworked and improved upon in Chapter 12. The text of Chapter 11 was left unaltered, however, as it brings out the historical and institutional background of the controversy, whereas Chapter 12 does not, and also enters more directly into certain aspects of the debate (e.g., those referring to risks and to national defense considerations) that are not treated in Chapter 12.

## Chapter 11

### The Taxation of Mineral Industries

In this paper I propose to outline the incentives given by our tax laws to mineral industries. It will be shown that these incentives lead to a situation in which it takes \$2 million of capital invested in mineral exploration to produce as much product as \$1 million of capital invested in other industries. Our tax laws also foster the uneconomic expansion of mineral production and give mineral holdings artificially high values.

These effects can be avoided through the gradual elimination of percentage-depletion provisions in favor of cost depletion and through the gradual merging of the rate of tax on capital gains with that on ordinary incomes. In the concluding sections of the paper, arguments for special treatment of mineral industries on grounds of their special riskiness and on grounds of their special contribution to our defense potential are examined.

#### NEUTRAL TAX TREATMENT

The corporation income tax operates chiefly as a tax on the return to invested capital. Such a tax would clearly not be neutral if the return to capital in some uses were free of tax. For example, if the tax rate were 50 percent, and if investment in the untaxed industries were carried to a point where the return was, say, 10 percent, then in the taxed industries investment would be carried only to a point where the return before tax was 20 percent. Investors would in each case be getting a 10-percent return after tax, but the economy as a whole would suffer as a result of the differential treatment of different uses. Projects yielding only 10 percent would be willingly undertaken in the untaxed industries, while projects yielding 19, 18, and 17 percent would be rejected as potential investments in the taxed industries. A lower tax rate, striking all industries equally, would yield the same amount of revenue, yet would not lead to a situation in which high-return uses of capital were foregone and low-return uses undertaken as a result of the tax laws. So long as we intend to retain the corporation income tax as a part of our fiscal structure, we should therefore

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strive to design its provisions in such a way that the return to capital is taxed equally in all uses and industries.

#### NONNEUTRAL TREATMENT OF CAPITAL GAINS

Practically everybody is familiar with the effects of the special provisions for capital-gains taxation, because they are present, also, in the individual income tax. The purchase of growth stocks increasing in value at 6 percent per year is preferable to the purchase of stocks paying dividends at 6 percent per year but which do not increase in value. Particularly for taxpayers in the higher brackets, it is worth while to incur substantial costs in order to find ways of transmuting income into capital gains. Actually, only the most arbitrary distinctions can be made between income and capital gains. If at the beginning of a year two taxpayers have \$20,000 of net assets, and at the end of the year they both have \$23,000 of net assets, and if during the year they both spend \$7000 for consumption, by what rationale can we justify separate tax treatment of the two, even though one might have had \$10,000 in "income," and the other an accrual of \$10,000 in capital gains? In this context it is sometimes argued that capital gains do not come in a steady flow, but for many taxpayers neither does income flow in steadily. Such arguments really favor the extension of the provisions in our tax laws that permit taxpayers to average their incomes over time, not the special treatment of capital gains.

For many industries the possibilities of treating the returns to their capital as capital gains are inconsequential, but for some industries, including mineral exploration, they are extremely important. Successful oil wells and other mineral finds can be sold, and the difference between their sale price and their cost treated as a capital gain. If this procedure were followed in the mineral exploring industry, and if all costs were considered in computing the capital gain, the return to capital in mineral exploration would be taxed at only 25 percent as compared with the 52-percent tax applying to ordinary corporate income. This would give a substantial incentive to mineral exploration. If in the economy as a whole the return to capital after tax were 10 percent, investment in mineral exploration (taxed at 25 percent) would be carried to the point where it yielded around 13 1/3 percent before tax, while in industries unable to take advantage of the special rate on capital gains, investment would be carried only to the point where it yielded around 20 percent before tax. Projects yielding 19, 18, 17 percent would be foregone in most industries, while activities yielding only 13 1/3 percent would be willingly undertaken by mineral explorers.

#### CAPITAL GAINS AND THE EXPENSING OF COSTS

The above example far understates the incentive which our tax laws offer to mineral explorers who sell their finds as capital gains. It assumes that the capital-gains tax of 25 percent applies to the difference between the value of successful finds and all the costs incurred. That is, it assumes that the government takes 25 percent of the gross return to the explorer, and shares in his costs

to the tune of 25 percent. Actually our present laws provide for the government's sharing to the tune of 52 percent in most of the costs of mineral exploration, because most exploration costs are deductible from ordinary income in the computation of income subject to tax.

Consider first the costs of unsuccessful explorations. From the standpoint of economy as a whole, the costs of unsuccessful searches are part of the cost of finding new deposits, but individual searches are treated separately for tax purposes. Hence the costs of unsuccessful searches become losses, to be written off against ordinary income before computing taxes. The riskier is the type of exploration in question, the larger will be the fraction of the total costs of unsuccessful exploration which finds a 52-percent tax offset in this way.

Some of the costs of successful explorations can also be written off as expenses against ordinary income. These writeoff possibilities are the result of special provisions of the tax laws. In the case of petroleum, a substantial fraction of the costs of successful wells are written off as expenses under the heading "Intangible Development Costs." In the case of mineral deposits, all development expenses after the existence of commercial ore is established are deductible. Such expenses do not, however, include the costs of plant and equipment.

The unequal tax treatment of revenues and expenses leads to the paradox that companies can make a substantial amount of money on exploration even if their revenues from exploration (before taxes) are just barely equal to their costs of exploration (before tax offsets). If \$1 million in exploration expenditures carries with it \$500,000 of tax offsets, and leads to finds worth \$1 million in the marketplace, with corresponding capital gains taxes of \$250,000, what would be a marginal investment under neutral tax treatment becomes an extremely profitable one.

Such extremely profitable outlets for capital will not last for long in a free market economy. Capital will flow into profitable uses until their rate of return after taxes is brought into accord with the rate of return to investors of capital in the economy generally.

If the rate of return on capital in the economy is 10 percent, investments will tend to be made in any line of activity up to the point where the returns from those investments after taxes, discounted at 10 percent, are equal to their costs after tax offsets.

Let us now compare two possible ways of producing capital assets worth \$1 million: one by means of mineral exploration and the other by producing machines. Machine producers will be willing to spend up to \$1 million to make machines whose discounted value is \$1 million. But mineral explorers will be willing to spend, on the average, up to \$1.5 million in order to provide discovered reserves worth \$1 million. The explorers would obtain a tax offset of about \$.75 million on their costs, leaving costs net of taxes at \$.75 million. On their revenues, the explorers would pay \$.25 million in capital gains taxes, leaving revenues net of taxes also at \$.75 million.

Thus capital-gains treatment plus the expensing of exploration costs would lead to a situation in which \$1.5 million worth of capital would be willingly spent in order to find \$1 million worth of reserves. Alternatively put, if \$1 million of capital were transferred out of mineral exploration into other uses,

such as manufacturing, the economy would give up \$.67 million of reserves and gain in its place \$1 million worth of manufactured goods, both evaluated at the normal rate of return. Looked at either way, the combination of capital-gains treatment and expensing of exploration costs leads to a shocking waste of the nation's capital resources.

#### DISCOVERY DEPLETION

Although, as we have seen, the available option of capital gains treatment for mineral discoveries gives extremely strong incentives to exploration, we do not in fact observe frequent sales of mineral discoveries as capital gains. The reason for this is that still stronger incentives to exploration are available under the label of "percentage depletion," and when percentage depletion is used the discoverers have a strong incentive to retain and operate their properties.

It is convenient to begin the discussion of percentage depletion with an analysis of its historical forbear, known as discovery depletion. The earliest provisions for the depletion of mineral properties provided for a deduction from income for tax purposes, analogous to depreciation, of a certain fraction of the cost of the property in question. Where the property was in existence in 1913, provision was made (in the 1916 act) for the use of the market value of the property in 1913 in lieu of cost as the basis for depletion allowances. Since, because of the riskiness of mineral exploration, the value of successful finds usually greatly exceeds the costs of the successful finds alone, this provision was welcomed by the owners of properties which had been discovered before 1913.

Properties discovered after 1913 were not treated in this way; their depletion allowances had to be based upon cost. The apparent disparity of treatment of properties discovered before and after 1913 led to the adoption in 1918 of a provision allowing depletion based on the fair market value of the property at the date of discovery or within 30 days thereafter, in lieu of depletion based on cost. This was called discovery depletion.

Discovery depletion can best be viewed as a means of avoiding the capital-gains tax altogether. If the 1918 provisions applied today, and a discoverer spent \$1 million on exploration in order to find deposits worth \$1 million in the market, he would obtain tax offsets of about \$500,000 on his costs, but would have to pay no tax at all on the value of his discoveries, so long as he retained and operated them himself.

If we compare discovery depletion with capital-gains treatment and with neutral tax treatment for the case where \$1 million is spent to find \$1 million in reserves, we find that in all three cases tax offsets of some \$500,000 are obtained on the basis of the costs incurred. But while gross revenues would in effect be taxed at \$500,000 under neutral tax treatment, they would be taxed at \$250,000 under capital-gains treatment, and they would not be taxed at all under discovery depletion.

With discovery depletion, as with any other provisions, investment in exploration would tend to be pressed to the point where the discounted value of discoveries, net of tax, equaled the cost of discoveries, net of tax offsets. \$1 million of capital investment would represent only about \$500,000 of costs

after tax offsets, and investment in mineral exploration would accordingly be pressed to the point where \$1 million of investment resulted in the discovery of only \$500,000 worth of reserves. Yet the investors would be making the ordinary rate of return on their capital, and would have no cause to regret this outcome.

#### PERCENTAGE DEPLETION

Percentage depletion grew out of discovery depletion when it was found difficult to obtain good estimates of the market values of all discovered properties as of the date of discovery. To overcome the administrative burden of estimating the value of each individual property, provision was made for allowing as depletion a certain percentage of the gross value of the output of the property, value being taken at the mine or wellhead. The percentage was different for different minerals, and was chosen so as to accord roughly with the actual experience under discovery depletion. Thus the percentage depletion provisions of the 1926 and 1932 acts attempted to allow roughly the same amounts of depletion as would have been allowed under the earlier discovery of depletion provisions; the main purpose of the acts was to make the computation of depletion easier and less subject to controversy. The percentage of gross income allowed in the case of oil was 27 1/2; in sulfur, 23; in metals, 15; and in coal, 5. Provision was also made that the amount of depletion should in no case exceed 50 percent of the net income from the property.

Since percentage depletion was the direct outgrowth of discovery depletion, and attempted to approximate its effects, it should be no surprise that an analysis of percentage depletion yields much the same results as the above analysis of discovery depletion. Because the computations are rather complicated, I have placed them in an appendix,\* but the results for typical minerals are summarized here:

Whereas under discovery depletion it would be worthwhile for an explorer to spend \$2 million to find \$1 million worth of reserves, under percentage depletion it appears that to find \$1 million worth of reserves an explorer would be willing to spend \$1.95 million for oil, \$2.11 million for sulfur, \$2.13 million for iron, \$1.96 million for copper, \$2.27 million for lead and zinc, \$2.30 million for coal. Estimates are based on data provided by the Treasury for 1946 and 1947, and on approximations of the average length of life of wells and mines in the various minerals. They are accordingly not precise, but can be taken to confirm the conclusion that the effects of percentage depletion on exploration are not substantially different from those of discovery depletion.

#### EFFECT OF OUR TAX INCENTIVES

There can be no doubt that our present tax laws give strong incentives to mineral exploration, but this does not mean that we have a great deal more exploring activity than would take place under neutral tax treatment. In the case of some minerals, such as petroleum, the annual volume of exploring activity is great, and here there is good reason to suppose that our tax incentives have rather substantially affected the amount of exploration. With other

\* [A later article which supplants the original appendix appears as the next chapter in this volume.]

minerals, such as coal, reserves already known are ample to fill the needs of our economy for hundreds of years, and accordingly there is very little exploration for new deposits. Obviously the tax incentives under discussion here cannot have had a very substantial effect on the amount of exploration for coal. What is true of coal is probably equally true of sand and gravel and a number of the minor minerals that have recently (1951) been granted percentage depletion. Minerals like copper, lead, and zinc probably occupy an intermediate position, exploration for them having responded less than in the case of petroleum but more than in the case of coal as a result of our tax incentives.

Our analysis has indicated that to the extent that exploration is increased in response to current tax provisions, it involves a very substantial waste of resources, with capital devoted to exploration producing only about one-half as much value of product as the same capital would if devoted to ordinary industrial investment. But what happens if little or no additional exploration takes place in response to the special tax provisions? Here the predominant effect is either to increase the value of mineral holdings or to increase the rate of extraction. To the extent that the value of mineral holdings is increased, their owners have received, as a result of the special tax provisions, a "gift" from the Treasury. To the extent that the rate of extraction is increased beyond the point which would be dictated by neutral tax treatment, a waste of resources is involved which is closely analogous to that discussed above in the case of exploration.

These two effects are alternatives. If on the one hand, as may be true in the case of coal, our national output can be greatly expanded without any increase in unit costs, then tax concessions like percentage depletion operate to increase production and drive down prices. Mine owners end up with little more profit than they had before, and consumers get coal more cheaply, say for \$9 per ton instead of \$10. What looks here like a benefit to consumers really is not, however, for the economy is paying, in terms of the resources used to extract the coal, \$10 per ton while consumers use coal to the point where it is only worth \$9 a ton to them. But consumers in their role as taxpayers will be paying extra taxes to cover the concession of \$1 per ton.

If on the other hand national output cannot readily be expanded, as may be the case with lead, prices will not fall significantly as a result of the tax concession, and the concession will accordingly lead to increased profits and hence to increases in the value of mineral holdings.

Thus if the waste of resources involved in increasing production beyond the level it would attain under neutral taxation is great, then the "gift" to mine owners in the form of enhanced capital values will be small. But if the increase of production beyond its level under neutral taxation is small, the "gift" to mine owners will be large, and indeed will be the predominant result of the tax concession.

#### POLICY RECOMMENDATIONS

Our present tax laws thus have three possible effects on the minerals industries: To increase the profits and capital values of the owners of mineral deposits; to increase the production of minerals to a point where, but for tax

concessions, cost would exceed the value produced; and to increase exploration for minerals to the point where, but for tax concessions, the value of discoveries would be only about half the cost of exploration. The relative importance of these three effects varies from mineral to mineral, but regardless of which effect is dominant, our present policy is unwise. It cannot have been the intent of Congress to make owners of mineral deposits richer at the expense of the rest of the community, and it is clearly unwise to foster the use of resources in either mineral production or mineral exploration when those resources would be much more productive elsewhere in our economy.

I accordingly strongly recommend and urge that every effort be made to place the tax treatment of mineral industries on a par with that of other industries. This should be accomplished:

1. By the gradual reduction and eventual elimination of percentage depletion provisions, leaving strict cost depletion as the sole basis for recovery of capital values in mineral extraction.
2. By the gradual reduction and eventual elimination of the differences that now exist between the tax treatment accorded to capital gains and that given to ordinary income. I envisage here the gradual raising of the maximum rate of tax on capital gains from its present level of 25 percent to the rate applying to ordinary corporate income.

Although a considerable improvement over our present position could be made simply by eliminating the percentage depletion options which are now available, there would still remain the strong incentives to mineral exploration that stem from the special treatment of capital gains, and which were outlined in the early sections of this paper. Thus a rather significant overhaul of our tax structure is necessary before the taxation of mineral industries can be thoroughly rationalized.

#### *RISK AND SMALL ENTERPRISE*

It will be recalled that most of the incentive to mineral exploration outlined above came from the fact that the costs of exploration were deductible against ordinary income, while the fruits of exploration received tax treatment which was more favorable than that accorded to ordinary income. A small firm with little or no income against which to offset its exploration costs is thus placed at a severe disadvantage as compared with a large firm having substantial income, either from mineral extraction or from some other source. This disadvantage would still remain if the policy recommendations outlined above were put into effect. However, it could be substantially mitigated by allowing firms to carry forward the losses made on unsuccessful explorations against the income to be obtained from future successes. Then small firms would be at a disadvantage only if their explorations over a long period of time did not yield discoveries equal in value to the costs incurred. A certain share of the costs of such firms would be without tax offsets, while all the costs of the corresponding large firms would be offset against income subject to tax.

#### *SPECIAL INCENTIVES TO RISK-TAKING*

It is sometimes argued that our present tax provisions for mineral industries are desirable because of the special risks that such industries are alleged to face. Especially risky enterprises, like specially risky securities, are said to require a rate of return somewhat higher than that prevailing on investments of moderate risk. If the required rate of return were 15 percent after taxes in petroleum exploration, but only 10 percent after taxes in most other industries, then the search for oil would stop at a point where the capital invested yielded 15 percent. By transferring capital from other uses, where it was earning 10 percent, to oil exploration, the economy would gain until the point was reached where capital yielded only 10 percent in the oil business.

The difficulty here is that a yield of 10 percent after taxes in the oil industry cannot be achieved if the required rate of return is 15 percent. More oil can indeed be obtained by tax concessions, which operate as a gift from the rest of the economy to the oil explorers of, say, 5 percent per annum on the capital invested in oil exploration. But such a gift is merely a hidden price paid for the extra oil. If the rest of the economy wants more oil, it should be willing to pay for it by way of a higher market price.

In our present world, in which most minerals are available in the world market, it would indeed be unnecessary for extra oil to be obtained through the payment of price premia to domestic explorers as incentives to risk taking. It would be much cheaper for the rest of the economy simply to buy whatever extra oil it desired in the world market. If in the process market prices would be bid up, more domestic oil would also be forthcoming, but oil users would have the knowledge that they were paying no greater price than was necessary to provide them with the amount of oil they wanted. Hence there is no justification for the use of tax concessions as a device for overcoming the reluctance of domestic mineral enterprises to incur risk, at least not in a peacetime economy.

In point of fact, there are good reasons to believe that the riskiness of mineral exploration has been exaggerated. In petroleum, which is often cited as an extremely risky industry for exploration, there have developed a wide range of contractual devices by which the risks of exploration can be shared. Exploring companies can sell off 90 percent or more of the interest in the wells which they themselves drill, and with the proceeds buy fractional interests in wells drilled by others. In the light of these possibilities, the fact that nine out of ten exploratory wells are dry seems less of a deterrent to exploration than it might at first glance appear. Additional evidence is provided by the fact that bankruptcies are not widespread among even moderate-sized petroleum companies. And the rate of return on capital, for the petroleum industry as a whole, appears to accord closely with that applying in other segments of the American economy. So even if the risks are substantial, it appears that investors demand no special premium of significant size for taking "long shot" rather than "sure shot" gambles. And in a way it would be surprising if they did require a special premium, for worldwide experience with gambling and lotteries suggests that



many people are willing to risk their capital at long odds even when the aggregate winnings fall far short of the aggregate of wagers.

Thus even if mineral exploration is especially risky, in the sense that the risks cannot be pooled to leave the individual investor in a position of only moderate risk, and even if investors demand special premia for special risks, there is no justification for special tax concessions to mineral enterprises on this account. But our scattered evidence suggests that even if individual explorations are risky there is no reason to presume on that account that special risk premia are required; indeed it suggests that the possibilities of risk pooling are sufficiently great to cast doubt on the assumption that exploration need be especially risky to the investor or investing company.

#### *SPECIAL INCENTIVES FOR NATIONAL DEFENSE*

Our national defense is such a primary objective that citizens are willing to incur great costs on its account. But especially with a defense budget as large as ours is today, we should be strongly interested in seeing to it that we are getting the maximum amount of defense potential for our money, or to put it another way, that we are not paying more than is necessary for the amount of defense potential that we are getting. True economy, in this area as in others, requires scrutinizing each individual action to make sure that we are getting the most for our money.

It is my conviction that our present tax treatment of mineral industries has no justification in a peacetime economy. Hence it can be justified, if at all, only in terms of its contribution to national defense. But it would indeed be surprising if percentage depletion were the best way to provide for our defense needs of coal and sand and gravel as well as oil and copper and lead. Some minerals are domestically available in great abundance and can be extracted easily. These should need no special treatment on defense grounds. Other minerals are abundantly available, but their rate of extraction can be expanded only slowly. Here the maintenance of stockpiles or of standby capacity might be warranted. Still other minerals are increasingly hard to find in the United States, and we are relying increasingly on foreign sources of supply for them. These minerals, of which petroleum, copper, lead, and zinc are examples, pose the hardest problems for national defense. Should we create incentives to extract our waning supplies more rapidly, so as to have a high output available for an immediate emergency, but at the risk of failing supplies for a more distant conflict? Should we restrict current production and maintain stockpiles of known reserves in the ground, and incur the costs of recruiting and training a labor force to mine them in the event an emergency should strike? Should we rely exclusively on stockpiles above ground, incurring what in some cases might be substantial storage costs? Or should we attempt, in our defense preparations, to assure the comparatively safe transportation of the minerals from nearby foreign sources, such as Canada, Mexico, and Venezuela?

It is not within my competence to answer the above questions. They are questions of great importance to our nation, yet they have not been given adequate study. Such study is necessary before the best minerals policy for

national defense will be found. One may reasonably wonder, however, whether a tax policy such as we have at present would have a place in any rational scheme of providing for our defense needs. Certainly it is not in our defense interests to enhance the capital values of those who happen to own mineral deposits. It is dubious at best whether we should provide incentives to increase the production and use of our waning supplies of scarce minerals. And it is almost certainly wrong for us to foster the use of \$200 worth of our resources to find \$100 worth of mineral deposits, which then will more than likely be extracted and consumed before a national emergency strikes. Yet these are the effects of our present tax laws. I accordingly do not believe that the present provisions can be supported even on national-defense grounds.