



Fall 1978

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Recommended Citation

Reed Moyer, *The Role of Coal: Problems and Policies*, 18 Nat. Resources J. 761 (1978).
Available at: <https://digitalrepository.unm.edu/nrj/vol18/iss4/6>

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THE ROLE OF COAL: PROBLEMS AND POLICIES

REED MOYER*

The coal industry is caught up in powerful undercurrents of change that are profoundly affecting its course. Some of the developments are new; others represent a continuation or acceleration of previously existing trends. These developments include the following:

- (1) a movement in the locus of coal production from the eastern coal districts to the west;
- (2) a breakdown in the authority of the United Mine Workers and a corresponding increased dependence on coal produced by labor not affiliated with U.M.W.A.;
- (3) the entry of large firms (especially petroleum) into an industry composed mostly of small firms; and
- (4) the increased influence of court cases, legislation and government regulations on the welfare of the industry.

Although each of these factors potentially affects coal's future, the last element, the intrusive hand of government, overwhelms the others in importance. The unpredictability of future governmental moves makes forecasting in this area hazardous. Much of this article deals with the effect on coal's future of the major developments listed above.

President Carter's National Energy Plan (NEP), assigns an important and growing role to coal in the country's energy picture.¹ But coal has occupied a favored position in the nation's economy several times in the past. Coal's golden era occurred in the first two decades of the 20th century when output rose steadily, and coal accounted for 67% of the United States' energy consumption. The next several decades witnessed a steady decline in coal's fortunes. Not until 1947 was the 1920 level of dollar sales surpassed. The World War II coal boom carried over for several post-war years, but the industry soon lapsed into an era of relative decline. Accounting for 47.9 percent of total U.S. energy consumption in 1947, coal's share of consumption

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1. EXECUTIVE OFFICE OF THE PRESIDENT, THE NATIONAL ENERGY PLAN (1977).

declined to 17.3 percent by 1972.² The oil embargo, sharply higher oil prices, and concern for future energy supplies have contributed to renewed interest in coal as a major energy supplier. The question remains, however, whether coal will achieve the position of prominence that the National Energy Plan envisions.

Coal's future is marked by bright prospects and nagging problems. The favorable prospects are discussed first.

PROSPECTS

Among coal's greatest assets is the Administration's commitment to encourage coal consumption through a combination of legislative proposals that directly or indirectly promote the use of coal. Note that the emphasis is on consumption and not on production. Implicit in the Carter energy program is the belief that increased latent demand will call forth corresponding supplies. But critics of Administration policies argue that consumption will fall short of targeted levels unless the government modifies other policies that hamper coal production and consumption.

What are the elements of the Administration's program to encourage coal use? What the President wants and what Congress delivers may be widely divergent. But the NEP addresses the issue on several fronts. It seeks to encourage coal consumption by taxing oil and natural gas use by utilities and industrial firms, and by banning these alternate fuels in new electric utility plants and new large industrial installations. Allowing investment tax credits for the installation of new coal equipment is another part of the program aimed at increasing coal's relative share of total energy production.

A pro-coal policy by the Administration may enhance coal's position, but underlying forces favor coal in the near term even in the absence of legislative stimulants. The Administration's program calls for the consumption of 1.2 billion tons of coal by 1985, an increase of 565 million tons over the 1975 level. Without the plan coal consumption ought to rise to 1 billion tons in the same year. Coal benefits from two powerful forces: its strong reserve position and its relative cheapness, despite sharp price increases in recent years.

Determining the quantity of available U.S. coal reserves is at the same time, an easy and difficult task.³ This phenomenon is true of other energy sources as well. Uncertainty exists in the estimation of

2. W. DUPREE & J. WEST, UNITED STATES ENERGY THROUGH THE YEAR 2000 (1972).

3. I have used the term "reserves" loosely. Technically there is a distinction between "resources" that includes coal *in situ* and "reserves" that takes account of recovery losses.

oil and gas reserves because we have thus far failed to locate large quantities of potential reserves. This condition does not obtain with coal. Existing coal reserves are fairly well known even though they are mapped imperfectly. The uncertainty arises over determining the extent of economically recoverable reserves given the economic, technological, and environmental forces that limit the availability of known reserves.

Table 1 illustrates only a few of the possible measures of potential coal reserves. The largest total includes all identified and inferred reserves and makes no allowance for coal recovery losses. It also includes reserves at depths and with seam thicknesses that render them unmineable under current economic conditions. The 432 million ton reserve base figure eliminates inaccessible coal and reserves that cannot be mined under existing economic conditions. But it neglects recovery losses from the mining process which may run from 20 to 70 percent depending on mining conditions and the mining technology utilized. The 132 to 150 billion ton figure makes this adjustment. This figure is also deficient since it considers neither the varying heat content of coals, nor their sulphur content which may

TABLE 1
DIFFERENT MEASURES OF U.S. BITUMINOUS COAL
RESERVE ESTIMATES

	<i>billion tons</i>
1. U.S.G.S. estimate of total coal resources, identified and hypothetical	3968
2. U.S.G.S. identified resources, 3000' depth maximum	1560
3. U.S. Bureau of Mines estimate of demonstrated coal reserve base	432
4. Recoverable coal reserves under existing economic conditions	132-150
5. Recoverable coal reserves with sulphur content <0.7 lbs/mm BTU	42

Sources: 1 and 2: Paul Averitt, *Coal Resources of the United States, January 1, 1974*, U.S. Geological Survey Bulletin 1412 (Washington: U.S. Government Printing Office, 1975), p. 5.

3: U.S. Bureau of Mines, *Reserve Base of U.S. Coal by Sulphur Content*, 2 vols. (Washington, U.S. Government Printing Office, 1975).

4: William C. Helt, "Coal Resources Available for Power Generation" in *Illinois Coal*, Proceedings of the Fourth Annual Illinois Energy Conference, September 16-17, 1976 p. 31, and National Petroleum Council, *U.S. Energy Outlook Coal Availability* (Washington, 1973), p. 22.

5: Helt, p. 35.

affect their ability to comply with EPA air quality control standards. The 42 billion ton figure represents a rough approximation of the reserve tonnage meeting minimum sulphur content standards.⁴ Since the standard used to arrive at this figure is expressed as sulphur content per million Btu's, the reserve totals are far less than those indicated by data published by the Bureau of Mines on reserves by sulphur content, which are unadjusted for the coal's heat content. Normalizing the 42 billion ton figure to adjust for the subaverage Btu content of the majority of the reserves comprising the total would reduce this reserve calculation even more.

Table 1 expresses some of the ways coal reserves data may be calculated. The highest and lowest figures represent the range of probable reserve estimates. It is distressing to note that the maximum figure is 100 times larger than the lowest. How much coal will be eventually mined depends on so many variables that an accurate forecast is impractical. For example, a relaxation of the Clean Air Act's SO₂ standards or improvement in flue gas desulphurization technology would bring enormous quantities of higher sulphur coal into compliance with the Act. Similarly, increased prices for competitive fuels and improved coal mining technology would make certain coal reserves economical that were previously economically unattractive. Also, account must be taken of the likelihood of future conversion of coal to synthetic fuels through utilizing above ground plants or in situ methods that would make use of coals that are marginal by today's standards.

Coal's advocates point to the several hundred years supply of coal; the doomsayers emphasize the minimum reserve figures. The "correct" figure lies somewhere between the minimum and maximum, but probably enough above the minimum to let coal fill the role expected of it in the foreseeable future.

Table 2 reveals coal's strategic position in the total energy reserve picture. Given a national commitment to reduce relative dependence on foreign oil, and given eventual dwindling supplies both of domestic and imported oil and gas, United States' energy policy must necessarily favor coal, at least for the remainder of the 20th century. Table 2 is based upon known and fairly conservative estimates of energy reserves. Allowing for new discoveries and exploitation of marginal reserves would raise the totals considerably, but this dis-

4. The EPA specific-source standard calls for a maximum of 0.6 pounds of sulphur emissions per million Btus for new electric utility installations. This is equivalent to 0.5 percent sulphur content by weight for coal with a heat content of 16 million Btus per ton. Large quantities of so-called low sulphur western coal fail to meet that standard.

TABLE 2
U.S. RECOVERABLE ENERGY RESERVES

<i>Energy Source</i>	<i>Quadrillion BTU</i>	<i>%</i>
Coal	4557	79.5
Petroleum	197	3.4
Natural Gas	258	4.5
Natural Gas Liquids	26	0.5
Oil in Bituminous Rocks	7	0.1
Shale Oil	450	7.9
Uranium Oxide	234	4.1
Total	5729	100.0

Source: National Coal Association, *Coal Facts, 1974-75*, p. 7.

tribution among the sources listed would remain fairly constant. Coal still stands out as the dominant energy source for as long as it is feasible to project in the planning horizon.

Coal's cost advantage over competitive fuels is borne out in the Table 3 data. The cost figures cover the electric utility market which accounts for 72 percent of coal consumption, but excludes nuclear power costs. Comparing coal and uranium costs in this market is difficult for several reasons, not the least of which is the existence of regional cost differences. Overall, coal appears to have an edge over other energy sources as evidenced by a projection for planned additions to electric power plant capacity for the period 1976-1980 broken down as follows: 44 percent for coal, 29.7 percent for nuclear, and 17.7 percent for oil or gas-fired plants or combustion turbines.⁵ The final package of energy legislation may well stimulate an even greater use of coal-fired plants in the 1980s.

Table 3 reveals that in some regions coal use lags despite its lower delivered price per million Btus. Added costs and the inconvenience involved in burning coal coupled with non-fuel cost differentials partly counterbalance coal's delivered cost advantage. But coal's improved competitive position vis à vis oil and gas has led to higher market shares for coal in the electric utility market, and has stemmed the long term downward trend in coal's share of the total energy market. The combination of favorable relative prices, abundant reserves and a national commitment to reduce our dependence on foreign oil bodes well for coal. On the other hand, a combination of new and continuing problems block the road to unfettered progress.

5. Coal News, February 27, 1976.

TABLE 3
 NATIONAL PRIMARY ENERGY PURCHASE DATA
 12 MONTHS ENDING APRIL, 1977
 FOR STEAM ELECTRIC PLANTS

<i>Geographic Region</i>	<i>% of Total BTU</i>			<i>Avg. Price, Cents/MM BTU</i>		
	<i>Coal</i>	<i>Oil</i>	<i>Gas</i>	<i>Coal</i>	<i>Oil</i>	<i>Gas</i>
New England	5.8	93.5	0.6	126.4	196.8	157.1
Middle Atlantic	58.8	40.8	0.4	102.5	207.0	125.8
East North Central	93.8	4.8	1.4	90.5	238.5	151.3
West North Central	82.6	4.6	12.8	68.8	201.8	81.4
South Atlantic	66.6	29.5	4.0	104.5	195.7	88.2
East South Central	92.2	5.7	2.1	89.2	180.9	143.9
West South Central	8.3	7.9	83.9	48.4	190.7	104.4
Mountain	81.2	4.3	14.4	38.0	225.8	107.1
Pacific	5.6	62.8	31.6	75.4	231.9	166.2
United States Total	61.2	20.5	18.3	86.9	207.7	111.1

Source: Federal Power Commission, *FPC News* (Week Ended August 20, 1977).

PROBLEMS

What are some of these problems? Several have plagued coal since the inception of the industry. Coal is a dirty commodity. It is dirty to handle; its combustion adds to air pollution; mining contributes to water pollution and especially in the case of strip mining, to the despoliation of the land.

Air Quality

Increased social concern for air quality and passage of the Clean Air Act have had profound effects on the coal industry in addition to introducing an element of uncertainty that adds to the industry's woes. Coal users face a congeries of federal and state air quality standards and variances that influence both investment decisions and fuel choices. The primary restriction affecting coal is regulation of sulphur oxide emissions; however, implementation of the federal and state standards have affected consumers unequally. Hence, the impact on coal producers is also uneven.

A result of this development has been increased dependence on the low sulphur western coals at the expense of eastern and midwestern producers. Thus coal output in the west has increased at a much faster rate than in the east. From 1970 through the first six months of 1977 the share of total coal production from mines west of the Mississippi River increased from 7.3 percent to 23.5 percent. Output from western mines during that period rose almost fourfold, while

output from eastern mines declined slightly. The next decade should witness an acceleration of that trend. A Federal Energy Administration forecast calls for western coal output to increase from 107 to 378 million tons between 1975 and 1985 and to account for 36.3 percent of total coal output in the latter year.⁶ The coal consumption figures parallel the coal production trends. Coal consumption in states west of the Mississippi totaled 102.8 million tons in 1975. It is projected to increase to 289.2 million tons in 1985, a 181 percent increase as opposed to a 79 percent increase for the rest of the country.⁷ This development is a function both of the increased demand for low sulphur coal (at the expense of higher sulphur mid-western and eastern coals) and of the switch to coal use and away from oil and gas.

There are, however, elements in the western coal situation that threaten the industry's potential. Amendments to the Clean Air Act of 1977 mandate that new manufacturing plants and utilities use the "best available control technology" to reduce SO_x emissions. The failure to distinguish between the use of high or low sulphur coals neutralizes the natural advantage of western coal. Pressure on several fronts is growing in the mining states themselves to thwart the expansion of western coal output. Environmentalists express concern over the ecological threat posed by the disturbance of the fragile surface by strip mining operations in areas with limited rainfall. They fear that inadequate moisture will prevent the revegetation of disturbed strip land to the detriment of the mined-out areas for generations to come. Concern has also been raised about the social and economic problems created by the explosive growth of the once placid mining communities that have been swept up in the expansion of western coal output.

The net effect of enforcement of environmental legislation on both total coal production and its location is conjectural. The General Accounting Office's evaluation of the NEP concluded "that the expanded use of coal, even to the administration's base case level of 1 billion tons, will not take place if all current and proposed air quality policies are strictly enforced."⁸ But the fact remains that no

6. FEDERAL ENERGY ADMINISTRATION, 1976 NATIONAL ENERGY OUTLOOK (1976).

7. U.S. BUREAU OF MINES, BITUMINOUS COAL AND LIGNITE DISTRIBUTION, CALENDAR YEAR 1975, U.S. BUREAU OF MINES MINERAL INDUSTRY SURVEY, April 12, 1976 and G. Larwood and D. Benson, COAL TRANSPORTATION PRACTICES AND EQUIPMENT REQUIREMENTS TO 1985, U.S. Bureau of Mines Information Circular 8706.

8. General Accounting Office, AN EVALUATION OF THE NATIONAL ENERGY PLAN 520 (1977).

one can be certain (1) whether and to what extent the policies will be enforced, (2) whether variances and delays will impede their implementation, and (3) what effect on the air quality situation developments both in scrubber technology and the commercialization of coal gasification will have. Much of the coal research effort today is directed at the discovery of ways to reduce SOx emissions either by "scrubbing" the deleterious gases from the smokestack before they are emitted into the atmosphere, or by removing the harmful sulphur before combustion through gasification or intensive coal cleaning.

The results of this uncertainty are fuzzy coal forecasts and a reluctance by coal users and coal producers to press full speed ahead on the development of new coal capacity. An eastern coal operator controlling high sulphur reserves will think twice about investing in a mine whose output may be banned by air quality regulations. The same uncertainty exists for the coal user although he has a possible escape value—a switch to low sulphur western coal. This move often results in increased fuel costs which eventually translate into higher electricity rates. Critics of this condition call for a reform which will spur utilities to seek lower fuel costs. The present approach diminishes the incentive to perfect scrubber technology. Thus, failure to develop effective and economical ways to deal with the SOx problem enhances the prospects for western coal development at the expense of eastern coal development. Conversely, breakthroughs in this area could reverse the fortunes of these two major coal producing regions. If there is not enough uncertainty surrounding the air quality issue, an added concern is the potential for carbon dioxide buildup from coal combustion, which some feel may threaten to significantly alter the ecosystem.

LEASING RESTRICTIONS

Another restriction on the free development of coal reserves is the government's policy concerning the leasing of western coal lands. The federal and state governments are the principal owners of coal deposits in the western states. Fifty four and a half million tons of coal were produced from federal leases in 1976 but this represented a tiny fraction of the 16.2 billion tons of coal controlled by private interests under federal leases.⁹ Since most of these leases were entered into when the prospect for western coal development was dim, they create relatively little revenue for the government and in-

9. United States Geological Survey, *FEDERAL AND INDIAN LANDS COAL, PHOSPHATE, POTASH AND OTHER MINERAL PRODUCTION, ROYALTY INCOME AND RELATED STATISTICS* (1977).

adequate incentive to develop the reserves. Government policy-makers, realizing the shortcomings of the leasing policies, placed a moratorium on leasing to allow development of a new program to encourage production, enhance competition and increase royalty revenue. Meanwhile, a lawsuit instituted by the Natural Resources Defense Council, *NRDC v. Hughes*, prevents implementation of the revised leasing regulations.¹⁰ The need for Environmental Impact Statements hampered development of western coal under the old program and will continue to impinge upon it under the revised policy.

DECLINING PRODUCTIVITY

One of the most pervasive and important influences on the coal industry has been the consistent reduction in productivity both in strip and underground mining, since 1969. The decline can be attributed to several factors including provisions in the 1974 U.M.W.A. labor contract calling for added personnel for safety purposes, increased absenteeism and wildcat strikes, and an alleged weakening of the work ethic among miners. The latter factor lacks substantiation, although it is an article of faith among some coal operators. The absenteeism and wildcat strike charge also cannot stand up to scrutiny since a productivity measure is a ratio of an input (e.g., man hours worked) to output (coal tonnage), and absenteeism reducing coal output affects the ratio's numerator and denominator equally. Absenteeism undoubtedly reduces *production*, but its effect on productivity is probably minimal. The labor contract changes undoubtedly reduced output per man day, although here too, the effect is undetermined.

The biggest factor accounting for coal's productivity slide has been passage and implementation of the Federal Coal Mine Health and Safety Act of 1969. The industry witnessed a decline in productivity of 24 percent from 1969 to 1975 affecting both strip and underground mines.¹¹ The national average data suggest that underground mines have been affected more than strip. In the 1969-75 period output per man day declined 38 percent for deep mines and 22 percent for strip, but the totals mark the underlying trend.¹² Except for Pennsylvania, where strip mining productivity increased slightly,

10. 437 F. Supp. 981 (D.D.C. 1977).

11. U.S. BUREAU OF MINES, MINERALS YEARBOOK (various issues).

12. Two factors account for the apparent discrepancy caused by a decline of 38% for deep mine productivity, 22% for strip and 24% for the two combined: the relative shift in output toward strip during the period and the use of man days and not tonnage as the weighting factor in deriving a national average.

the major eastern strip mining states suffered reductions in productivity of from 19.8 to 48.7 percent.¹³ The factor saving strip mine productivity from a decline as sharp as that experienced by underground mines was the growth of strip mining in the west where in the five major producing states output per man day averaged 71.0 tons in 1975, compared with 19.0 tons for the rest of the strip mining sector.¹⁴

How likely is coal productivity to resume the pace of growth exhibited in the post World War II period when output per man day increased at a compound annual rate of 5.3 percent until the Coal Mine Health and Safety Act took effect in 1970? The answer depends partly on the severity of the Act's enforcement which is another unknown variable facing coal company management. Some operators fear that transfer of the Mining Enforcement and Safety Administration from Interior to the Labor Department will stiffen enforcement of health and safety standards in response to organized labor's pressure. Others expect that adjustment to the Act's enforcement provisions both by management and enforcement personnel will eventually stem the productivity decline.

Other factors ought to aid the total productivity picture. We have already noted the enormous productivity advantage accruing to western strip mines compared to both the eastern underground and strip operations. The changing mix of total production, involving more output from the west and relatively less from the east, will boost overall productivity figures. Additional improvement should flow from the sharply increased research and development expenditures undertaken both by the government and by operating companies. This condition is in stark contrast to the parsimonious research and development outlays that characterized the industry until recently. The increases trace in part to the entry of richly capitalized petroleum companies into coal mining. The infusion of oil industry management talent should also improve productivity.

Another unknown in the productivity equation is the extent to which the coal industry may have reached a cyclical plateau in the introduction of labor-machines and techniques. Much of the steady and substantial improvements in output per man day in the three decades following World War II stemmed from three factors—(1) the growth of strip mining output, with its relatively high inherent productivity, at the expense of the inefficient underground sector; (2) introduction of ever larger machines in strip mining that allowed

13. *Id.*

14. *Id.*

strip operators to overcome increasing stripping ratios; and (3) the replacement of hand loading with machine cutting and loading in underground mines. There is still room for productivity growth from the first of these three factors (although probably not in the east and midwest where desirable strip properties are scarce), but the other two forces may have essentially run their course. In the absence of major technological breakthroughs or the introduction of revolutionary mining techniques (e.g., remote control mining or improved underground haulage), productivity growth may fail to resume the growth trend broken by enforcement of the Health and Safety Act.

LABOR UNCERTAINTY

In few industries have labor conditions been as volatile as they have been in the coal industry. A combination of fiercely independent workers often laboring under dangerous conditions in a traditionally competitive industry has contributed to unsettled labor conditions in coal mining. Looming over the labor landscape has been the United Mine Workers of America, a union whose record has been as checkered as the industry whose workers it represents. It has never succeeded in fully capturing the allegiance of the industry's work force. From a fairly strong position around World War I, the union's position deteriorated throughout the 1920's and was not completely resuscitated until after passage of the National Industrial Recovery Act in 1933. Union membership grew from 100,000 to 400,000, wage rates were stabilized and, though labor strife persisted, it took the form of national strikes. The strong leadership of John L. Lewis maintained discipline at the local level and minimized the non-union threat that had magnified the industry chaos for 15 years following World War I. Moreover, Lewis encouraged the introduction of labor saving machinery and techniques.

Today the cycle is turning against the union, and both they and the operators are suffering as a result. We noted earlier the spate of absenteeism and wildcat strikes that has burdened the industry in recent years. Man-days lost from wildcat strikes stood at 2.3 million for the first eight months of 1977, almost seven times above the level five years ago and ten times the average for all industries.¹⁵

The union suffers from weak leadership and the debilitating effect of internal dissension. Tonnage from U.M.W. mines stands at around 50 percent of national output as the coal union movement weakens

15. BUSINESS WEEK, November 28, 1977, at 88. National Coal Association, *IMPLICATIONS OF INVESTMENTS IN THE COAL INDUSTRY BY FIRMS FROM OTHER ENERGY INDUSTRIES* 9 (1977).

in the eastern coal fields and western miners opt for representation by the Operating Engineers. Achievement of targeted goals for coal production in the National Energy Plan will depend in part on the creation of more stable labor relations. The protracted U.M.W. strike in 1978 dampened the prospects for improved labor conditions. It also strengthened the belief of coal's critics that coal cannot be relied on as a dependable energy source as long as labor relations in the regions organized by the U.M.W. remain in the present chaotic state.

DIVESTITURE

Another cloud over the industry is the prospect of legislative or administrative action mandating horizontal divestiture to reduce the economic power of emerging energy companies. Recent legislative sessions have witnessed bills designed to prohibit energy firms from engaging in the production of more than one energy source. They are aimed primarily at the petroleum companies which have moved vigorously into reserve acquisition and production of coal and uranium.

The divestiture argument is intuitively appealing. It recognizes that the long run substitutability of coal for oil strengthens the oil companies' alleged market power in energy markets. Proponents of divestiture argue that oil companies controlling coal deposits will weaken energy competition by refusing to compete with themselves in markets where coal and oil are ready substitutes. The corollary of this argument is that the growth of energy market power will manifest itself in restrictions on coal production and new capital investment in the monopolist's time-honored tradition. Advocates of divestiture also fear that the oil industry will be reluctant to invest in the development of alternate energy sources since to do so would make obsolete their huge investments in petroleum.¹⁶

Interest in the possibility of horizontal divestiture has spawned Congressional hearings, symposia, and scholarly research on the subject. The result is a better balanced perspective on the problems and potential of divestiture. Space limitations prevent a complete analysis of the problem. The author's analysis of the issue leads to the following tentative conclusions:

- (1) Concentration ratios at the 4, 8, and 20-firm level in the coal

16. For a variety of viewpoints on the issue of horizontal divestiture see: D. Norman, *Diversification and Competition in the Energy Industry* (paper delivered at Annual Meeting of the Southwestern Economics Association, April, 1977). W. Adams, *Horizontal Divestiture in the Petroleum Industry: An Affirmative Case* (paper delivered at the American Enterprise Institute, January 27, 1977); J. Markham, A. Hourihan and F. Sterling, *HORIZONTAL DIVESTITURE AND THE PETROLEUM INDUSTRY* (1977).

industry have declined slightly in the last decade and, compared to other American industries, appear to offer no immediate anti-competitive threat.

- (2) The share of total coal output controlled by petroleum firms fell in the 1968-76 period from 19.2 percent to 17.5 percent.¹⁷
- (3) The foregoing would seem to bear out the "withholding production" argument, but an analysis of output levels for the oil companies' coal affiliates fails to support it. Comparing average coal output figures for the four major coal-oil companies for the five years before and after the coal companies' acquisition reveals that they increased coal output from 16.8 percent to 73.9 percent.¹⁸
- (4) The percent of economically recoverable coal reserves controlled by oil companies, and the share of announced tonnage of coal mine developments exceeds the oil firms' share of present coal output, suggesting that their share of future output will increase.
- (5) None of the price behavior studies in coal have traced elevated coal prices and profits to the entry of the oil industry into coal, although the charge is frequently made. The confluence of the oil industry's entry into coal and an upsurge in the average price of coal seems to support the charge, but the causes run deeper. The combination of increased prices of competitive fuels, sharply higher coal mining costs, a tight spot coal market, and a robust export market, rather than the entry of the oil industry into coal, account for most of coal's higher price level.
- (6) Far from deterring research, the oil industry's invasion into the coal industry appears to have enhanced research and development expenditures.

The effect of these conclusions plus recognition of the administrative complexity of divestiture have temporarily blunted the legislative move toward this antitrust remedy. Underlying suspicion of the oil industry's alleged market power, however, keeps the divestiture issue alive. The continuing threat of its implementation forces energy companies to factor it into their planning processes.

CONCLUSION

This article has balanced a few of the coal industry's favorable prospects against some of its major problems. It would be easy to expand the potential problem areas (water pollution, potential manpower shortages, conflict concerning the allocation of precious western water sources, environmental lawsuits over implementation of the Energy Supply and Environmental Coordination Act, and adjust-

17. KEYSTONE COAL INDUSTRY MANUAL (various years).

18. *Id.*

ing to the Surface Mining Control and Reclamation Act of 1977). Some potential entrants into the industry, having assessed the pros and cons, have felt that the disadvantages outweigh the advantages, and have elected to stay out of the industry. Nonetheless, a large number of American industry's biggest firms have chosen to enter the industry via coal company acquisitions or through purchase of coal reserves, some of which are currently under development. They apparently visualize the potential for profitable investment in an industry which offers the prospect rarely afforded American industry—the opportunity for rebirth and expansion after suffering stagnation and decline. Whether the industry meets the goals envisioned for it depends as much on actions in the legislative halls and courtrooms as it does on decisions flowing from coal company boardrooms.