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This is both a comment and an independent statement of my own position. I will comment on Commissioners Dorgan and Goodman, but not on Professor Samuels' sterling pinch-hitting, because I have not heard his paper any earlier than you just have. I do thank him, however, for introducing the concept of economic rent, something lacking from the other two papers and a concept which runs like a thread through my analysis. My other major emphasis is on the free market, how it helps determine the ultimate incidence of energy taxes and how some inept tax measures may interfere with its efficient operation.

COMMENTS ON COMMISSIONER BYRON DORGAN

Commissioner Dorgan is quite right that North Dakota, like other states, possesses a sovereign right to levy taxes in the manner of its choosing provided only that it does not discriminate against interstate commerce in a gross and overt way. I am only surprised that he feels a need to defend North Dakota's use of its indisputable right. Anyone, it is true, has cause to be nervous when squaring off with the politically powerful energy industry. When North Dakota's neighbors, the western Canadian provinces, increased royalties on minerals in the early 70s, Ottawa responded by denying the deductibility of these royalties for federal income tax. Such can be the fate of colonial areas politically dominated by metropolitans. North Dakota's weakness in Washington may be exemplified by the statistic that her farmers report 69% of their income for federal tax purposes, less than you or I perhaps but more than the farmers in any other state.¹

An analogous move in the United States is hardly possible, however, Ottawa's move was aimed against royalties collected from crown-owned lands in the western provinces. North Dakota is levying taxes on private lands in the same manner as most other states, by comparison with which it has historically made only modest demands on its oil industry.² Even in the unlikely event that severance taxes should be declared non-deductible, the states can always fall back on property taxation which has arguments in its favor anyway.

Price control is the weapon most likely to be used by consuming states against producing states, but it has not come historically as a response to heavy resource taxation by producing states. It is probably rather more a political response to the political cartelization of the energy industry that reached its peak in the Connally Hot Oil Amendment and the import quota system. In the peculiar uneconomic logic of price regulation, state taxes would, if anything, be treated as costs and used to justify higher regulated price levels.

In an unregulated market, taxes on coal in North Dakota would not be mostly shifted forward to consumers anyway, but would fall on the owners of coal lands and come out of their rent, the concept which Professor Samuels introduced. I develop this argument later when commenting on Commissioner Goodman. Commissioner Dorgan points out that these coal lands have moved silently into the very strong hands of the giants of the energy industry who possess the large reserves of "patient money" to buy appreciating resources in advance of demand and gain the unearned increments that accrue. There is no need to apologise for socializing large parts of such increments through taxation.

The best that can be said for severance taxes as opposed to other taxes on resources is political and legal familiarity and convenience. Mr. Dorgan's economic arguments in advocacy are, however, wrong, I believe. The severance tax is not front-end but back-end loaded compared to the property tax. Severance taxes wait on production. Property taxes raise revenue during that long interval after resources are known and before they are produced. The Alaska Reserves Tax on Prudhoe Bay was adopted specifically to raise front-end revenue from a resource whose production was lagging. Appreciating energy reserves are generally in the strong hands of energy giants whose cash flow problem is more one of disposing of embarrassing surpluses than scrambling to meet a payroll. The recent study by Senator Church's committee³ is the latest in a long series to establish

the high concentration of these reserves. Their regular accrual of value is an income tax base unpre-empted by the Internal Revenue Service, thanks to the doctrine of *Eisner v. Macomber*.⁴ The state putting a premium on early cash from mineral taxation should favor property taxation over severance taxation.

The present and future operation of price controls underscores this point. Mines in production are declared "old" energy and devalued by maximum price controls. Reserves not yet being produced come in as "new" energy, and their owners can look forward to receiving higher prices. Whether this set of policies will be applied some day to coal we can only conjecture, but the growing tradition of discriminating against old energy certainly calls for a drastic new attitude towards the role of unproduced reserves in the property tax base.

As to stability of revenues, the severance tax ranks low. These revenues are turned on and off at the convenience of producers, unlike property taxes which do not vary with shifts in production (although they do vary with valuations).⁵

The severance tax imposes a greater "excess burden" on producers than any other tax because its base is so gross. Scores of economists have declaimed on this point. Probably the greatest distortion is to defer the owner's optimal time of production, thus also deferring state revenues.

Mr. Dorgan's criticism of "postage stamp pricing" is well taken but surprising. If I came from North Dakota, I would say as little as possible against postage price pricing as a general principle, for in most matters the low density areas benefit at the expense of high density areas whenever common prices are charged in spite of differential distribution costs. The classic article on "Space as a Negative Resource" was written with North Dakota in mind. Mr. Dorgan has perhaps found one case where postage stamp pricing works to the disadvantage of North Dakota, but even here he has looked at trunk transmission only and overlooked the more costly business of microdistribution. His conclusion, as a result, is considerably less than half true. Certainly it cannot be accepted on the basis of the partial evidence he has presented.

COMMENT ON COMMISSIONER SIDNEY GOODMAN

Commissioner Goodman makes many good points, but they fall so evenly on both sides of several issues that the overall effect is too equivocal. More sympathetically, the effect is well balanced, and there is a fine line between balance and equivocation. But he falls on the wrong side of the line by failing to integrate the pros and cons to reach a bottom line along a clear, understandable path. It is clear that he is defending Michigan's revenues, which is his duty, and his message would fly in Lansing. But my duty is to ask what is in it for the rest of us.

On the conservation side, he says there is a genuine shortage of energy; the problem is too much consumption; and Michigan is helping by taxing consumers. On the energy-prodigal side he says that cold weather is good because it increases tax collections; we must continue to increase consumption; we can't compete without cheap energy; the consumer is the one we really should be concerned about; and jobs depend on cheap energy. This is mostly consistent with a tax commissioner's position that energy should be cheap at the border and dear to consumers with Michigan taxes filling the gap. Again the conclusion is too parochial to satisfy a general public interest.

Mr. Goodman favors some taxation by energy producing states but would limit it to cover marginal impact costs, the kind of thing Mr. Dorgan spoke about. Thus he would allow no public profit on the resource base itself. But meanwhile Michigan and Detroit are taking all they can from energy distribution and using the profit to replace other taxes. Incompatible value judgments are being applied to consuming and producing states.

Mr. Goodman favors cheap energy for industry and also a "fair shake" for homeowners. We can all applaud and endorse the goal of a fair shake for everyone but unfortunately that has no content and therefore solves no problems. The plain fact is that something has to give and policymakers must face it and decide what that shall be in specific operational terms. We must be "fair" not just to industry and homeowners but to farmers, transportation, taxpayers and the consumers of other products. We must be fair intertemporally too, making provision for the future. Such a comprehensive concept of fairness is not served by speaking of "fair shakes" for specific limited consumer groups.

Mr. Goodman shares with Mr. Dorgan the presumption that taxes are automatically shifted forward. The presumption is too easily made. It requires at least four conditions, as follows. First, the producing jurisdiction must have lots of marginal production—that is "no-rent" production. This is because energy prices, like other prices, are determined by supply and demand (absent regulation). Prices go up when supply is cut. Taxes only cut supply if they are applied to production

which yields no rent. This is one of the first things that freshmen learn in economics (assuming they do learn something).

Second, the taxing jurisdiction must be large enough so that a drop in its output can affect price. While the first condition might apply to parts of North Dakota, the second condition does not. Only if many states like North Dakota act in concert levying severance taxes on marginal production will taxation significantly reduce supply.

Third, the taxes must be on a base of gross production and therefore stifle marginal production. That is, they must not be property taxes or net proceeds taxes. Property taxes levied on coal reserves have been accused of accelerating and increasing production, but not of reducing production. And a large share of the total taxes levied on the energy industry are property taxes."

Fourth, the demand for the product must be inelastic, and there must be no large alternative sources of supply. As to coal, it is abundant in many areas around the world.

So none of these conditions is very true. If they were, producing states could have exported their taxes for years and would indeed have found a tax source of unparalleled richness. The fact is, I believe, that the taxing states bear the lion's share of their own taxes because these will fall on the owners of resources. Of course, many owners of North Dakota coal resources are absentees. But no one has yet suggested that any state's power over its resource tax base could be limited by the foreign residence of the owners. So producing states can conscientiously determine their own taxes in their own interests free of legitimate complaints from consumers.

I will comment presently on my disagreement with Mr. Goodman's assumption that jobs depend on cheap energy.

I applaud several of Mr. Goodman's points. The Michigan resource inventory is, as he implies, a necessary information basis for intelligent policy formation in Lansing. And all states and nations should follow suit.

Mr. Goodman very rightly criticizes federal miles per gallon standards for autos as an energy conservation measure. Such a measure is too partial ever to replace the comprehensive price mechanism as a conservation device. Energy efficiency is much more comprehensive than operating efficiency. The production of energy-saving capital uses energy itself. He might have added that a standard applied only to manufacturers creates no incentive for the consumer-owner to operate the vehicle efficiently and to maintain it. He might have added that the vehicle standard does nothing to abate the consumption of energy in producing highways, whose cement consumes probably more energy per dollar of value added than any other raw material. He might have said something about economy in space heating and the energy consumption of rambling one-story houses that abundant cars and highways make possible. He might have added that an energy standard coupled with continued underpricing of energy does nothing to abate exports. We remain the world's number one coal exporter.

To sort out all these complexities, generations of economists have concluded that we need the price system, applying the proper pressure in the proper degree throughout the system at all times. Federal standards cannot do this, even for energy. And besides energy there are thousands of other resources and values to conserve. Only a price mechanism can weigh these in the same balance with energy values and apply the proper measure of conservation to each. Thus, Mr. Goodman's point leads us to the conclusion we must let energy prices rise to a market clearing level.

Mr. Goodman is certainly right that imported cars must be required to meet the same energy standards that are imposed on domestic vehicles. Although a higher energy price level would make this unnecessary, there are still environmental standards to consider. We have been victimized for twenty years by undermuffled imports, for example, while Japanese environmental regulations double the price of American cars sold in Japan. None of this makes very much sense.

Mr. Goodman is right again that tax costs should not be used to regulate supply and demand. Uniformity and neutrality in taxation in an unregulated economy ruled by consumer sovereignty are worthwhile goals. But his example is poorly chosen when he singles out taxes on automobiles and their fuel. These are needed to recoup the astronomical federal investment in highway subsidies and to restrain unbridled subsidized demand from forcing ever more highway expansion.

A WORD FOR THE PUBLIC INTEREST

In this hurly-burly of intergovernmental competition for revenues, what about the public interest, an efficient allocation, optimal conservation through time, and adequate incentives to produce? The public interest is generally best served by the operation of consumer sovereignty in free markets, free both of private monopoly and public intervention. Government, I trust we have all learned, does not represent the people. Government represents organized groups. The market represents

the people better than government. Government can raise revenues without disrupting the market by seeing that taxation is uniform and neutral.

Federal taxation has long been soft on the energy industry, violating the uniformity requirement for neutrality. This practice shifts rents to producing states—either to resource owners, or state and local treasuries, depending on how alert local governments are to take advantage of these rents. In addition, producing states have a long history of more or less successful cartel management, raising prices to shift more rents in their direction. Federal intervention through the Connally Hot Oil Act and the Eisenhower quotas on imports and the long subjection of Gulf of Mexico OCS lands to Texas prorates were all part of this pattern.

But they who take the sword of politics must face the sword, and consuming states have struck back with their own price regulations which now hold prices below market clearing levels.

While there may be poetic justice in this, as an approach to equity it is as crude as surgery with a rusty tin can. As to efficiency, it approaches a national disaster. Preferential tax treatment subsidizes production while price regulation subsidizes consumption. This double subsidy effect is fortified by a long list of like-minded policies hyping up both supply and demand so that they meet at a much higher volume than they would in an unbiased market.

Let's itemize some subsidies to consumption. There is the highway trust fund which milks drivers on city streets to subsidize subeconomic highway extensions in new and lean territory, spearheading the development of the most energy-intensive land settlement pattern the world has ever seen. There is the virtual exemption of autos and trucks from the property tax which capital in other forms must pay. There are promotional rate structures of gas and electric utilities, which structures are not so much calculated to reflect cost savings as they are to maximize rate bases. There is utility price discrimination which features low wholesale rates for primary industries of low value-added, including agriculture. There is a capital-intensive, energy-intensive bias in military procurement which consumes some 10% of all our energy. There is the complex of policies that generate urban sprawl, a pattern which causes heavy line losses, heavy auto and truck use, and one-story dwellings which are so expensive to heat. There is a transcendent bias in favor of primary products (exemplified by but not limited to freight rate structures based on value of service rather than cost of service) which overstimulates energy-intensive primary production.⁷ There is a monument building bias in public works which turns into an energy using bias exemplified by BART, the Seattle airport, the Washington Metro, and the California Water Plan pumping water over the Tehachapis.⁸ There is the effluence-affluence mindset that lets energy users in effect appropriate pollution easements through everyone's air without being charged for the damages. All these and more are subsidies to consumption.

Now let's itemize some production subsidies. Tax subsidies include the familiar depletion allowance, expensing intangibles, and capital gains treatment. In addition there is deferral of tax on unrealized appreciation of reserves; exemption from property taxation for operations outside state boundaries, for example in the OCS, and virtual exemption in sparsely populated areas inside state boundaries; avoidance and evasion of state taxes by multinational corporations; the foreign tax credit and deferral of tax on unrepatriated profits; and favorable tax treatment of oil tankers using flags of convenience. In pipeline networks, regulatory bias creates the same incentive to extend subeconomic collection feeder lines as it does distribution lines. There is an import subsidy implicit in the entitlements system. There is the concept of letting investments be deducted like expenses so long as the capital remains captive inside the industry, a concept Senator Russell Long is running wild with. There is a propensity towards premature leasing of public lands, for example in Alaska and the federal OCS, using gross rather than net gain as a criterion of value.⁹ There is discrimination against old production, which in effect milks old producers to subsidize new ones. There is the long-term effect of vertical integration in the industry which forces each firm to develop its own reserves. There is the exemption of nuclear power plants from public liability. There is a general failure to charge the production end of the industry for environmental damage (which subsidizes production just as giving free pollution rights to consumers subsidizes consumption). There is regulatory bias which lets utilities invest prematurely in their own reserves, adding the investment to their rate bases.

Subsidized supply and subsidized demand: how do they come about? We have inherited two conflicting cultural traditions to resolve. There is the "natural heritage" tradition which says that subsoil resources are peculiarly affected with a common interest. A second tradition tells us that discovery and exploration of resources are the most worthwhile private activities, deserving subsidized support of incentives. Instead of asserting the common interest through taxation, in our times we have begun to assert it through maximum price regulation. And, instead of rewarding the discovery of better conservation techniques, we continue to subsidize discovery and extraction of increasingly scarce subsoil reserves.

If that evaluation of institutional bias is accurate, the result will have to be to deplete mineral reserves much too fast, followed by a severe shock some years down the road (on top of the one we have just experienced) when the exponential growth of demand comes into unresolvable contradiction with the exponential decay of reserves. We will have depleted too fast and prepared alternative energy sources too slowly. We will have developed even worse energy-intensive land settlement patterns. These are not literally "irreversible" when we look at decades, but in the short run we are stuck with them. Because the lag in adjusting land settlement patterns is so very long, the penalties for not beginning to readjust right now will be severe.

Let's look at two objections to letting energy prices rise to market-clearing levels. One is that the poor may suffer. This argument does not bear analysis. First, energy consumption is progressive, that is energy is a "superior good." No doubt an intensive search would find some impoverished elderly widow shivering in a drafty, uninsulated, rambling old house in northern North Dakota, but this is no basis for national energy policy. Welfare may be distributed in money and targeted on those who really need it. Cheap energy is not strained, it droppeth as the gentle rain from heaven on the poor and the unpoor alike, with the unpoor getting about 95% of the benefit. Subsidized energy consumption is no kind of substitute for a welfare system: but the job of financing it would certainly increase the number of welfare cases.

A second argument is that jobs and GNP and our standard of living require cheap energy: that there is a fixed coefficient between energy consumption and employment. This notion flies in the face of all experience and all theory which tells us that resources may be substituted for each other.

Cheap energy industries are not labor-intensive, nor is energy production itself. Cement production and primary metal refining and reduction require a hundred times more energy per dollar of value added than simple manufacturing. Energy-intensive farming replaces labor with big capital-intensive machines, it does not create jobs. Most of these energy-intensive primary producers also receive large subsidies of other kinds in the form of preferential freight rates paid for by higher rates imposed on the products of labor-intensive industries. Cheap energy does not just complement labor, it also substitutes for labor. This theme has been developed by many economists, engineers and scientists, among them Kenneth Arrow, Tjalling Koopmans, Ernst Berndt, John Holdren, Roger Bezdek, Bruce Hannon, Amory Lovins, Philip LeVeen, Philip Raup, David Pimentel, myself, and others.

A high energy price forces us to use more of the less "convenient" fuels, but "inconvenient" is just another word for "labor-intensive." Let's not be deceived and misled by the value-judgment in the word "convenient." Convenient is not better if convenience comes at the price of wasting scarce capital and irreplaceable natural resources while labor is unemployed.

It is comforting to take a perspective through history and note that twenty years ago we got along with half as much energy per capita as today, and that was hardly the dark ages. The air, in fact, was cleaner. Other countries with high living standards still do get along with much less energy per capita than we do, and lower unemployment rates as well.

I conclude we should not use price regulation as a means of shifting resource rents among jurisdictions. Tax reform is a much more efficient means to the same end. We need government not to regulate price primarily but to identify and correct a wide range of institutional biases that subsidize production and consumption of energy.

Energy is a useful integrating principle for perceiving a wide range of issues which need attention anyway. The range of issues may seem complex, but there are simple guiding themes which are taught in most economics departments. These themes are supply and demand, the free market, uniform and neutral taxation, and unbiased regulatory institutions.

Otherwise, we only suffer to rely on government. Government is clumsy, lurching, ponderous, internally inconsistent and uncoordinated, sloganeering, prone to improper influence, and self-serving above all. What passes for an "energy policy" this year is primarily a coal program. Meantime, millions of individuals are exploring hundreds of other solutions to the energy problem. Some of these are wood stoves, methane, sawdust burners, oil beans, geothermal energy, wind power, solar energy, better insulation, new cement making techniques using less energy, substituting less energy-intensive materials, maintaining cars and heating plants better, lowering temperatures, driving less, shifting from energy wasting electric consumption, and returning to central cities and multistory buildings. None of these is "the" solution, and most of them therefore are beneath the grand scale of government attention. But many small solutions add up to one big solution. That is how the market works, and there is no reason in history or theory to suggest that government "programs" can solve our problems half as well.

FOOTNOTES

¹Finis Welch and Robert Evenson, "Farm Income and its Taxation: Evidence of Gross Inequities," unpublished ms.

²Gene Wunderlich, "Taxing and Exploiting Oil: the Dakota Case," in M. Gaffney (ed.), *Extractive Resources and Taxation* (Madison: University of Wisconsin Press, 1967).

³Library of Congress, report to U.S. Senate, subcommittee on Energy Research and Development (Senator Frank Church, Chairman), cited in *Los Angeles Times*, October 14, 1977.

⁴*Eisner v. Macomber* (1920). 252 U.S. 189, 40 S.Ct. 189. American Petroleum Institute et al., *Joint Association Survey*, Section II: Expenditures for Exploration, Development and Production, (Washington: May, 1976), p. 4.

⁵As to accuracy of valuations the active market in lease acquisition has generated volumes of data sufficient for evaluation. Acquisition of undeveloped acreage has been far greater than spending on exploration, development or production in the last several years. For the oil and gas industry see American Petroleum Institute et al., *Joint Association Survey*, Section II: Expenditures for Exploration, Development and Production, (Washington: May, 1976), p. 4.

⁶Joint Association Survey, 1976. The respondents were estimated to comprise 76% of oil and gas industry revenues in 1974. They reported \$400 millions in property tax payments—not large compared to revenues, but large compared with industry income tax payments.

⁷Talbot Page at Resources for the Future, Inc. has researched this matter at length.

⁸Ernst Berndt and David Wood, "Technology, Prices, and the Derived Demand for Energy," *Rev. of Econ. and Stat.*, August, 1975, pp. 259-68.

⁹Those who tout ripple effects, regional multipliers, input-output analysis, regional development, economic base magnification and the like are frequently making this mistake.