LETTERS

We welcome letters from readers, particularly commentaries that reflect upon or take issue with material we have published. The writer's name, affiliation, address, and telephone number should be included. Because of space limitations, letters are subject to abridgment.

DON'T FORGET ACCESS RIGHTS

Many of us have not been enamored with the self-serving argument from the electric utilities that deregulation should begin by compensating them for "stranded costs," as their price for political support. (See *Regulation* Vol. 19, No. 1, an issue devoted to electricity deregulation). Such costs are the uneconomical investments believed to be encouraged by the disincentives of regulation, and past government energy policies. I don't know if *Regulation* readers have noticed, but several recent sales of generating assets—where "stranded costs" have been alleged to be concentrated—have occurred at prices above book value. Thus, Southern California Edison sold ten plants for 2.65 times book value. Why should market sales of stranded assets reveal a willingness-to-pay above the depreciated cost of assets believed by utilities and others to be worth less than their investment cost?

I offer a simple hypothesis: left out of the calculation of generator book value is the value of access rights to the transmission grid to which those assets are connected. A buyer buys generator hardware bundled with the right to inject power up to the capacity of the generator. (See my article, "Regulatory Reform in the Electric Power Industry," in *Regulation* Vol. 19, No. 1, for a proposal dealing with such rights). Furthermore, to the extent that the Federal Energy Regulatory commission mandates generator access at a below market regulated transmission rate, the value of those access rights is artificially inflated. So, the invisible hand of the market allows any alleged stranded costs to be indirectly compensated by transferring transmission rents to generator owners. So much for the FERC's attempt to contain the "natural monopoly" power of the grid. If I am right, this is good news indeed. The policy implication, given the FERC's decision to regulate transmission, is to make sure that generator assets are valued by passing them through the eye of the needle of the market, and are not determined by an accounting pact between the utilities and the regulators.

I am reminded that in the wake of airline deregulation many airlines went bankrupt. There was vigorous competition for those airline assets; not because the airplanes were in great demand—we had too much capacity once we deregulated—but because airport runway rights went with the sale.

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GRAND MASQUERADE

Marxsen examines the slowdown in productivity growth in the U.S. since 1973 ("Wages, Water, and Stagnation," last issue), a topic of great national importance. While most economists see a variety of interacting influences creating that situation (see McConnell and Brue), Marxsen fingers one true culprit—environmental regulation. To support his assertion, he uses a simple regression model and cites a handful of studies that calculate the short-term costs of pollution abatement activities. Unfortunately for Marxsen, his study suffers from a fatal analytic flaw that completely undermines his conclusions.

The centerpiece of the article is a regression that uses pollution abatement spending in a single year—1991—to explain changes in productivity from 1973 to 1992. He gets a coefficient of determination of .23 which tells the world there is very little correlation between the two sets of numbers. (And of course we all remember that even a large coefficient does not prove causation.) However, we would expect a low number because of the multitude of influences on productivity change identified by other economists. Unfortunately for Marxsen, and the editors and reviewers of *Regulation*, the regression is fundamentally flawed and in fact says nothing about the impact of environmental regulation. How in God's name could spending in 1991 explain productivity changes in 1973, in 1974, in 1975? (You get the picture?) There is nothing in the article arguing that the pattern of spending was unchanged over this entire period so 1991 could legitimately be used to represent all years. If it were an implicit assumption, I would question its validity.

Following his flawed regression, Marxsen reports on the findings of other studies. Because he is trying to prove that environmental regulation is the culprit in decreasing productivity, Marxsen chooses to report those findings that indicate very large impacts, somewhere around a 10 percent decrease in GDP. Everyone understands that regulation inflicts short-term costs that influence measured productivity, increase prices, and decrease GDP. There is no agreement on the magnitude of the impact. Rather than confining his coverage to confirming studies, Marxsen should have addressed the variation in results of studies addressing that issue. For example, an OCED study found only a .7 percent decrease in U.S. GDP attributable to environmental regulation (not the 10 percent decline that Marxsen wants to use).

Marxsen ends his essay by discussing

the meager benefits obtained for the pollution control efforts of the Clean Water Act. He cites a study by Freeman that gives an annual benefit of $14 billion in 1985. Marxsen never reports Freeman's cost estimate, so it is difficult for a reader to know if costs exceed benefits. Freeman actually calculated that benefits were between $5.7 and $27.7 billion, with $14 billion his point estimate. By using only the point estimate, Marxsen gives a reader not familiar with this literature the impression that benefits can be precisely estimated, but that is not true. What will the market price of a gallon of clean water be one hundred years from now? As with cost calculations, benefit estimates show a wide range of results. Carson and Mitchell, in a study more recent than Freeman's, calculate that aggregate benefits of water pollution abatement exceeded aggregate abatement costs by $6.4 billion in 1990.

We now get to the little worm that has been gnawing away at Marxsen, the idea that regulation is not only costly; it is absolutely unnecessary because water quality was good before the enactment of the Clean Water Act. What scientific credentials does this economist have which allow him to make that statement? He offers no evidence from a reliable source for the validity of the statement. Try telling it to the people of Woburn, Massachusetts where the childhood leukemia rate is twice the national range. A Harvard Medical School study linked the deaths of nineteen children to the industrial solvents trichloroethylene and perchloroethylene, which had leached into the towns water wells (Miller). The Platte River, which carries a sizable load of atrazine, nitrates, and other chemicals from agricultural and urban runoff, flows about two miles south of Marxsen's college campus. Perhaps he should start drinking water straight from the river since there is nothing to worry about.

Marxsen's use of a U.S. Geological Survey report that there was little improvement in water quality from 1974 to 1981 shows his complete ignorance of ecological systems. Just because you stop dumping some chemicals into a river in 1973 does not mean that all the chemicals dumped in previous years suddenly disappear. For example, chlorinated hydrocarbons (like DDT) persist (they remain active for two to fifteen years). Why cite that early report without an update? What has happened since 1981? According to more recent information from the USGS website–accessed in 1998–national water quality is still less than desirable, but there is evidence of progress. For example the data show that since the 1970s, concentrations of the toxic elements arsenic, cadmium, and lead and the organic compounds chlordane (and related compounds), dieldrin, DDT (and related compounds), toxaphene, and total PCB's declined significantly (Smith, et al.). On the other hand, nitrate concentrations and yields remained nearly constant nationally. The USGS sees decreases in some pollutants and little change in others, but concludes that any improvement in the nation's water supply during a period when population increased by 20 percent and GDP increased by more than 50 percent represents a significant achievement in the pollution control.

While the shortcomings of Marxsen's editorial render it useless, there are many other legitimate articles in print that do shed light on the productivity issue. To readers with an interest in using market mechanisms to improve efficiency in environmental regulation, I suggest finding an article discussing the Sulfur Dioxide Allowance Program created under Title IV of the Clean Air Act Amendments of 1990. That marketable permit program represents the first market-based approach to environmental management at the national level. To the editors of *Regulation*, I am afraid you've been had—you've published a screed masquerading as science.

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MARXSEN RESPONDS:
Both Denison and Kendrick identified significant reductions in U.S. economic growth as a result of environmental regulations and their findings came from early evidence before the greater extremes of EPA controls had been instituted. By 1994, the Census Bureau acknowledged that each dollar of compliance cost reduces productivity by three or four dollars (Weidenbaum, Murray L. 1994. "Environmental Regulation vs. Economic Health." *USA Today*, Vol. 123. No. 2594). With annual EPA compliance cost estimates now past the $150 billion mark, we may infer from the government's own estimates that environmental compliance is well on its way to costing us in the order of a tenth of our national income; not the 0.7 percent of GDP which Jenkins accepts from the globalists of the OECD.

Combining the results of James C. Robinson with those of Michael Hazilla and Raymond Kopp, I conclude that, by 1992, a productivity growth slowdown costing 17 percent of manufacturing output, and, therefore, 15.8 percent of GNP seems attributable to EPA regulation. Compared with 1960-1973, average annual multifactor productivity growth slowed about 2 percentage points in the 1973-1994 period. That 15.8 percent of GNP by 1992 represents about 0.775 percentage points of annual growth each year since 1973. Environmental regulation, therefore, appears to have caused about 38 percent of America's 2 percent annual multifactor productivity growth slowdown since 1973

As a member of the American Economic Association, Professor Jenkins should not faint when he reads such numbers. Wayne B. Gray reported in the *American Economic Review* in 1987 that OSHA and EPA regulations accounted for more than 30 percent of the 1970s slowdown in total factor productivity growth in the average manufacturing industry. More recently, Professor Richard K. Vedder at Washington University concluded from a variety of time series regressions that nearly half of the long-run productivity growth slowdown from 1963 to 1993 in the private business sector can be explained by the increase in regulatory

activity of all kinds. Vedder finds total recent annual costs in excess of $2 trillion which is at the lower end of the three to four multiple range one would expect based on other estimates of direct compliance costs. Thomas Hopkins at Rochester Institute of Technology reported in *National Review* that American households, workers, and businesses recently spent a total of $670 billion annually just to comply with federal regulations.

My regression and graph were intended to illustrate an already established relationship rather than to prove some new hypothesis. The reader interested in seeing a year by year correlation between multifactor productivity growth and EPA compliance spending, cross sectioned throughout the manufacturing sector, would enjoy reading Robinson's lengthy and more exhaustive article in the *Yale Journal on Regulation* (Summer, 1995). Professor Jenkins is startled by my use of 1991 industry compliance spending to explain the annual growth slowdown in the previous two decades for each industry. But 1991 compliance spending estimated by the Office of Technology Assessment is much like the size of a carefully measured brain tumor that never really fluctuated over the period when it was developing (1991 is the only year for which the OTC provides that data). Showing that the sickliness of cancer patients is proportional to the sizes of the brain tumors they've grown would be similar to my regression. With other substantial influences at work, as Jenkins observes, explaining 23 percent of the variance is not really as bad as he implies. It means the correlation coefficient was .48 (in the absence of suspicion of auto correlation). Professor Jenkins rests his faith in the validity of student evaluations of teaching when studies often find lower correlations between those and other measures of teacher performance.

Professor Jenkins seems oblivious to the well known economic inefficiency of most of the results of environmental legislation in the United States in recent decades. Rather than maximizing the excess of benefits over costs, environmental regulations have actually produced benefits which fall short of even the direct compliance costs, not to mention the productivity stifling and ripple effect costs. Robert W. Hahn has reported in *Natural Resources Journal* that the Clean Water Act of 1972 and the 1990 revision of the Clean Air Act of 1970 both produced benefits estimated to total less than their compliance costs; only the original Clean Air Act of 1970 seems to have produced benefits exceeding compliance costs.

Water quality was good before the Clean Water Act was enacted and hasn't improved much since, according to A. Myrick Freeman III of Resources for the Future. By 1981, about 96 percent of industrial water pollution sources complied with "best practicable control technology" effluent limitations as prescribed by the 1972 Clean Water Act. The experiment was complete. The U.S. Geological Survey then found overall water quality for U.S. streams, lakes, and estuaries to be good in 1982 but little improved from 1972. The sewerage became cleaner but our lakes and rivers did not become substantially cleaner. What has changed since 1981 simply has little or no relation to the controls imposed by the Clean Water Act of 1972. Jenkins seems to attribute the benefits of burning unleaded gasoline to the Clean Water Act of 1972. He trumps up phony benefits or benefits not deriving from the Clean Water Act of 1970 in an effort to catch up with the very real costs of the Act.

Indeed, most of the water pollution in 1970 was from run off and not from industrial effluent. America hobbled its productivity growth and the Platte River remains just as loaded with the same fairly harmless atrazine and nitrates that were washing off of farmland decades ago. Contributions to the nitrates in the Platte River also come from a population sand hill cranes and other migratory birds which dwarfs the population of turkeys at a commercial turkey farm. Thanks to the likes of Professor Jenkins, the EPA appears poised to expand its cost-benefit miracles onto the Nebraska farmer's turf, however. Jenkins would damn the farmers and protect the cranes at all cost.

I confess that the little worm Jenkins refers to is indeed gnawing away at me. While Jenkins seems terrified by the alleged presence of carcinogens in Woburn, Massachusetts water wells, I find myself more afraid of President Clinton's 1996 campaign pledge to clean up two-thirds of the nation's toxic waste dumps. Viscusi and Hamilton in, *The Public Interest*, analyzed data for ninety-nine superfund sites for which adequate information was available. They report that cleaning up those sites according to EPA guidelines will theoretically prevent future cancers at a median cost of $3.6 billion per cancer case prevented. The U.S. Department of Transportation refuses to spend more than $3 million to statistically save a motorist from becoming a highway fatality. Pursuing superfund cleanups to such an absurd level of costs in excess of benefits is indeed absolutely unnecessary.

But, Professor Jenkins is not concerned with the cost of the environmental movement. He's a government bureaucrat himself and unlikely to suffer any direct personal oppression as a result of such laws. In fact, devouring grants from the EPA ranks high on his hidden personal agenda.

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MEDICARE RISKS

Sue Blevins is quite correct in saying that Medicare limits seniors' liberty. However, the limitations are not caused by Section 4507 of the Balanced Budget Act. One can make an argument that the section actually improves the situation, although the net effect will not be clear for some time.

Before Section 4507, the statute and the official regulations (the kind published in the Federal Register after public notice and comment) were silent on the question of whether seniors could pay privately for the medical care of their

choice. However, the Medicare Carriers' Manual, and communications to physicians from the carriers, stated that physicians were at risk of sanctions if they accepted payment from Medicare-eligible seniors without filing a Medicare claim. When seniors inquired whether they had lost their right to use their own money to buy medical care without government interference, HCFA bureaucrats sent back carefully worded responses that evaded the question.

A group of senior citizens and their private physician sued HHS to establish the legality of private contracting (*Stewart v. Sullivan*). The 1992 decision held that the case was not ripe because plaintiffs failed to prove that the Secretary of HHS had an official policy against private contracting. The method of threats and intimidation worked to deter private medical care but was insufficient to force a court to decide the issues.

Since 1992, some physicians have seen some seniors privately (and as far as we know have not been sanctioned, though some were threatened), but most were afraid. Some of these completely closed their practice to Medicare beneficiaries.

Section 4507 makes it clear that private contracting is legal, as long as the physician is not accepting *any* Medicare funding. If the physician *does* accept some Medicare funds, then his right to accept private funds as well is in doubt. Clearly, HCFA wants doctors to believe that case-by-case private contracting is forbidden, and that is enough to deter most of them. By pure logic ("if A, then not B" does not imply "if not B, then A"), the statute does not forbid private contracting at all. But who wants to risk an adverse ruling from a court?

Numerous physicians are asking for advice on how to opt out of Medicare. But what will happen to patients of those who do not? Will they be able to receive private care from those physicians?

If a patient is not enrolled in Part B, then no Medicare rules apply to him for services covered under Part B. This point has recently been clarified by HCFA. Patients need to *disenroll* if they want to be assured of the right to see the doctor of their choice privately. Part B services, because Medicare has destroyed the private market for such insurance. There is a substantial penalty for re-enrolling.

The original Kyl-Archer bill would have simply established the right for seniors to "disenroll" at will for selected services by simply not filing out a claim. The version that is now being promoted, however, has a poison pill. It has a provision that would enable HCFA to require reporting on *all* services rendered to Medicare-eligible patients by means of a dummy claim.

The original Kyl-Archer bill is thus a Trojan horse for demanding unprecedented federal intrusion into private arrangements. It is another step in cementing the infrastructure for comprehensive government surveillance of every citizen. The potential for nefarious use of the data is there, regardless of the good intentions of the bill's sponsors. And what good purpose would the requirement accomplish? At best, the dummy claims would be expensive, onerous, and useless. The government is at the Medicare claim that might be used to defraud the government. The protection against dual payment for the same service is the already existing Medicare Explanation of Benefits form.

It is the nature of socialism to plug up the escape hatches in the name of egalitarianism. The malfunction of the system is always blamed on the residual private sector. The reasoning seems to be that if we all jump overboard together, we will all float (but only if lifeboats are destroyed).

Thank you for the opportunity to comment on this important article.

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NOT ENOUGH ANARCHY IN THE U.K.?

In "Transforming Power," (*Regulation,* Summer 1997) John Kwoka offers a clear, useful, and thorough description of the problems that have beset the British attempt to expand competition in electricity markets. He begins by describing how the U.K. restructured its nationalized electricity industry into largely privatized sectors handling the generation of power and its distribution to end users. While the latter remains regulated under price-caps, the former is nominally competitive. Although the U.K. created only two private power generators, initially retaining a nationalized nuclear sector, that has been since partially privatized as well.

However, in the U.K., all electricity ends up being sold and bought through a national "pool." The pool sets prices at half-hour increments based on the cost of the marginal kilowatt, along with other uplift costs. Those "uplift" costs include "capacity payments" for all available plant, whether or not used, to prevent power outages during periods of unexpected high demand or system failure. Transmission constraints may keep low cost plants from serving, and may force higher cost plants into service. If so, the "uplift" covers the cost of payments equal to foregone profits to the low cost plants that cannot serve and payments above the pool price to higher cost plants brought into service.

Kwoka finds that restructuring has led to increased productivity and profits. Prices appear to have fallen, but the data are controversial. Kwoka identifies one problem as the U.K.'s failure to go as far as it might in deconcentrating the generation sector, particularly as the two fossil-fuel companies typically supply the marginal unit that sets the pool price for the market as a whole. He also notes that power suppliers have taken advantage of obvious flaws in the system. For example, generators located where transmission is at capacity bid very low prices to get profit payments, knowing that they will not have to supply at the bid price. Kwoka concludes with a discussion of some structural trends, most notably tendencies toward vertical integration between distribution and generation.

The stated purpose of Kwoka's article, in its subtitle, was "Lessons from British Electricity Restructuring." We believe that it might be useful to make those lessons more explicit than the familiar

observation that these "issues represent serious continuing challenges in Britain and equally serious concerns as restructuring gains momentum in the U.S." What exactly *are* the lessons that can be drawn from this complicated experiment? What can states (the venue for promoting retail power competition under existing law) and the federal government (which may change the law to encourage if not mandate such competition) do to avoid similar potholes? And, finally, how much success can we expect?

Our reading of the British experience is that it offers three key policy lessons, if we are going to adopt retail power competition:

(1) Clearly decide which sectors are competitive and which remain monopolistic, and ensure their economic independence.
(2) For the monopolistic sectors, adopt sensible regulation schemes that provide appropriate incentives to expand capacity.
(3) For the competitive sector, deconcentrate if you must, but then—perhaps with qualifications noted below—trust the market and get out.

The most important lesson is the last, but a few words on the first two may be useful.

As Kwoka and virtually every other commentator on the electricity industry (including ourselves) have observed, the potential for competition is limited to power generation and retail sales. The wires themselves are likely to remain regulated monopolies for some time to come. For distribution, the rationale is familiar–the high fixed and sunk costs of constructing local power lines make the business a natural monopoly. (Unlike telephony, video lines and wireless systems are not economically feasible alternatives.)

For long distance transmission, the explanation is a bit more complicated. One might think that economies of aggregation would permit competition in power delivery as it has in long distance telephony for a couple of decades. However, the reliability benefits of interconnection, and the propensity of electricity to take all interconnected paths to get from point A to point B—referred to as "loop flow"—imply that a set of long distance transmission lines essentially operates most efficiently as a single entity.

The (upstream) generation and (downstream) retail sales sectors fortunately lack the scale economies and ubiquitous externalities that make the wires side of the industry monopolistic. Both the British experience, as portrayed by Kwoka, and other U.S. analogs, primarily telecommunications, reflect concern over the potential for anticompetitive favoritism and suppression of efficient industry evolution if the monopolist retains substantial control of competitive operations. Whether outright divestiture, as in the U.K., will be necessary in the U.S. or less drastic separation between production and delivery will suffice remains to be seen. The 1996 Telecommunications Act's record so far on allowing regulated vertical integration is not encouraging, but perhaps that jury is still out.

Regarding the regulated sector, Kwoka pointed out that under the current (so to speak) British regulatory scheme, The National Grid Company has lacked much incentive to expand transmission capacity because sales associated with reduced congestion were passed on to grid users. That suggests that U.S. regulators should adopt so-called incentive regulation methods that divorce prices from costs, and thus give firms incentives to cut costs and expand output. We do not want to minimize the complexity of setting transmission prices because of loop flow and the consequence that transmission grids typically cross both corporate and state boundaries. But setting transmission rates in the neighborhood of what they would be at efficient capacity levels, perhaps on a point-to-point basis, would provide appropriate signals for expansion that would remain attenuated under more conventional regulatory schemes.

In looking at generation, Kwoka began his assessment by noting that the U.K. retained an effective duopoly, perhaps limiting the intensity of competition. (That problem may have been made worse by the lack of demand-side bidding in the British pool.) How important that is in the U.S. remains to be seen. Depending on grid capacity and transmission prices, relevant markets for power could be geographically broad, allowing numerous producers to compete for industrial, commercial, and residential customers. If power markets turn out to be fairly small, utilities as currently structured may retain some market power. Because U.S. antitrust law permits legally-acquired monopolies to charge high prices, some explicit state or federal policy to deconcentrate may be warranted.

But the main lesson from the British experience may be that taking the competitive plunge is quite difficult. Whether large firms continue to exercise political clout to preserve competitive advantages, or policymakers can't bear to let planning go, the will to let markets work seems weak. Kwoka's description of U.K power pools brings out a couple of manifestations. The first is the insistence on least cost dispatch. In a regulated environment, especially when revenues cover costs, there is little if any incentive to control costs, hence the need for policy aimed at minimizing generation cost. However, in competitive industries, markets allocate customers to least-cost providers, making centralized dispatch unnecessary.

Undoubtedly one can find market mistakes. Someone probably could produce some commodity, say gasoline, at lower cost than someone else who is actually producing. But, for very good reasons, we don't generally believe in mandating pools in which all suppliers of gasoline bid for permission to sell to consumers forced to pay what a "gasoline pool manager" deems the highest marginal cost. An alternative approach that was adopted in Norway and Sweden and is being adopted in competitive power pools across the U.S. is to make participation in the pool voluntary. The opportunity to make sales outside the pool could limit any market power it might have.

A second problem is that the pool manager has become the venue for

imposing regulated charges to cover the risk of power outages. Kwoka details the perverse incentives created by the U.K.'s capacity uplift payments. We infer that perhaps decentralized spot, contract, and futures markets might be a better way to determine when and the degree to which the benefits of mitigating power interruptions exceed the costs of ensuring availability. Restructuring the utility business may not be worth the trouble if it leads to a USDA-like system of electricity price supports.

Electricity is unlike other commodities in that minor disequilbria tolerable in other markets are costly here. Loads and generation need to be continuously balanced to prevent the system from breaking down. The losses from power failures when one generator lacks the ability to serve its customers, or pumps too much power, are spread across all on the same local or perhaps regional grid. To "internalize the externalities," one might:

(1) Have a centralized power pool take responsibility for dispatching power and preventing outages, leaving contracts between customers and generators little more than means for allocating price risk.

(2) Allow local or regional grid operators to own generation capacity to provide power during unanticipated surges in demand, and give them the authority to shut down generators during periods of unanticipated slack demand.

(3) Assign liability for outages and oversupply to generators, letting secondary markets arise under which power sellers could contract with independent firms to supply extra power when needed to meet their customers' demands.

No solution is perfect. Although U.S. pools need not incorporate all of the flaws Kwoka describes in the British example, the first solution may impede the development of a competitive retail market. The second breaches the wall between regulated and unregulated sectors, and the third introduces potentially substantial risk and litigation cost. A virtue of the structure of regulatory authority over electricity in the U.S., unlike the U.K., is that the decisions and implementation of retail competition rest with the states. In that regard, the U.K. is but one of an additional fifty laboratories that we can use to get lessons on how, and perhaps if, we can realize our hope to have meaningfully competitive electricity markets and a reliable power system at the same time.

TIMOTHY J. BRENNAN AND KAREN PALMER
Resources for the Future

WHOM THE GODS WOULD DESTROY

Timothy Cason, in your Summer 1997 issue ("Market Masked Regulations"), presents an interesting criticism of the sulfur dioxide allowance auctions designed by the Environmental Protection Administration for the Clean Air Act Amendments of 1990. His results indicate that the EPA's "discriminative" auction yields lower prices than the prices from the more common "uniform" auction. That surprises me as much as it probably surprises the EPA.

The annual auction of allowances is primarily held to dispose of the EPA's own allowances. In that auction, the potential buyers submit sealed bids and the EPA sells the allowances requested by each buyer, cleverly ordering the sales by price, the highest first. It is a variation of a Dutch auction, except that the bidders are not (supposed to be) informed about the other bids, as they would in an open auction. The clear intent was to create higher prices and higher revenues for the government.

The government auction allows nongovernment holders of allowances to sell their allowances immediately after the government session. According to the arrangement, private allowance holders, many of whom received allowances as government favors rather than earning them through extra emission reductions, can also submit sealed offers. The arrangement consists of matching the highest bid with the lowest offer, until all of the sell orders with bid prices exceeding offer prices are filled. There is incentive for sellers to tender their allowances early because they receive the best prices regardless of their own offer price. That is another government ploy to make the system appear more successful than it actually is. I would have expected the nongovernment sales of allowances to yield higher prices than an auction that produces a single price. Thus, Cason's results surprise me, not that I had any great faith in the government's ability to design a workable market. Cason seems to say that the government has been too clever by half.

However, it would be a mistake to extend the EPA auction results to the larger system where trades are individually negotiated. Actually, the larger system is in worse shape, despite EPA gimmicks to stimulate the market. Allowances are now selling for one hundred dollars and less, rather than the many hundreds of dollars that were predicted. Moreover, the number of trades from one utility to another is a minority fraction (24 percent) of the total volume.

To understand what is happening, it is helpful to go back to my 1991 article in *Regulation* ("A Market Without Rights," Fall 1991). One point I make in that article is that the allowance is a combination of a futures and an option, because the allowances can be "banked" for future use. That, in turn, means that the notional value of the allowance is higher than the simple difference in abatement costs. The present low prices for allowances suggest the presence of an insurance that utilities would like to have for unusually hot summers when emissions peak. The underlying futures contract is apparently worthless.

Another point I make in my 1991 article is that while the government did not hesitate to fiddle with the prices, it did not want to be held responsible for the system if it failed. That involved denying property rights status for the allowances and specifically reserving

the right to alter or eliminate the system. The government's refusal to accept responsibility for its actions is an obvious attempt to circumvent the Fifth Amendment of the Constitution that prohibits government takings without compensation.

What is an electric utility to do under such an arrangement? It is faced with the choice of (1) actually reducing emissions for which the utility is always allowed compensation from the ratepayers and (2) buying allowances whose approval the government can withdraw at any time. In 1991, I predicted that the utility would favor the former. The trading would be primarily internal to each utility, where the implied contract would always be honored. I indicated at the time that about 80 percent of the trading would be internal.

The August issue of *Public Utilities Fortnightly* has a report on Sulfur dioxide trading by two analysts from the EPA. Allowances transferred within utilities or groups of utilities from March 1994 to March 1997 amounted to twenty-seven million. Allowances transferred between economically distinct parties for the same time period amounted to 8.9 million, of which 18 percent did not involve utilities. That implies that roughly 76 percent of the trades in the last three years are internal ones. That figure is pretty close to my 1991 estimate.

Examining the government's sulfur dioxide trading market is important because a similar system is being proposed as a part of the Kyoto Protocol on global warming. I am skeptical that an idea which is failing domestically can succeed globally.

If Euripides were alive today, he might say the following:

> Whom the gods would destroy, they first endow with a government-designed emissions trading system. To ensure that the destruction is complete, the gods then encourage the environmental functionaries to meet in international forums to spread their mistakes around the world.