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Evaluating the Milk Advertising Dollar

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Got Milk? Who hasn't been tempted by the image of a frothy glass of milk and a plate of chocolate chip cookies? And everyone knows that "milk does a body good." Whether broadcast directly into your living room or printed in a magazine, these images are the result of a producer-supported, nationwide dairy promotion program.

In 1983 the *Dairy and Tobacco Adjustment Act* authorized a producer check-off, an assessment of 15 cents per hundred pounds of milk. Totaling about $200 million per year, the check-off funds the National Dairy Promotion and Research Board, which tries to increase consumer demand for milk and dairy products, enhance dairy farm revenue, and reduce the amount of surplus milk purchased by the government.

Through their promotion organizations, dairy farmers have increased fluid milk demand and improved retail prices via advertising. But are producers getting the biggest bang for their advertising buck? That was what we asked ourselves when we started the research project reported here.

Expenditure Patterns

To increase consumption, the Dairy Board invested in generic dairy advertising and promotion, nutrition research, education, and new product development. Of these, advertising (particularly for fluid milk and cheese) accounts for the largest share of expenditures. The amount spent on advertising fluid milk has increased considerably in recent years, even when inflation is taken into account (Figure 1).

A 1997 study found the advertising of dairy products increased milk demand by 2.14 percent, which, in turn, increased farm milk prices by 2.9 percent.

It is important to recognize that generic fluid milk advertising is a cooperative effort quite distinct from branded advertising. Generic advertising disseminates information about a nearly homogeneous product, while branded dairy product advertising attempts to differentiate one product from another in the mind of a consumer. None of the $200 million per year assessment is used for branded dairy product advertising. Because of this, we confined our research only to generic fluid milk advertising.

Generic advertising dollars are spent in four distinct media outlets, although television receives more advertising dollars per quarter than print, radio, or outdoor advertising combined (Figure 2). Television receives eighty-nine percent of the advertising budget while each of the others gets less than five percent.

*(See **Milk** page 2)*

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Cleaner Air, Lower Costs Through Markets?

Jay S. Coggins

Pollution control in the United States has long been based upon "command-and-control" (CAC) regulation. The command feature is usually legislation, passed at the state or federal level, that regulates polluters. The control is enforcement of the rules, perhaps by the Environmental Protection Agency or the Minnesota Pollution Control Agency. Under these conditions, polluters, whether large corporations or individual households, have little latitude or incentive to devise new ways to comply with the law. They must simply adopt particular control methods or meet clearly specified emissions targets—or face a penalty.

In the past three decades, considerable progress in environmental clean-up has been achieved with the command-and-control approach. But drawbacks have been emphasized by economists for some time. With a CAC system, agencies need to know which

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The reason for the bias toward television has to do with consumer response. Some media engage the consumer more quickly and the advertising message is retained longer. This is true for television relative to other media outlets.

We have estimated relative effectiveness of each advertising outlet using an economic simulation model. The model relates the amount of fluid milk sold in each quarter to factors affecting demand such as the retail price of milk, consumer income, the price of milk substitutes, seasons of the year, and, for present purposes, the amount of television, radio, print, and outdoor advertising.

By relating the demand factors to fluid milk sales, our model can approximate net percentage changes in sales for a given percentage change in television, radio, print, or outdoor advertising expenditures. Figure 3 illustrates television advertising's disproportionate impact on fluid milk sales. For an additional one percent of funding allocated to television advertising, total fluid milk demand would be increased by 0.01281 percent, according to our calculations. Since total annual demand is roughly 14 billion pounds, this is equivalent to a demand increase of 179 million pounds of fluid milk per year. In contrast, print provides only a 0.00224 percent increase, radio a 0.00158 percent increase, and outdoor a 0.00377 percent increase.

Too Much of a Good Thing?

At first glance, Figure 3 suggests that television is far and away the most effective media outlet, followed distantly by the other three modes. But while it has had the greatest impact, we argue that television has been overused in dairy promotion.

Although it has the largest advertising response for a given percentage increase in spending, television's expenditure base is substantially larger than that of the other advertising modes. For instance, between 1984 and 1993, a one percent increase in advertising expenditures (in 1982 dollars) was equivalent to a $33,000 increase per quarter for television, a $2,000 increase for print, $1,600 for radio, and $900 for outdoor. It follows then that a one percent increase in television advertising represented an investment 16.5 times larger than the same percentage increase in print advertising. Yet the advertising responsiveness (the associated increase in milk demand) of television is only 5.7 times larger than that of print.

Our results suggest that the dairy promotion agency should reallocate expenditures from television to other media in order to be more cost-effective. Recall that fluid milk demand increases by 0.01281 percent for a percentage increase in television advertising—from current spending levels. However, for every additional dollar spent, the incremental effect of any advertising message begins to lose its effectiveness. Consumers have heard the message, and digested it. Less and less is gained from subsequent exposure. The advertising message wears out with repeated use.

This wearing out, an example of the principle of diminishing marginal returns, suggests that at some expenditure level, any additional dollar spent on television advertising would not be as effective as would an increase in print, radio, or outdoor advertising. Diminishing marginal returns means that the most profitable approach to advertising is almost always diversified approach—funds are distributed among all media so that the last dollar spent goes to the most effective media outlet.

Figure 1. Fluid Milk Advertising Expenditures 1985-1996 (in 1982 dollars)

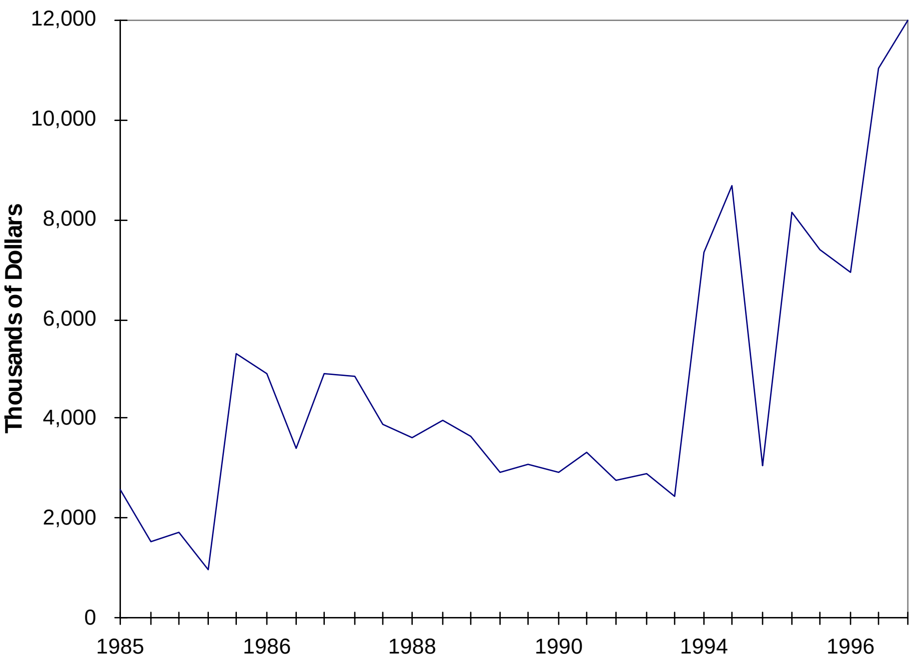
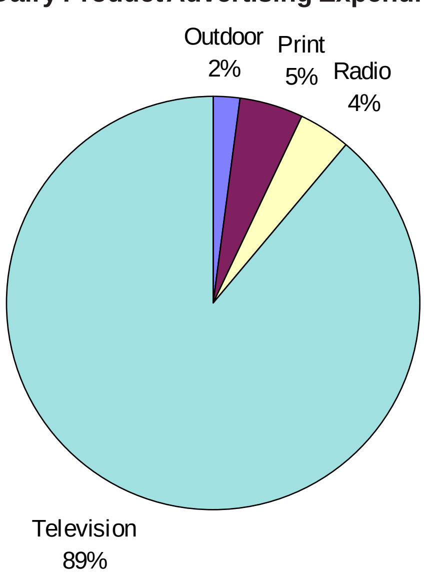


Figure 2. Typical Dairy Product Advertising Expenditures by Media Outlet



The Right Mix

How might the optimal mix of advertising expenditures be determined? Once the relationship between demand factors and fluid milk sales has been estimated, as above, we then consider how the supply of milk responds to changes in fluid milk sales.

An increase in fluid milk demand leads to higher milk prices, and higher prices encourage more milk production. This increased production is often called a supply response. We developed a second econometric model to quantify the supply response by relating important supply factors such as milk price and the cost of production to the amount of milk produced in each quarter.

The resulting estimated supply and demand equations become important components of what economists refer to as an "optimal control model." The goal of these models is to achieve the greatest profits (fluid milk sales minus advertising expenditures, in our case) over a given time period. To do this, the researcher adjusts the advertising expenditure level of each media outlet incrementally while staying within the advertising budget. Information on supply and demand is used to determine the amount of fluid milk sold, the price of milk, and profits.

The model can control both the level of estimated demand in each quarter and the subsequent estimated supply response. Ultimately, the optimal control model arrives at an advertising mix that maximizes profits throughout the time period.

What is the optimal mix of advertising, according to our research? On average, the best mix of funding is that shown in Figure 4. Television should receive seventy percent of the advertising budget—down from the existing eighty-nine percent shown in Figure 2. Outdoor advertising spending should increase from two to fifteen percent, radio from four percent to six percent, and print from five percent to nine percent.

Had the dairy board employed this optimal advertising mix, milk producers would have been better off because there would have been a larger demand increase for the same level of advertising expenditure.

Suppose we go back in time to the period 1984-1993 and switch from the typical mix of advertising to the calculated optimal mix.

Figure 5 shows milk demand in each quarter with and without the switch. In this illustration, both the typical advertising mix (dashed line) and the optimal advertising mix (solid line) share the same "high" demand quarters and "low" demand quarters. These peaks and valleys reflect the seasonal nature of consumer demand. Yet, it is clear that demand from the optimal advertising mix is greater than the typical advertising mix.

Had this extra milk been sold, the nation's dairy producers would have made an additional $265 million for the period (about $29 million per year), at little or no additional expenditure on advertising. It's simply a matter of putting the right funds in their proper place.

Figure 3. Percent Increase in Fluid Milk Demand by Media Type

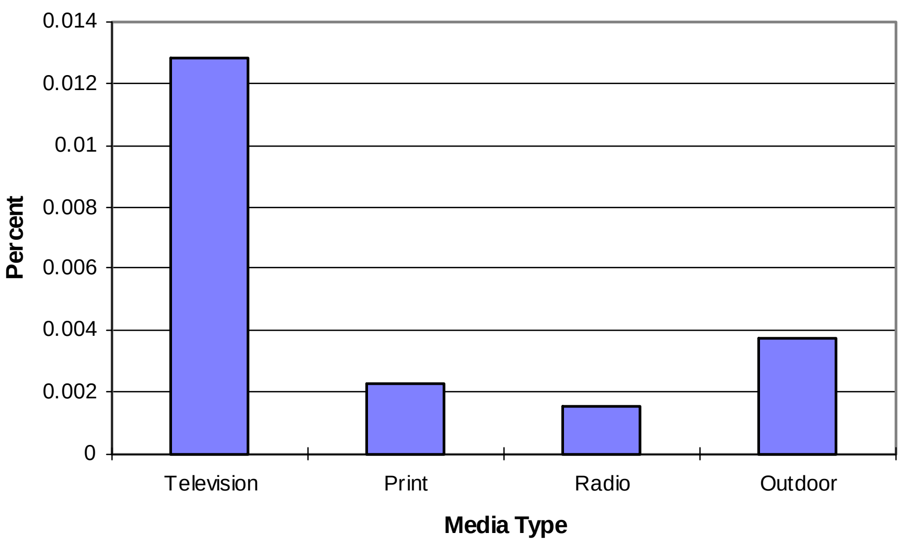
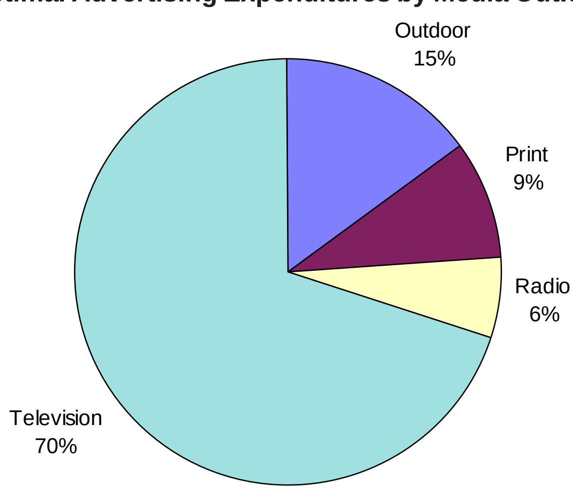


Figure 4. Optimal Advertising Expenditures by Media Outlet



Conclusion

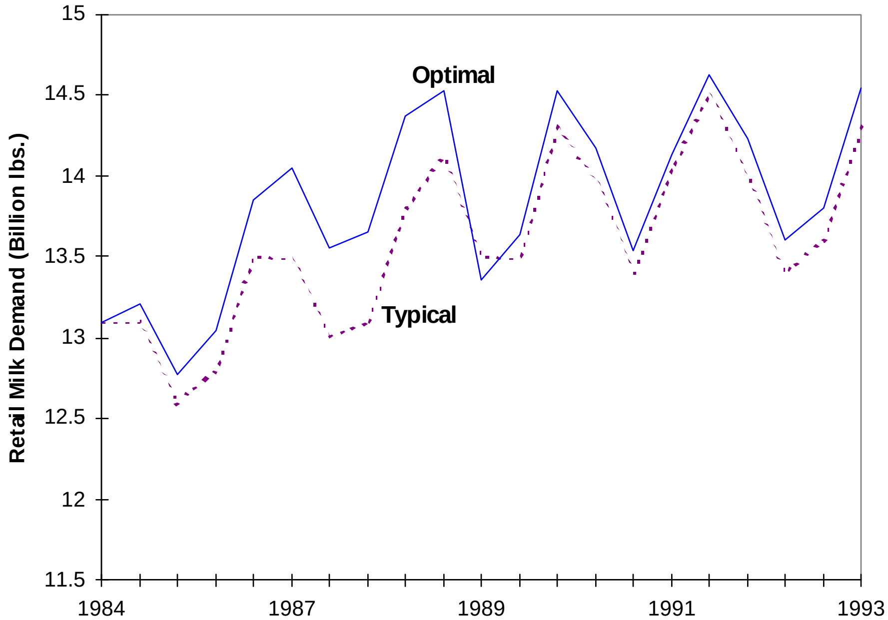
Clearly, dairy promotion programs influence the amount of fluid milk consumed in the United States each year. Television is by far the most effective media outlet—it is easily five times more effective than the alternatives.

But it is possible to have too much of a good thing. The effectiveness of television is subject to diminishing marginal returns. The greatest impact from fluid milk expenditures requires an optimal mix of media outlets.

Our research is not without its limitations, of course. It is important to recognize that this study compares an optimal media mix to a historical media mix. Our suggested mix would have yielded the greatest net returns for 1984-1993, yet it might not prove to be the optimal mix in the future. As a result, continued careful analysis must be made to forecast fluid milk demand, raw milk supply, and advertising effectiveness to the media mix for future years. Also the general results from our national model may not apply to specific regions within the United States. The optimal media mix for Minnesota milk may be different than that for Florida milk. Again, continued careful analysis is called for—this time at the regional level.

Finally, we've assumed here that the dairy promotion agency does not exert market power, even though in fact it may use the size of its media purchases as a bargaining tool to get a discounted price on advertising. Redistributing funds from television to other media outlets could reduce the effectiveness of this bargaining tool. This issue is beyond the scope of this report—but we might look into it sometime.

Figure 5. Estimated Demand Under Typical vs. Optimal Media Mixes (1984-1993)



(***Cleaner Air*** *continued from page 1)*

polluters should reduce emissions by what amount, which abatement methods should be used by whom, and which energy sources should be used. Coordinating clean-up efforts by hundreds or thousands of emitters—at the least cost—is increasingly difficult.

Economists propose instead that environmental regulators select an overall cap on emissions of a given pollutant and allow polluters to decide how they might jointly achieve the required reduction.

This idea has been put in practice in the United States for control of sulfur dioxide (SO_2), a primary ingredient of acid rain. In 1990, Congress authorized a market for SO_2 emissions. In this article, I first summarize the new trading rules, then discuss why economists think markets might help, not hinder, pollution control efforts. Finally, I'll evaluate the SO_2 trading system's performance to date.

Sulfur Dioxide Trading

The trading scheme is the first of its kind to be attempted on a national scale. Under the law, U.S. coal-burning electric utilities are to reduce total annual emissions in two increments. In Phase I (begun in 1995), only the dirtiest 110 plants in the country were required to reduce their emissions. In Phase II (beginning in 2000), total national SO_2 emissions will be limited to 8.95 million tons, down from about 19 million tons in 1980.

Environmental interests had sought even more dramatic reductions in emissions, while the utility industry hoped for a less ambitious emissions target. In the end, industry interests agreed to the 10 million tons reduction nationwide. In return, they insisted upon the trading scheme, believing it would reduce their compliance costs dramatically. If there were no trading program, the environmental target would not have been as ambitious.

The law creates a national market for SO_2 "allowances." Each allowance grants its bearer the right to emit one ton of sulfur dioxide during or after the year in which it was issued. Each affected utility is granted allowances tied to emission levels during a 1985-87 base period.

During Phase I, the annual endowment is enough to permit affected plants to emit 2.5 pounds of SO_2 for each million Btu (mmBtu) they generate. In Phase II, all coal-burning electric utility plants with a capacity of at least 25 megawatts will be affected. The overall Phase II emission restriction is also more stringent, with endowments of allowances equivalent to an emission rate of no more than 1.2 pounds per mmBtu.

Some plants now emit as much as 9 pounds of SO_2 per mmBtu under regular operations. Utilities such as these may purchase allowances from other utilities if they find the cost of doing so is lower than the cost of alternative compliance measures such as switching fuels. Likewise, those utilities that "overcomply" by reducing their emissions more than required may sell their excess allowances.

In both phases, utilities are given wide latitude in complying with the law. They may add scrubbers, switch to low-sulfur fuels, or buy additional allowances.

The purpose of the trading scheme, then, is to reduce the cost of reaching the fixed goal of 8.95 million tons of SO_2 emissions per year after 2000. How big are the potential savings? In a 1993 report published by the Electric Power Research Institute, it was estimated that meeting the Phase II SO_2 provision would cost \$5.1 billion annually in the absence of an allowance market. With full-blown allowance trading between utilities, on the other hand, annual compliance costs were estimated at \$2.2 billion dollars.

Minnesota's relatively clean utilities have been little affected during Phase I and in Phase II, will probably feel the effects of the law less than in most states. I'll return to an overview of the Minnesota situation near the end of this article. First, however, I want to explain why economists are so fond of market-based pollution-control schemes such as SO_2 trading.

Emissions Trading

The idea that markets might lead to cost savings in pollution abatement is quite old, dating at least to Pigou in 1932. By harnessing the powerful incentive firms have to reduce costs, the argument goes, and placing the decision of how to achieve a *given* environmental goal in the hands of those who emit pollutants, we can save money.

When one considers it carefully, this idea seems plausible. There are many emitting sources, each with a different set of circumstances. Surely some will find it less expensive to cut back their sulfur emissions than will others. If a system can be devised to get the former to reduce overall emissions to acceptable levels, while those for whom cutting back is quite costly continue as before (except that now they must buy some allowances), then overall compliance costs should be minimized.

From the perspective of each utility, the decision about how to comply with a given environmental standard is simple. If the price of an allowance is lower than the per-ton cost of installing a scrubber or switching fuel, then the utility should buy allowances to meet its pollution goal. Otherwise, the utility should install a scrubber or switch, and sell any leftover allowances at the going rate.

To illustrate, consider a world in which two coal-burning plants supply all of the electricity. These plants (call them Plant 1 and Plant 2) are located near each other, and each spews a certain amount of SO_2 into the air for every unit of coal it burns. Imagine that together these plants exactly meet the demand for electricity, that they know everything that can be known about each other, about tomorrow's weather, and so on. Finally, suppose that Plant 1 is currently emitting 100 tons of SO_2 annually, and that Plant 2 is emitting 150 tons.

In order to make this already fanciful world look like the world of the economist, we must make another assumption about the plants. For a given level of electricity generation, and for a given level of sulfur emissions, each plant gets everything else just right. That is, all of the usual optimizing behavior (employing the right number of people, burning the optimal amount of coal, building a plant of exactly the right size, and so on) is taking place. No mistakes are being made anywhere.

Now suppose the operations of each firm can be represented by a simple rule that relates the amount of abatement a firm achieves to its overall cost of operations. The rule, called an *abatement cost function,* represents everything interesting about the plant's operations. It gives the cost of doing business, but in such a way that cost depends only on the level of SO_2 emissions.

One must bear in mind that for a given level of electricity generation, costs will *increase* as emissions *decrease*. In order to produce the same amount of electricity as emissions go down, more must be spent on abatement equipment or on low-sulfur coal.

In our example, Plant 1 is relatively new and its level of emissions is lower than that of Plant 2. It is also cheaper for Plant 1 to cut back on emissions. In the world as it exists today, suppose, Plant 1 emits its 100 tons of sulfur dioxide at a cost of $500 and Plant 2 emits its 150 tons at a cost of $3,266. Total costs for the industry equal $3,766.

The example includes one additional actor—an environmental regulator named Solomon. This benevolent government employee is charged with protecting the environment from those who would spoil it by putting things like SO_2 in the sky. Solomon is very wise, however, and gets some pleasure from making people's lives as easy as possible.

Solomon's job is to look around, decide whether there is an air pollution problem, and, if there is one, figure out a way to solve it. After a lengthy study, Solomon decides that there is too much SO_2 emission and that the annual level should be reduced by forty percent, from 250 to 150 tons.

This number is thereupon made the law of the land, and Solomon is charged with devising a plan for meeting the new environmental target. Two alternatives for achieving the required 100 tons of abatement are put forward. The first is a simple command and control regime: each plant will be required to cut back in proportion (forty percent) to its initial pollution level. Call this the proportional reduction (PR) plan. The second is to implement a marketable pollution permit scheme, under which the two plants are together given a total of 150 allowances, each allowance granting its holder the right to emit a ton of SO_2. Call this the tradable allowance (TA) plan.

Under the TA plan, it is illegal to emit more sulfur than represented by the allowances a plant holds. With this program the two plants have the freedom to reach an agreement between themselves—free, in particular, from further government intervention—about how much each plant should pollute. Whatever the initial allocation of allowances, the two plants buy and sell allowances from one another so that each owns exactly enough to emit SO_2 according to its own optimal plan.

Solomon's decision about which plan to implement is based solely on total cost considerations. Whichever plan is cheaper for the industry as a whole will be chosen. The results of these calculations appear in Table 1. Without pollution regulation, the numbers are as above (total cost equals $3,766). These appear in the first column of the table. The PR plan, as sketched here, is easy to implement and requires very little in the way of calculation. Each plant must come up with a reduction of forty percent. Plant 1 can emit only 60 tons, and Plant 2 can emit 90 tons. The corresponding costs for Plant 1 and 2 are $645 and $4,216 (costs go up as emission levels fall). The total cost is $4,861.

Under the TA plan, trade between the two plants makes the cost of achieving the last unit of abatement the same for each. In order to decide which plan to implement, Solomon calculates the optimal decision under this plan, and compares it to $4,861.

Table 1. Total operating costs under various pollution control regimes

	Status Quo	Proportional Reductions	Tradable Allowances
Plant 1 Emissions	$100	$60	$30
Plant 2 Emissions	150	90	120
Total Emissions	**250**	**150**	**150**
Plant 1 Costs	500	645	913
Plant 2 Costs	3,266	4,216	3,651
Total Costs	**$3,766**	**$4,861**	**$4,564**
Allowance Price	n.a	n.a.	$15.21

The cost-minimizing decision turns out to be for Plant 1 to cut back more, emitting a total of only 30 tons, and for Plant 2 to emit 120 tons.

The corresponding costs of operating (ignoring the purchase or sale of allowances) are $913 for Plant 1 and $3,651 for Plant 2. Total cost to the industry is $4,564. It is also relatively easy to calculate that the market-clearing allowance price, the price at which all allowances will change hands to reach this optimal allocation, will equal $15.21 each.

It is easy to see that Solomon will select the tradable allowance plan. Under this plan, total cost of compliance with the environmental standard is $298 less than under the proportional reduction plan. To understand this, keep in mind exactly what it is that goes wrong if the PR plan is implemented. Plant 2 cuts back more pollution, but at a relatively high cost, which means the resources devoted to pollution reduction when this plant is emitting only 90 tons are not used wisely. The same level of expenditures on abatement at Plant 1 would have purchased a greater level of abatement. This is the source of the inefficiency and of the additional cost of the PR plan over the TA plan.

Note that in this simple example, the regulator is smart enough to be able to calculate the outcome under the allowance plan. So why bother with trading? Why not simply have Solomon calculate the optimal level of emissions for each plant, and announce to them what their share of the required abatement will be?

The point is that in a more complex world, the computational burden placed upon our government official would be Solomon is privy to the required cost information for all plants. In the real world, no government agency has this cost information, nor do plants know everything about each other. The primary advantage inherent in a market for allowances is that each plant needs only to know its own cost structure and the allowance price. The government agency is not required to know very much at all about the cost structure of any of them. And still the optimal allocation can be readied.

National Market Performance

We have seen why an allowance-trading scheme is appealing in concept. But the example was exceptionally simple, while the real work is complex. Could such a scheme actually work in practice? More to the point, is the SO_2 scheme working as hoped?

The short answer to this question, in my view, is yes. Let us now take a look at the performance of the market to date.

Under Phase I of the SO_2 program, 110 plants were granted allowances sufficient to emit SO2 at a rate of the same 2.5 pounds per mmBtu. They were also required to reduce their base level emissions to 2.5 pounds to buy additional allowances. The 110 plants comprise a total of 263 "units," or individual boilers.

Under the law, utilities may volunteer to include additional units in their SO_2 compliance plans. Extra units must also meet the requirements of the law, but utilities with many plants may find this advantageous because of the way their plants are coordinated to generate electricity. In the end, a total of 445 units nationwide fell under the SO_2 control provisions in 1995; 431 were affected in 1996 (Table 2).

These units were granted 8.75 million allowances in 1995 and 8.30 million in 1996. Total emissions of SO_2 by affected plants, again nationwide, were 5.30 million tons in 1995 and 5.44 million tons in 1996. Actual SO_2 emissions were lower in 1996 than in 1995, and both were much lower than they would have been under the pre-1990 regulations.

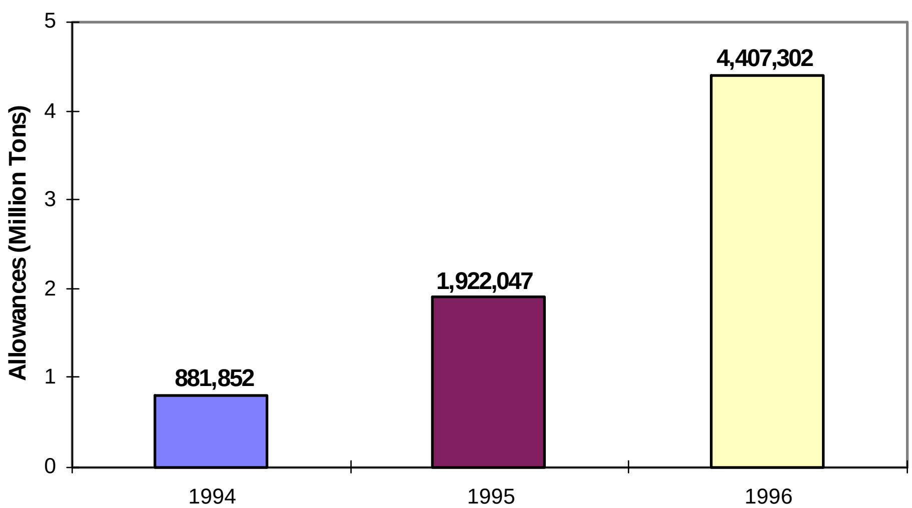
As of January 1997, utilities held 6.38 million unused allowances. Because allowances can be carried from one year to the next, or "banked," most utilities seem to be saving them for when they know their annual allowance allocations will shrink (in Phase II when the calculation will be based on 1.2 pounds of SO_2 per mmBtu rather than 2.5 pounds).

These numbers alone do not tell us whether the market is working well or not. How does one decide this question? Two valuable indicators are the number of allowances traded and the price at which they are traded.

Let us look first at the number of trades. As recently as 1994, when utilities began to anticipate the new rules, there were few trades. This worried some observers, who took it as an indication that the market was not working very well.

But as time has passed, trading volume has increased dramatically. Figure 1 illustrates the annual volume of allowance trades between non-related parties. (Most of these are between utilities, but some involve brokers and fuel vendors as well. Private parties can also purchase allowances and then "retire" them. I bought one myself in 1995 for $150, $50 over the going rate, just to get a framed certificate.) Of the 8.3 million

Figure 1. Volume of Allowance Trades



Source: "1996 Compliance Report," EPA, June 1997

Table 2. 1995 and 1996 SO_2 Emissions and Allowance Allocations

	1995	1996
# Units Participating	445	431
Allowances Granted (Million)	8.75	8.30
Emissions (Million)	5.30	5.44

allowances distributed in 1996, more than 4.4 million changed hands. Traded volume more than doubled between 1994 and 1995, and then doubled again between 1995 and 1996.

The 1996 trade volume numbers are striking. They provide what may be the most compelling evidence that the market can work, despite a variety of potential difficulties, including uncertainty about the program's long-term survival, state utility regulation that has often been designed to work against the use of allowances, and the market power wielded by large utilities in the allowance market.

How about the allowance price? One may expect the price at which allowances trade to be close to the actual cost of abatement, because utilities will not buy them unless the price is no higher than the cost of alternative compliance measures. At the time the rules were first written (1990), abatement costs were thought to be as high as $750 per ton of SO_2. If this had been correct, the allowance trading price should be in the same neighborhood.

But shortly after allowance trading began in 1992, allowance prices were around $150. They fell to a low of about $70 in early 1996 and are currently around $100 (see Figure 2).

So abatement costs must be significantly lower than the $750 per ton anticipated only seven years ago. Why were these estimates so far off? Perhaps it is because the very possibility of allowance trading has struck fear into the various industries supplying the alternative abatement methods, encouraging them to lower their own prices.

Minnesota and the SO_2 Allowance Market

So the national allowance market appears to be working well. But what of Minnesota's part in it? How will the state be affected?

The short answer is, not much. Minnesota utilities were already very clean before 1995. Many of the state's power plants have long been fitted with scrubbers, and most had switched to low-sulfur western coal by the 1980s. Both of these changes were the result of the Minnesota Acid Precipitation Control Act of 1980 and the 1986 rules pertaining to it. Emissions of SO_2 by Minnesota utilities, which totaled 227,157 tons in 1980, had fallen to 110,189 tons by 1992—before emissions trading got under way.

Minnesota's early compliance is "better" in the sense that our air is relatively clean. It is "worse" in the sense that the large cost of SO_2 abatement was incurred by Minnesota utilities and their ratepayers before the federal rules took effect. This means, among other things, that utilities in the state will be granted relatively few allowances under the SO_2 trading program.

Indeed, only one Minnesota unit—Northern States Power's High Bridge Unit 6—is affected under Phase I. NSP chose to include five other units in Phase I, giving it more flexibility in meeting the requirements of the law. In 1995 and in 1996, NSP was awarded 30,604 allowances, while its emissions in each year totaled around 13,600 tons. Thus, NSP was able to bank about 17,000 allowances in each year. These allowances will be available for compliance in Phase II, which will be important as demand for NSP power grows.

Of the Minnesota plants affected under Phase II, only Rochester Public Utilities and the LTV Steel Mining Company will need to purchase allowances, according to the MPCA. NSP and the other utilities expect neither to buy nor to sell allowances after the year 2000.

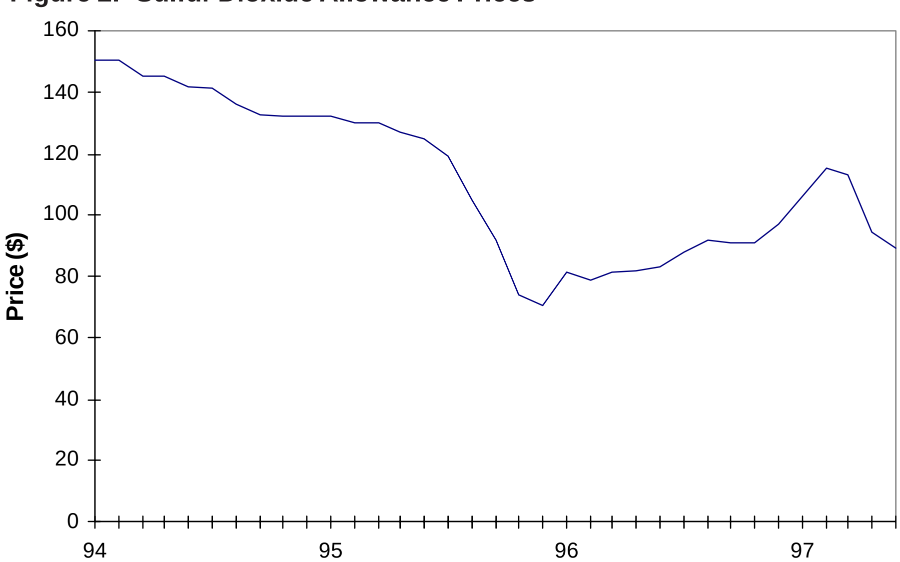
Conclusion

The provisions designed to reduce SO_2 emissions under the 1990 Clean Air Act Amendments have put in place an entirely new way of improving environmental quality. They apply market forces to pollution reduction on a massive scale. Although many of the expectations about how the law would work have proven to be wrong, important indicators show that it is nonetheless working very well so far. Trade volume is high, allaying fears that electric utilities would be unwilling to participate. Costs of achieving the overall environmental goal are now expected to be considerably lower than was originally estimated.

While Minnesota utilities are not affected by the new law as much as are other utilities around the country, people in this state will still benefit from it. Without question, acid rain will be reduced, because the rest of the country will soon be required to devote resources to reducing SO_2 emissions, just as Minnesota did years ago.

The apparent success of the SO_2 allowance market might well encourage policy makers to try market-based schemes for reducing emissions of other pollutants, including water pollution and greenhouse gases. One such scheme (for phosphorus reduction) has just been put into place on the Minnesota River. Perhaps I'll report on its economic performance in a future issue of this publication.

Figure 2. Sulfur Dioxide Allowance Prices



Source: "1996 Compliance Report," EPA, June 1997

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