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Farm Real Estate Prices Still Rising in Minnesota

Steven J. Taff

Average Minnesota farm real estate sales prices just keep on climbing (figure 1). This despite low output prices, rising input costs, and continued uncertainty about the future of federal subsidies. Sales price increases were seen in all parts of the state except in the northwest.

In this annual sales price summary, I can provide only an overview, some cursory analysis, and—as always—a few opinions. I'll not bore you with text that simply repeats what's already shown in the charts. Instead I'll spend some time discussing how land transaction data are recorded, adjusted, and employed.

I think it's useful to go through some administrative and procedural details to further our understanding of what these data are and what they are not. If this prospect makes you say, "Just show me the data, Steve," then you can stop right after the sales summary section. Or, if your impatience knows no bounds, go straight to the Minnesota Land Economics (MLE) Web site at http:/apec.umn.edu/landeconomics and start working the numbers yourself.

Farm Land Sales in 2000

Assessors are required to report initial assessments in late fall, based on sales data to date. That's why the data are reported on a "record year" basis: these are the sales that were, presumably, available for assessor scrutiny at the time the initial estimated market-values are calculated. Final values are set by summer, to be used in the succeeding tax year. So, for example, sales made in late 1999 are used by assessors to set initial values for January 2001. These estimates are adjusted in spring 2001, finalized in summer 2001, and then used for tax

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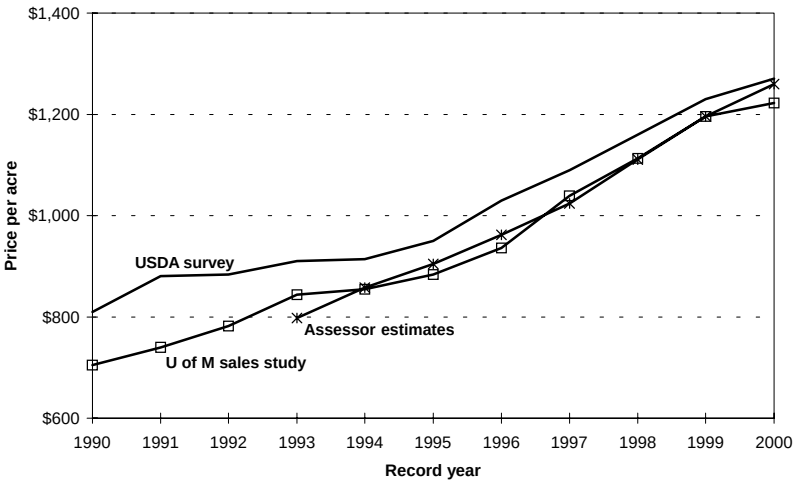
Figure 1. Average Minnesota farm real estate values



How Clean Is Clean Enough?

Stephen Polasky

On Election Day, November 7, 2000, the U.S. Supreme Court heard oral arguments on two related cases pitting industry groups against the U.S. Environmental Protection Agency (EPA) over new air quality standards issued in 1997. Though air quality standards have been overshadowed by other legal and political news lately, the air quality standards cases are quite significant and raise a host of important economic, legal, and policy issues. Should the government consider how costly it might be to attain air quality standards when it sets the standards? Or should the government only consider factors related to protecting the public health? And how much discretion and latitude should a government agency have in deciding how stringent environmental standards should be?

The final Supreme Court decision, announced a few months ago, could have far-reaching impacts, not just on air quality, but on all federal environmental, health, and safety regulations.

Air Quality Regulation

The Clean Air Act authorizes the EPA to set National Ambient Air Quality Standards for certain pollutants including

- ozone (smog), which is associated with respiratory difficulties and diseases and, possibly, with premature death; and
- particulate matter (soot), which is linked to respiratory diseases and premature death.

The Act mandates the EPA to set air quality standards "requisite to protect the public health with an adequate margin of safety." This phrase establishes the legal

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University of Minnesota Extension Service

(*Farmland* from page 1)

purposes in 2002. The adjusted record year 2000 sales data were therefore not available until April of this year.

Figure 2 shows the distribution of all farmland sales in 2000. The bulk of the sales lie between $500 and $2,000 per acre. I excluded a small number of sales that exceeded $5,000 per acre as well as those involving parcels of land less than 20 acres in size. Both were excluded as not being plausibly "agricultural"—despite their designation on the Certificate of Real Estate Value (CRV) as "agricultural" land. (Although excluded from figure 2, these data *are* included in the MLE Web site data.)

Even though *MAE* readers and MLE Web site users can view the full distribution of sales prices, most still ask for a single number that somehow captures the story behind the figures. Obviously, for a set of sales that span such a wide range in prices, any single number fails completely to accomplish this end. Movements in averages, while arithmetically correct, usually fail to tell the entire story.

The particular average I use in this article is a location- and size-weighted mean (table 1). In last year's farm real estate report (http://agecon.lib.umn.edu/mn/mae699.pdf), I discussed the usefulness of such weighting as well as the desirability of examining sales data at the smallest geographic scale possible.

Figure 1 compares the movements of actual sales price averages with those two other estimates of land value—the United States Department of Agriculture (USDA) annual state estimates (based on a farmer opinion survey) and the average assessor estimates (the location- and size-weighted mean estimated market value). The University of Minnesota sales prices averages are location- and size-weighted means.

The fact that all three (somewhat) independent estimates of farmland real estate values shown in figure 1 move in lockstep adds credence, I believe, to the conclusion that, on average, farmland values really *are* increasing in Minnesota.

Geographic variations in real estate values for the past 11 years are shown in the box-and-whisker plots of figure 3. (District boundaries are shown in figure 4.)

The range of sales prices for each district for each year is shown by the endpoints of the vertical lines. The ends of each box show the prices at which 25 percent of the sales were higher (or lower). The median is indicated by the horizontal bar within each box. So, for example, the median Central district farmland sale was about $1,200 per acre, with 25 percent of the sales lower than $750 and 75 percent lower than $1,850 per acre.

In previous years' reports, I've noted the wide variation in average price movements among districts. Such differences were accentuated in 2000 by the continued climb of values in the South East district combined with the continued stagnation in the North West district (figure 5).

Farm Sale Data

When a Minnesota property is sold, the transaction details must be recorded at the county courthouse on a form called a CRV. On it, the seller attests that such-and-such a property was sold to so-and-so on a certain date for a specific price. Other information about the property (its size, soil characteristics, prior year's estimated market value) is often entered on the CRV as well.

Frequently, the per-acre prices that underlie this article and are also shown in the MLE Web site are *not* the prices entered on the CRV. Long before a land sales figure enters the official data base, it has been passed through an array of filters and adjustments designed to make comparison among transactions more meaningful and more reliable.

Recording the Transactions

There are many possible slips between an ownership change and data analysis. Of course, there is always the chance that simple recording errors are made. For example, numbers may be miscopied from bills of sale onto the CRV, or into a computer file, or into a spreadsheet.

There is also a chance of misrepresentation. The person who fills in the CRV might have a reason to understate or overstate the actual sales price—perhaps to avoid a tax. This, of course, is illegal, but, as any courthouse veteran can tell you, it occasionally happens.

Not every sale receives further processing. Local or state officials remove from subsequent analysis any sale not deemed "arms-length," because it was sold, for example, to a member of the seller's immediate family. Or, a sale might be pulled because the new buyer intends to convert the land to a non-agricultural use.

Adjusting the Prices

After this filtering, sales prices are frequently adjusted to make comparison among sales more appropriate.

First, to expunge the effects of inflation, sales prices are deflated by an officially reported rate to January 2 of the year in which they were recorded. This "adjustment for time" is fairly minor in years (like the past decade) where inflation has been low.

The second adjustment is "for terms." Not all farm real estate sales are for the full property. Some are made through a contract for deed, an arrangement that allows the buyer to pay a certain amount now and other amounts at stated intervals. Until the final payment is made, the property remains in the possession of the seller—even though it has been "sold." Because the full payment schedule is entered on the CRV, the Department of Revenue can calculate a present value of the initial and subsequent payments at an official discount rate. This becomes the official sales price of the property, regardless of what the buyer and seller had in mind when they sealed the deal.

Adjustments don't end with a time- and terms-adjusted sales price, honestly reported and accurately recorded. In most cases, users of the data are interested in *per-acre* prices, not per-parcel prices. That means some chosen total price must be divided by some total acreage. But which price? Which acres? Should we use the total price or should we first subtract out the value of buildings, personal property, ancillary property, or machinery to get closer to the "true" land price?

In this article (and on the MLE Web site), I choose to follow conventions established years ago in Minnesota. I report the time- and terms-adjusted total sales price, minus the value of personal property, divided by the entire acreage of the parcel. That's why, when I'm being careful, I speak of the average price of farm *real estate,* not of farm *land*.

Figure 2. Minnesota farm real estate sales prices and estimated values in 2000

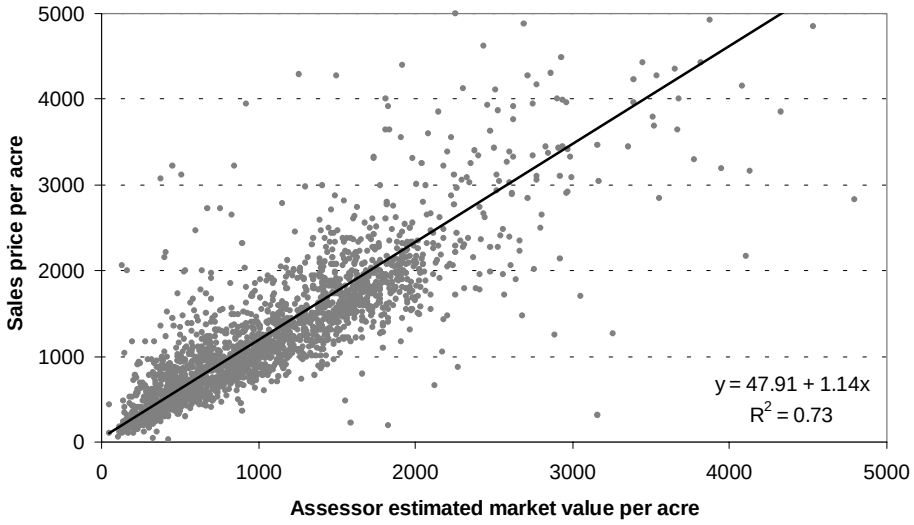


Table 1. Minnesota farm real estate sales summary

Record year	Number of sales	Acres sold	Average price*
1996	2,504	263,728	936
1997	2,641	296,803	1,039
1998	2,724	303,968	1,113
1999	2,212	235,359	1,196
2000	2,258	250,979	1,222

* Location- and size-weighted per-acre mean

Employing the Data

The sales reported here are only those recorded between October 1, 1999, and September 30, 2000. These "record year 2000" sales are so bundled because of the way real estate transactions are used to help local assessors value land for property tax purposes.

Strange as it may seem, the Department of Revenue does not collect sales data merely to satisfy the data cravings of University economists like me. No, statewide sales data are collected principally to create statistics that are used to "equalize" property tax valuations across county boundaries.

Each year, county assessors are required to assign an estimated market value (EMV) to each of the thousands of real estate parcels in the county. The estimate is supposed to be based on an examination of similar properties that were actually sold recently. (The combined valuations for each township, city, or county are the source of the Land Values—in contrast to the Farmland Sales—data on the MLE Web site.)

Because every county has its own assessor who uses largely independent valuation procedures, there are inevitably discontinuities across county lines—even for adjacent properties. Farmer Brown wonders why Farmer Olson's land, just across the fence line in the next county, carries an assessed value that is lower by $200 per acre.

The state has created an equalization procedure that is supposed to smooth over such discontinuities. Assuming that nearby properties really would sell for similar prices, any observed difference in assessed values for otherwise similar properties is presumed to be evidence that one or both of the assessors is either undervaluing (that is, assigning an EMV that is too low) or overvaluing properties.

To test this, the state calculates a sales ratio (the EMV divided by sales price) for every property sold in a particular area. If an assessor systematically undervalues properties (shown by sales ratios that are consistently lower than some threshold), the state might demand the EMVs in that jurisdiction be uniformly raised, to better accord with what is thought to be "true" market conditions.

How Accurate Are the EMVs?

We can see for ourselves how close the final assessor estimates are by comparing actual sales prices against the previous year's estimated market values for the same property (figure 2). Each point in the figure represents one sale. For example, the rightmost point is for a property that was estimated to have a value of $4,900 per acre, but actually sold for only $2,900 per acre. While some of the estimates are obviously way off (like this example), the bulk are pretty close. In most cases, the EMV was lower than the sale price, but in a neatly predictable manner. A simple one-variable regression model, shown as the straight line in the figure, accounts for nearly 75 percent of the observed variation in farm real estate sales prices.

Parting Thoughts

What accounts for the ever-onward-and-upward movement of average farm real estate prices in Minnesota? We need only to round up the usual suspects, most of which I have discussed at length in previous issues of *MAE*. These include 1) perennial farmer optimism about future crop and livestock prices, 2) expected extensions of federal farm subsidy programs, 3) continued favorable local property tax treatment for farmland, 4) the desire of some farmers to increase the size of their current operation by buying adjacent farmland, 5) the desire of some non-farm buyers to use land as a hedge against inflation, and 6) inflation itself.

An additional suspect that we need to add is the increasing prominence of *location* even in rural land markets. We simply can't explain current price levels on the basis of income potential (including subsidies) and speculation potential alone. Clearly, where the land sits with respect to job centers and what it looks like is influencing the price buyers are willing to pay for a particular parcel of land.

(See *Farmland* on page 5)

Figure 3. Minnesota farm real estate sales price distributions by district

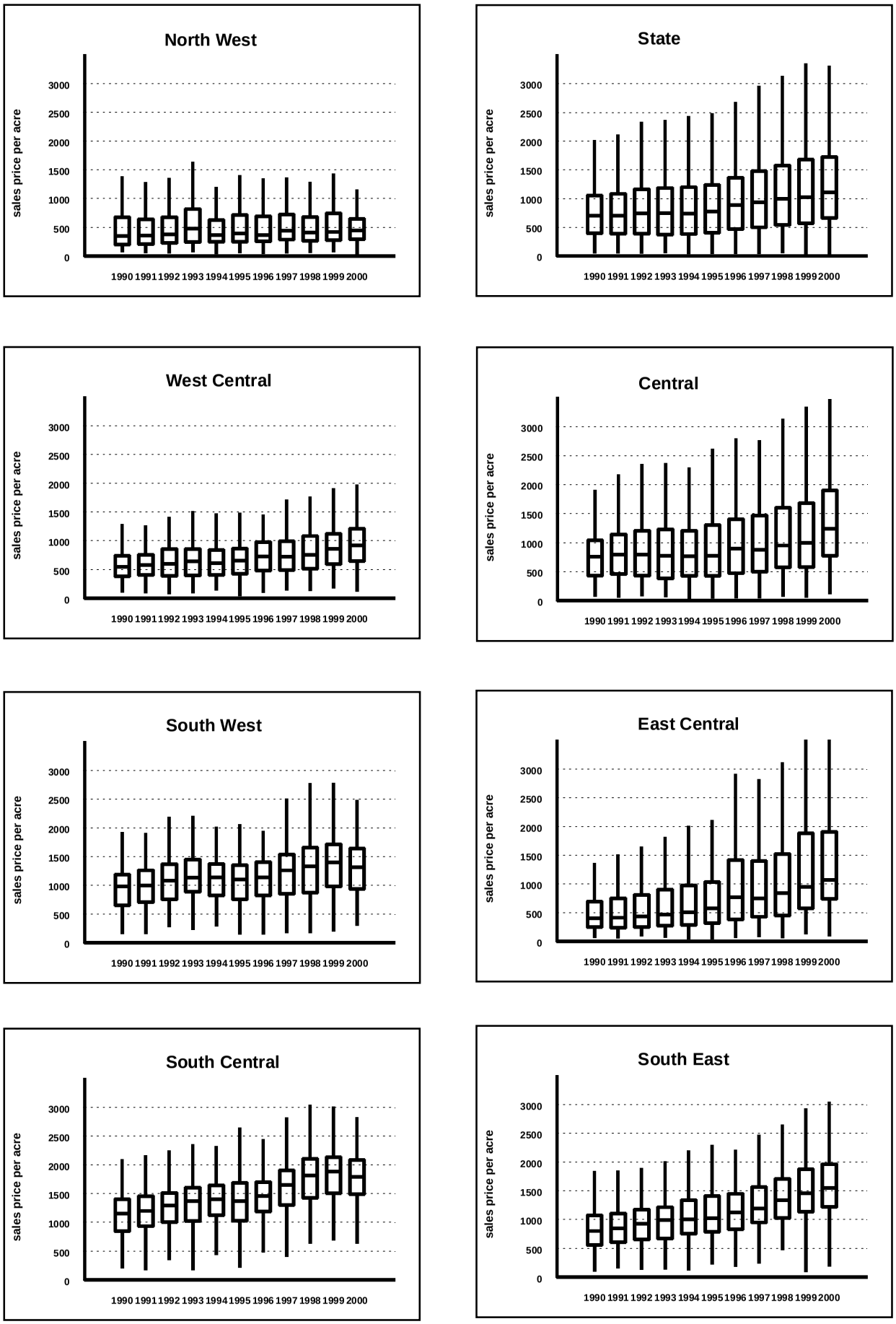
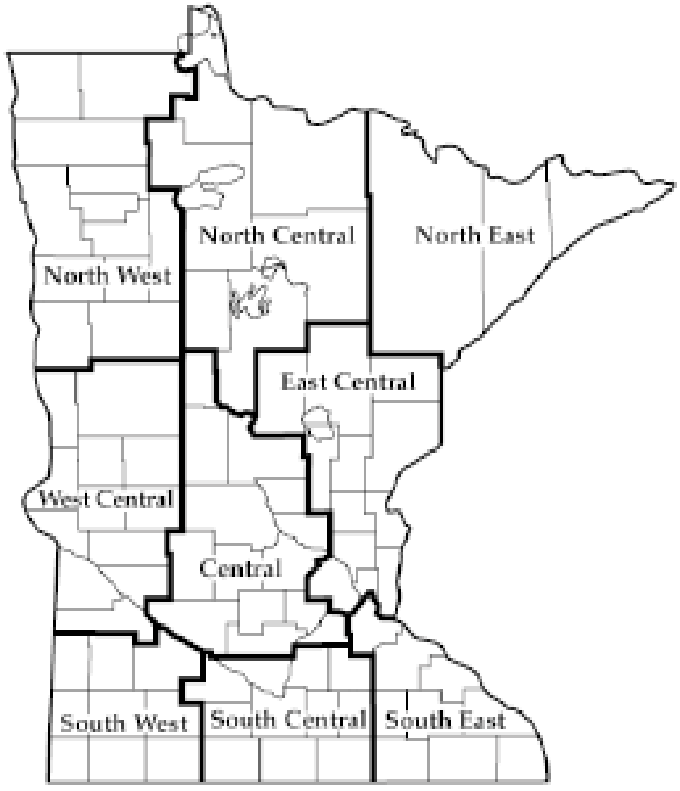


Figure 4. Farm real estate sales districts



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As always, I caution potential land buyers and sellers about reading too much into the average land prices reported here and elsewhere. If you've got land to sell or if you have a hankering to buy land—look before you leap. The financial stakes are too high for casual empiricism. Hire an appraiser. Talk with your spouse. Check your finances. Think about the children. Be careful out there!

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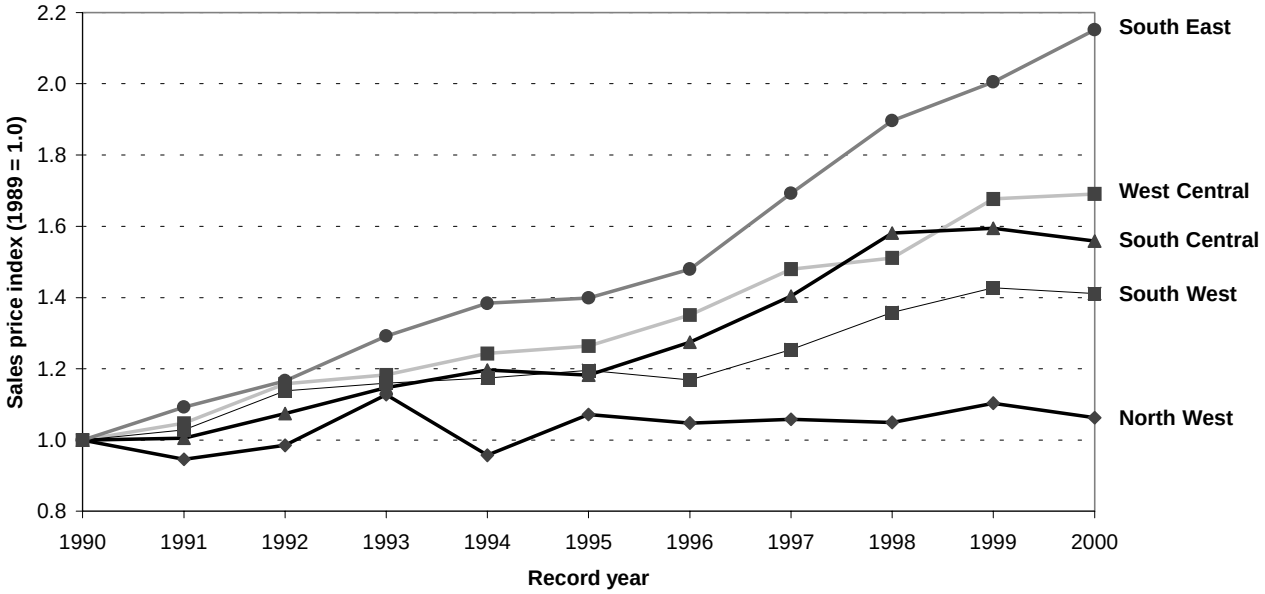
Figure 5. Movements in average Minnesota farm real estate sales prices



(*Standards* from page 1)

basis for how the EPA is to set air quality standards. Though the words seem relatively clear, there have been extensive arguments over their precise meaning. The EPA has interpreted them to mean that it is public health considerations alone, without considerations of cost, that dictate the stringency of air quality standards. Most lower court rulings supported this interpretation of the Act.

Once the EPA sets air quality standards, each state must then implement its own controls on emission sources so that the national air quality standards are met. At this implementation stage, unlike the standards-setting stage, considerations of cost and technological feasibility may be considered. In particular, a state can consider the relative costs of reducing emissions from different sources. From a strict standpoint of economic efficiency, it is better to obtain emissions reductions from the sources where it is cheapest to do so. The same level of environmental quality is thereby obtained at lower cost. As a result, the current air quality regulatory environment is designed to, in theory at least, permit some efficiencies.

A Safe Level of Pollution?

The Clean Air Act establishes the laudable goal of protecting public health with an adequate margin of safety. Who could be against protecting the public health? But what does such a goal mean in practical terms for air-pollution standards, and is it achievable?

Deciding What Is Unacceptable

It would be wonderful if there were such a thing as a level of air quality that everybody agreed was "safe." It would be comforting to think that the EPA can set "safe" air quality standards and protect us all from the adverse health consequences of air pollution. This nice vision, however, is just a vision. Setting precisely and scientifically justified "safe" levels for many air pollutants is still a dream.

For most air pollutants—ozone and particulate matter included—breathing less pollution is certainly better than breathing more of it. But for some pollutants there is a possibility of adverse health consequences at *any* level of exposure. These pollutants are called "non-threshold pollutants" because there is no level (threshold) below which adverse health effects have been shown not to occur. There is no "safe" and "unsafe" level of exposure to non-threshold pollutants; there is only "better" and "worse." Science can help us measure pollution, but only politics can help us decide how much or how little is acceptable. Congress, however, has chosen not to make this political judgment; rather, it has told the EPA to decide what level of pollution is unacceptable.

If there are potential threats to public health from even minimal levels of pollution, does the Clean Air Act require the EPA to set standards that eliminate pollution entirely? Hopefully not, because getting to zero emissions would mean shutting down virtually the entire economy. That, surely, is not what Congress intended when it wrote the Clean Air Act. No one has advocated the total elimination of emissions. Even environmental groups shy away from pushing such an extreme outcome because they realize it would almost surely cause Congress to revise the Clean Air Act.

Stricter Rules

The accumulation of new scientific information, however, may change the received wisdom on the links between air pollution and public health. When such new information changes the level of air quality thought to be "requisite to protect public health," the EPA must reevaluate air quality standards. Thus, in 1997, citing new scientific information on the dangers of air pollution to public health, the EPA issued new stricter air quality standards for ozone and particulate matter.

The new ozone and particulate matter air quality standards therefore resulted in new stricter state regulations on point sources such as electric power-generating plants and industrial plants, as well as on automobiles and trucks.

Challenges to the New Rules

Most environmental groups were pleased with the new air quality standards. Many industry groups, however, were not. After losing the fight during the Clinton administration over the stringency of the new standards, several industry groups turned to the courts for relief. In May 1999, the U.S. Appeals Court for the D.C. Circuit issued a ruling favorable to the industry position. The court held that the imposition of the new standards represented an unconstitutional delegation of legislative power to an agency of the executive branch. In a different part of the same ruling, the Appeals Court held that the EPA was correct in not considering the cost of attainment when deciding how stringent to make air quality standards.

The Appeals Court agreed with industry groups that the EPA, because it appeared to have the discretion to set the standard anywhere "between zero and a hair below…London's Killer fog," was not just administering the law but, in an important sense, was *creating* the law and usurping the role of Congress. In most cases, courts defer to agencies on how statutes should be interpreted, reasoning that Congress has delegated that power to the agency.

The EPA appealed the non-delegation decision to the U.S. Supreme Court, and, at the same time, some industry groups petitioned the Court to consider the argument that the EPA must consider the costs of attaining the standards when setting air quality standards. The Supreme Court agreed to hear both cases.

The Arguments

In the Supreme Court case, the EPA argued that it does not need to regulate emissions to zero. Just because a potential risk exists does not mean it represents an actual risk to public health. Further, some risks are small or temporary and do not rise to the level of causing adverse consequences to public health.

The difficulty for the EPA in this line of argument, however, is that it must make value judgements about how much evidence is needed before it can establish enough of a link to justify action. Further, a value judgement is required about just how large or permanent an effect must be before the EPA will consider it detrimental to public health. Are there any grounds for coming up with definitive criteria for saying why a few cases of disease are acceptable but a few more are unacceptable?

It was on this point, the basis for how the EPA chose the stringency of the new air quality standards, that the Appeals Court had such difficulty. The Appeals Court decision said that neither the Clean Air Act nor the EPA provided an "intelligible principle" on which to

base the standards:

> *[In the Clean Air Act, it seems as though] Congress commanded EPA to select "big guys," and EPA announced that it would evaluate candidates based on height and weight, but revealed no cut-off point. The announcement, though sensible in what it does say, is fatally incomplete. The reasonable person responds, "How tall? How heavy?"*

The Appeals Court, in effect, was asking the EPA to specify in clear terms exactly how it decides "how safe is safe enough?"

The industry groups aligned against the EPA argued that the way to establish an "intelligible principle" is to weigh the economic cost of attaining an air quality standard against the economic benefits gained by improving the public's health. Using a cost-benefit approach, standards should be tightened if, and only if, the benefits of further improvements in air quality equal or exceed the costs of attaining the standards. Policy economists have long endorsed using cost-benefit analyses to make rational public-policy decisions. In fact, all recent administrations have required that a cost-benefit analysis be done when new regulations were under consideration. Unfortunately, no administration has yet mandated that public-policy decisions should actually be based on such analyses.

Using Cost-Benefit Analyses

A cost-benefit approach for setting air quality standards faces several significant practical as well as legal difficulties. Actually measuring the economic costs and benefits of cleaner air is problematic. The lion's share of the benefits of air quality improvement is associated with reductions in respiratory disease and premature death. Estimating such benefits requires two pieces of information. First, there must be a way to estimate how many premature deaths or cases of disease would be avoided with a reduction in air pollution, something for which our current scientific understanding and data are woefully inadequate. Second, there must be a way to place a dollar value on reduced disease and premature death.

Several economic studies have estimated the value people place on reducing their chances of suffering pollutant-induced disease or death. Naturally, some people are horrified by the whole idea of trying to estimate the dollar value of life and health. As a result, the values given in different studies vary widely. On the cost side, air quality standards are often meant to be "technology forcing," which means the new standards should spur the development of new pollution-control technology capable of meeting the standards. However, it is often difficult to estimate how much it will cost to develop this new technology.

The Supreme Court Decision

In late February 2001, the Supreme Court unanimously ruled that the EPA could not consider economic costs in its air quality rule-making. Congress, the Court held, was so explicit about this that no wiggle-room is permitted. This decision, however, doesn't make the EPA's work any easier.

No new air quality standard can be "arbitrary and capricious." There must be good reasons for setting a particular standard at a given level and for not setting it higher or lower. Assuming that costs will not be considered, it is hard to see how *any* standard for a non-threshold pollutant can stand up in court against an allegation that it is "arbitrary and capricious." The only exception may be a zero-risk standard, but using a zero-risk standard would impose intolerable costs on society.

Any time risks are greater than zero, the EPA cannot claim that there are no adverse health consequences from air pollution. What principle, then, allows the EPA to draw a line and say that some risks are acceptable but others are not? For non-threshold pollutants, Congress—and now the Supreme Court—has given the EPA an impossible task.

There are only two ways out of this dilemma. There must either be some explicit recognition that a certain level of risk is tolerable, or there must be a consideration of the tradeoffs between the costs of attainment and the benefits of cleaner air. In addition, the EPA (or Congress) needs to spell out some clear criteria for setting standards based on how much risk is tolerable, and the courts must agree that such criteria are not "arbitrary and capricious."

Most people who think for any length of time about environmental policy come to realize that we can't have it all: a perfectly clean environment and unimpeded industrial activity are mutually incompatible. If you drive a car to work, you contribute to pollution. If you heat your house in winter or cool it in summer, you contribute to pollution. Tradeoffs, however, can be made, and it seems inevitable that enlightened public policy will have to confront these tradeoffs when setting new air quality standards.

In the political debate over environmental standards, the argument to weigh the costs against the benefits is often used by those who want to weaken environmental regulations. There is no logical link, however, between an explicit consideration of costs and benefits and weaker environmental protection. In fact, studies by the EPA have shown that regulation under the Clean Air Act has yielded far more economic benefits than it has imposed costs since 1970. Deciding what is best will inevitably involve difficult value judgements about the relative importance of various factors. Reasonable people may disagree about where to set a particular standard. But a standard will be far more defensible if there is a clear and explicit consideration of all of the important consequences of deciding exactly "how clean is clean enough."

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