Owners' Attitudes Towards Regulation of Agricultural Land

Technical Report on a National Survey

- May 1998 -

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The Survey's Objectives

As a contribution to the national debate about property rights and the appropriateness of land use regulations, American Farmland Trust sponsored a national level survey of farmland and ranch land owners. In the summer and fall of 1997, the Public Opinion Laboratory of Northern Illinois University surveyed random samples of owners of agricultural land in six regions of the country: the West, Southern Plains, Northern Plains, Midwest, Southeast and Northeast. Opinions were obtained from a total of 1,729 respondents owning or, in a few cases, managing agricultural land in 162 randomly selected counties spread over 42 states.

The survey had four main objectives to learn from owners:

1) if they believed that any government regulations had reduced the value of farmland or ranch land they, themselves, owned;
2) what guidelines should determine compensation when government regulations diminish property values;
3) under what circumstances, if any, should government regulations and payments be used to address land use conflicts and environmental issues; and
4) how support for particular compensation criteria and approaches to environmental conflict-resolution may vary significantly by region, type of regulation, kind of agricultural land owned (e.g., used for livestock, crops, logging) and other traits of the land or the owner.

National Sample

The names of the surveyed owners were randomly chosen from plat books and real estate assessment files for 162 randomly selected counties. Each county's chance of being included in the sample was proportionate to its share of the total number of farms enumerated by the 1992 Census of Agriculture for its region. The numbers of completed surveys neared or exceeded the target of 300 per region, except in one case (216 in the Southeast).

Reported Property Devaluations Attributed to Land use Regulations

The surveyed landowners were asked if agricultural land they owned had been reduced in value because of any one of five kinds of government regulations. For each kind there was a separate question, although all had the common beginning, "Has any of the farmland or ranch land you ever owned been reduced in market value because of government regulations affecting . . . ["wetlands," "highly erodible land," "endangered species," "because of government zoning regulations," and "reduced in market value by some other kind of government regulations]? "Market value" was defined as "the price the land's owner is likely to receive if the land were sold."

In both the weighted national sample and across the six regional samples, majorities of the respondents reported that none of the agricultural land they ever owned had lost market value because of government regulations. At the national level, the majority percentage was 71.4 percent, while in the regions it ranged from a low of 53.2 percent in the West to 78.5 percent in the Southern Plains. If we exclude those cases where the surveyed owners said the losses were "small" in size, the percentages are 80.4 percent at the national level and from 64.3 percent to 86.6 percent at the regional. That exclusion leaves ~~11.3~~ 17.7 percent in the national sample and from 13.5 percent to 35.7 percent in regions with at least one kind of regulation devaluation that the owners perceived to be "moderate" or "large" in size.

Owners' Preferences for Guidelines to Shape Compensation Decisions

The surveyed owners were asked their opinions about seven separate guidelines:

- whether compensation should vary with the severity of the financial burden that the regulation imposes on the owner:
- whether compensation was appropriate if the owner knew of the regulation before purchasing the property that the regulation affected;
- whether the regulation is designed to prevent harm to human health;
- whether compensation should vary with how hard the land user tries to comply with regulations;
- whether compensation should be automatic in the sense of being provided once a trigger percentage of loss is reached, like 20 percent of appraised value;
- whether compensation should be adjusted downwards when the government that would provide regulatory compensation has also made the same owners land more valuable through some subsidy, infrastructure investment, or other support; and
- whether compensation should be partial in the sense that costs of protecting the environment should be shared between the government and the landowner.

In the weighted national sample, only 30.7 percent approved of the guideline of limiting compensation to the severely burdened; and just 23.1 percent would deny compensation in the regulatory scenario with a public health purpose. By contrast, 75 percent would withhold compensation to persons who knew about the regulatory limitations on the land's before they bought the property, and 63.5 percent would relate payments to how hard the land user tried to comply with regulations. Two-thirds of the weighted national sample rejected the principle of automatic compensation (when a specified reduction in market value is reached). Those respondents preferred basing compensation decisions on "other considerations," including the guidelines of relating compensation to the extent of compliance and denying compensation if the owner knew about the regulatory limitations before buying the property.

Large majorities also appeared to accept that compensation should be reduced by some factor that takes into account prior or current government payments (or "givings") that enhanced the land's value (e.g., subsidized irrigation water, production flexibility contracts and road improvements). Three-quarters of the surveyed owners opted against full compensation for at least two of the three "givings" scenarios we presented.

Finally, 60.5 percent endorsed the principle that "the burden of protecting the environment should be shared in the sense of the public paying partial compensation and the owners bearing the remaining losses in property value." The questionnaire presented this option as one where the burden would be shared because both the public and the owners reap benefits from protection of the environment.

Landowners' Opinions about the Appropriateness of Regulations

Another route to regulatory relief besides compensation is to substitute alternative means to deal with the same kinds of land use conflicts. Therefore, the survey presented five separate conflict situations; and for each of the five there were offered two competing approaches in addition to regulation. One non-regulatory approach was where private parties settle the conflict through the courts or private negotiations. The other competitor was government-provided financial incentives designed to induce land users to desist from, or moderate, their problem-causing behavior. The conflict situations were defined by five kinds of complaints: (1) about agricultural odors, chemicals and dust, with the complainants being nonfarm residents living near the farm operations; (2) about livestock manure that might pollute streams, rivers or groundwater; (3) about the possibility of increased flood hazards downstream when wetlands that used to store storm water are filled in; (4) about farming practices that might threaten the lives of endangered species; and (5) about logging operations that might cause soil erosion resulting in pollution of nearby bodies of water.

For three of these five conflict situations, majorities of the weighted national sample supported the given regulatory approaches to dealing with the conflicts. Respondents favoring regulation comprised majorities in all six regions regarding the zoning and manure-disposal conflicts and in four of the six regions regarding the logging scenario. They accepted: (1) zoning to limit nonfarm residences near farming operations; (2) requiring adequate manure disposal practices to prevent contamination of drinking water; and (3) requiring soil conservation practices to avoid pollution of recreational water by logging operations. Even among the surveyed people who may feel greater vulnerability to the effects of the particular regulations - including current farm operators, respondents with relatively large revenues from farming, with land subject to zoning, and with livestock or logging operations on their land - more than 50 percent supported regulations for those three scenarios.

The surveyed owners who reported losing market value in the past because of regulations tended to be less supportive of regulation for these three situations. But even among the respondents reporting such property devaluations, majorities were in favor except for the small group listing losses due to endangered species regulations. In other word, these three regulatory scenarios were broadly acceptable.

Favored by about 40 percent in the weighted national sample was regulating to retain wetlands, but only about one in six respondents (15.8 percent) supported regulations to protect endangered species. Therefore, opinions varied greatly by the type of conflict situation and perhaps also by whether the regulated land users would be eligible for cost-sharing. However, the most popular regulatory scenario, regarding zoning to prevent complaints from nonfarm neighbors, had no cost-sharing component.

Chapter One

Survey's Objectives and Design

The Survey's Objectives

As a contribution to the national debate about property rights and the appropriateness of land use regulations, American Farmland Trust sponsored a national level survey of farmland and ranch land owners. In the summer and fall of 1997, the Public Opinion Laboratory of Northern Illinois University surveyed random samples of owners of agricultural land in six regions of the country: the West, Southern Plains, Northern Plains, Midwest, Southeast and Northeast. Opinions were obtained from a total of 1,729 respondents owning or, in a few cases, managing agricultural land in 162 randomly selected counties spread over 42 states (see Table 1 and Figure 1).

The survey had four main objectives to learn from owners:

1) if they believed that any government regulations had reduced the value of farmland or ranch land they, themselves, owned;
2) what guidelines should determine compensation when government regulations diminish property values;
3) under what circumstances, if any, should government regulations and payments be used to address land use conflicts and environmental issues; and
4) how support for particular compensation criteria and approaches to environmental conflict-resolution may vary significantly by region, type of regulation, kind of agricultural land owned (e.g., used for livestock, crops, logging), and other traits of the land or the owner.

The common, underlying purpose of pursuing these four objectives is to contribute to the policy debate within the country about the appropriate role of government in achieving public environmental goals on private land. One component of that debate is the subject of this report's Chapter Two: the extent to which land use regulations have imposed costs on agricultural land owners. That chapter reports the percentages of respondents who believe that government regulations had reduced the market value of any land they ever owned. The findings are broken down by region of the country, type of regulatory issue (wetlands, highly erodible land, endangered species, zoning and "other"), and whether the respondent believed the reduction in value was "small," "moderate" or "large" in size. This part of the survey's findings, as well as others, deals with perceptions. What one person regards as a "large" loss may seem "small" to others. However, the perceived seriousness of losses is what tends to motivate letters or phone calls to legislators, to influence policy-makers' responses to citizen input, and to shape other aspects of policy deliberations.

A second focus of public debate is the subject of Chapter Three: the factors to consider in deciding whether to compensate owners who can demonstrate loss in property value because of regulations. A third focus, the subject of Chapter Four is in what circumstances may regulations be preferable to other approaches to solving land use conflicts. The survey questionnaire described five rather common conflict situations involving farmland and ranch land and asked the responding owners to choose among three methods for resolving or preventing each type: having the private parties settle in court, using government funds as incentives to avoid the problem (e.g., "pay livestock operators who volunteer to apply recommended practices that prevent water pollution"), or use regulations to deter the problem behavior.

Table 1

Counties from which random samples of owners of agricultural land were selected - by region

WEST	SOUTHERN PLAINS	NORTHERN PLAINS
Arizona	**Arkansas**	**Colorado**
Pima	Izard	Delta
	White	Logan
California		Otero
Butte	**Louisiana**	Routt
Contra Costa	Franklin	
Madera	Jefferson Davis	**Kansas**
San Luis Obispo	St. Mary's	Coffey
Sonoma		Crawford
	Oklahoma	Decatur
Idaho	Alfalfa	Dickinson
Bingham	Beaver	Grant
Boundary	Canadian	Greenwood
Gem	Jackson	Kingman
Payette	Kingfisher	Neosho
	Lincoln	Reno
New Mexico	McCurtain	
Grant	Okfuskee	**Montana**
	Ottawa	Hill
Oregon	Pottawattomie	
Baker		**Nebraska**
Clackamas	**Texas**	Boone
Malheur	Burleson	Cherry
Marion	Comanche	Dawson
Yamhill	Ellis	Hamilton
	Fisher	Knox
Utah	Glasscock	Saunders
Box Elder	Hill	Sheridan
Grand	Jackson	
Utah	Lubbock	**North Dakota**
	Milam	Emmons
Washington	Robertson	McHenry
Benton	Rusk	Ramsey
Franklin	Val Verde	Richland
Klickitat	Young	Traill
Okanogon		
Pierce		**South Dakota**
Stevens		Brule
Yakima		Meade
		Roberts

(Table 1 continued on next page)

Counties from which random samples of owners of agricultural land were selected - by region

MIDWEST

Illinois
Adams
Edgar
Ford
Logan
McLean
Saline
Wayne
Will

Indiana
Henry

Iowa
Cedar
Crawford
Guthrie
Lyon
Wapello

Michigan
Clinton
St. Joseph

Minnesota
Aitkin
Houston
Morrison
Nobles
Steele

Missouri
Lewis
Pulaski
Stoddard

Ohio
Mercer
Sandusky

Wisconsin
Baron
Marinette
Monroe
Sheboygan

SOUTHEAST

Florida
Clay
Holmes
Jackson

Georgia
Houston
Laurens

Kentucky
Adair
Carter
Logan
McLean
Todd

Mississippi
Walthall

North Carolina
Hyde
Lincoln
Mecklinburg

South Carolina
Orangeburg

Tennessee
Grundy
Montgomery

Virginia
Buckingham
Franklin
Highland
Rockingham
Shenandoah
Washington

NORTHEAST

Connecticut
Litchfield

Maryland
Anne Arundel

Massachusetts
Franklin

New Hampshire
Coos

New Jersey
Hunterdon
Monmouth

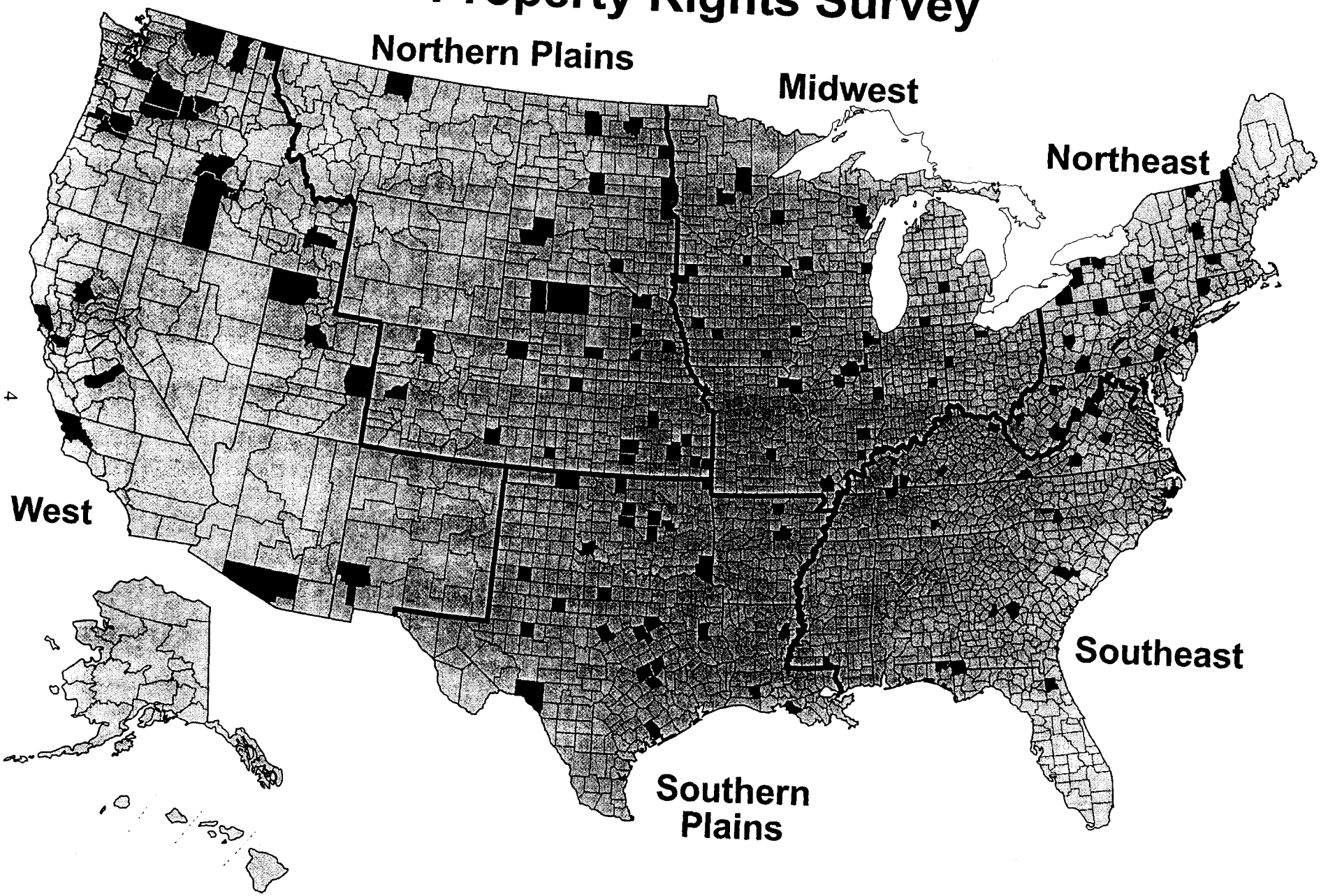
New York
Chautauqua
Chenango
Erie
Monroe
Orleans

Pennsylvania
Adams
Armstrong
Chester
Juniata
Potter
Somerset
Susquehanna
Wyoming

West Virginia
Berkeley
Greenbriar
Hancock
Harrison
Putnam
Taylor

Vermont
Franklin
Rutland

Counties and Regions Sampled for AFT Property Rights Survey



Drawing the Sample and Pre-testing the Questionnaire

Through this survey, we (the research team at Northern Illinois University and Southern Illinois University) aimed to learn the opinions of a class of people who should be strongly interested in, and may be importantly affected by, public debate about regulations of agricultural land - the land owners. Other studies have focused on agricultural land regulations but drew their samples from groups, like registered voters, many of whom have no direct financial stake in farmland or ranch land.[1]

To obtain a representative sample of agricultural landowners, we needed a national enumeration of farms. The best available source of this kind was the most recent national *Census of Agriculture,* that one conducted in 1992.[2] We drew the sample in three stages:

1) First, we divided the country into the six regions (or groups of states) that the U.S. Department of Agriculture's Natural Resources Conservation Service uses for planning and delivering programs: West, Southern Plains, Northern Plains, Midwest, Southeast and Northeast.
2) Next, we used the 1992 *Census of Agriculture* to list all the counties with agricultural land in each region. Then we randomly chose 30 counties per region, with each county's probability of selection being proportionate to its share of the region-wide total number of farms.
3) Finally, from county level plat books or real estate assessment files, we randomly selected names of 20 persons who likely owned farmland, that is, they owned parcels of at least 20 acres in size.[3] Published by a variety of local and regional commercial companies, plat books normally provide maps with the boundaries of parcels, the acreage per parcel, and the owner's name. While not including maps, assessment files tended to be more useful to us because they included addresses and frequently indicated whether land was used for agricultural purposes. However, we expected that hiring someone to visit the assessment office and draw the 20 names at random would likely be too costly if done in all counties. Therefore, wherever possible we relied on commercially available plat books. Another advantage of this source of names was that we had better control over the quality of sampling; the source used for drawing the sample was in our own hands.

We found usable plat books for 47.5 percent of the 162 counties that ultimately provided respondents for our sample. As Table 1 indicates, we achieved our targets of 30 counties in the Midwest and the Northern Plains, 26 to 28 counties for the Northeast, Southern Plains and West, but 23 in the Southeast. In this last region, plat books were more scarce and we had greater difficulty lining up help with assessment files. Nevertheless, with around 300 completions in five regions, as well as 216 in the sixth, we can make useful comparisons across and within regions. With 1,729 total completions, the margin of error due to sampling for a national

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[1]For example, the National Wildlife Federation sponsored a poll of 1,000 voters that was released on August 6, 1996. "Environment is high priority for voters: Public sees room for improvement on environmental protection, NWF poll indicates," *National Wildlife EnviroAction,* September 1996: 4-6.

[2]U.S. Department of Commerce, Economics and Statistics Administration, Bureau of the Census, 1994. *Census of Agriculture, 1992* (Washington, D.C.)

[3]If, when we talked with them on the phone or received back their mailed questionnaires, the respondents stated that they currently owned fewer than 20 acres of land used for farming or ranching, they were included in the survey as long as they told us that they owned at least five such acres.

level response percentage (e.g., 50 percent of the national sample replied "yes" to a survey question) is estimated to be plus or minus 3.3 percentage points.[4]

Much more problematic to estimate is the error due to nonresponse. Such estimates require assumptions about how the nonrespondents would have answered if they had somehow been interviewed. In Appendix Two to this report, we use conservative assumptions to estimate adjustments in the survey's major findings that take into account nonresponse.

In early June of 1997 the questionnaire was pre-tested twice on a total of 15 farmland owners who were randomly selected from the 162 counties on our list. As the pre-test participants went through the draft questionnaire, they were asked to evaluate the questions for clarity and answerability (e.g., ones they felt comfortable answering). These surveyed owners were paid $20 for their time. The pre-tests resulted in dropping some questions and rewording many. Then in mid-June the interviewing with the revised questionnaire began and extended through December 1997.

Response Rates

Along with other researchers, we calculate a survey's response rate as the ratio of completed interviews or questionnaires to the total persons who were eligible to be surveyed.[5] The closer that ratio is to 1.00 (or 100 percent), the more accurately the survey's findings can be generalized to the entire population from which the samples were drawn. Ninety-one percent of the total of 1,729 completions came from telephone interviews. Those interviews averaged 21.5 minutes. The other 9 percent of completions came from mailed-back questionnaires.[6] We sent questionnaires to sampled owners who were hard of hearing or otherwise could not be interviewed over the phone. Also, mailed questionnaires were the cases for which we had addresses but no telephone numbers.

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[4]This estimate assumes that the researcher aims to be 95 percent confident that the error range of plus or minus 3.3 percentage points contains the population value. Included in the calculations that yielded this estimate was a design effect of 2.0; a design effect was needed because we drew the sample in two stages (e.g., first 180 counties were chosen and then, 20 owners per county).

[5]Paul J. Lavrakas, 1987. *Telephone Survey Methods: Sampling, Selection, and Supervision* (Newbury Park, CA: SAGE Publications), p. 79; James H. Frey, 1983. *Survey Research by Telephone* (Beverly Hills, CA: SAGE Publications), p. 38. We subtracted from the ratio's denominator (e.g., the total sampled persons) all those who were ineligible to give opinions or who were unable to give them. The first type of these deleted cases consisted of persons who told us by phone or mail that they did not currently own any agricultural land or were not managers for the owners. The second group consisted of people who had died, whose relatives characterized as too ill or old to be surveyed, or who were out of town during the survey period. Remaining in the response ratio's denominator were (1) the actual completions, (2) the sampled owners who refused to participate in the survey, and (3) those persons whom we could not contact (that is, those for whom we lacked addresses or who did not respond to our mailed questionnaire).

[6]Since the 149 survey completions via mailed questionnaires did not bear names or any other identifiers, except for region of the country, we could not determine how many of them were initial refusals and how many were cases of missing phone numbers. We decided to classify them all as falling in the former group.

The best response rate occurred in the Northeast, where the 293 completions represented 71.1 percent of the total eligible cases, which is a comparatively high rate of response (Table 2).[7] The rate calculated from the 314 completions in the West was almost as good, 68.3 percent, as was the percentage for the Northern Plains, 67 percent. The rates for the other three regions ranged from 51 percent to 61 percent.

A major obstacle to higher rates was the absence of owners' addresses. With them in hand, we could hope to find telephone numbers or at least to send out mailed questionnaires. Internet search services and CD-ROM electronic telephone books tend to yield good results if one can type in names and full addresses. However, most of the plat books we used lacked the addresses of the listed owners. We chose owners at

Table 2

Percentages of sampled persons who completed interviews, refused to participate, and for whom no phone or mail contact was possible - by region

	West	Southern Plains	Northern Plains	Midwest	Southeast	Northeast
Completions	68.3	51.0	67.0	57.6	61.0	71.1
Refusals	4.8	8.2	6.8	14.3	13.3	8.7
No contacts*	26.9	40.8	26.2	28.1	25.7	20.2
Total Percentage	100.0	100.0	100.0	100.0	100.0	100.0
Total Cases	460	582	457	526	354	412

*The "no contact" cases include persons for whom we could find no working telephone numbers or addresses. Since there was no way to know what percentage of them did not own farmland, were no longer living, were too incapacitated to provide opinions, or were out of town, we assumed that the same proportion of them were ineligible for these four reasons as were the persons whom we learned about via the telephone or mailed-back questionnaires. The number of non-eligibles was sizable in all regions because we used five acres as our minimum size when drawing the samples, and many five-acre parcels in the selected counties were too small to be farmed.

random from the indexes of names typically found at the backs of the books. Associated with each name in those indexes was the map page on which that person's parcel(s) appeared. If one of the tentatively selected owner's parcels (or the only listed parcel) was at least 20 acres in size, we included that owner in our sample. Whether using an Internet search service or an electronic phone book, we entered the owner's name and the state; and if the name on the screen was associated with a town in that county, it was likely that we had identified the owner. But in 62 cases in the Northeast (the region with the best response rate) to 212 in the Southern Plains (the worst), this search procedure yielded no address in the county or nearby. Therefore, our sample of completed cases probably under represents out-of-county and out-of-state owners.

We adjust for this likely bias in the following way. First, we determine if the respondents who do not live near their farmland differ from those who do. If there are statistically significant differences, we warn the reader that, if we had somehow interviewed all sampled persons eligible for the survey, the distribution of

[7]See discussions of response rates by Lavrakas (cited above), pp. 77-79; and Floyd J. Fowler, Jr., 1993, *Survey Research Methods* (Newbury Park, CA: SAGE Publications), pp. 40-41.

opinions would probably be shifted in the direction of the modal (or most frequently given) opinion of the out-of-county respondents.

The Weighted National Sample

In chapters two through four, we report findings at both the regional and national levels. The national level sample derives from the regional samples except that, rather than simply summing the number of respondents per region who gave a particular response, we attached two kinds of weights to their answers. Since we had approximately the same number of respondents per region, around 300 (except in the Southeast), not assigning different weights would have over-represented regions like the Northeast that account for relatively small proportions of farms nationally. The converse would be true for regions like the Midwest that contain comparatively large percentages of the nation's farms. Therefore, we weighted responses by their region's share of total farms as enumerated in the most recent national Census of Agriculture. For example, since the Midwest accounted for 31.5 percent of the 1992 total, its respondents in our survey were weighted by a factor of .315. Similarly, the Southeast with 20.5 percent of the 1992 total received a weight of .205. The respondents from the other four regions also had weights equaling their shares: West (.109), Southern Plains (.168), Northern Plains (.127) and Northeast (.075). Therefore, if 100 respondents from the Midwest supported or opposed a particular guideline for compensation, the number of such responses in the national total from that region became 31.5 in the first stage of weighting. And if 100 from the Northeast gave the same answer, that region's contribution to the national total was 7.5.

The second stage of weighting adjusted for differences in the sizes of the regional samples. Five of these six samples were very close to or just above our target of 300 completions per region. Except for the Southeast's sum of 216 completions, the others varied between 293 and 314. To make the Southeast's contribution to national level percentage estimates carry its appropriate weight, we multiplied its frequencies by 1.39. That is, we increased the weight of its responses to take in account the shortfall in completions (216 rather than 300).[8] The other five regions' totals were also adjusted to reflect the differences (slight) between their actual totals and 300. The two types of weights together yielded a global total of 300 cases, which represented the two adjustments necessary before we could present them as useful for estimating national percentages on the various informational and opinion questions we asked: adjustments both for the relative importance of their region and for closeness to the target number of completions per region. To remind the readers that the national total resulted from weighting the answers of 1,729 persons, we report both totals, 300 and 1,729, at the bottom of the column labeled "National" in Table 3 (Chapter Two) and others like it.

The table in Appendix One to this report contains a profile of the 1,729 respondents, broken down by region and various traits that were hypothesized to be associated with their opinions about land use regulations and compensation for the effects of regulation (such as their gross revenues from their agricultural land, whether any of their agricultural land was subject to zoning, and if they believed that any of their land had lost value because of government regulations).

Understandability of Questions

The full texts of the questions asked about compensation guidelines and the appropriate role for regulations, the subjects of chapters three and four, are reproduced in those chapters. The texts tend to be long because the issues being addressed are not simple. Would the pattern of responses have been different if the same questions had been asked in a mailed questionnaire, with the respondents able to read questions at their own

[8]The 1.39 weight was derived by dividing the target completion number of 300 by the actual completions for that region, 216.

pace, perhaps more than once, before answering? We do not think so. In the first place, the telephone interviewers were trained to re-read questions whenever respondents requested or seemed to need it. More importantly, it happened that 149 of our respondents were surveyed by mailed questionnaires. They were persons for whom we had addresses but no working phone numbers or who preferred not to participate by telephone (e.g., some because they had hearing problems). For the 14 policy questions on which we focus in chapters three and four, the differences between the respondents surveyed by mail and by telephone vary within the narrow range of 0.4 to 6.5 percentage points, except for one question. For example, while 30.7 percent of the 1,580 respondents interviewed by telephone said that compensation should be limited to the owners severely burdened by a regulation, the corresponding percentage from the 149 persons who filled out questionnaires was 33.6. With that one exception (a disparity of 16.9 points),[9] we could not find sizable differences due to the survey medium (e.g., telephone interviews versus mailed questionnaires).

[9]The one exception to the pattern of largely similar responses regarded the question about sharing the costs of protecting the environment (see Table 16 in Chapter Three); the percentage-point difference in responses across the two groups of participants was 16.9 points.

Chapter Two

Reported Cases of Property Devaluations Attributed to Government Regulations

Introduction

One contribution we hoped to make to the national debate about land use regulations was to measure the extent to which agricultural landowners believed that regulations had reduced the market value of their land. Although in some cases what they believed to be the effect of regulations might have resulted from other causes, we were nevertheless interested in their perceptions of effects. Those perceptions could significantly shape the owners' preferences for public policy options. In our discussions in chapters three and four about owners' policy preferences, we see that surveyed owners who believed that they had lost property value because of regulations did assess differently some of the policy options presented in the survey. Moreover, these are the people who, at least in their own minds, are bearing costs which in many cases are the costs of protecting the environment, (e.g., preserving wetlands, using farming practices that minimize soil loss or protect wildlife habitat, and foregoing residential or commercial developments on prime or unique farmland).

The advantage of a large survey like ours is that owners' perceptions could be gathered systematically. Rather than relatively few, perhaps unrepresentative persons testifying at legislative hearings or expressing their opinions on diverse subjects via the printed or electronic media, our survey permitted over 1,700 owners of agricultural land to respond to a common set of questions. Included were questions that permit us determine:

- whether the perceived devaluations were reported by comparatively few or many owners;
- if the cases of devaluation were concentrated in a few regions or found in significant numbers across almost all regions;
- whether the reported cases were restricted largely to one or two types of land use regulations, or if they extended over a wider spectrum of regulatory situations; and
- whether the monetary losses were perceived to be mostly small in volume or mostly large.

Choice and Design of the Questions about Property Devaluations

We asked the surveyed owners about five kinds of regulatory devaluations. For each kind there was a separate question, although all had the common beginning, "Has any of the farmland or ranch land you ever owned been reduced in market value because of government regulations affecting . . . ["wetlands," "highly erodible land," "endangered species," "because of government zoning regulations," and "reduced in market value by some other kind of government regulations]? "Market value" was defined as "the price the land's owner is likely to receive if the land were sold."

Two reasons shaped our choice of the phrase "you ever owned" rather than limiting the cases of regulatory devaluations to land the respondents currently owned or to some time period like the previous five years. In the first place, we suspected that in many cases memory recall would not be accurate enough to make such temporal distinctions. Secondly, we were interested in determining the proportion of total respondents who believed that they had suffered financially from some land use regulation. The recentness of the loss was less important than the total proportion of the sample with some form of loss.

Also needed was a measure of the perceived magnitude of the loss. Rather than asking for quantitative estimates like "zero to 25 percent," "26 percent to 50 percent,"etc., we assumed that it was more important for policy-making to learn how the landowners evaluated the losses. Therefore, if a respondent reported any reduction in market value, we asked the follow-up question: "Was that reduction small in size, moderate or large?"

Wetlands Regulations

The U.S. Environmental Protection Agency, as well as other federal agencies (including USDA), has defined *wetlands* as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support . . . a prevalence of vegetation typically adapted for life in saturated soil conditions."[10] Owners of agricultural land may be subject to two types of federal regulations that can negatively affect market value. First, under Section 404 of the Clean Water Act (initially enacted in 1972), the owners or their agents may not fill in wetlands, for purposes of farming the land or building on it except if specified conditions are met. Wetland areas of under one acre have been exempt from these regulations. For larger parcels, but with various exceptions, a permit is required before owners may discharge materials into a wetlands (e.g., fill them in).

When agricultural land owners are blocked from converting their land to a more productive use, the land's market value cannot increase to reflect that more profitable use. Rather than only a prospective loss, there may be an out-of-pocket loss if owners bought the land on the assumption that a better use was possible and then found that their investment expectations could not be realized.

Wetlands conversions may be prevented also under the "swampbuster" provisions of the 1985 and 1990 farm bills. A USDA brochure about these provisions warned producers, "If you drain, dredge, fill, level, or otherwise alter wetlands to make possible the production of an agricultural commodity . . . , you will lose your eligibility for most U.S. Department of Agriculture program benefits."[11] Among such benefits have been income support payments (currently provided under "production flexibility contracts"), Farmers Home Administration loans and annual rents under the Conservation Reserve Program. Swampbuster and a companion program called "conservation compliance" that is targeted at highly erodible land are quasi-regulatory in nature because not all owners of wetlands or HEL are affected by the legislative provisions. Only owners who wish to be eligible for USDA benefits must comply. Those who opt out of the benefit programs cease to be subject to swampbuster or conservation compliance. Agricultural land may also be subject to various state government regulations or quasi-regulations.

Incidence of Devaluations Attributed to Wetlands Regulations or Quasi-Regulations

In the weighted national sample, a very large majority, 86.1 percent of the respondents, answered "no" to the question, "Has any of the farmland, ranch land or forest land you ever owned been reduced in market value because of government regulations affecting wetlands?" (Table 3). Across the six regional samples, the corresponding percentages ranged from 78.2 percent in the Northeast region to 90.6 percent in the Southern Plains (Table 3). Not quite 12 percent of the weighted national sample reported reductions in agricultural land's market value due to wetlands regulations. In the six regional samples, the corresponding percentages

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[10]U.S. Army Corps of Engineers, *Recognizing Wetlands: An Informational Pamphlet*, Internet, April 1998, http://wetland.usace.mil/RW-bro.html.

[11]U.S. Department of Agriculture. 1991. *FACTA: Food, Agriculture, Conservation and Trade Act of 1990: Conservation in the 1990 Farm Bill: What Swampbuster Means to You.* Washington, D.C.

ranged from 9.1 percent in the Southern Plains to 17.7 percent in the Northeast. The differences between the Northeast's percentage and the others are statistically significant (that is, greater than sampling variability alone can explain) with the exception of the West's value and the Southeast's. Four of the six regions had measures above 10 percent (e.g., 11.6 percent to 17.7 percent). This kind of regulation was the only one among the five types (about which we asked) with as many as four regions above the 10 percent mark. Among the four specific types of devaluations (excepting the "other" residual category), the wetlands cases tied with the zoning cases in the largest number of regions (three) where at least a third of the respondents experiencing losses perceived them to be "large in size" rather than "small" or "moderate." In the national sample and across all six regions, the most common response for the extent of wetlands devaluations was "moderate" (Table 3).

Table 3

Percentages of landowners who reported losses in their land's "market value"* attributed to wetlands regulations - by region

Perception that Market Value was Reduced by Government Regulations	West	Southern Plains	Northern Plains	Mid-west	South-east	North-east	National (weighted)
Percent responding "yes"	14.0	9.1	9.5	11.6	13.0	17.7	11.9
Percent responding "no"	83.8	90.6	88.2	87.1	83.8	78.2	86.1
Percent "unsure" or "won't say"	2.3	0.3	2.3	1.3	3.2	4.1	2.0
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of cases	314	297	306	303	216	293	300/1,729
Perceived Size of the Loss Among Respondents Who Reported Losses							
Believed that loss was small	18.2	22.2	34.5	34.3	21.4	25.0	27.7
Believed that loss was moderate	38.6	37.0	55.2	37.1	39.3	51.9	41.7
Believed that loss was large	34.1	33.3	10.3	28.6	35.7	21.2	27.7
"Don't know" or "won't say"	9.1	7.4	0.0	0.0	3.6	1.9	2.8
Number of cases	44	27	29	35	28	52	36

*By "market value" we mean the price the land's owner is likely to receive if the land were sold.

Regulations Affecting Highly Erodible Land

The second type of devaluation addressed in the survey concerned "government regulations affecting highly erodible land." Official soil maps and/or field inspections by USDA personnel determine if agricultural land is highly erodible. To retain eligibility for USDA benefits, owners should ensure that their highly erodible land is farmed using soil conservation practices that prevent excessive erosion. Some necessary practices

like strip cropping or crop rotations may prevent planting parts of fields or entire parcels to the currently most profitable crop. Other practices like no-till may reduce yields or are perceived to have that effect. Either way, prospective buyers may regard land subject to conservation compliance as less desirable because of the needed practices. In a 1995 national survey of a random sample of participants in USDA commodity programs, 65 percent of the respondents said that they currently owned, managed or operated land with soil conservation plans designed to meet the requirements of conservation compliance.[12] This quasi-regulatory program has been administered primarily by USDA's Natural Resources Conservation Service.

As with our questions about wetlands regulations, relatively very few of the agricultural land owners whom we surveyed in 1997 reported having ever owned land that lost market value because of HEL regulations. In the weighted national sample the percentage was 12.2 percent, while in the regional samples it varied from 7.9 percent in the Southeast to a high of 20.6 percent in the Northern Plains (Table 4). The differences between that highest regional sample value and the other regions' are all statistically significant.

Table 4

Percentages of landowners who reported losses in their land's "market value"* attributed to highly erodible land regulations, by region

Perception that Market Value was Reduced by Government Regulations	West	Southern Plains	Northern Plains	Mid-west	South-east	North-east	National (weighted)
Percent responding "yes"	8.9	9.8	20.6	14.9	7.9	8.5	12.2
Percent responding "no"	87.9	88.9	77.5	81.5	89.4	91.1	85.3
Percent "unsure" or "won't say"	3.2	1.3	2.0	3.6	2.8	0.3	2.6
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of cases	314	297	306	303	216	293	300/1,729
Perceived Size of the Loss Among Respondents Who Reported Losses							
Believed that loss was small	32.1	41.1	47.6	44.4	35.3	32.0	41.7
Believed that loss was moderate	50.0	44.8	33.3	42.2	47.1	440	41.7
Believed that loss was large	17.9	6.9	15.9	11.1	17.6	16.0	13.9
"Don't know" or " won't say"	0.0	6.9	3.2	2.2	0.0	8.0	2.7
Number of cases	28	29	63	45	17	25	36

* By "market value" we mean the price the land's owner is likely to receive if the land were sold.

[12]J. Dixon Esseks, Seven E. Kraft, Edward J. Furlong, Victoria A. Krause and Brent L. Myers, 1995. *Producers and the 1995 Farm Bill* (Washington, D.C.: American Farmland Trust).

Just two regions (Northern Plains and Midwest) had as many as 10 percent of their respondents reporting this type of regulatory loss. In four of the regions the most common answer to the follow-up question about the perceived magnitude of the losses was "moderate," while in the other two (Northern Plains and Midwest), the modal response was "small" (Table 4). In none of the regions did as many as one-fifth of these respondents contend that the devaluations were "large." At the national level, only 13.9 percent of those with losses answered "large" when classifying this type of regulatory losses. Across the five types of losses about which we surveyed, the HEL category had the smallest percentage of cases where the loss was considered "large" (tables 4 through 7).

Endangered Species Regulations

A regulatory (rather than quasi-regulatory) program that may affect the market value of farm and ranch derives from the Endangered Species Act, initially passed in 1973. As implemented, this legislation may inhibit or prevent agricultural use of land that provides habitat (e.g., nesting space in fields) for endangered or threatened species. An ESA violation occurs when the habitat is modified or degraded in ways resulting in wildlife's death or injury because their "essential behavior patterns, including breeding, feeding, or sheltering have been impaired."[13] For example, a farmer may be prevented from grazing his cattle on land during the time that an endangered species of bird uses the field(s) for nesting; or it may not be permissible to cut timber within a certain radius of trees used for nests. Land with such constraints is likely to be less attractive to buyers. The primary implementation agency of ESA regulations for agricultural land has been the U.S. Fish and Wildlife Service.

In our survey we found that just 2.8 percent of the weighted national sample reported property devaluations because of endangered species regulations (Table 5). In only the West region did as many as 10 percent of the respondents make such a report; that region's percentage was 13.1 percent (Table 5). In the other regions there was no percentage above 2 percent. All the differences between the West's value and those of the other five regions are statistically significant. Among the owners in both the West and in the national sample who reported losses due to ESA, the modal response about the perceived size of these losses was "moderate" (Table 5). The percentages with "large" losses were the same or nearly identical to those in the "small" category. In the remaining five regional samples, the numbers of affected persons (e.g., those reporting losses due to ESA) totaled only three to eight individuals, too few for the distribution of answers to this question to be useful.

[13]CFR 17.3 (1994)

Table 5

Percentages of landowners who reported losses in their land's "market value"* attributed to regulations about endangered species - by region							
Perception that Market Value was Reduced by Government Regulations	**West**	**Southern Plains**	**Northern Plains**	**Mid-west**	**South-east**	**North-east**	**National (weighted)**
Percent responding "yes"	13.1	2.0	1.6	1.0	7.9	1.7	2.8
Percent responding "no"	84.4	97.0	97.7	98.0	89.4	98.0	96.1
Percent "unsure" or "won't say"	2.6	1.0	0.7	1.0	2.8	0.3	1.0
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of cases	314	297	306	303	216	293	300/1,729
Perceived Size of the Loss Among Respondents Who Reported Losses							
Believed that loss was small	24.4	33.3	20.0	33.3	25.0	40.0	25.0
Believed that loss was moderate	39.0	33.3	40.0	66.7	25.0	0.0	37.5
Believed that loss was large	29.3	16.7	20.0	0.0	50.0	60.0	25.0
"Don't know" or "won't say"	7.3	16.7	20.0	0.0	0.0	0.0	12.5
Number of cases	41	6	5	3	4	5	8

*By "market value" we mean the price the land's owner is likely to receive if the land were sold.

Zoning Regulations

County level and other local governments have used zoning regulations to prevent conflicts between farming operations and nearby nonfarm residences and businesses. Farm odors, dust and the noise of tractors operating late at night, among other byproducts of agricultural operations, may elicit complaints from neighboring nonfarmers[14]; and the latter may cause damage to crops, equipment, fences and other farm property when children or adults trespass onto farm property. A Midwestern study found that storm water run-off from rural subdivisions could be another form of "trespassing" that significantly damages crops.[15] To prevent these conflicts, the local zoning ordinance may exclude nonfarm uses from agriculturally zoned

[14]Neil D. Hamilton, 1992. "Right-To-Farm Laws Revisited: Judicial Consideration of Agricultural Nuisance Protections," *Journal of Agricultural Taxation and Law*, 14 (3): 195-228.

[15]J. Dixon Esseks and Robert B. McCallister, 1986. "Assessing the Need for Local Government Interventions in Farm-Subdivision Conflicts," in Jim Seroka, editor, *Rural Public Administration* (New York: Greenwood Press), pp. 137-154.

areas; or it may limit them such as by requiring large minimum lot sizes as a condition for building permits.[16] While many farmers may welcome the protections provided by zoning (see the discussion in Chapter Four), others may prefer to raise capital for their operations or otherwise earn money by converting some of their farmland into building lots.

In the weighted national sample, 88.2 percent said "no" to the question, "Has any of the farmland or ranch land you ever owned been reduced in market value because of government zoning regulations?" A few questions earlier in the survey, "zoning" had been defined as where "land [is] subject to local government regulations about what can be built on it and what uses are legal on the land." In the weighted national sample, 46.4 percent reported having land currently subject to zoning as thus defined (see data line 4 in Appendix One's table). Nineteen percent of those with land presently zoned and only 9.# percent of the entire sample said that they had ever lost market value because of zoning (Table 6). Across the regional samples, the corresponding percentages for all surveyed owners varied from 2.3 percent in the Northern Plains to a high of 29 percent in the West (Table 6). The percentage-point difference between the West and the other regions on this measure are statistically significant.

The West ranked first in the percentage of affected landowners who stated that the losses due to zoning were "large" (50.5 percent). Across the six regions the modal response varied considerably, with two at the "large" level, two at "moderate," one at "small" and one with responses evenly distributed across all three levels (see the entries for the Southern Plains). In the weighted national sample, both "moderate" and "large" tied for the mode (Table 6).

Table 6

Percentages of landowners who reported losses in their land's "market value"* attributed to government zoning regulations - by region

Perception that Market Value was Reduced by Government Regulations	West	Southern Plains	Northern Plains	Mid-west	South-east	North-east	National (weighted)
Percent responding "yes"	29.0	5.1	2.3	7.9	8.3	16.4	9.7
Percent responding "no"	68.5	93.9	97.1	88.8	89.8	81.9	88.2
Percent "unsure" or "won't say"	2.6	1.0	0.7	3.3	1.8	1.7	2.1
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of cases	314	297	306	303	216	293	300/1,729
Perceived Size of the Loss Among Respondents Who Reported Losses** *(table 6 continued)*							

[16]Since the mid-1970s DeKalb County, Illinois, has required 40 acres. Susan Jo Gehl and Jerry Paulson, 1997. "DeKalb, Illinois, First in Agriculture," in *Protecting Farmland on the Edge: What Policies and Programs Work* (DeKalb, Illinois: Center for Agriculture in the Environment, Working Paper Series, CAE/WP97-14).

(Table 6 continued)

Percentages of landowners who reported losses in their land's "market value"* attributed to government zoning regulations - by region

Perception that Market Value was Reduced by Government Regulations	West	Southern Plains	Northern Plains	Mid-west	South-east	North-east	National (weighted)
Believed that loss was small	9.9	33.3	42.9	29.2	22.2	22.9	20.7
Believed that loss was moderate	35.2	33.3	28.6	25.0	50.0	50.0	37.9
Believed that loss was large	50.5	33.3	28.6	41.7	27.8	27.1	37.9
"Don't know" or "won't say"	4.4	0.0	0.0	4.2	0.0	0.0	3.4
Number of cases	91	15	7	24	18	48	29

*By "market value" we mean the price the land's owner is likely to receive if the land were sold.

"Other" Kinds of Regulations

Just over 7 percent of the weighted national sample reported ever having owned land that lost value because of some "other kind of government regulations" (Table 7). Across the six regions that percentage varied in the narrow range of 5.7 percent (Southern Plains) to 14 percent (West). Although the difference between the West and Northeast is not statistically significant, those between the West and the other four regions are. The West was first in the percentage of affected owners who perceived their losses to be "large" - 36.4 percent (Table 7). This category of losses had the largest number of regions, four, in which at least a third of the affected respondents reported "large" reductions in property values due to the regulations.

Table 7

Percentages of landowners who reported losses in their land's "market value"* attributed to "some other kind of government regulation" - by region

Perception that Market Value was Reduced by Government Regulations	West	Southern Plains	Northern Plains	Mid-west	South-east	North-east	National (weighted)
Percent responding "yes"	14.0	5.7	6.9	5.9	6.0	11.3	7.3
Percent responding "no"	82.2	92.9	92.2	91.4	92.6	86.0	90.6
Percent "unsure" or "won't say"	3.8	1.3	1.0	2.6	1.4	2.7	2.1
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of cases	314	297	306	303	216	293	300/1,729

(table 7 continued)

(Table 7 continued)

Percentages of landowners who reported losses in their land's "market value"* attributed to "some other kind of government regulation" - by region

Perception that Market Value was Reduced by Government Regulations	West	Southern Plains	Northern Plains	Mid-west	South-east	North-east	National (weighted)
Perceived Size of the Loss Among Respondents Who Reported Losses							
Believed that loss was small	22.7	23.5	33.3	22.2	30.8	15.2	22.7
Believed that loss was moderate	34.1	41.2	28.6	50.0	30.8	51.5	40.9
Believed that loss was large	36.4	35.3	33.3	27.8	38.5	30.3	31.8
"Don't know" or "won't say"	6.8	0.0	4.8	0.0	0.0	3.0	4.5
Number of cases	44	17	21	18	13	33	22

*By "market value" we mean the price the land's owner is likely to receive if the land were sold.

Summary

In both the weighted national sample and across the six regional samples, majorities of the respondents reported that none of the agricultural land they ever owned had lost market value because of government regulations. At the national level, the majority percentage was 71.4 percent, while in the regions it ranged from a low of 53.2 percent in the West to 78.5 percent in the Southern Plains (see item 2 of Table 8). If we exclude those cases where the surveyed owners said the losses were "small" in size, the percentages are 80.4 percent at the national level and from 64.3 percent to 86.6 percent at the regional (item 3). That exclusion leaves ~~11.3~~ 19.7 percent in the national sample and from 13.5 percent to 35.7 percent in regions with at least one kind of regulation devaluation that was perceived to be "moderate" or "large" in size (item 4).

Since these summary statistics include "zoning" and "other" kinds of regulations that may not directly relate to environmental objectives, Table 8 also provides the percentages of respondents who reported one or more of the three kinds that are clearly related to the environment: protection of wetlands, highly erodible land and endangered species. At the national level 21.2 percent of the respondents said that agricultural land they owned had lost market value because of one or more of those three types of regulations; and the corresponding regional percentages varied from 17.1 percent in the Southeast to 26.8 percent in the Northern Plains (item 6). If we limit our focus to cases where the losses in those three categories were perceived to be at least "moderate," the measures become 14.3 percent in the weighted national sample and from 10.8 percent to 19.4 percent in the regions (item 7).

Whether the focus is on all kinds of land use regulations or on these three environmentally-related types, the percentages of owners responding greater than "small" losses are not large. Moreover, our particular sample may overstate some of the percentages. As discussed in Chapter One, the sample probably under-represents owners who lived out of the county where they owned land. And according to crosstabulation analysis, that

type of owner in our sample tended to report regulatory losses *less* frequently than did the surveyed owners who lived on or near their agricultural land.[17]

Table 8

Percentages of landowners who attributed losses in "market value"* to one or more kinds of land use regulation - by region

Perception that Market Value was Reduced by Government Regulations	West	Southern Plains	Northern Plains	Mid-west	South-east	North-east	National (weighted)
1. Percent of total respondents reporting at least one type of regulatory devaluation**	46.8	21.5	31.0	27.1	24.1	33.1	28.6
2. Percent of total respondents reporting no reductions in value due to government regulations	53.2	78.5	69.0	72.9	75.9	66.9	71.4
3. Percent who did not report devaluations **or** whose reported devaluations were "small in size"	64.3	86.6	81.4	82.8	81.5	74.4	80.4
4. Percent reporting one or more kinds of reductions that were at least "moderate " or "large" in size	35.7	13.5	18.6	17.2	18.5	25.6	~~11.3~~ 19.7
5. Percent reporting one of more kinds of reductions that were "large in size"	21.0	5.7	5.9	6.3	7.9	10.2	8.3
6. Percent reporting at least one kind of reduction due to *one of three types of environmental regulations****	26.1	17.2	26.8	22.1	17.1	21.5	21.2
7. Percent reporting at least one kind of such environment reductions that were "moderate" or "large" in size	19.4	10.8	15.7	14.2	13.4	17.8	14.3
Total respondents	314	297	306	303	216	293	300/1,729

(Table 8 continued on next page)

[17]In the weighted national sample, the difference between the percentages of respondents living more than 10 miles from their agricultural land who reported devaluations compared to the surveyed owners who lived closer were: 4 percentage points less frequently regarding losses due to wetlands regulations, 4.3 percentage points less for highly erodible land regulations, 2.2 points less for Endangered Species Act regulations, 3.3 points for zoning regulations, and 1.1 percentage point *more* frequently for "other" kinds of regulations.

*By "market value" we mean the price the land's owner is likely to receive if the land were sold.
**"Has any of the farmland, ranch land, or forest land you ever owned been reduced in market value because of government regulations affecting wetlands " [or "government regulations affecting highly erodible land" or "government regulations affecting endangered species" or "government zoning regulations" or "by some other kind of government regulations"].
***The three types concerned wetlands, highly erodible land and endangered species.

Chapter Three

Owners' Preferences for Guidelines to Shape Compensation

Introduction

As discussed in Chapter One, one objective of this survey was to learn the sampled owners' preferences for guidelines to determine whether compensation is appropriate where regulations cause losses in property values. The U.S. courts have considered such guidelines under the class of cases called "regulatory takings." The Fifth Amendment's protection against taking of property for public purposes without compensation has been extended to regulations that have the practical effect of severely limiting or nullifying the private owner's use of the land.[18]

In March 1995 the U.S. House of Representatives passed a bill that would provide for compensation for various federal regulations when "the affected portion of the property is reduced in value by 20% or more, with exemptions for nuisances, agency actions to protect health or safety,"and certain other conditions.[19] A companion bill introduced in the Senate (but not passed) set the trigger at 33 percent. Given the likelihood that more such legislation will be debated at the national and state levels, we devoted a portion of our survey questions to guidelines that may be considered in deciding whether and how much compensation landowners should receive if government regulations decrease the value of their property.

Compensation Guidelines Offered in the Survey

We asked the surveyed agricultural land owners their opinions about seven separate guidelines in the following order:

- whether compensation should vary with the severity of the financial burden that the regulation imposes on the owner;
- whether compensation was appropriate if the owner knew of the regulation before purchasing the property that the regulation affected;
- whether the regulation is designed to prevent harm to human health;
- whether compensation should vary with how hard the land user tries to comply with regulations;
- whether compensation should be automatic in the sense of being provided once a trigger percentage of loss is reached, like 20 percent of appraised value;

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[18]Jerold S. Kayden, 1996. "Private Property Rights, Government Regulation, and the Constitution: Searching for Balance," a chapter in *Land Use in America,* edited by Henry L. Diamond and Patrick F. Noonan (Covelo, CA: Island Press), p. 302.

[19]Robert Meltz, Congressional Research Service. 1996. *Property Rights: Comparison of H.R. 9 as Passed and S. 605 as Reported: Report for Congress.* (Washington, D.C.), p. 1 of Internet report: www.cnie.org/nle/econ-10.html.

- whether compensation should be adjusted downwards when the government that would provide regulatory compensation has also made the same owners land more valuable through some subsidy, infrastructure investment, or other support; and
- whether compensation should be partial in the sense that costs of protecting the environment should be shared between government and the landowner.

This last guideline points to a useful way of framing the entire issue of "just" compensation. As suggested by Edward Thompson, Jr., the underlying concern is who should be paying for the costs of regulations that aim to protect the environment: only the persons whose behavior is the subject of the regulations (e.g., farmland owners), the beneficiaries of regulations, or some combination of the two?[20] If there are no costs to any of the subjects, it is likely that either the rules were not needed, or they are not being enforced. In the cases of environmental regulations affecting agricultural landowners, the beneficiaries may include persons downstream of livestock operations who depend on intervening rivers or lakes for drinking water and, also, owners who may experience higher risks of flooding if wetlands upstream are filled in and thus no longer can store storm water runoff. Other beneficiaries may be fishermen or swimmers who use a river or lake protected against pollution, naturalists and scientists (including developers of new medicines) who value the survival of endangered and threatened species, and consumers of grain who benefit from lower food prices than would prevail if soil erosion were allowed to decrease farm yields.

Before asking our questions about compensation guidelines, we needed to define "compensation" and to ensure that our respondents understood the definition. The interviewers read the following definition: *"By 'compensation" we mean that the landowners would be paid some or all of the difference between (A) the land's appraised value with the regulation applied to it and (B) the land's appraised value without the regulation applied to it. Is this definition clear to you?"* A total of 83.3 percent of our 1,729 respondents replied "yes," while 16.7 percent said that they did not understand. For the 16.7 percent the same definition was read a second time, and 75.6 percent of them indicated that then they found it clear. The remaining 71 respondents who answered "no" or "not sure" were not asked any of the compensation guidelines questions. Instead, the interviewer skipped forward to the questions about regulatory devaluations that the respondents may have experienced, as well as about their age, education and other personal background traits.

Severity Guideline

The section of the questionnaire devoted to compensation guidelines began with a sentence that aimed to provide a practical setting for the questions to follow. If there were to be both significant enforcement efforts and compensation for some of their effects, there must be limits as to who is compensated. Otherwise regulatory agencies would run out of compensation funding, and genuine enforcement would stop. Therefore, we began with the introductory sentence, "Since compensation must come from taxpayers, and there won't be enough money to compensate everyone, we need your opinions about guidelines as to who should be compensated." We followed with seven kinds of guidelines.

The first, dealing with the severity of regulations' financial burdens, was suggested by the U.S. Supreme Court's ruling in *Lucas v. South Carolina Coastal Council* (1992) that compensation may be justified if the

[20]Thompson, Edward Jr. 1996. "Takings and Givings: Towards Common Ground on the Property Rights Issuse," in *Takings and Givings: Writings on Property Rights, Government Influence and Natural Resources* (Washington, D.C.: American Farmland Trust).

owner is deprived of "all economically viable" use of his land.[21] Our question read: *"Here's one possible guideline: Some people believe that money for compensation will be so limited that what's available should go only to the persons who are severely burdened by a regulation, such as when a regulation takes away almost all the land's existing appraised value. Do you favor; 1. Limiting compensation to the severely burdened persons? 2. Or should compensation be open to other landowners as well?"*

In the weighted national" sample, 30.7 percent supported the severity guideline as stated in our survey question (Table 9). Across the six regions, 24.5 percent (in the West) to 40.6 percent (in the Northeast) favored limiting compensation in this way (Table 9). The respondents who preferred to open compensation to others in addition to the severely burdened comprised majorities of 60.3 percent at the national level and from 54.6 percent (Northeast) to 67.8 percent (West) in the regions.[22]

Who supported the severity guideline? As discussed in Chapter One, a major purpose of our survey was to determine whether support for the candidate compensation guidelines and other policy positions varied by region, the owners' financial stake in the land and other traits of the respondents. In this chapter and Chapter Four, we use crosstabulation analysis to identify variations that are *statistically significant, that is, greater than sampling error alone could explain.*[23]

Support was relatively higher among respondents in the Northeast, among non-operator owners, among respondents with relatively low revenues from agriculture and among respondents who believed that none of their land had ever lost value because of some government regulation. In five of the six regions, the percentage of surveyed owners favoring the severity guideline varied within only 7.5 percentage points - from 24.5 percent in the West to 32 percent in the Northern Plains (Table 9). The Northeast stands apart with its 40.6 percent level of support. In the weighted national sample, two-thirds of the respondents were currently farm or ranch operators (see item 13 in Appendix One's table). The approximate one-third who were not farmers or ranchers were more likely to support the severity guideline (40 percent) compared to operators (31 percent). The 1997 median annual gross income from agriculture for our national sample was in the range of $10,000 to $24,999 (item 22 in Appendix One's table). Respondents below that median were slightly more likely to favor this guideline (37 percent versus 32 percent among surveyed owners at or above the median category). The difference was greater when we compared surveyed owners with relatively large stakes in their agricultural land, the approximately one-quarter of our sample who received at least $100,000 in gross revenues, to those respondents whose 1997 revenues were less. In this comparison, 27 percent in the $100,000-plus group supported the severity guideline as opposed to 36 percent among those in the less-than-$100,000 group.

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[21]Mark Cordes, W. 1997. "Leapfrogging the Constitution: The Rise of State Takings Legislation," *Ecology Law Quarterly*, 24 (2): 198.

[22]These percentages are based on all respondents per region, not just those who answered the question. For example, in Table 9 the interviewed owners who were not asked the question because they had found unclear our definition of compensation are accounted for in the "Not asked" category.

[23]These crosstabulations focus on respondents who had opinions about the policy issues presented in the survey questions. Excluded from the analysis are the relatively few cases where surveyed owners replied, "Don't know," they refused to give their opinions, or they were not asked the question because they had not understood our definition of "compensation."

Also less likely to favor the severity guideline were respondents who believed that government regulations had diminished the value of some of their land in the past. For example, while 36 percent of the surveyed owners who reported no losses due to zoning endorsed the severity guideline, 29 percent approved of it among the respondents who believed they *had* experienced devaluations because of zoning. Among the relatively few respondents who attributed devaluations to Endangered Species Act regulations, only 22 percent approved of the severity guideline compared to 34 percent among the respondents with no such losses to report.

Table 9

Farmland and ranch land owners' opinions as to who should be eligible for compensation: Limit it to those who are "severely burdened" or open it to others as well - percentages by response category and region

Response Category	West	Southern Plains	Northern Plains	Midwest	South-east	North-east	National (weighted)
Limit to severely burdened	24.5	31.3	32.0	32.0	26.9	40.6	30.7
Open to others as well	67.8	61.6	60.1	58.1	60.6	54.6	60.3
"Don't know" or "won't say"	4.7	2.0	3.6	4.3	6.0	3.7	4.2
Not asked	2.9	5.1	4.2	5.6	6.5	1.0	4.9
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total respondents	314	297	306	303	216	293	300/1,729

Text of question: "Since compensation must come from taxpayers, and there won't be enough money to compensate everyone, we need your opinions about *guidelines* as to who should be compensated. Here's one possible guideline: Some people believe that money for compensation will be so limited that what's available should go only to the persons who are severely burdened by a regulation, such as when a regulation takes away almost all the land's existing appraised value. Do you favor: 1. Limiting compensation to the severely burdened persons? 2. Or should compensation be open to other landowners as well?"

Persons living at least one month of the year on their land or within 10 miles were seven percentage points less likely to accept the severity guideline compared to respondents whom we might label as "absentee owners;" the percentages were 33 versus 41. As discussed in Chapter One, we believe that the final regional samples under-represent owners who live out of county. Therefore, if the sample had included more such persons, the support level for the severity guideline would likely have been higher.

Prior-to-Purchase Knowledge of Land being Subject to Regulation

The second guideline presented to the surveyed agricultural land owners dealt with whether the regulated persons had prior knowledge of a regulation's limitations on how the land could be used. If they did not have such knowledge before buying the land, perhaps because the regulations were imposed after the purchase, their investment expectations could be frustrated. Conversely, if they knew ahead of time, there would be the risk that their efforts to achieve a waiver would not be successful. To learn the survey owners' opinions about a prior-knowledge guideline, we chose a regulatory scenario that we believed would be realistic to our

respondents. The survey's pretests indicated that it (and the others used later in the survey) were credible. The question read: *"Here's another possible guideline for compensation. Some people believe that compensation is unnecessary when the owner knew about the regulation before he bought the land and purchased it anyway. Let's say that someone buys 40 acres with a wetland on it and knows about the regulations against draining it for farming purposes. However, he would like to be compensated for his inability to increase the land's value through draining the wetland. Should this owner be eligible for compensation? 1. Yes. 2. No 3. Maybe."*

In the weighted national sample (see Table 10), a 75 percent majority answered, "No compensation," implicitly endorsing the guideline that prior knowledge of the regulatory limitations on the land invalidates claims for compensation. Across the six regions, majorities of 66.7 percent (in the Southeast) to 80.2 percent (Midwest) answered, "No" (Table 10). Only 10.6 percent to 18.5 percent chose "yes." The underlying attitude may be that government (e.g., taxpayers) should not be expected to compensate someone for "his inability to increase the land's value" through obtaining a waiver on a regulation about which he knew before buying the land.

Evidence of the broad acceptability of this guideline is that we could find few significant differences between subgroups of respondents. Current farm operators endorsed this guideline in almost the same proportion as did non-operators in our sample. The difference between respondents living on or near their land versus those who resided more than 10 miles away was not statistically significant; nor was the difference between surveyed owners whose gross revenues from agriculture were below the median versus those at or above it (or between the respondents receiving at least $100,000 in revenues compared to those with less than that level of revenues). There were significant differences between the region with the highest level of support, the Midwest's with 80.2 percent, and the regions with the two lowest levels - the 66.7 percent in the Southeast and the 72.9 percent in the Northern Plains (Table 10). However, even the lowest of those values, 66.7 percent, amounts to a two-thirds majority in support of denying compensation.

A similar pattern was found when comparing opinions of respondents who reported having lost market value because of some regulation to those who experienced no such losses. The former were somewhat less willing to endorse the guideline of no compensation if the owner knew about the wetlands regulation before buying the land. Yet, even among those reporting losses, sizable majorities favored this guideline.[24]

[24]For example, among the owners with losses attributed to ESA regulations, 62 percent supported the guideline compared to 81 percent among the respondents who claimed no such losses. The corresponding differences regarding wetlands regulations were 70 percent versus 81 percent.

Table 10

Farmland and ranch land owners' opinions as to who should be eligible for compensation: Should owners who know about a regulation before purchasing the land be eligible - percentages by response category and region

Response Category	West	Southern Plains	Northern Plains	Midwest	South-east	North-east	National (weighted)
Yes	16.9	14.5	17.0	10.6	18.5	16.0	14.8
No	74.8	75.1	72.9	80.2	66.7	79.2	75.0
Maybe	4.1	4.7	4.9	3.0	6.0	3.8	4.3
"Don't know" or "won't say"	1.3	0.7	1.0	0.6	2.3	0.0	1.0
Not asked	2.9	5.1	4.2	5.6	6.5	1.0	4.9
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total respondents	314	297	306	303	216	293	300/1,729

Text of question: "Here's another possible guideline for compensation. Some people believe that compensation is unnecessary when the owner knew about the regulation *before* he bought the land and purchased it anyway. Let's say that someone buys 40 acres with a wetland on it and knows about the regulations against draining it for farming purposes. However, he would like to be compensated for his *inability* to increase the land's value through draining the wetland. Should this owner be eligible for compensation? 1. Yes. 2. No 3. Maybe."

Public Health Guideline

Our health-protection guideline received much less support. The goal of protecting citizens against nuisances like odors in the air and toxic substances in water has long been used to justify zoning ordinances, among other kinds of regulations.[25] Cordes observed that early U.S. Supreme Court decisions (like *Hadacheck v. Sebastian,* 1915) "are often interpreted as establishing that government regulation of nuisance-like activity does not constitute a taking" (that requires compensation).[26] We, therefore, wished to learn if agricultural land owners accepted a health-protection purpose as grounds for denying eligibility for compensation in a regulatory scenario that they would find realistic. Our survey question read: *"Here's a third possible guideline for deciding compensation. Some people believe that compensation is unnecessary when the regulations are designed to prevent harm to people. Let's say that the regulation deals with protecting the purity of river water that's used for a city's or village's water supply. To protect that supply, farmers are required to plant grass on strips of land next to the river rather than plant cash crops on the strips. The grass should catch soil and chemicals that might otherwise wash into the river. Should farmers who can't cash-crop the strips be eligible for compensation? 1. Yes 2. No 3. Maybe."* These grassy areas are often called "filter strips" because they are designed to filter pollutants out of the water before it drains into streams, rivers or lakes.

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[25]Richard F. Babcock, 1966. *The Zoning Game* (Madison, WI: The University of Wisconsin Press).

[26]Cordes, cited above, p. 193.

Although this question's multiple-choice responses were worded essentially the same way as those for the question about the prior-knowledge guideline, the distribution of answers was almost diametrically opposite. In the weighted national sample, 61.9 percent believed that, if land lost market value because of the required filter strips, the farmer should be eligible for compensation (Table 11). Only 23.1 percent chose the "no" response option. Across all six regions, support for no compensation varied in the narrow, low range of 18.1 percent in the Southeast to 28.4 percent in the Midwest.[27]

In a follow-up question, we asked the 61.9 percent majority that believed in eligibility for compensation, "Should this regulation's health purpose cause the amount of compensation to be reduced, or should the health purpose make no difference in the amount of compensation." Only 21 percent of them, or 13.6 percent of the entire weighted sample, answered that the health objective should reduce compensation. Overall, then, we had a little more than a third of the national sample (36.7 percent = 23.1 percent plus 13.6 percent) favoring some application of the health-protection guideline.

Who supported this guideline? In the weighted national sample, non-operators were somewhat more supportive than were operators (31 percent versus 22 percent), as were respondents residing 10 miles or more away from their land compared to those closer (24 percent versus 35 percent). Another differentiating variable was the amount of cropland the respondents owned. Those with relatively few acres in crops (e.g., below the median for the sample - 76 acres) were seven percentage points *more* likely to approve this health-protection guideline (28 percent versus 21 percent), and we found larger differences in the same directions in the Southern Plains and Northern Plains samples (15 and 11 percentage points, respectively). Respondents with relatively less (or no) land in crops may understandably be more willing to deny compensation for regulations affecting cropland. Another significant difference in level of support was between surveyed owners receiving at least $100,000 in gross revenues from their land (17 percent of whom endorsed this guideline) versus those with less than $100,000 (among whom the percentage in support was 28 percent).

Table 11

Farmland and ranch land owners' opinions as to who should be eligible for compensation: Should owners who are required to use filter strips to protect a city's or village's water supply be eligible - percentages by response category and region

Response Category	West	Southern Plains	Northern Plains	Midwest	South-east	North-east	National (weighted)
Yes	63.7	61.3	64.4	58.7	65.7	58.7	61.9
No	19.4	21.9	22.2	28.4	18.1	24.6	23.1
Maybe	10.5	10.4	6.9	6.6	7.9	11.6	8.3
"Don't know" or "won't say" *(table 11 cont)*	3.5	1.3	2.3	0.7	1.8	4.1	1.8

[27]Such a sharply different response pattern indicates that our surveyed owners were taking the survey seriously. When they shift 180 degrees between two questions that came in almost immediate succession, they are reacting to the question's content rather than giving mostly the same responses in order to get the interview over with quickly.

(Table 11 continued)

Farmland and ranch land owners' opinions as to who should be eligible for compensation: Should owners who are required to use filter strips to protect a city's or village's water supply be eligible - percentages by response category and region

Response Category	West	Southern Plains	Northern Plains	Midwest	South-east	North-east	National (weighted)
Not asked	2.9	5.1	4.2	5.6	6.5	1.0	4.9
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total respondents	314	297	306	303	216	293	300/1,729

Text of question: "Here's a third possible guideline for deciding compensation. Some people believe that compensation is unnecessary when the regulations are designed to prevent harm to people. Let's say that the regulation deals with protecting the purity of river water that's used for a city's or village's water supply. To protect that supply, farmers are required to plant grass on strips of land next to the river rather than plant cash crops on the strips. The grass should catch soil and chemicals that might otherwise wash into the river. Should farmers who can't cash-crop the strips be eligible for compensation? 1. Yes 2. No 3. Maybe"

Effort-to-Comply Guideline

Like the second candidate guideline for compensation that we offered to the surveyed owners (the one about prior knowledge), the fourth attracted majority support both in the weighted national sample and in all six regions. Here we tested the guideline of relating compensation to the owner's or operator's effort to comply with the environmental regulation at issue. Our survey question read: "*A fourth possible guideline might be to base compensation decisions on the extent to which the landowner tried to comply with the regulation. Let's say the regulation deals with protecting endangered birds, and one farmer tries hard not to disturb the nests of such birds, such as by leaving some of his land unfarmed. Another farmer leaves as much land unfarmed but does not follow other recommended management practices for protecting the birds. Should both farmers be treated equally regarding compensation, or should the farmer who tried harder be treated better? 1. Treat both farmers equally. 2. Treat the farmer who tried harder better.*"

Almost two-thirds (63.5 percent) of the weighted national sample favored treating better the farmers who tried harder (Table 12). Of course, with very weak or no effort to comply, there might be no loss in market value to compensate. In all six regional samples, sizable majorities favored rewarding effort; they ranged from 58.6 percent in the West to 71.3 percent in the Northeast (Table 12). The Northeast stands out from the other regions in that the differences between its level of support and the corresponding percentages in all five other regions are statistically significant.

At the national level support was somewhat more likely, by seven percentage points, if the respondent was *not* a current farm operator, but still a large majority (69 percent) of the surveyed farmers or ranchers favored this guideline, as did the current operators in the regional samples.

The same pattern was found for the variable, gross revenues from agriculture While 76 percent of the surveyed owners who were *below* the median in revenues supported the principle of compensating better the farmers who try harder, the approval level among the owners at or above that median was 69 percent. When we moved the cutting point to $100,000 and above versus below $100,000, there was little change; 74 percent

below that mark supported the effort-to-comply guideline compared to 67 percent among the respondents at or above $100,000. Similarly, while respondents without any land in crops were eight percentage points more likely to support the reward-effort guideline, compared to their counterparts with cropland, a large majority (70 percent) among the latter still favored it.

Table 12

Farmland and ranch land owners' opinions as to who should be eligible for compensation: Should farmers who make a greater effort to comply with a regulation, such as protecting endangered birds, be eligible for higher compensation than farmers who try less hard to comply - percentages by response category and region

Response Category	West	Southern Plains	Northern Plains	Midwest	South-east	North-east	National (weighted)
Treat both equally	30.9	25.6	25.5	24.8	23.1	22.5	25.2
Treat better if try harder	58.6	63.6	64.7	63.7	62.0	71.3	63.5
"Don't know" or "won't say"	7.7	5.7	5.6	5.9	8.4	5.1	6.5
Not asked	2.9	5.1	4.2	5.6	6.5	1.0	4.9
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total respondents	314	297	306	303	216	293	300/1,729

Text of question: "A fourth possible guideline might be to base compensation decisions on the extent to which the landowner tried to comply with the regulation. Let's say the regulation deals with protecting endangered birds, and one farmer tries hard not to disturb the nests of such birds, such as by leaving some of his land unfarmed. Another farmer leaves as much land unfarmed but does not follow other recommended management practices for protecting the birds. Should both farmers be treated equally regarding compensation, or should the farmer who tried harder be treated better? 1. Treat both farmers equally. 2. Treat the farmer who tried harder better."

Another differentiating condition was past negative experience with land use regulations. However, even the owners in the national sample who lost market value due to regulations of wetlands, HEL and zoning supported this guideline at a level of at least 66 percent. The exception came from persons reporting ESA losses. Only 46 percent of them at the national level favored this guideline. Where respondents resided had no significant effect. Those living on or near their agricultural land were as supportive as surveyed owners residing greater than 10 miles away. Therefore, we probably need not worry about adjusting the findings to take into account our sample's likely under-representation of absentee landlords (see Chapter One's discussion of this potential bias).

Compensation Automatic after a Specified Percentage of Market Value is Lost

Given that legislative proposals at both the state and federal levels have included provisions for automatic compensation after a specified percentage of market value is lost, we included a question about this fifth kind of guideline for compensation. Our question read: *"Proposed legislation would have compensation be automatic if a regulation decreased the land's appraised value by a set percentage, like 20%, or higher. For*

example, if the value decreased by 21%, the owner automatically is paid that full 21% in compensation. If the decrease is 19%, there would be no compensation at all. An opposing opinion is that compensation should depend on other considerations such as whether the owner bought the land knowing about the regulation, whether the regulation might protect humans from harm, or whether the land user made a genuine effort to comply with the regulation. What do you think? Should: 1. Compensation be automatic after a certain percentage reduction in value is reached? 2. Or should it depend on other considerations?"

We selected 20 percent as the "trigger" percentage because it was included in the property rights bill that the House of Representatives passed in March 1995 (H.R. 9). And we purposely made that 20 percent a real dividing line so that right to compensation would plainly hinge on that condition. If 20 percent or more in appraised value were lost, money would be paid, but none if the devaluation fell below that percentage. We considered adding exemptions such as no money, regardless of the percentage loss, if the regulation had a public health purpose. However, earlier survey questions had dealt with such conditions. We wanted owners' opinions about an automatic compensation principle. Moreover, at least some of the compensation legislation being debated contained few significant exceptions. According to Robert Meltz, the bill that passed the Senate Judiciary Committee of the U.S. Congress in 1995 with a trigger of 33 percent exempted "chiefly property uses that are nuisances, the United States having the burden of showing that the proposed activity would constitute a nuisance. . . ."[28] The other exemptions he classified as "narrow."

Table 13

Farmland and ranch land owners' opinions as to who should be eligible for compensation: If appraised value of the land is reduced, should compensation be automatic after a certain percentage reduction in value is reached, or should it depend on other considerations - percentages by response category and region

Response Category	West	Southern Plains	Northern Plains	Midwest	South-east	North-east	National (weighted)
Automatic	21.7	23.6	25.2	20.5	20.8	16.7	21.6
Depends	68.5	64.6	64.4	69.0	65.7	78.5	67.8
"Don't know" or "won't say"	7.0	6.7	6.2	4.6	6.9	3.7	5.9
Not asked	2.9	5.1	4.2	5.9	6.5	1.0	4.8
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total respondents	314	297	306	303	216	293	300/1,729

Text of the question: "Proposed legislation would have compensation be automatic if a regulation decreased the land's appraised value by a set percentage, like 20%, or higher. For example, if the value decreased by 21%, the owner automatically is paid that full 21% in compensation. If the decrease is 19%, there would be no compensation at all. An opposing opinion is that compensation should depend on other considerations such as whether the owner bought the

(continued on next page)

[28]Robert Meltz, 1996, *Property Rights: Comparison of H.R. 9 as Passed and S.605 as Reported* (Washington, D.C.: American Law Division, Congressional Research Service, March 7, 1996, 95-509A), Internet,www.cnie.org/nle/econ-10.html, p. 7.

land knowing about the regulation, whether the regulation might protect humans from harm, or whether the land user made a genuine effort to comply with the regulation. What do you think? Should: 1. Compensation be automatic after a certain percentage reduction in value is reached? 2. Or should it depend on other considerations?"

Our version of an automatic compensation guideline attracted only minor support from the surveyed owners. In the weighted national sample, 21.6 percent favored it (Table 13); and across the six regions support varied in the narrow range of 16.7 percent (Northeast) to 25.2 percent (Northern Plains). By contrast, large majorities selected the response option, "depend on other considerations." Making that choice were 67.8 percent at the national level and from 64.4 percent to 78.5 percent in the regions.

What were the "other considerations" that respondents might have been thinking of when they selected this option rather than "compensation [should] be automatic?" Since this question about guidelines came fifth in order, we had the same persons' responses about the four previously discussed guidelines. Table 14 presents the extent to which these respondents had approved any of the other four guidelines. A third of them in the weighted national sample had supported applying a severity-of-burden guideline; for the scenario about converting a wetland, 82.3 percent implicitly endorsed a prior-knowledge guideline; regarding the scenario about strips of land along water courses filtering out pesticides, 27.8 percent approved of denying compensation where the regulation's object was to protect human health; and for the endangered species scenario, 69.7 percent endorsed the guideline of relating compensation to the effort to comply with the regulation.

Table 15 indicates that 95.7 percent of these respondents in the national sample had supported at least one of the four guidelines and 74.2 percent, at least two. Almost 58 percent had approved both the prior-knowledge guideline and the principle of relating compensation to the effort to comply. Nearly 30 percent had endorsed both the prior-knowledge constraint on compensation and the severity-of-burden guidelines. That is, they would both limit compensation to the severely burdened land owners and deny it to owners who wanted to convert a wetland even though they knew of the regulations against converting it prior to buying the land. In other words, the surveyed owners who rejected automatic compensation in favor of "other considerations" probably had one or more of these other, rather specific guidelines in mind.

To put it yet another way, when automatic compensation was offered as a policy option to agricultural landowners after they considered the kinds of other guidelines we provided, a large majority of the surveyed owners rejected the automatic option in favor of "other considerations;" and almost all of that majority probably were thinking of one or more of those other guidelines when they rejected it.

Table 14

Likely extent to which owners supported specified other guidelines for compensation when they endorsed the principle of taking into account "other considerations" rather than making compensation automatic after a particular percentage of appraised value has been lost - percentages by response category and region

Compensation Guidelines	West	Southern Plains	Northern Plains	Midwest	South-east	North-east	National (weighted)
Limit to the severely burdened *(table 14 continued)*	30.7	32.8	33.0	34.4	31.7	44.8	33.9

(Table 14 continued)

Likely extent to which owners supported specified other guidelines for compensation when they endorsed the principle of taking into account "other considerations" rather than making compensation automatic after a particular percentage of appraised value has been lost - percentages by response category and region

Compensation Guidelines	West	Southern Plains	Northern Plains	Midwest	South-east	North-east	National (weighted)
No compensation if knew of regulations before buying the land	80.5	81.8	80.2	86.6	77.5	83.5	82.3
No compensation if a health purpose	23.3	26.0	25.4	34.9	21.8	27.4	27.8
Relate compensation to extent of compliance	68.8	73.4	71.6	68.4	65.5	75.7	69.7
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total respondents*	215	192	197	209	142	230	203/1,729

*The total respondents in this row of data consisted of the surveyed owners who had selected the response option, "[compensation] should depend on other considerations," rather than being automatic.

Table 15

Likely extent to which owners supported combinations of specified guidelines for compensation when they endorsed the principle of taking into account "other considerations" rather than making compensation automatic after a particular percentage of appraised value has been lost - percentages by region

Compensation Guidelines Approved	West	Southern Plains	Northern Plains	Mid-west	South-east	North-east	National (weighted)
*Endorsed at least one of four specific guidelines**	96.3	95.8	97.0	97.1	91.5	97.0	95.7
At least two such guidelines	71.2	75.0	73.1	77.0	71.8	83.1	74.2
(1) Denying compensation if owner had prior knowledge of regulations and (2) relating compensation to effort	54.4	59.4	56.3	59.8	53.5	64.8	57.9

(table 15 continued)

(Table 15 continued)

Likely extent to which owners supported combinations of specified guidelines for compensation when they endorsed the principle of taking into account "other considerations" rather than making compensation automatic after a particular percentage of appraised value has been lost - percentages by region

Compensation Guidelines Approved	West	Southern Plains	Northern Plains	Mid-west	South-east	North-east	National (weighted)
(1) Prior knowledge criterion and (2) limiting compensation to severely burdened	26.0	27.1	27.4	32.1	27.5	37.4	29.6
(1) Relating compensation to effort and (2) limiting it to the severely burdened	24.2	29.7	24.9	25.4	19.7	34.8	25.6
Total respondents**	215	192	197	209	142	230	203/1,729

*The four were: limiting compensation to the severely burdened, denying it to owners who want to convert a wetland but knew about the regulation against converting before they bought the land, denying compensation to owners who were required to take strips of cropland next to water courses out of crop production because that regulation had a health purpose (e.g., protecting a source of drinking water), and relating compensation to the extent that owners complied with an endangered species regulation.

**The total respondents in this row of data consisted of the surveyed owners who had selected the response option, "[compensation] should depend on other considerations," rather than being automatic.

Crosstabulation analysis indicates that support for the guideline, "depends on other considerations," was widespread. Across the six regions, the only statistically significant difference is between the highest level of support, 78.5 percent in the Northeast, and each of the other five regions' levels. Among those five, approval varied in the very narrow range of 64.4 percent to 69 percent (Table 13). In the weighted national sample, support for this guideline did not significantly vary by whether or not the respondents were farm operators, whether they lived close or far from their land, or if they had received relatively a lot of revenue from their land (e.g., at or above the median value) versus comparatively little (below the median). There are not significant differences either if we make the comparison at $100,000-plus in gross revenues versus less-than-$100,000. The regional samples also showed no significant variation on these dimensions.

The only kinds of variables showing significant differences in both the national and regional samples dealt with prior negative experiences with regulations and present participation in USDA benefit programs. For example, in the weighted national sample, respondents who reported losing market value because of wetlands regulations were 13 percentage points less likely to want compensation to be guided by "other considerations" rather than be automatic. Still a majority of them, 64 percent, favored "other considerations." Current participants in the CRP also were somewhat less likely to support that guideline, by 71 percent versus 77 percent.

The Public and Owners Share the Cost of Protecting the Environment

Like the depends-on-other-considerations guideline for compensation, the sixth that we tested in the survey was general in its application. That is, it was not placed in a specific regulatory scenario except that it dealt

with "protecting the environment." It addresses directly the question,"Who should pay the costs of regulation?"

The analyses of previous questions about compensation guidelines indicate that our respondents were divided in their opinions about who should pay. Although a majority believed that the wetlands owner with prior knowledge about the land's limitation should not be compensated for his inability to enhance its value after purchasing it, there was only minority support for limiting compensation to the severely burdened or denying it to owners required to take filter strips out of production to protect drinking water supplies. By inference, it appears that many of our surveyed owners were open to policy options that assigned some (or all) the costs of regulation to the public. The answers to the sixth guideline question confirm this inference. That question read: *"Some people say that, when it comes to protecting the environment, the public through its government should normally pay landowners for any losses in their property's value because of regulations. Another opinion is that, since landowners and their families benefit from a safe environment, normally they should not receive any compensation. A third opinion is that normally the burden of protecting the environment should be shared in the sense of the public paying partial compensation and the owners bearing the remaining losses in property value. What's your preference? 1. The public pays for any losses in property value? 2. The landowners receive no compensation? 3. The public and the landowners share the burden of protection?"* The surveyed owners should have known what was meant by "protecting the environment" since earlier questions in the questionnaire's same section dealt with wetlands, potential pollution of surface water and endangered species.

Predictably very few respondents wanted landowners to go uncompensated. Only 3.3 percent in the weighted national sample selected that response category, and just 1.9 percent to 6.4 percent did so across the six regions (Table 16). However, sticking "the public" with the entire cost was also not a majority position in any of the regions. It was supported by only 29 percent at the national level and by a fifth to a third in the regions, except for the West, where 41.1 percent of that sample favored it. But even there a majority preferred that "the public and the landowners share the burden of protection." In the national level sample 60.5 percent supported such sharing, as did from 52.5 percent (in the West) to 67 percent (Midwest) in the regions.

Table 16

Farmland and ranch land owners' opinions as to who should pay for the costs of environmental regulations which protect the public -- percentages by response category and region

Response Category	West	Southern Plains	Northern Plains	Midwest	South-east	North-east	National (weighted)
The public	41.1	33.0	29.4	22.8	30.1	24.6	29.0
Landowners	1.9	6.4	3.3	2.3	2.8	4.1	3.3
Share costs	52.5	54.2	61.4	67.0	56.9	66.6	60.5
"Don't know" or "won't say"	1.6	1.4	1.7	2.4	3.8	3.7	2.4
Not asked *(table 16 continued)*	2.9	5.1	4.2	5.6	6.5	1.0	4.9

(Table 16 continued)

Farmland and ranch land owners' opinions as to who should pay for the costs of environmental regulations which protect the public, percentages by response category and region

Response Category	West	Southern Plains	Northern Plains	Midwest	South-east	North-east	National (weighted)
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total respondents	314	297	306	303	216	293	300/1,729

Text of question: "Some people say that, when it comes to protecting the environment, the public through its government should normally pay landowners for any losses in their property's value because of regulations. Another opinion is that, since landowners and their families benefit from a safe environment, normally they should not receive any compensation. A third opinion is that normally the burden of protecting the environment should be shared in the sense of the public paying partial compensation and the owners bearing the remaining losses in property value. What's your preference? Normally, 1.The public pays for *any* losses in property value? 2. The landowners receive no compensation? 3.The public and the landowners *share* the burden of protection?"

Who were the owners who took the position that government and landowners should share the costs of environmental compliance? In contrast to the breakdown of opinions by various traits of the owners that we analyzed for the previous five guidelines for compensation, the crosstabulations for this criterion indicated very considerable differentiation. The statistically significant differences all seem to relate to the occupational or financial risks that regulation posed to respondents. In the national sample, surveyed owners were nine percentage points less likely to approve of this sharing if they were farm or ranch operators rather than being nonoperators, 10 points less if they were at or above the median in number of acres planted to crops, and 10 points less also if they were at or exceeded the median in gross revenues from agriculture (and 12 points if we place the cut at $100,000 and above versus less than $100,000). At the regional level, some of the percentage-point differences were appreciably larger: 14 points in the Southeast if the respondent was a current operator, and 12 points to 16 points in the West, Southern Plains, Northern Plains and Midwest if the respondent was at or above the median for acres in crops. However, the surveyed owners in *all* these groups of respondents who were less likely to approve of the sharing principle still constituted majorities when we analyzed them at the national level. The same pattern was found in most cases at the regional samples.[29]

Another type of differentiating condition was whether the surveyed owners attributed some decrease in market value of their land to government regulations. Compared to respondents who reported no devaluations, those who claimed losses due to wetlands violations were eight percentage points less likely to approve of sharing costs; and the corresponding difference for zoning problems was 12 percentage points and for endangered species violations, 14 points. In the weighted national sample, majorities of the

[29]The few exceptions included the West and Southern Plains respondents at or above the median in income from agriculture. Forty-eight percent and 49 percent of them, respectively, approved of sharing the costs of compliance.

respondents reporting losses nevertheless supported the sharing principle, except in the ESA cases.[30] At the regional level, where the differences were often sharper, respondents with this kind of regulatory grievance were less likely to accept a sharing of costs. For example, only 21 percent of the owners in the Southern Plains who claimed losses due to zoning approved of sharing, as did just 38 percent of their counterparts in the Southeast and 47 percent in the Northeast.

In sum, we found majority support for the sharing principle at the national level, in all regions, and among most subgroups formed by variables that reflect respondents' stakes in regulation. Two other types of potentially differentiating variables, place of residence and participation in USDA benefit programs, proved not to yield significant differences at the national level. At the regional level they either failed to make appreciable differences, or the findings were inconsistent. Overall then, this guideline of sharing costs looks widely acceptable.

Balancing "Givings" and "Takings"

Edward Thompson, Jr., Anthony Downs and Ann Strong, among others, argue that decisions to provide compensation by government should be informed by consideration of how much the market value of the relevant land derives from past and current investments by government. Strong and colleagues urged, "It is important to recognize that the very reasons that developers [faced with environmental regulations] argue that such land is developable can often be traced to other governmental actions. The airport highway that crosses a large wetlands area, the causeway opening the barrier island to general use, and the major sewer line . . . all make property attractive for development."[31] Thompson argued that, given the amount of past government financial support to the land's value, which he calls "givings," compensation for regulatory "takings" may in some circumstances be unfair: "The last thing . . . [the public] can afford is to pay *twice* for environmental protection."[32]

To test for the acceptability of considering such "givings" when deciding on compensation for regulatory takings, we offered three scenarios to our surveyed owners: (1) one dealing with the current rule that USDA production flexibility contracts may be contingent on the farmer applying approved soil conservation practices (see Table 17 for the full the text of the question); (2) another whereby one governmental action, the provision of subsidized irrigation water, increases the land's value, while another action, prohibition of the use of a certain pesticide, reduces yields and the land's value (Table 18); and (3) the situation where separate county government policies have offsetting impacts on land values: on the one hand, the county's investment in paving a dirt road that enhances the adjoining land's value for development, and, on the other hand, a county zoning regulation that limits the density of residential development to two homes on the 10-acre parcel in question rather than the 10 units that the owner wants to build (Table 19).

Each of these questions had three response options: (1) full compensation for the reduction in appraised value or, in the case of the zoning decision, for "the difference between that parcel's value for two homes versus its value for 10 homes;" (2) "at least some reduction in compensation" because of the "giving"(the annual

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[30]According to the crosstabulation, 42 percent of the surveyed owners at the national level who reported property devaluations due to ESA supported the guideline of sharing costs between landowners and the public.

[31]Strong, Ann Louise, Daniel R. Mandelker, and Eric Damian Kelly. 1996. "Property Rights and Takings," *APA Journal*, 62 (1): p. 15. See also Anthony Downs, 1994, *New Perspectives on Metropolitan America*. Brookings Institute, p. 128.

[32]Edward Thompson, Jr. 1994. "The Government Giveth," *Environmental Forum*, March/April, p. 26.

payments from the PFCs, the subsidy for irrigation water, or the increased value because the road was paved); and (3) "no compensation at all."

Our respondents tended to accept the principle that positive government contributions should have some offsetting effect on compensation. Across the three related questions, the largest percentage for "full compensation" was only 29.2 percent, regarding the required soil conservation practices (Table 17). In reacting to the other two situations, 15.5 percent and 16.5 percent of the weighted national sample favored full compensation (tables 18 and 19). In all cases the most common response was "partial compensation," and from 13.9 percent (for the subsidized irrigation scenario) to 35.9 percent (the zoning case) selected "no compensation at all."

As we found with the other guidelines for compensation, opinions varied with the respondents' likely stake in, or past negative experiences with, regulation. In the weighted national sample, current operators of farms or ranches were, compared to nonoperators, 10 percentage points *more* likely to favor full compensation (e.g., not taking into account government contributions to the land's value) in the soil conservation scenario and eight points more likely to favor that option for the situation where a pesticide is banned for farmers buying subsidized irrigation water. As we also found in earlier analyzes, the differences could be larger in the regional level. In the West, Southern Plains and Northeast samples, current operators were 11 to 16 percentage points more likely to want full compensation for the effects of soil conservation regulations regardless of the receipt of PFC payments. However, in all cases majorities of the surveyed operators supported partial or no compensation rather than full.

Another differentiating variable was the number of acres planted to crops. In the weighted national sample, respondents below the median on that measure were 10 percentage points *less* likely to want full compensation in the soil conservation situation and six points less likely regarding the pesticide ban. In the West and Southern Plains the differences for the soil conservation issue were 12 and 14 percentage points, respectively. But again, whether respondents were below or above the median on this measure, majorities favored partial or no compensation rather than full.

Roughly the same pattern was found on the dimension of past experience with land use regulations. Respondents in the weighted national sample who reported losses due to highly erodible land regulations were understandably more likely to prefer full compensation for the soil conservation issue, but the difference was only eight percentage points; and about 60 percent of this subgroup favored partial or no compensation. Similarly, although surveyed owners with negative experiences from zoning regulations were more likely to want full compensation in the case of the builder limited to two homes rather than 10, the difference was just five percentage points (23 percent versus 18 percent). Even among the small group of respondents who said their land lost market value from endangered species regulations, less than a majority (36 percent to 47 percent) supported full compensation for any of the three scenarios (e.g., over the soil conservation requirement, the pesticide ban and the zoning restrictions).

In the regional samples, there were some majorities for full compensation among the respondents reporting devaluations: those with ESA losses in the West and Northeast, HEL losses in the Southern Plains and Southeast, zoning losses in the Southern Plains and devaluations from "other" regulations in the Southern Plains. However, overall the "victims" of regulations tended to accept that government payments enhancing the land's value should offset, at least somewhat, the value-diminishing effects of regulations. When even

those who lose money from regulations think this way, we probably have found a guideline of considerable importance.[33]

Table 17

Farmland and ranch land owners' opinions as to whether compensation should be adjusted downward if the regulating government is also providing benefits to the landowner, the case of soil conservation practices required to maintain eligibility for USDA benefits -- percentages by response category and region

Response Category	West	Southern Plains	Northern Plains	Midwest	South-east	North-east	National (weighted)
Full compensation	26.4	32.3	33.7	26.4	32.4	21.5	29.2
Partial compensation	46.2	39.7	43.1	50.2	44.0	54.9	46.2
No compensation	19.1	18.2	17.0	15.8	12.0	18.1	16.1
Don't know or won't say	5.4	4.7	2.0	2.0	5.1	4.4	3.7
Not asked	2.9	5.1	4.2	5.6	6.5	1.0	4.9
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total respondents	314	297	306	303	216	293	300/1,729

Text of question: "In some cases of land regulation, protecting the environment is a condition for receiving government benefits. Let's say that a farm parcel's appraised value is lower because of a USDA regulation requiring soil conservation practices on it. But the owner is currently receiving annual payments from a production flexibility contract with USDA, and applying the conservation practices is a condition for getting the payments. Should the owner receive: 1. Full compensation for the farm parcel's reduced appraised value? 2. Partial compensation to reflect the value of the annual payments? 3. No compensation?"

Another indication of agricultural landowners' acceptance of the "givings" argument is that large majorities at the national level (75.8 percent) and across the regional samples (69.4 percent to 84.7 percent) supported partial or no compensation for at least *two* of the three scenarios offered to them (Table 20). Rather than being persuaded by just one situation and its perhaps especially appealing circumstances, they apparently saw that prior or current government payments should offset regulatory losses in two or all three. In the weighted national sample, 48.5 percent opted against full compensation for all three situations; and 41.6 percent to 59.4 percent did so across the six regions (Table 20).

[33]Since the responses of surveyed owners living out of county were not significantly different from those owners residing on or near their farms, we do not need to adjust our findings for the under-representation of the former kind of owner in our sample.

Table 18

Farmland and ranch land owners' opinions as to whether compensation should be adjusted downward if the government is also providing benefits to the landowner: The case of subsidized irrigation water - percentages by response category and region

Response Category	West	Southern Plains	Northern Plains	Midwest	South-east	North-east	National (weighted)
Full compensation	27.7	16.8	15.7	11.6	16.2	9.6	15.5
Partial compensation	48.7	59.3	64.4	66.0	63.0	71.3	62.5
No compensation	16.2	15.2	11.4	15.2	11.1	14.3	13.9
Don't know or won't say	4.5	3.7	4.3	1.6	3.3	3.8	3.1
Not asked	2.9	5.1	4.2	5.6	6.5	1.0	4.9
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total respondents	314	297	306	303	216	293	300/1,729

Text of question: "Let's say that an owner receives irrigation water at below market prices, and his farmland is more valuable because of the subsidy. Then that owner learns that the government has prohibited the use of a certain pesticide on land like his. That regulation lowers his land's yields and its appraised value. Should the owner receive full compensation for the lower value? Or should there be at least some reduction in compensation because he is getting the irrigation water at subsidized prices? 1. Full compensation? 2. Some reduction in compensation because of the subsidy? 3. No compensation?"

Table 19

Farmland and ranch land owners' opinions as to whether compensation should be adjusted downward if the regulating government is also providing benefits to the landowner: The case of paving a road next to the owner's land - percentages by response category and region

Response Category	West	Southern Plains	Northern Plains	Midwest	South-east	North-east	National (weighted)
Full compensation	17.5	20.9	12.4	14.5	18.5	15.4	16.5
Partial compensation	30.6	35.4	44.8	40.3	40.7	39.2	39.0
No compensation	43.0	37.0	34.0	38.0	27.3	41.0	35.9

(table 19 cont)

(Table 19 continued)

Farmland and ranch land owners' opinions as to whether compensation should be adjusted downward if the regulating government is also providing benefits to the landowner: The case of paving a road next to the owner's land - percentages by response category and region

Response Category	West	Southern Plains	Northern Plains	Midwest	South-east	North-east	National (weighted)
"Don't know" or "won't say"	6.0	1.7	4.6	1.6	6.9	3.4	3.8
Not asked	2.9	5.1	4.2	5.6	6.5	1.0	4.9
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total respondents	314	297	306	303	216	293	300/1,729

Text of question: "In another example, a county highway department paves a dirt road next to a 10-acre parcel, making that land more valuable for building houses. A county zoning regulation restricts residential building so that only two homes may be built on those 10 acres, but the owner would like to build 10 homes. Should the owner receive full compensation for the difference between that parcel's value for two homes versus its value for 10 homes? Or should there be at least some reduction in compensation because the county paved the road and thereby increased the land's value? What do you favor? Do you favor: 1. Full compensation? 2. Some reduction in compensation because the county paved the road? 3. No compensation at all?"

Table 20

Farmland and ranch land owners' opinions as to whether compensation should be adjusted downward if the government also provides benefits to the landowner: The percent who accept such adjustments for zero, at least one, at least two or all three of the regulatory scenarios presented in the survey* - by region

Number of scenarios for applying the principle	West	Southern Plains	Northern Plains	Midwest	South-east	North-east	National (weighted)
Zero or not asked	12.4	12.8	8.5	9.9	13.0	5.1	10.8
At least one	87.6	87.2	91.5	90.1	87.0	94.9	89.2
At least two	72.0	73.1	77.1	80.2	69.4	84.7	75.8
All three	44.3	44.4	46.1	55.1	41.6	59.4	48.5
Total respondents	314	297	306	303	216	293	300/1,729

*The three scenarios were: being required to apply approved conservation practices in order to remain eligible for production flexibility contracts with USDA, being prohibited from using a certain pesticide while receiving from the same government subsidized irrigation water, and being limited to building two new homes rather than the desired 10 on a 10-acre parcel whose value had been enhanced by the same government's investment in upgrading the adjacent road.

Summary

This chapter reports on the surveyed agricultural landowners' opinions about seven kinds of guidelines for compensation in situations where regulations reduce the appraised value of land. For these respondents, issues of compensation should not have been academic since they were owners of the kind of land under discussion. Two-thirds of the weighted national sample rejected the principle of automatic compensation (when a specified reduction in market value is reached). Those respondents preferred basing compensation decisions on "other considerations," including the guidelines of relating compensation to the extent of compliance and denying compensation if the owner knew about the regulatory limitations before buying the property.

Large majorities also appeared to accept that compensation should be reduced by some factor that takes into account prior or current government payments (or "givings") that enhanced the land's value, (e.g., subsidized irrigation water, production flexibility contracts and road improvements). Three-quarters of the surveyed owners opted against full compensation for at least two of the three "givings" scenarios we presented.

Our respondents also accepted that in some situations it may be right to deny all compensation. A total of six questions included conditions for denial: when the owners were not severely burdened, they knew about the regulatory prohibition prior to purchasing the land, the regulation was needed to protect public health, it was a condition for receiving PFC payments, a government agency was providing them with subsidized irrigation water, or their property's value for development had been enhanced by improving the adjacent

Table 21

Farmland and ranch land owners' opinions as to whether compensation should be denied to agricultural landowners in zero, at least one, at least two or at least three of six scenarios presented in the survey* - by region

Number of scenarios where favored denying compensation	West	Southern Plains	Northern Plains	Midwest	South-east	North-east	National (weighted)
Zero or not asked	13.7	14.8	14.4	12.2	20.4	7.5	14.4
At least one	86.3	85.2	85.6	87.8	79.6	92.5	85.6
At least two	57.6	59.6	56.8	63.7	48.6	68.3	58.7
At least three	33.4	31.3	31.8	35.3	20.4	37.9	31.0
Total respondents	314	297	306	303	216	293	300/1,729

*The six scenarios were: limiting compensation to owners severely burdened by the regulations, denying it to owners who knew about the limitations on filling in a wetland but who want government to compensate them for their inability to convert it to farming, denying compensation to farmers who are required to turn cropland adjacent to a river into filter strips in order to protect water used by a city for human consumption, being required by USDA to apply approved conservation practices in order to remain eligible for production flexibility contracts with USDA, being prohibited from using a certain pesticide while receiving from government subsidized irrigation water, and being limited to building two new homes rather than the desired 10 on a 10-acre parcel whose value had been enhanced by the same government's investment in upgrading the adjacent road.

county road. In the weighted national sample, 85.6 percent favored no compensation for at least one of these six situations, 58.7 percent did so for at least two, and 31 percent for three or more (Table 21).

Table 22 presents the two- and three-element combinations of guidelines that individual respondents most frequently supported. At the national level, 62.5 percent subscribed to taking into account both any "givings"[34] when deciding on compensation and whether the owner had prior knowledge of the regulations; and 53.7 percent endorsed both the givings principle and relating compensation to compliance effort. The combination of three guidelines with the most support, from 44.1 percent of the weighted national sample, was the prior-knowledge criterion, the "givings" argument and the principle of relating compensation to compliance effort.

In brief summary, we found that:

- the surveyed agricultural land owners tended to reject automatic compensation. For most of them, compensation was not an unqualified right;
- instead, they tended to favor basing it on situational factors; and
- they tended to accept in some cases those factors that would dictate a decision of no compensation whatsoever.

We found differences across the regions, but they were not large. The Midwest and Northeast samples had the largest percentages against automatic compensation and in favor of denying it to owners with prior knowledge of the regulatory limitations, of denying it in the case of a regulation to protect human health against water pollution and of sharing the costs of protecting the environment (tables 10, 11, 13 and 16). The Northeast ranked first in the percentages of surveyed owners who favored taking into account "givings" (tables 17 to 19). The Southeast sample had the lowest percentages in support of the prior-knowledge and public-health guidelines as presented in our survey, the second lowest both for relating compensation to extent of compliance and against automatic compensation, and the lowest overall support for the considering the value of "givings." The West region's sample had the lowest percentages in favor of tying compensation to effort and of sharing the costs of protecting the environment. However, the differences between the highest and lowest regional values for all seven kinds of guidelines were not great, from only 10.3 to 17.4 percentage points. In other words, it was *not* a situation of the national level findings obscuring a totally different pattern of responses in several of the regional samples.

[34]By accepting the "givings" argument, we mean that they opted for partial or no compensation for at least two of the three scenarios presented in the survey. See Table 20.

Table 22

Percentage of respondents who accepted combinations of guidelines for deciding on compensation - by region

Compensation Guidelines Accepted	West	Southern Plains	Northern Plains	Mid-west	South-east	North-east	National (weighted)
(1) Deny compensation if knew of regulation before purchase and (2) taking "givings" in account*	59.9	62.0	60.5	69.3	53.2	68.3	62.5
Taking into account (1) compliance effort and (2) "givings"	48.7	52.5	56.2	54.8	50.9	61.8	53.7
(1) Denying compensation if had prior knowledge and (2) taking into account effort and "givings"	45.2	50.8	50.0	54.1	45.8	58.4	50.7
Three guidelines: (1) prior knowledge, (2) compliance effort and (3) "givings"	39.5	44.1	44.8	47.2	38.9	50.5	44.1
Total respondents	314	297	306	303	216	293	300/1,729

*Where some prior or current government payments (production flexibility contracts with USDA, subsidized irrigation water, road improvements) make the regulated land's value greater than it otherwise would be.

Chapter Four

Landowners' Opinions about the Appropriateness of Regulations

Introduction

Chapter Three investigated agricultural landowners' opinions about the conditions for regulatory compensation. Another route to regulatory relief is to substitute alternative means to deal with the same kinds of land use conflicts. Therefore, the survey presented five separate conflict situations, and for each of the five we offered two competing approaches in addition to regulation. One non-regulatory approach was where private parties settle the conflict through the courts or private negotiations. The other competitor was government-provided financial incentives designed to induce land users to desist from, or moderate, their problem-causing behavior. The conflict situations were defined by five kinds of complaints: (1) about agricultural odors, chemicals, and dust, with the complainants being nonfarm residents living near the farm operations; (2) about livestock manure that might pollute streams, rivers or groundwater; (3) about the possibility of increased flood hazards downstream when wetlands that used to store storm water are filled in; (4) about farming practices that might threaten the lives of endangered species; and (5) about logging operations that might cause soil erosion resulting in pollution of nearby bodies of water.

By asking owners to evaluate the use of regulation in concrete situations with competing approaches to the same problem, we hoped to obtain more reasoned opinions than if the regulatory approach stood alone in a vague context. Therefore, we aimed to provide realistic problem situations with real monetary stakes. As will be seen, when the texts of the questions are reproduced, each situation was defined to include the possibility of the owner losing appraised value if the complainants succeeded in stopping or limiting the agricultural or logging operation at issue.

Landowners Opinions about the Appropriateness of Regulations for Avoiding Land use Conflicts: The Case of Non-Farmers Complaining about Nearby Farming Operations

In this section of the interview about competing approaches, we encouraged surveyed owners to give serious consideration to nonregulatory options by introducing the section with the following sentence: "Perhaps some existing regulations should be modified or replaced with a different approach to avoiding conflicts over farmland." That sentence was designed to present nonregulatory options as legitimate; but the qualifying word, "perhaps," was intended to indicate that they were not necessarily preferred.[35]

The first type of land use conflict addressed in this section of the interview was between farmers and non-farmer residents living nearby. The question read: "*For example, when non-farm homes are built in agricultural areas, the new non-farm residents may complain about agricultural odors, dust, or chemicals and may even sue farmers to restrict their operations. One way of dealing with this kind of conflict is to have the residents and farmers settle their problems in court or in out-of-court settlements. A second way is to do what some eastern state governments have done -- to pay landowners who volunteer not to develop*

[35]In telephone and face-to-face interviews, there is the danger that surveyed persons will deliberately or unconsciously give answers that the interviewers seem to prefer. See, for example, James H. Frey, 1983. (Beverly Hills, CA: SAGE Publications), pp. 45-46.

especially important farmland. A third way is for local government to zone land in important farming areas so that few homes may be built on it. Probably only one approach can be used. Which approach do you prefer? 1. Have the private parties settle conflicts in court? 2. Pay landowners who volunteer not to develop? 3. Zone to restrict development?"

Land use specialists have written about these farmer-neighbor conflicts since at least the early 1980s.[36] In eastern states like Massachusetts, Connecticut, New York, Pennsylvania and Maryland, local and/or state government agencies prevent conflicts by purchasing conservation easements on agricultural land that retain land in farming and, in the process, preclude the building of nonfarm residents that would generate complaints about agricultural operations on that land as well as on nearby parcels also still in farming.[37] A regulatory approach used by some local governments is to zone farming areas so that few nonfarm residences may be built. For example, in the agriculturally zoned land of DeKalb County, Ill., building permits should not be granted for residential use unless the home is to be sited on at least a 40-acre parcel, because a "farm" is defined as being at least that size.[38]

When presenting the three options of: (1) farmers and complaining non-farmers settling their disputes in or out of court; (2) government preventing conflicts by purchasing conservation easements; and (3) zoning to preclude conflicts, we wanted the respondents to express their preference for only one rather than some combination or solutions (e.g., regulations and payments). Therefore, just before re-stating the three approaches, we inserted the qualifying sentence, "*Probably only one approach can be used.*" In response, 58 percent in the weighted national sample chose "zone to restrict development" (Table 23). Across the six regional samples, there were also majorities of the surveyed owners in favor of the zoning approach, although in the Northeast it was a bare majority - 50.2 percent.[39] Perhaps the support level was less because of the

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[36]Edward Thompson, Jr. 1980. *Farming in the Shadow of Suburbia.* Washington, D.C.: National Association of Counties Research Foundation; Neil D. Hamilton, 1992. "Right-To-Farm Laws Revisited: Judicial Consideration of Agricultural Nuisance Protections," *Journal of Agricultural Taxation and Law*, 14 (3): 195-228; Charles W. Abdalla and Timothy W. Kelsey, 1996, "Breaking the impasse: helping communities with change at the rural-urban interface," *Journal of Soil and Water Conservation,* 51 (Nov.-Dec.): 462-467.

[37]Julia Freedgood, 1991. "PDR Programs Take Root in the Northeast," *Journal of Soil and Water Conservation*, 46(5): 329-332:

[38]Susan Jo Gehl and Jerry Paulson, 1997. "De Kalb, Illinois, First in Agriculture," in *Protecting Farmland on the Edge: What Policies and Programs Work* (De Kalb, Illinois: Center for Agriculture in the Environment, Working Paper Series, CAE/WP97-14).

[39]Is it possible that this widespread support for zoning was an artifact of how we conducted the survey–mostly through telephone interviews rather than by means of mailed questionnaires, with the latter medium perhaps being more suitable for the kind of long questions we asked in this section of the survey? We think not. As discussed in Chapter One, a total of 149 surveys were completed via the mails because their respondents were unable (hearing problems or no phone numbers) or unwilling to participate over the telephone. The 149 who sent in their surveys answered these five questions about competing approaches to land use conflicts in ways very similar to the those of the respondents surveyed by phone. For example, while 58 percent of the weighted national sample supported the zoning option for avoiding conflicts between farmers and nearby nonfarm residents, the corresponding percentage among the 149 mail-questionnaire participants was 53.7 percent. In replying to the other four questions about the appropriateness of regulations, the discrepancies between the two sets of percentages did not exceed 6.5 points.

greater prevalence in that region of conservation easement programs. That difference seems reflected in our finding that the Northeast had the largest percentage by far (31.1 percent) in favor of government paying landowners who volunteer not to develop (Table 23).

Table 23

Farmland and ranch land owners' opinions about dealing with land use conflicts: The case of conflicts between farmers and non-farm residents who complain about agricultural operations they find to be nuisances - percentages by response category and region

Response Category	West	Southern Plains	Northern Plains	Mid-west	South-east	North-east	National (weighted)
Settle in court	8.3	20.2	10.8	11.6	15.3	7.2	13.0
Government pays volunteers not to develop	15.9	15.5	13.7	12.5	17.1	31.1	15.9
Zone to restrict development	62.7	52.5	64.7	61.4	53.2	50.2	58.0
"Don't know" or "won't say"	10.2	6.8	6.6	8.9	7.9	10.6	8.3
Not asked	2.9	5.1	4.2	5.6	6.5	1.0	4.9
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total respondents	314	297	306	303	216	293	300/1,729

Text of question: "Perhaps some existing regulations should be modified or replaced with a different approach to avoiding conflicts over farmland. For example, when non-farm homes are built in agricultural areas, the new non-farm residents may complain about agricultural odors, dust, or chemicals and may even sue farmers to restrict their operations. One way of dealing with this kind of conflict is to have the residents and farmers settle their problems in court or in out-of-court settlements. A second way is to do what some eastern state governments have done--to pay landowners who volunteer not to develop especially important farmland. A third way is for local government to zone land in important farming areas so that few homes may be built on it. Probably only one approach can be used. Which approach do you prefer? 1. Have the private parties settle conflicts in court? 2. Pay landowners who volunteer not to develop? 3. Zone to restrict development?"

As in Chapter Three, we used crosstabulation analysis to determine the extent to which support for different policy options varied with the surveyed owners' likely personal stakes in the options. Somewhat surprising was the finding in the national sample that, among respondents reporting that at least some of their land was subject to local government zoning (and who answered the question about nonfarmer complaints), support for the zoning solution to prevent conflict was slightly *higher* - 69 percent compared to 64 percent among the respondents without any farmland that was zoned. By contrast, respondents at the national level who had nonfarm homes located as close as 100 yards from some of their farmland were nine percentage points (62 percent versus 71 percent) *less* likely to approve of zoning to prevent farmer/nonfarmer conflicts; and in three regional samples (West Southern Plains and Northeast), they were from 10 points to 16 points less likely. Perhaps some of the owners with residential development that close believed that there was a market for more building lots that they, the owners, would help to supply from their own agricultural land. At both the national level and in those three regional samples, majorities of 52 percent to 66 percent of the respondents in this category, having nonfarm homes within a football field's length, favored the zoning option.

In other crosstabulations from the weighted national sample, we found that support for the zoning option did *not* significantly vary by the respondents' age, gross revenues from agriculture (even when the cut was at $100,000 and above versus below that level), the shortest distance from their agricultural land to the nearest town, their acres in crops, or the acreage in livestock production. That is, whether surveyed owners placed below or above (or at) the medians for those variables, majorities favored zoning for dealing with the rather common conflict presented in the survey question. Also not making significant differences was whether or not the respondents were currently a farm or ranch operators, had livestock on their land, or lived on or close to their land or more than 10 miles away .

Although past negative experience with zoning did make significant differences, the effect was insufficient in the national sample to keep a majority of even that group from favoring zoning for this conflict situation. Among the almost 10 percent of the sample who reported having lost market value due to zoning restrictions, 55 percent chose the zoning option when answering our first question about competing approaches for coping with land use conflicts. Among the 90 percent with no such losses, the corresponding percentage was 69. However in three of the six regional samples (those for the Southern Plains, Southeast and the Northeast), majorities of the surveyed owners with this grievance favored one or the other non-regulatory solutions (e.g., either settling the disputes between the private parties or having government pay volunteers to keep the land in farming). In the other three regions, that pattern was not found. Instead, even among the self-reported victims of zoning, there was majority support for using that same tool to prevent conflicts between farming and nearby nonfarm residents.

Preventing Water Pollution from Livestock Manure

Another problem situation for which majorities of our samples preferred a regulatory solution (over private litigation or government incentives) was the disposal of animal manure by livestock operations located near bodies of water. The relevant question (our second in the series about competing approaches to land use conflicts) read: "*Another type of conflict affecting farmland is that sometimes manure from livestock operations seriously pollutes streams, rivers, or groundwater. One way to deal with this kind of problem is to have the people threatened by the pollution go to court against the livestock operators. A second way is for government to provide payments to livestock operators who volunteer to apply recommended practices that prevent water pollution. A third approach is not to rely on volunteers but for government to require livestock operators near bodies of water to apply good manure disposal practices. The regulated operators would be eligible for cost-sharing payments. Which approach do you prefer? 1. Have private parties settle conflicts in court? 2. Provide payments to operators who volunteer to apply recommended practices? 3. Require operators near water to apply good practices?*" Manure may enter surface bodies of water through storm water that washes across farm fields on which manure has been spread, as well as through leaks from confined manure storage facilities (e.g., "lagoons") that farmers construct. Ground water pollution may occur if the soils and/or bedrock structure permit pollutants to infiltrate down to aquifers.

In the weighted national sample, 58.6 percent of the surveyed owners selected the response option, "require operators near water to apply good [manure disposal] practices" (Table 24). Across the six regions, support for this policy varied from 51.4 percent in the Southeast to 65 percent in the Midwest (Table 24). Making

it more attractive may have been the cost-sharing provision that was inserted in the question just before the response options were listed: "The regulated operators would be eligible for cost-sharing." The 1996 Farm Bill provides for a cost-sharing program to assist livestock operations faced with manure-storage problems.[40]

The least popular response option for this question and all the other four conflict scenarios was the private-initiative approach, whereby private parties would use the courts or negotiate solutions out of court. Only 4.5 percent of the weighted national sample preferred that approach for the manure-disposal problem, while for the other four conflict situations, the stated private approach attracted support from 5.1 percent regarding the logging issue (Table 27) to 30.1 percent for the conflict over endangered species (Table 26).

Was the regulatory approach to the stated manure-disposal problem supported also by owners with livestock on their land, or did the respondents to whom the conflict situation tended to directly apply also tend to oppose regulation? At the national level, they were less likely to favor it by 13 percentage points; but still a majority (58.7 percent) of the surveyed owners who had land in livestock (and who answered this question) opted for requiring appropriate practices. There were statistically significant differences in the same direction in five of the six regional samples (West, Northern Plains, Midwest, Southeast and Northeast). But in four of these five, majorities of the owners with livestock, from 53 percent in the West to 68 percent in the Midwest, nevertheless favored the regulatory approach. The only exception was in the Southeast sample, where the corresponding value was 46 percent.

Table 24

Farmland and ranch land owners' opinions about dealing with land use conflicts: When manure from livestock operations may pollute water resources, how should conflicts between those who are threatened by water pollution and livestock operators be settled - percentages by response category and by region

Response Category	West	Southern Plains	Northern Plains	Midwest	South-east	North-east	National (weighted)
Settle in court	2.5	8.1	4.2	5.0	2.8	2.0	4.5
Government pays volunteers to apply practices	34.7	26.3	29.1	21.8	32.4	37.9	28.3
Require good practices	55.4	57.6	59.2	65.0	51.4	57.3	58.6
"Don't know" or "won't say"	4.4	3.0	3.3	2.6	6.9	1.7	3.8
Not asked *(Table 24 cont)*	2.9	5.1	4.2	5.6	6.5	1.0	4.9

[40]Title III ("Conservation") of the Federal Agriculture Improvement and Reform Act of 1996 reserved one-half of the funding under the Environmental Quality Incentive Program "for addressing conservation problems associated with livestock operations" (U.S. Department of Agriculture, Office of Communications, 1996, *USDA 1996 Farm Bill: The Federal Agriculture Improvement and Reform Act of 1996: Title-by-Title Summary of Major Provisions of the Bill* [Washington, D.C.], p. 9).

(Table 24 continued)

Farmland and ranch land owners' opinions about dealing with land use conflicts: When manure from livestock operations may pollute water resources, how should conflicts between those who are threatened by water pollution and livestock operators be settled - percentages by response category and by region

Response Category	West	Southern Plains	Northern Plains	Midwest	South-east	North-east	National (weighted)
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total respondents	314	297	306	303	216	293	300/1,729

Text of question: "Another type of conflict affecting farmland is that sometimes manure from livestock operations seriously pollutes streams, rivers, or groundwater. One way to deal with this kind of problem is to have the people threatened by the pollution go to court against the livestock operators. A second way is for government to provide payments to livestock operators who volunteer to apply recommended practices that prevent water pollution. A third approach is not to rely on volunteers but for government to require livestock operators near bodies of water to apply good manure disposal practices. The regulated operators would be eligible for cost-sharing payments. Which approach do you prefer? 1. Have private parties settle conflicts in court? 2. Provide payments to operators who volunteer to apply recommended practices? 3. Require operators near water to apply good practices?"

In the weighted national sample there were no statistically significant differences in the level of support for this regulatory approach by the respondents' gross income from agriculture,[41] whether they participated in a USDA benefit program, or even whether they reported having streams, lakes, or other bodies of water on their agricultural land. Support was five percentage points more likely among owners below the median age of 57 and 11 points more likely if the owner lived more than 10 miles from his/her agricultural land. But among the older and closer subgroups, still majorities favored regulation. As discussed in Chapter One, we believe that our sample under-represents out-of-county owners of agricultural land, the group that we measured as living more than 10 miles from their land. Therefore, if an adjustment is needed in our survey findings about dealing with this problem for livestock operations, it would be in the direction of *increasing* the percentage of respondents who favor regulation.

Since earlier in the survey a majority of respondents approved the general principle of owners and government sharing "the burden of protecting the environment" (Table 16), we crosstabulated the responses to this question about disposing of manure with the answers about sharing the costs. Nearly seven in 10 (69.5 percent) of the surveyed farmers who had endorsed the sharing principle also favored the option of requiring livestock farmers to follow appropriate disposal practices, with the additional condition that they could receive cost-sharing assistance. In other words, when faced with a practical application of their previous endorsement of a principle, almost seven out of 10 accepted it.[42]

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[41]For example, the crosstabulation found that among the respondents reporting 1997 gross revenues from their agricultural land of at least $100,000, 65 percent supported using regulation to deal with this kind of land use problem, while among the surveyed owners with less than $100,000 the corresponding percentage was 64.5 percent.

[42]Finding this type of logical relationship between two rather widely spaced questions encourages the survey researcher. It indicates that respondents were thinking consistently.

To summarize, we found that, in competition with the particular private approach and incentives option that was provided in our question, *the idea of regulation with eligibility for cost-sharing had broad appeal.*

Increased Threat of Flooding because of the Draining of Wetlands

One of the benefits of retaining wetlands is that, if they are large enough individually or in the aggregate, they can store storm water runoff that might otherwise contribute to significant flooding of properties downstream. Therefore, our third of five conflict situations in this part of the interview dealt with wetlands. The question read: *"A third type of conflict is that sometimes when wetlands are drained, flooding occurs downstream because storm water runoff is no longer stored in the wetlands. But if drainage of wetlands is limited, the appraised value of the land may be less than if it were drained. One way to deal with this kind of problem is to have people downstream threatened by flooding go to court against the owners of the wetland that's drained. A second way is for government to provide payments to wetlands owners who volunteer not to drain their land. A third approach is not to rely on volunteers but for government to use regulations to prevent the draining of wetlands important for flood control. Which approach do you prefer? 1. Have private parties settle conflicts in court? 2. Provide government payments to owners who volunteer not to drain their wetlands? 3. Use regulations to prevent the draining of wetlands important for flood control?"*

In the weighted national sample, no one of the given three approaches received majority support. While 45 percent of the surveyed owners favored using incentives, the regulatory approach was not far behind with almost 40 percent support (39.8 percent, Table 25). Four of the six regions presented the same pattern, with from zero to 6.5 percentage points separating the levels of support received by the incentives and regulatory options. The differences were greater in the Northern Plains and especially in the West region's sample. In the former, the option of government payments to landowners willing to keep their land in wetlands earned almost a majority, 48 percent; and in the West it was supported by 53.5 percent of the surveyed owners compared to only 29.3 percent who endorsed regulation.

Table 25

Farmland and ranch land owners' opinions about dealing with land use conflicts: How should conflicts be settled between those who are threatened by flooding and landowners who desire to drain their wetlands - percentages by response category and region

Response Category	West	Southern Plains	Northern Plains	Midwest	South-east	North-east	National (weighted)
Settle in court	6.1	7.1	5.9	4.0	5.6	4.4	5.3
Government pays volunteers not to drain	53.5	43.1	48.0	43.9	40.7	48.1	45.0
Prevent draining with regulations	29.3	39.1	36.6	44.2	40.7	41.6	39.8
"Don't know" or "won't say"	8.2	5.7	5.2	2.4	6.4	4.8	4.9
Not asked *(Table 25 cont)*	2.9	5.1	4.2	5.6	6.5	1.0	4.9

(Table 25 continued)

Farmland and ranch land owners' opinions about dealing with land use conflicts: How should conflicts be settled between those who are threatened by flooding and landowners who desire to drain their wetlands - percentages by response category and region

Response Category	West	Southern Plains	Northern Plains	Midwest	South-east	North-east	National (weighted)
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total respondents	314	297	306	303	216	293	300/1,729

Text of question: "A third type of conflict is that sometimes when wetlands are drained, flooding occurs downstream because storm water runoff is no longer stored in the wetlands. But if drainage of wetlands is limited, the appraised value of the land may be less than if it were drained. One way to deal with this kind of problem is to have people downstream threatened by flooding go to court against the owners of the wetland that's drained. A second way is for government to provide payments to wetlands owners who volunteer not to drain their land. A third approach is not to rely on volunteers but for government to use regulations to prevent the draining of wetlands important for flood control. Which approach do you prefer? 1. Have private parties settle conflicts in court? 2. Provide government payments to owners who volunteer not to drain their wetlands? 3. use regulations to prevent the draining of wetlands important for flood control?"

In contrast to our crosstabulation analyses for the responses about the first two conflict situations (between farmers and nonfarmer residents and over disposal of livestock manure), we found many more variables that differentiated between levels of support for the regulatory approach to retaining wetlands. Those respondents *less* likely to support regulations included:

- current farm or ranch operators, by 16 percentage points (39 percent versus 55 percent among non-operators);
- respondents who earned at least the median level ($10,000 to $24,999) of gross revenues from agriculture, by 14 percentage points (39 percent versus 53 percent among those receiving less than the median);[43]
- owners who lived on or within 10 miles of their agricultural land, by 14 points (43 percent versus 57 percent among respondents living father away);
- respondents with livestock on their land, by 10 points (40 percent compared to 50 percent),
- owners whose acres in crops was at or above the median (76 acres), by 12 points (37 percent versus 49 percent); and
- respondents who attributed losses in their land's market value to one or more type of regulation, by 10 percentage points (37 percent compared to 47 percent).

This listing suggests that a regulatory approach to wetlands tends to be less acceptable to persons with relatively greater occupational or income stakes in their agriculture land. However, majorities of the same types of respondents supported regulations for the first two conflict situations that we presented to them. It may be that agricultural landowners tend to find less value to themselves and perhaps to the greater community in regulations that protect wetlands compared to regulations that prevent farmer/nonfarmer conflicts and that guard against water pollution from livestock manure.

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[43]When the comparison was made at $100,000 and above versus less than $100,000, the percentage-point difference was 17 points (32 percent as opposed to 49 percent).

Endangered Species Threatened

Since agricultural land provides considerable cover for wildlife, we included in this section of the interview a question about conflicts over endangered species. The question read: *"Here's a fourth kind of conflict. Sometimes when land is farmed, the lives of endangered birds or other animals are threatened. But if farming is limited on such land, its appraised value may be decreased. One way to deal with this kind of problem is to have private people who want to protect the endangered animals approach the farmers with some monetary offer. A second way is for government to provide payments to farmers who volunteer to protect those animals. A third approach is not to rely on volunteers but for government to use regulations to prevent harm to the animals. Which approach do you prefer? 1. Have private parties deal with the conflict? 2. Provide government payments to owners who volunteer to protect the animals? 3. Use regulations to prevent harm to the animals?"* Among the regulations may be restrictions on plowing land that provides nesting areas to rare species of birds or on watering livestock in ponds that provide habitat to endangered fish.

A significant minority of respondents in the weighted national sample, 30.1 percent, favored the option, "prefer ... to have private people who want to protect the endangered animals approach the farmers with some monetary offer" (Table 26). The most popular option, selected by 44.9 percent of the national sample, was

Table 26

Farmland and ranch land owners' opinions about dealing with land use conflicts: The case of farmland being taken out of production to protect endangered animals - percentages by response category and region

Response Category	West	Southern Plains	Northern Plains	Midwest	South-east	North-east	National (weighted)
Activists pay farmers to protect	39.8	30.6	30.1	30.0	25.5	27.6	30.1
Government pays volunteers to protect	41.1	45.8	47.1	45.2	44.0	45.7	44.9
Protect with regulations	8.9	12.8	14.4	17.8	18.1	19.8	15.8
"Don't know" or "won't say"	7.3	5.8	4.3	1.3	6.0	5.8	4.3
Not asked	2.9	5.1	4.2	5.6	6.5	1.0	4.9
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total respondents	314	297	306	303	216	293	300/1,729

Text of question: "Here's a fourth kind of conflict. Sometimes when land is farmed, the lives of endangered birds or other animals are threatened. But if farming is limited on such land, its appraised value may be decreased. One way to deal with this kind of problem is to have private people who want to protect the endangered animals approach the farmers with some monetary offer. A second way is for government to provide payments to farmers who volunteer to protect those animals. A third approach is not to rely on volunteers but for government to uses regulations to prevent harm to the animals. Which approach do you prefer? 1. Have private parties deal with the conflict? 2. Provide government payments to owners who volunteer to protect the animals? 3. Use regulations to prevent harm to the animals?"

"provide government payments to owners who volunteer to protect the animals." Only 15.8 percent favored "use [of] regulations to prevent harm to the animals." Largely, the same pattern of responses was found across all six regional samples (Table 26). Approval of government payments varied in the narrow range of from 41.1 percent (West region) to 47.1 percent (Northern Plains), while approval of a regulatory approach ranged from 8.9 percent (West) to 19.8 percent (Northeast).

Among the five kinds of land use conflicts presented to our samples of agricultural land owners, the respondents tended to find the conflict over protecting endangered species the least appropriate for regulations to solve. Conceivably, regulation would have attracted more support if for that situation we had offered only one kind of compensation outcome (government payments) rather than two provided in the questions about endangered animals (public money and the possibility of financial inducements from private persons).

However, our crosstabulation analysis suggests that regulation as applied to endangered species is a broadly unpopular tool, even though, as discussed in Chapter Two, relatively few of the surveyed farmers reported ever having owned land that lost market value because of the Endangered Species Act. In none of the numerically important subgroups in the national level sample could we find more the 17 percent of the respondents favoring the given regulatory approach for our endangered species scenario: only 13 percent of the owners with livestock on their land, 16 percent with land in crops, 12 percent of the surveyed owners who were farm or ranch operators, 15 percent whose land was currently participating in some USDA benefit program and 17 percent of the respondents living on or within 10 miles of their land.

A regulation that is widely unacceptable risks encountering broad efforts at noncompliance. Included in efforts to minimize vulnerability to enforcement may be owner or farmer actions that make the environmental situation worse than if there were no regulatory program. A representative of the Texas Parks and Wildlife Department reported that, fearing some public official might visit their land to document a rare species' presence on it, "landowners are intentionally destroying endangered species habitat because of ESA ..."[44] Our survey findings indicate a need either for better education programs among land owners about the purposes of endangered species regulations or for some exploration of alternative means to the same end, perhaps including an incentives component.

Protecting Recreational Bodies of Water from Soil Pollution Traced to Logging Operations

The fifth and final type of land use conflict presented to our national sample focused on protecting recreational bodies of water from soil pollution traced to logging operations. The latter can be of sufficient scale that the soil of many acres loses its vegetative cover because of the bulldozers, trucks and other equipment used for felling trees and cutting and transporting logs. Our survey question read: *"The last type of conflict we need to discuss affects timber operations. Sometimes the machinery and vehicles used for logging timber disturbs soil, and then the soil is washed by storm water into streams and rivers. Fishing, swimming, and other recreation may be harmed by this soil pollution. But regulations to slow down or limit logging may reduce the land's sale value. One way to deal with this kind of problem is to have the people harmed by the pollution go to court against the timber operators. A second way is for government to provide payments to operators who volunteer to log the land in ways that do not cause pollution. A third approach is not to rely on volunteers but for government to require the use of logging practices that minimize pollution. The regulated operators would be eligible for cost-sharing money for the application of good*

[44]Cited by Ike C. Sugg, "Reconciling Property Rights and Endangered Species," in *Property Rights Reader* (Washington, D.C.: Competitive Enterprise Institute), pp. 13-16.

practices. Which approach do you prefer? 1. Have private parties settle conflicts in court? 2. Provide payments to owners who volunteer to use good logging practices? 3. Require operators to use good practices?" As with the question about manure disposal practices, we included the possibility that regulated land users would receive cost-sharing money. Among cost sharing assistance available for private forest lands has been USDA's Stewardship Incentive Program. Between fiscal year 1991 and FY 1997, it assisted 8,853 participants across 34 states.[45]

Majorities of surveyed landowners in the weighted national sample and in four of the regional samples favored the given regulatory approach to this conflict situation about pollution of recreational waters from logging. At the national level the approval percentage was 55.2 percent, while in the Southern Plains it was 54.9 percent; in the Midwest, 60.4 percent, the Southeast, 50.9 percent and in the Northeast, a more

Table 27

Farmland and ranch land owners' opinions about dealing with land use conflicts: How should conflicts between the recreational users of water resources and logging operations on private timber land be settled - percentages by response category and region

Response Category	West	Southern Plains	Northern Plains	Midwest	South-east	North-east	National (weighted)
Settle in court	4.1	6.4	3.9	4.3	6.9	3.4	5.1
Government pays volunteers to log cleanly	42.0	30.0	37.3	27.7	31.5	28.3	31.7
Prevent pollution with regulations	47.8	54.9	49.7	60.4	50.9	65.5	55.2
"Don't know" or "won't say"	3.2	3.7	4.9	2.0	4.2	1.7	3.2
Not asked	2.9	5.1	4.2	5.6	6.5	1.0	4.9
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total respondents	314	297	306	303	216	293	300/1,729

Text of question: "The last type of conflict we need to discuss affects timber operations. Sometimes the machinery and vehicles used for logging timber disturbs soil, and then the soil is washed by storm water into streams and rivers. Fishing, swimming, and other recreation may be harmed by this soil pollution. But regulations to slow down or limit logging may reduce the land's sale value. One way to deal with this kind of problem is to have the people harmed by the pollution go to court against the timber operators. A second way is for government to provide payments to operators who volunteer to log the land in ways that do not cause pollution. A third approach is not to rely on volunteers but for government to require the use of logging practices that minimize pollution. The regulated operators would be eligible for cost-sharing money for the application of good practices. Which approach do you prefer? 1. Have private parties settle conflicts in court? 2. Provide payments to owners who volunteer to use good logging practices? 3. Require operators to use good practices?"

[45]U.S. Department of Agriculture, Farm Service Agency, 1998. *Stewardship Incentive Program: From Inception of the Program through 1997 Fiscal Year* (Washington, D.C.), p. 25.

impressive 65.5 percent (Table 27). By contrast, in the West and Northern Plains, the support levels were 47.8 percent and 49.7 percent, respectively.

Unexpectedly, surveyed owners with logging operations currently on their land were only slightly less likely to approve of the regulatory option compared to owners with no logging. The percentage difference was just 59 percent versus 60 percent (among the respondents without logging operations). There was no statistically significant difference in responses either between respondents who currently ran logging operations and those who did not. As we found before, support for regulation was somewhat lower among current farm operators, participants in USDA benefit programs, those receiving at least the median level of gross revenues from their land, and surveyed farmers whose land in crops was at or above the median number of acres. With the just-noted exception about loggers, relatively greater occupational and financial stakes in agriculture appeared to make the respondent less accepting of regulation. But still majorities of all these subgroups supported the regulatory option for this conflict over logging. For example, although current farmers in the weighted national sample were seven percentage points less likely to approve of regulating logging operations to prevent pollution of recreational waters, the farm operators who supported that policy were 58 percent of the farm and ranch operators who answered this questions about logging operations.

The possibility of cost-sharing may have made a regulatory approach more acceptable for this conflict about logging operations, as it may have for the manure-disposal conflict. As in the discussion about that latter conflict, we tested for whether the respondents who earlier in the interview had approved of the principle of sharing the burden of protecting the environment also tended to support this regulatory solution to the logging problem that had a cost-sharing component - 64 percent of them did.

Summary

In summary, for three of our five land use conflict situations, majorities of the weighted national sample supported the given regulatory approaches to dealing with the conflicts. Respondents favoring regulation comprised majorities in all six regions regarding the zoning and manure-disposal conflicts and in four of the six regions regarding the logging scenario (Table 28). Even among the groups who may feel greater vulnerability to the effects of regulations - including current farm operators, owners with livestock on their land, respondents with relatively large revenues from farming, owners whose land had logging operations, and those with land subject to zoning - more than 50 percent of them supported regulations for those three scenarios. In the weighted national sample, majorities of all five of these groups accepted: (1) zoning to limit nonfarm residences near farming operations; (2) requiring adequate manure disposal practices to prevent contamination of drinking water; and (3) requiring soil conservation practices to avoid pollution of recreational water by logging operations.[46] The respondents who reported losing market value in the past

[46]The same pattern was found in the regional samples except for the following cases: In the Southeast sample, only 40 percent of the owners living on or close to their land supported the zoning approach to farmer-neighbor conflicts; 45.6 percent of the respondents with livestock operations favored regulation for the manure disposal problem; and 50 percent of the owners at or above the median in gross farm revenues selected the regulatory option for the logging/water pollution situation. In the Northern Plains, 49.7 percent of surveyed owners at or above the revenue median favored the regulatory approach to the logging problem, as did 50 percent of the respondents with land in crop production. There were eight exceptions in the West Region's sample regarding the logging/water pollution scenario: supporting the regulatory option were 46.5 percent of the respondents with livestock operations, 49.5 percent with crop production, 49.8 percent who were farm or ranch operators, 48.1 percent with land subject to local government zoning, 49 percent who participated in some USDA benefit program, 46.1 percent of those whose cropland acreage was at or above the median for that region, 47 percent who were at or above the median for gross farm revenues, and 49 percent who lived on or within 10 miles of their land.

because of regulations tended to be less supportive of regulation for these three situations; but even among the respondents reporting property devaluations, majorities were in favor except for the small group reporting losses due to endangered species regulations. In other words, these three regulatory scenarios were broadly acceptable.

Favored by about 40 percent in the weighted national sample was regulating to retain wetlands, but only about one in six respondents (15.8 percent) supported regulations to protect endangered species. Therefore, opinions varied greatly by the type of conflict situation and perhaps also by whether the regulated land users would be eligible for cost-sharing. However, the most popular regulatory scenario, regarding zoning to prevent complaints from nonfarm neighbors, had no cost-sharing component.

There were differences across the six regional samples. For three of the five problem scenarios (manure disposal, wetlands conversion, and water pollution from logging), the Midwest ranked first or second in the percentage of respondents favoring a regulatory approach (Table 28). The same pattern was found for the Northeast (regarding wetlands, endangered species and logging). None of the other regions ranked so consistently on percent supporting regulation except the West, which placed last in three (wetlands, endangered species and logging) and next-to-last in a fourth (manure disposal).

Table 28

Percentages of surveyed owners who favored a regulatory approach to dealing with selected types of land use conflicts - by region

Type of Land use Conflict	West	Southern Plains	Northern Plains	Mid-west	South-east	North-east	National (weighted)
Zoning to limit nonfarm residences near farms	62.7	52.5	64.7	61.4	53.2	50.2	58.0
Requiring manure-disposal practices to avoid contamination of drinking water	55.4	57.6	59.2	65.0	51.4	57.3	58.6
Regulating wetlands to prevent draining them	29.3	39.1	36.6	44.2	40.7	41.3	39.8
Regulating to protect endangered species	8.9	12.8	14.4	17.8	18.1	19.8	15.8
Requiring soil conservation practices to prevent pollution of recreational waters by logging	47.8	54.9	49.7	60.4	50.9	65.5	55.2
Total respondents	314	297	306	303	216	293	300/1,729

Table 29

Percentages of surveyed owners who favored regulatory approaches to dealing with at least one, two or three selected types of land use conflicts - by region

Number of Conflict Situations	West	Southern Plains	Northern Plains	Mid-west	South-east	North-east	National (weighted)
At least one for which regulation was appropriate	82.5	80.8	86.9	88.1	83.8	85.7	85.1
At least two	60.8	65.0	68.3	74.2	61.1	68.3	67.4
At least three	40.4	44.5	42.8	52.1	39.3	48.8	45.6
Total respondents	314	297	306	303	216	293	300/1,729

Much the same ranking pattern emerged when we tallied the percentage of respondents who accepted regulation for at least one of the five scenarios, at least two and three or more (Table 29). Supporting regulatory approaches for at least two situations were over two-thirds of the weighted national sample and from 60.8 percent (in the West) to 74.2 percent (Midwest) of the surveyed owners in the regional samples. Approving of three or more were 45.6 percent at the national level and from 39.3 percent (Southeast) to 52.1 percent (Midwest) at the regional level.

Appendix One
Traits of Respondents

Table 30

Traits of surveyed respondents hypothesized to be associated with their responses to policy preference questions: Percentages of respondents with indicated traits - by region							
	West	**Southern Plains**	**Northern Plains**	**Mid-west**	**South-east**	**North-east**	**National (weighted)**
1. Percent who owned land that was used for agricultural purposes, including timber production	95.5	94.9	97.7	94.1	94.0	93.2	94.8
2. Percent who managed land used for agricultural purposes but did not own	4.5	5.1	2.3	5.9	6.0	6.8	5.2
3. Percent whose agricultural land had a stream or other body of water on or next to it	64.6	74.1	63.7	65.7	78.2	86.7	70.9
4. Percent whose agricultural land was subject to zoning	80.3	11.8	42.5	54.5	42.6	58.4	46.4
5. Percent with non-farm homes within 100 yards of their agland	45.5	35.0	26.8	43.2	55.1	68.9	44.4
6. Average number of miles from nearest town to agland parcel closest to that town	5.9	8.2	6.5	4.2	6.4	3.5	5.8
7. Percent with land used for crops	73.2	71.0	89.2	85.1	70.4	73.7	78.1
8. Percent with land used to raise livestock	62.7	78.5	71.9	46.2	48.1	57.7	58.0
9. Percent with land used for timber or timber products	23.2	10.4	2.0	17.2	50.9	40.3	23.4
10. Percent living on their ag land at least one month per year	82.5	68.0	83.3	82.2	84.7	87.7	80.9
11. Percent living within 10 miles but not on their agland	8.6	16.5	9.8	8.9	9.3	7.8	10.3
12. Percent living more than 10 miles or unsure	9.1	15.5	6.9	8.9	5.1	3.8	8.8
Total respondents	314	297	306	303	216	293	300/1,729

Table 30 (continued)

Traits of surveyed respondents hypothesized to be associated with their responses to policy preference questions: Percentage of respondents with indicated traits - by region							
	West	**Southern Plains**	**Northern Plains**	**Mid-west**	**South-east**	**North-east**	**National (weighted)**
13. Percent currently farm operators	79.0	69.0	76.1	63.0	59.7	64.8	66.9
14. Percent who used to be farmers	11.1	14.5	19.0	21.1	14.4	12.6	16.6
15. Percent who never were farm operators	9.9	16.5	4.9	15.8	25.9	21.8	16.5
16. Percent who currently run logging operations	7.6	4.0	2.0	2.3	10.2	7.5	4.9
17. Percent who owned land in the CRP	11.1	14.8	30.1	17.8	14.4	10.2	16.9
18. Percent who owned land under a production flexibility contract with USDA	19.7	34.3	47.7	40.6	25.5	18.8	33.4
19. Percent who owned land that received some other USDA payment or loan	12.7	16.5	19.9	12.9	13.0	13.3	14.4
20. Percent who owned land that participated in at least one of these three kinds of USDA benefit programs	34.1	46.5	68.3	56.4	41.2	33.8	49.0
21. Percent who purchased irrigation water from govt.	18.5	2.4	2.3	0.7	0.0	0.7	4.4
22. 1997 gross revenues from ag land: Percent not offering information	7.3	7.4	5.6	8.3	7.9	6.8	7.5
Percent less than $5,000	12.1	22.2	9.2	19.8	34.3	33.8	22.0
Percent $5,000 to $9,999	9.9	9.8	4.9	9.6	10.6	10.2	9.3
Percent $10,000 to $24,999	14.0	17.5	14.4	16.2	15.7	12.6	15.6
Percent $25,000 to $49,999	12.4	13.8	11.4	13.5	9.7	8.5	12.0
Percent $50,000 to $99,999	7.6	10.8	16.7	10.2	6.5	6.8	9.8
Percent $100,000 and over	36.6	18.5	37.9	22.4	15.3	21.2	23.7

Table 30 (continued)

Traits of surveyed respondents hypothesized to be associated with their responses to policy preference questions: Percentage of respondents with indicated traits, by region

	West	Southern Plains	Northern Plains	Mid-west	South-east	North-east	National (weighted)
23. Owned land used in current year for **crop** production: zero such acres	26.8	29.0	10.8	14.9	29.6	26.3	21.9
One to 99 such acres	29.6	22.9	12.4	29.7	44.0	44.4	30.4
100 to 299 acres	15.0	16.9	23.2	31.6	13.8	19.1	21.7
300 or more acres	28.3	29.3	52.9	22.8	12.0	9.9	26.0
Don't know or won't reply	0.3	2.0	0.7	1.0	0.5	0.3	0.0
24. Owned land used in current year for **livestock** production: zero such acres	37.3	21.5	28.1	53.8	51.9	42.3	42.0
One to 99 such acres	17.5	13.8	12.4	21.1	21.8	24.2	18.8
100 to 299 acres	10.2	23.3	15.1	16.5	12.5	18.7	16.2
300 or more acres	34.7	40.4	43.1	8.3	13.4	14.7	23.1
Don't know or won't reply	0.3	1.0	1.3	0.3	0.5	0.0	0.0
25. Owned land used in current year for **timber** production: zero such acres	76.8	89.6	98.0	82.8	49.1	59.7	76.1
One to 99 such acres	11.1	6.1	1.3	13.9	27.3	24.9	14.2
100 to 299 acres	3.8	2.4	0.3	2.6	14.4	11.3	5.5
300 or more acres	8.3	2.0	0.3	0.7	9.3	3.8	3.7
Don't know or won't reply	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Total respondents	314	297	306	303	216	293	300/1,729

Appendix Two

Adjustments in the Survey's Major Findings that take into Account Nonrespondents

Assumptions about Nonrespondents

At the national level, approximately 40 percent of the total owners we tried to survey did not participate. Table 2 in Chapter One reports that most of the nonrespondents were owners for whom we could not find addresses, let alone telephone numbers. In adjusting survey findings to take into account nonresponse, one must make assumptions about how the nonrespondents would have answered if they somehow had been surveyed. Our strategy is to make conservative assumptions relative to our hypotheses. For example, Chapter Two focuses on owners' reports about whether any of their agricultural land had ever suffered losses in market value because of government regulations. Our hypothesis was that relatively few respondents would report such losses. To be conservative we assumed that, among the nonrespondents, the percentage reporting losses would be twice as high as the percentage for the actual respondents. For example, 11.9 percent of the latter told us that they had suffered devaluations due to wetlands regulations (Table 3). Therefore, we assumed that, among the nonrespondents, who in the weighted national sample numbered 200, the percentage reporting such losses would be 23.8 percent.

Chapter Three deals with owners' preferences for seven kinds of compensation guidelines, and Chapter Four reports owners' opinions about the appropriateness of regulation for preventing or resolving five land use conflict situations. For both chapters, we (the research team) hypothesized that nontrivial percentages of surveyed owners would endorse the guidelines or would approve of regulation as appropriate to dealing with the conflict situations. Our conservative assumption about the nonrespondents was that, among them, the percentage approving a compensation guideline or the use of regulation to deal with a land use problem would be half the percentage that was found among the actual respondents. For example, 58.6 percent of the latter favored using regulations to prevent livestock manure from polluting surface water (Table 24). We, therefore, assumed that among nonrespondents the percentage would be 24.3 percent. The following table presents, for the weighted national sample, both the percentages calculated for the respondents and the adjusted percentages computed after we included the assumed responses from the 200 nonrespondents.

Table 31

Adjustments in the Survey's Major Findings that take into Account Nonrespondents - by chapter		
Chapter and Assumptions	Percentage among respondents	Percentage after making conservative adjustment for nonrespondents
Chapter Two on the incidence of property devaluations ***Assumption:*** that among nonrespondents, the percentage reporting devaluations was twice that found among respondents		
Land reduced in value because of wetlands regulations	11.9	16.7
Land reduced in value because of highly erodible land regulations	12.1	17.0
Land reduced in value because of endangered species regulations	2.8	3.8
Land reduced in value because of zoning regulations	9.7	13.6
Land reduced in value because of "other" kinds of regulations	7.3	10.7
Chapter Three on guidelines for compensation ***Assumption:*** that among nonrespondents the percentage supporting a guideline was half that found among respondents		
Limit compensation to those severely burdened by the regulation	30.7	24.5
Deny compensation if the owner knew about the regulation before purchasing the land	75.0	60.0
Deny compensation if regulation had objective of protecting drinking water used by a municipality	23.1	18.4
Treat better in compensation the land user who tries harder to comply	63.5	50.7
Compensation should not be automatic but depend on "other considerations"	67.1	54.2
Cost of protecting the environment should be shared between the public and landowners	60.5	48.3
Partial or no compensation for land taken out of cropping for soil conservation purposes if owner is also receiving USDA payments	62.3	49.7
Partial or no compensation for loss of yield to pesticide ban if owner obtains irrigated water at a subsidy	76.4	61.3
In case of zoning restriction on number of new homes per acre, partial or no compensation if value of developer's land was enhanced by public investment paving nearby road	74.9	60.0

Table 31 (continued)

Adjustments in the Survey's Major Findings that take into Account Nonrespondents - by chapter

Chapter and Assumptions	Percentage among respondents	Percentage after making conservative adjustment for nonrespondents
Chapter Four on opinions about appropriateness of regulations ***Assumption:*** that among nonrespondents the percentage approving regulation for dealing with the particular land use conflict was half that found among respondents		
Prevent conflict between farmers and nonfarm neighbors by zoning so that few homes are built on farmland	58.0	46.4
Require livestock farmers near water to apply recommended practices for storing manure	58.6	46.9
Use regulations to prevent the draining of wetlands important for flood control	39.8	31.8
Use regulations to prevent harm to endangered animals	15.8	12.6
Require owners to use good practices to prevent pollution of water due to soil erosion caused by their logging operations	55.2	44.2
Number of cases in weighted national sample	300	500

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