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Takings and Endangered Species Protection

by Robert Innes

Private property rights are at the forefront of the U.S. debate on endangered species policy. Section 9 of the Endangered Species Act (ESA) prohibits citizens from "taking" any threatened or endangered species on their private property. The Fish and Wildlife Service has interpreted "taking" to mean any action which injures or kills an endangered creature or significantly modifies or degrades an endangered specie's habitat (an interpretation recently upheld by the Supreme Court in *Babbitt* v. *Sweet Home Chapter of Communities for a Great Oregon et al.,* 1995). The scope of this protection is potentially very wide indeed. For example, some estimate that as much as 75 percent of the prospective habitat for the endangered red-cockaded woodpecker is in private pine forests in the southeastern United States (Welch). Habitat protections for the northern spotted owl may potentially restrict logging on hundreds of thousands of private forest acres in the Pacific Northwest (Sugg 1994). Private California farmland is habitat to the endangered Tipton kangaroo rat, the San Joaquin kit fox, and the blunt-nosed leopard lizard (Johnson). Indeed, more than half of the listed endangered species have at least 80 percent of their habitat on private land (U.S. Fish and Wildlife Service).

The Fifth Amendment to the U.S. Constitution proscribes another type of "taking": government taking of private property without just compensation. In the endangered species context, current jurisprudence generally exempts uncompensated protections of endangered creatures from the Constitution's takings clause (Meltz), although the scope of this exemption continues to be litigated. Public debate has instead centered on Congressional takings initiatives that, despite the absence of Constitutional prompting, would require compensation for endangered species and other government actions that diminish the value of a private property by a minimal percentage. This article is concerned with the economic merits of compensation for precisely these governmental "takings."

For economists, the takings debate raises two sets of issues. First, economic logic can shed light on how compensation affects private incentives to use property—and, in view of these effects, when and how much compensation should be paid in order to ensure an efficient private use of land. On the constitutional front, in contrast, the question is how to provide the government with incentives to regulate and take land efficiently, using constitutional (compensation) restraints that curb potential

government misbehavior.

Before turning to governmental incentives, let me first discuss three private incentive concerns that are particularly important in the endangered species context.

Environmental protection incentives

While landowners make decisions that affect the private use value of their land, their decisions can also inhibit or promote conservation. For example, if landowners are not compensated when their land is taken for endangered species preservation, a number of economists have argued that they do not have an incentive to protect the species *ex ante* and, indeed, will take actions that reduce the likelihood that their land will be valuable as habitat for an endangered species. The case of Benjamin Cone is illustrative. To protect habitat of the red-cockaded woodpecker, a bird that makes a home in old growth pine forests in the southeastern United States, Cone was denied logging rights on 1,560 acres of his old growth trees in Greensboro, North Carolina, at a cost to him of approximately $2 million. Faced with the logging restriction, Cone was quoted as saying (Sugg 1993): "I cannot afford to let those woodpeckers take over the rest of the property. I'm going to start massive clear-cutting. I'm going to a 40-year rotation instead of a 75- to 80-year rotation." Lambert and Smith cite a related phenomenon in the Pacific Northwest, where officials of the U.S. Fish and Wildlife Service have observed accelerated harvesting of old growth Douglas Fir plantations that are potential habitat for the protected northern spotted owl. Similarly, Stroup quotes Texas wildlife officials as bemoaning excessive loss of habitat for the black-capped vireo and the golden-cheeked warbler as a result of their listing under the Endangered Species Act.

When landowner choices affect the value of their land in "public uses," such as endangered species habitat, compensation is generally needed to elicit efficient landowner behavior (Innes, in press). However, almost all of the commonly debated forms of compensation do not achieve efficiency. For example, setting compensation equal to the private losses from a government "taking" of private land does not give the landowner any of the public benefits that are enjoyed when a taking occurs (such as the conservation value of habitat); as a result, owners will tend to make choices that impair public use values more than would be the case were they behaving efficiently, considering effects on public benefits. Pigovian taxation—charging landowners for their land's opportunity cost in public use when they retain the property in private use—only makes matters worse. With Pigovian taxes, landowners still ignore benefits of lowering their private investments (or raising their conservation investments) to improve their land's prospective conservation value. The reason is that they still receive nothing when the land is actually taken by the government; hence, they do not reap any of the public benefits from any conservation efforts that they might undertake. What is more, Pigovian taxes give owners a powerful incentive to reduce their land's public use value and thereby reduce the taxes they will have to pay in order to retain their land.

These inefficient investment incentives can be corrected by compensating landowners for the public use value derived from their land when the land is taken (as suggested by Hermalin). Landowners then receive the private land-use value when the land is not taken and the public use value when the land is taken. Because these values coincide precisely with society's land-use benefits, private land-use incentives are fully aligned with those of society as a whole.

Such "Pigovian compensation," however, will not be the preferred regime when the government is concerned about the budgetary costs of its decisions (Innes, in press). This concern may be motivated by "deadweight costs" of government taxes that include direct administrative expenses from tax collection, labor/leisure distortions from income taxation, and investment incentive costs of profit taxes; these deadweight costs are not small, estimated by economists to be on the order of ten to thirty cents on the dollar. In view of such deadweight losses, the government should strive to provide appropriate land-use incentives with minimum compensation, and public value compensation—with its high budgetary burden—is dominated by other approaches. One low-cost approach compensates landowners only when they do not behave

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"negligently"—that is, when they efficiently protect public use values; with this regime (proposed first by Miceli and Segerson), efficient landowner behavior can be elicited with minimum possible compensation, although compensation must still be positive. In essence, an efficient negligence compensation rule provides just enough compensation as a reward for nonnegligent (efficient) behavior that landowners are just willing to behave efficiently—and receive the minimal compensation—rather than behave as they would with no compensation.

...efficient development incentives can be restored at zero government cost with a tradable development rights (TDR) policy under which each and every landowner is issued a fractional (and tradable) development permit. In order to avoid a taking—and retain the right to hold developed land—a property owner must buy up TDRs from other landowners.

Information acquisition incentives

A second set of incentive issues arises when a given property's prospective value in public use can only be uncovered with costly efforts to acquire this information. Often, landowners can effectively prevent government agents from performing field surveys on their property that can be essential to determining the presence of endangered species and/or the potential value of the property as habitat (Polasky and Doremus). Without this information, the government may leave the property in private hands, either because it is efficient to do so (with the private use value exceeding the uninformed estimate of habitat use value) or because the government must prove its case before the land can be taken (by gathering the requisite information and using it to show that the informed estimate of habitat use value exceeds the property's private use value). If so, landowners will have every incentive to obstruct the government's information-collection activities unless the government compensates them if and when their property is designated for habitat.

In the presence of information-acquisition activities, incentives need to be aligned to ensure that

- information is collected when and only when the prospective societal benefits from the information exceed the costs of its acquisition;
- landowners cooperate in information collection, so that the collection activities are conducted at minimum cost; and
- land is taken only when its public use value (estimated with whatever information has been efficiently collected) exceeds the private cost of the taking.

Two rules drive these incentives (Polasky and Doremus): (1) The burden of proof: Must landowners prove that a taking is inefficient in order to keep their property in private use, or must the government prove that a taking is efficient in order to place the property in public use? (2) Compensation: Must landowners compensate the government for its lost public use value in order to avoid a taking of their property, or must the government compensate landowners for their lost private use value in order to institute a taking?

In a private property rights regime, both the burden of proof and the compensation obligation reside with the government. Compensation gives landowners a motive to cooperate in the acquisition of information, although (as noted above) it will not provide landowners with efficient conservation incentives. Locating the burden of proof with the government also implies that a taking does not occur when information is not collected; the reason is that without acquiring information the government cannot prove its case. This outcome is efficient when the uninformed estimate (or expectation) of public use value is less than the private use value—that is, when an "uninformed" taking is not efficient.

However, suppose instead that an uninformed taking is efficient. Then, without information collection, private property rights prevent the government from efficiently designating habitat. The government, in turn, will strive to reduce the efficiency costs that arise in the absence of information, by acquiring information more often than would otherwise be efficient. By instead locating the property right with the government—essentially implementing a Pigouvian tax regime by placing both the burden of proof and the compensation obligation with the landowner—Polasky and Doremus argue that efficiency can be restored. Without information, a taking then occurs, as is efficient. Moreover, by collecting information, the landowner obtains exactly the societal benefits that the information affords, namely, any net positive gain from preventing a taking that would otherwise occur. The difficulty with this logic is the old adage "Whoever pays the piper

dictates the tune." Landowners who must both engage in information collection and pay the public use value that is revealed by their information have an incentive to underestimate the public use value, "buy back" their land (for private use) too frequently, and collect information too often. As noted above, they will also have a powerful incentive to "sabotage" the public use value of the land.

An alternative approach avoids the drawbacks of both of these extreme property rights rules (Innes and Polasky). Specifically, suppose that

1. A government decision to "acquire information" about a property indicates that the property will be taken, unless the acquired information reveals that it should not be.
2. When the government decides not to acquire information (because it is too costly), a landowner bears the burden of proof in order to avoid a taking.
3. When a taking occurs—and the landowner does not fight it by acquiring his or her own information—the government provides positive takings compensation in the form of a "settlement offer"; however, if the landowner "fights" the taking, the "settlement offer" is dropped and no compensation is available (although the landowner can avoid a taking if the public use value turns out to be sufficiently low).

With the first of these rules, landowners will not obstruct the government's information acquisition efforts because these efforts offer landowners a chance to avoid a taking that they are better off without. Moreover, with sufficiently high "settlement" compensation—though compensation which is less than "full" private use value—the second and third rules will deter landowners from inefficiently acquiring information on their own. The reason is that landowners lose the settlement compensation and bear costs when they "fight" the government by inefficiently gathering information for their case. As a result, these rules give the government free (and sole) reign to acquire information and designate habitat when it is efficient to do so.

In policy language, this approach is akin to the use of habitat conservation plans which require landowners to prove their case in order to avoid a taking. However, there is an important addition: The government must pay some compensation to landowners who cooperate (by not fighting the taking) and are "nonnegligent" (because they have acted to efficiently conserve their property).

Early development incentives

In practice, governments confront choices which are more complicated than a "take or not take" decision for a given piece of land. Generally, they face a set of land parcels on which heterogeneous development/private-use decisions have been made, and they decide not only how many parcels to "take," but also which specific properties to divert to public use, among those which can deliver comparable public services. In the endangered species context, for example, the government decides which land to divert as habitat and how much of it. Such "multiparcel" considerations have important implications for the incentive effects of compensation (Innes 1997).

In particular, government takings do not—and should not—treat "more developed" and "less developed" property symmetrically. Other things equal (including the prospective habitat value of different properties), the least-valuable undeveloped land should be taken first. If takings are not compensated, landowners thus have an incentive to develop their land prematurely (or more intensively) in order to reduce their risk of subsequent government appropriation.

Takings compensation can restore efficient development incentives in a multiparcel setting by ending the financial stigma associated with the risk

of a taking. However, if landowners are offered exactly full compensation for their lost private property value, excessive development may persist; although landowners may no longer develop early in order to avoid a taking, they do not circumscribe the extent of their development to account for the prospective loss of the development investment in the event of a taking. (This is the classic overinvestment effect described by Blume, Rubinfeld, and Shapiro; see Innes 1995 for discussion.) Such excessive development incentives can be countered if

owners of undeveloped land are offered more-than-full takings compensation, and owners of developed land are afforded exactly full takings compensation. By increasing the relative return to ownership of undeveloped land, this compensation policy reduces early development incentives.

Of course, such a compensation solution is very costly to the government, indeed much more costly than necessary to achieve efficiency. Incentives to develop early are generated by differences between economic rents (or returns) that are available to owners of developed and undeveloped land, respectively. Hence, by protecting the relative value of undeveloped and developed land—rather than allowing this relative value to fall with takings of undeveloped land—efficient development incentives can be provided.

For example, efficient development incentives can be restored at zero government cost with a tradable development rights (TDR) policy under which each and every landowner is issued a fractional (and tradable) development permit. In order to avoid a taking—and retain the right to hold developed land—a property owner must buy up TDRs from other landowners. Those who sell their permits, and thereby give up their property for public use, are implicitly compensated by those who buy them. With TDRs, early developers no longer reap excessive benefits from their reduced likelihood of a government taking because they share in the cost of takings, even when their property remains in private use.

Government incentives: interpreting the Constitution

So far, I have presumed that the government is simply a benevolent maximizer of society's economic welfare. However, the central case for the U.S. Constitution's limits on government takings is to protect property owners from prospective government excesses, recognizing that the state is a political animal that need not act benevolently. In view of political realities, how should the Constitution restrain government action in order to ensure efficient behavior?

Consider, for example, a government that can "take" private lands (for species preservation, for example) from those who are not politically powerful. In making its decisions, this hypothetical government places less weight on the private costs of its actions to the landowners than it places on the public benefits and budgetary costs. If not obligated to compensate landowners, the government will take more land more often than is efficient because it understates the private costs of the takings. Stroup echoes this line of argument in the endangered species context:

> When a northern spotted owl, red-cockaded woodpecker, or other species listed as endangered or threatened is found on private property, the owners are required to meet the demands of the Fish and Wildlife Service biologists. Yet the biologists have no economic incentive to limit their demands. Since they have no requirement to compensate the owners of the land they control, other people's land has no budgetary cost to them; it is available free of charge.

A compensation requirement is the proffered cure to this problem. If the government is obligated to compensate landowners for the full value of their taken property, the private costs of the government's actions will be added to its budget, forcing a full accounting of costs and benefits (Epstein). In view of the efficiency costs of "full" compensation (the Blume, Rubinfeld, and Shapiro effect described above), a partial (proportionate) compensation requirement can trade off its landowner incentive costs against its governmental incentive benefits (Fischel and Shapiro).

Implicit in this logic is the premise that the government makes its takings decisions in response to exogenous compensation rules. In contrast, let us suppose that the government is completely unfettered, freely choosing both its regulatory/takings policies and its compensation/tax policies. Because a bigger "economic pie" permits more economic rents to be distributed to constituents, even an unscrupulous government will maximize the size of the pie by making efficient takings decisions. However, it will set its compensation policies to suit political ends that, except by coincidence, do not prompt landowners to make efficient development choices. For example, Fischel and Shapiro's majoritarian government acts only in the interest of the political majority. If landowners are in a political minority, such a government will tax away the landowners' economic benefits and redistribute these benefits to the political majority. In essence, the government will expropriate owners' prior land investments and thereby deter these investments. Constitutional restraint is required to prevent such distorting political opportunism and still preserve the government's incentives for efficient regulation. In Innes (1997), I describe an "equal treatment" restraint that has these properties—requiring that landowners receive relative rewards for their different investments and development decisions that reflect their relative societal benefits.

If the courts instead impose a requirement that landowners be fully compensated for takings, the government's regulatory choices will not be efficient in general. Consider, for example, a government that is considering how much private land to set aside for endangered species habitat, given that

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it must purchase the land at fair market value from property owners who are in a political minority. When it buys up more land, less land is available for private use and, given a downward-sloping demand for private land, land prices rise; with higher land prices—and associated higher compensation obligations for those whose property is set aside—payoffs to property owners rise. Thus, by buying up more land, the government bears the political cost of implicitly having to allocate more economic surplus to a political minority, the property owners. Because of this additional political cost of habitat acquisition, the government will set aside less land than is efficient. In essence, the government becomes a monopsonistic demander of land for habitat, and demands too little land as a result.

Better approaches

For the economic analyst, three key questions are raised by the debate on takings and the Endangered Species Act: (1) Should "takings" compensation be paid to landowners whose property is designated as habitat for endangered species? (2) If so, what form should the compensation take? (3) When is there a need for judicial (that is, constitutional) restraint to ensure that the government has an incentive to make efficient habitat designations and pursue efficient compensation policies?

Overall, I have argued here that some form of takings compensation has potentially a variety of economic merits. Takings compensation can curb incentives for excessive early development as a hedge against the risk of a taking. It reduces landowners' incentives to avoid takings by impairing the prospective conservation value of their land (for example, cutting down trees to eliminate potential habitat or surreptitiously killing endangered creatures). And it reduces landowners' incentive to hinder government efforts to gather information about the potential conservation value of their property (Polasky and Doremus) and to inefficiently engage in such efforts themselves.

I also argue, however, that compensation should not take the form generally envisioned by its proponents—namely, the full private use value foregone when a property is "taken." With full compensation, landowners have no incentive to circumscribe investments in private land improvements either (1) to account for the prospective loss of these improvements in the event of a taking (Blume, Rubinfeld, and Shapiro) or (2) to preserve their land's prospective conservation value (Innes, in press). This incentive problem can be overcome by instead tying compensation to the land's public use value (with the "Pigovian compensation" proposed by Hermalin). However, economic costs of government taxation argue for compensation solutions that have lower budgetary costs. Miceli-Segerson-type "negligence compensation"—under which takings compensation is only afforded to those who behave efficiently in a whole host of relevant domains (including their choices of land investment, preserva-

tion measures, and information provision)—offers promise as a mechanism to achieve incentive objectives at minimum government cost (Innes, in press). Also important in this regard is the distinction between relative and absolute compensation (Innes 1997). For landowner incentives, what matters is the relationship between the payoffs obtained with different investment, development, and other choices. Therefore, incentives for efficient behavior can often be provided by regimes in which owners of "taken" land are implicitly compensated by other landowners whose prior decisions render their property less attractive for a taking (for example, a tradable development rights policy). Indeed, with deadweight costs of taxation, such low government cost approaches dominate direct government compensation that is funded by taxpayers at large.

Full compensation has other drawbacks if enforced as a constitutional requirement for government policy. Facing such a requirement, governments that are averse to budgetary outlays for landowners will tend to protect too little habitat because of the political cost incurred when additional land is purchased.

In sum, current practice of uncompensated ESA actions against private landowners can create incentives for costly and inefficient landowner behavior. Economic welfare may therefore be enhanced by reforms that cleverly compensate those whose land is taken for critical habitat in ways that keep government budgetary costs to a minimum and yet provide landowners with incentives to protect their land's prospective conservation value, to cooperate in information gathering, and to make efficiently circumscribed private development and investment decisions. "Negligence compensation" and tradable development right approaches offer some promise in this direction. ◘

■ For more information

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