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United States
Department of
Agriculture

ERS

Agricultural
Economic
Report
Number 718

An Economic Research Service Report

USDA
1997 OCT 29 P 4:00

Purchase of Development Rights and the Economics of Easements

Henry Buist, Carolyn Fischer,
John Michos, and Abebayehu Tegene

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Purchase of Development Rights and the Economics of Easements. By Henry Buist, Carolyn Fischer, John Michos, and Abebayehu Tegene. Natural Resources and Environment Division, Economic Research Service, U.S. Department of Agriculture. Agricultural Economic Report No. 718.

Abstract

Since the 1970's, an increasing number of State and local governments have administered purchase of development rights programs (PDR's) that use easements to protect farmland and similar lands from conversion to other land uses, such as residential development. The economic principles, issues, and problems underlying these farmland protection programs are broadly examined, with an emphasis on basic design and implementation aspects of easement programs. Other issues, such as the role of private land trusts in farmland protection, are also discussed.

Keywords: Development rights, easements, externalities, option value, tax burden, zoning

Acknowledgments

We appreciate the cooperation of the State and local agencies involved in purchase of development rights programs for providing information necessary for compiling this report. We also appreciate the helpful comments provided by William Anderson, Nelson Bills, Peter Feather, Jim Hrubovcak, Betsey Kuhn, Steve Nako, and David Schimmelpfennig. Many thanks to Melody Mathis-Pace who typed several drafts of this report.

Washington DC 20005-4788 June 1995

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Summary

State and local governments adopting programs to purchase rights that protect farmland and open spaces have grown in numbers since the 1970's. These programs buy limited rights—called easements—to prevent farmland and similar lands from converting to other uses, especially residential or commercial development. This report explores the economic principles and problems of these farmland protection policies, describing the basic design and implementation of easement programs. Pertinent issues, such as the role of private land trusts in farmland protection, are discussed. The report also describes the criteria for land parcel choice and the buying procedures of several States that have developed major State-level programs for the acquisition of easements on open lands under their jurisdiction.

The conversion of farmland to residential or commercial development can bring unintended losses to local public goods. Such losses include reduced habitat for wildlife, restricted areas for recreation, reduced open space, aesthetic loss, and diminished viability of the local agricultural economy. In some counties, such as areas of the Northeast, cultural and historic values are also lost with development. By the end of 1992, 15 States or their county governments had experimented with purchase of development rights programs, under which farmowners agreed not to develop their land. Since such farmowners both volunteer to join the programs and receive compensation for their rights, the programs avoid potential legal problems that arise with zoning. Also, the purchase of development rights requires fewer public dollars than would outright land purchase.

Methods for selecting which land parcels are chosen vary with the State or local program. Such goals as clustering farmland and maintaining environmental amenities can often conflict. Several States therefore use ranking systems to weigh factors before deciding on the purchase of the rights for each parcel from the necessarily limited public funds available for the purpose.

Most States finance these land easement programs partly or wholly with bonds. This distributes the cost among those who gain most: the current and future community members, whose taxes buy the benefits from the protected farmland. When the difference between the market value of the easement and the accepted price can qualify as a charitable donation for tax purposes, the cost is partly shifted to the Federal Government.

Land trusts and other nonprofit, charitable groups play an active role in farmland preservation, sometimes buying and holding desirable easements until public money becomes available. These trusts also encourage donation of development rights as a source of tax deduction. Thus, even though these programs are now private, State, or local, current Federal tax laws can strongly influence the success of easement programs for farmland protection.

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Introduction

The conversion of agricultural land to urban uses has prompted the enactment of several pieces of farmland protection legislation at the Federal, State, and local level. At the Federal level, the 1981 Farmland Protection Policy Act instructs, but does not require, Federal agencies to reduce or eliminate the contribution of Federal programs to farmland conversion. At the local level, zoning laws impose direct regulations and prohibitions upon land use changes. At the State level, all 50 States have passed legislation that allows local governments to grant property tax relief (Aiken, 1989).[1] To ease the financial burden of real estate taxes, agricultural lands have preferential treatment under use value assessment laws. Much of the economic and policy research argues that these laws have been ineffective in preserving farmland.[2]

The search for a better approach has led to the birth and growth of purchase of development rights (PDR) programs since the mid-1970's. A distinguishing feature of these market-based conservation efforts is the establishment of common property rights over the uses of privately owned land. PDR programs use legal instruments, known as easements, to protect targeted lands. In return for payments, landowners agree to adhere to the terms of the easement contract, such as not converting farmland to an alternative use over a specified time period. The expressed purposes of most of these programs revolve around the common theme of preserving the agricultural potential of the State and the environmental benefits of farmland.

By the end of 1992, nine States and several county governments in the same and other States had established PDR programs in some form, protecting over a quarter of a million acres at the cost of nearly half a billion dollars. The American Farmland Trust's magazine, *American Farmland*, provides periodic updates of these totals.

As with use value assessment, interest in PDR programs has fostered considerable economic and policy research. Instead of trying to comprehensively survey this literature, this report focuses on the underlying economics of easements—namely, the financing, pricing, and allocation of easements. This tactic enables an efficient survey of the key issues, some of which have not been emphasized by the literature, and avoids having to interpret and reconcile the perspectives and objectives of different authors. Moreover, the main purpose of the report is to distill those aspects of easements that might be relevant for any related program of any government that might be interested in using easements to achieve a public policy objective. Since easements can be thought of as a flexible, generic public policy instrument, the States' experiences with the PDR programs can provide insights into using the instrument for other purposes besides farmland protection.

A Brief Overview of PDR Programs

The earliest purchase of development rights programs originated in the Northeast Coastal States in the mid-1970's. In the Washington-Boston corridor States (from Maryland to Massachusetts), income and population growth and continuing metro suburbanization resulted in a rapid increase in the urban value of agricultural land.[3] Although agricultural districts and use value assessment were already in place, some States perceived that the rate of farmland conversion was too high, and they commissioned studies of alternative methods, which they developed as an additional means to support the preservation of farmland.

[1] Names cited in parentheses will be found in the References at the end of this report.

[2] Coughlin (1990), Mackenzie (1990), and Stocker (1979) discuss the issues and problems in the preservation of farmland.

[3] The papers by Derr (1988) and Mackenzie (1988) provide statistics describing the various trends.

Statewide programs operate in Connecticut, Maryland, Massachusetts, New Hampshire, New Jersey, Pennsylvania, Rhode Island, and Vermont. Mostly independent county or local programs operate in California, Colorado, and New York, as well as in some of the previously mentioned States, including Pennsylvania and Maryland. Some programs are occasionally suspended or terminated. Maine's program has reverted to fee simple purchases. Delaware authorized its program in 1991 but delayed the funding until 1995. Some Florida counties have begun purchasing easements, and a State committee has recently recommended creating a statewide PDR program. In addition to *American Farmland*, such works as the *Farmland Preservation Report* (Bowers Publishing) and *Policy Issues in Rural Land Use* (Williams and Bills, 1991) provide information and updates regarding the status of PDR programs. The appendix to this report summarizes the various State programs. The references to this report also provide various documents describing PDR programs.

The General Terms of Development Rights Purchases

All PDR programs are voluntary. Farmowners offer or are encouraged to sell the development rights for their land to the appropriate State or local government agency (or, in some cases, to a nonprofit land trust). An offer to sell does not guarantee purchase by the PDR agency. If the parties arrive at an agreement, the terms of an easement will typically include a specification of the following:

(1) Land use activities that are and are not permitted by the landowner.

(2) The extent, if any, to which the public has access rights to the land.

(3) The quantity and form of payment (either lump sum or periodic).

(4) The length of time the easement is binding (anywhere from a few years to indefinitely).

(5) The conditions, if any, governing changes of land ownership.

(6) The conditions governing a termination of the contract (such as if the landowner declares financial hardship).

Easements can be as flexible as any other economic contract as long as they conform to real property laws. For lands with special characteristics, clauses can be written into the agreement to accommodate whatever unique features are important to the agency or the landowner. As an example of easement terms, the agricultural preservation restriction of the State of Massachusetts specifies that easements are to be permanent, that non-agriculture-related land uses are forbidden, that the State retains the right to inspect the land, and that the public does not have access rights (Commonwealth of Massachusetts, 1992).

Motivation for Farmland Protection

Arguments supporting farmland protection[4] appeal to the classical market failure problem in which the private decisions of an economic agent do not reflect full social values or costs. The interpretation of the general principle to the present case is that the farmowner can become wealthier by selling to an urban developer than by remaining in farming, even though the public goods value of the farm plus the private market value of the farm in agriculture might exceed its value in urban use. Farmland protection methods, such as tax relief and easement purchases, quantify the public's valuation of preserved farmland and compensate farmowners for the forgone urbanization value of their land. These public choice mechanisms can resolve, or at least attenuate, the market failure problem that lies in the excess conversions of farmland.

The public goods value of a farm warrants explanation. Agricultural land can serve many vital environmental purposes. In addition to providing open space, it offers a habitat for wildlife and resting grounds for migratory birds. Agricultural land can function as natural drainage and water recharge areas. Open lands enable dispersion and cleansing of air pollution and can provide windbreaks. Conversion reduces the area's natural environmental support system at the same time that it increases pollution. Intensive farming, fertilizing, and pesticide usage can offset some of these benefits, as can the conversion of wetlands to agricultural use.

Farmland losses can also hurt tourism, such as in Vermont or in the Pennsylvania Dutch country, where rural scenery is one of the main attractions. Many of the Northeastern States were founded by agricultural communities, and these States perceive farmland conver-

[4] See Heimlich and others (1991) for a further discussion of farmland protection motives and policy.

sion as the permanent loss of part of their cultural heritage.

Farmland conversion increases the demand for infrastructure investment, such as roads, sewers, education, and police. Increased expenditures can frequently outweigh the additional tax revenues, at least in the short run, since new roads and the like require large initial capital outlays.

The conversion of one farm can have repercussions on the viability of neighboring farms and the local farm industry. As the farm acreage shrinks, key supporting infrastructure, such as feed or fertilizer suppliers or transportation and machinery repair services, have smaller markets and may relocate or discontinue their businesses. If farmers face uncertainty about the future of agriculture in their area, they will be less likely to maintain their investments in buildings and machinery. As speculation bids up the price of farmland, the increasing spread between market and agricultural land values intensifies the financial incentive to sell to urban developers.[5] In addition, air and water pollution from nearby urbanized areas can result in crop losses, possibly lowering agricultural values and further increasing the spread in use values.

Preservationists often identify food security as a motive for farmland protection. Some recent research disputes the significance of any threat by urbanization to food supplies. Heimlich, Vesterby, and Krupa (1991) found that in areas of the United States with rapid population growth (and thus with the most pressure to urbanize), the amount of cropland and pasture declined only 4 percent during 1970-80. In addition, agricultural productivity steadily increased over the same period. From this perspective, food security does not seem to represent an urgent national issue.

Regionally, however, almost all States in the Northeast and Mid-Atlantic regions have pursued policies motivated by the concern over the local capacity to produce food. While these regions do have some extremely fertile agricultural land, they also have a comparative advantage in urban industries, which have competed for land uses and reduced the regions' share of U.S. farmland to less than 3 percent.[6] These States' farmland protection efforts appear to discount the comparative advantage argument and the ease of trade between regions and instead emphasize the need for a diversified State economy.

Distributive Issues

The market failure aspects of farmland conversion and the public policies intended to correct the market failure raise a number of distributive questions related to economic entitlements and burden sharing. A stylized characterization of the political economy surrounding rural-urban conversions can be used to place the questions in context. The following steps are common in areas possible for conversion.

Developers read market signals sent by potential urban residents to extend urban boundaries into agricultural areas. Current residents opposed to specific developments or farmland conversion in general directly or indirectly encourage their political representatives to block farmland conversions. Farmowners, who benefit from the urban-induced capital gains, can either challenge or support the efforts to control development.

Developers, who seek profits, act as agents of future residents, who seek new homes. Similarly, politicians, who seek to please their constituents, act as agents of current residents (including farmowners), who seek to satisfy their economic self-interest or their personal preferences regarding preservation. The complexity of the situation breeds economic and political conflict across and within these groups.

Three fundamental questions exemplify the types of conflicts that can arise:

1. *Who should pay to preserve farmland?* Given that it is decided to preserve farmland, do the private property rights of the farmowner take precedence over the rights of current residents to benefit from the public goods value of the preserved farmland? A "yes" answer implies that the current residents must compensate the farmowner if the right to convert and sell to a developer is taken away or curtailed. An obvious method to provide compensation would be a PDR program. A transfer of development rights program would be a way to shift the cost of farmland protection from current residents to developers and future residents.[7] A "no" answer implies that the farmowner must pre

[5] The literature calls farmland disinvestment prompted by encroaching urbanization the "impermanence syndrome." Fischel (1991) provides a critical appraisal of this and other motives for farmland preservation.

[6] See U.S. Department of Agriculture, *Agricultural Statistics 1991*, table 530.

[7] Under transfer programs, developers buy development rights in a preservation zone, whereupon they can exercise the rights in a zone which permits development. Developers can partly shift these costs to new residents in the form of higher housing prices.

serve the land without compensation. For example, zoning imposes a no-compensation policy.

2. *Who should pay for the harm caused by farm conversions?* When conversions result in congestion or destroy the public goods value of farmland, are current residents entitled to compensation? A "yes" answer implies that the developer or farmowner should pay something like impact fees or conversion taxes, which can be passed on to future residents of the new development in the form of higher housing prices. Alternatively, new residents could be forced to pay compensation in the form of higher property taxes, as is implicit in California's Proposition 13. A "no" answer implies that the current residents bear the burden without compensation, even if future residents share the burden.

3. *Are farmowners entitled to urban premiums resulting from government policies?* When governments invest in public infrastructure on behalf of current and perhaps future residents and when the returns from those investments accrue to farmowners in the form of new urban value, do those gains incontrovertibly belong to the farmowner? A "yes" answer implies that the farmowner can realize these gains without compensating the taxpayers who financed the investments. A "no" answer implies that the farmowner should pay compensation reflecting the public contribution to his or her land value, perhaps through a special tax upon realizing the gain.[8]

Zoning and the Takings Clause

In influencing the decision of whether or not to convert farmland to other uses, PDR programs interact with myriad other public policies, such as use value assessment property tax laws; Federal tax laws; Federal farm programs; and Federal, State, and local investments in public infrastructure. Another familiar policy, zoning laws, do not explicitly interact with easement programs but do help to clarify the distributive issues described in the previous section.[9] With only a few exceptions, such as Texas, States allow their local governments to impose zoning and land use regulations. Depending on the language and extent of legislation, jurisdictions can use zoning to establish agriculture as the preferred land use and to directly control the location and type of developments. The takings clause of the Fifth Amendment requires the Government to provide just compensation when it takes away private property for public use. Zoning for exclusive agricultural use effectively appropriates—without compensation—land value attributable to potential urban use. Alternatively, zoning can be thought of as a special case of an easement program that is involuntary and acquires development rights at zero prices.

Easement Programs in Practice

Going beyond zoning and trying to create a special market for development rights poses an unusual challenge to policymakers. The PDR agency itself has monopsonistic buying power and can exercise substantial control over easement sale prices. To achieve its policy goals, the agency has to devise an allocation mechanism that replaces the normally reliable market institution of privately arranged transactions. Program design and implementation must price the easements and ration the agency's limited resources among the potential sellers of easements in an equitable and efficient manner. Perhaps the leading example of an allocation mechanism is an auction. In fact, some PDR programs attempt to force easement sellers to bid against each other, at least indirectly.

The details of a PDR program generally include a statement of objectives, a list of eligibility requirements, a description of easement pricing and allocation rules, and an enumeration of monitoring and enforcement conditions. The appendix of this report provides a basic summary of all major State-run PDR programs. See these program documents for more information and for additional sources.

The Statutory Price of an Easement

Every PDR program defines the price of an easement as the difference between the parcel's current full market value and its current agricultural value. Appraisers typically assess market value by using comparable sales information or similar methods. Appraisers assess agricultural value by calculating the present value of an estimated income stream or by using formulas based on soil content and productivity. Recently, many programs have also employed comparable sales methods for agricultural appraisals. Sales of parcels with existing use restrictions serve as a basis for the comparable sales ap-

[8] This situation can be thought of as a case of government failure—the inability to directly appropriate and equitably distribute the full benefits of taxpayer-financed investments.

[9] See Fischel's treatise (Fischel, 1985) on the law and economics of zoning for an integrated "property rights" perspective on a vast subject. Chapter 13 includes a discussion of agricultural zoning.

praisal.[10] The estimated price of an easement generally establishes the maximum price a PDR agency will pay and marks the point at which negotiations with farmowners begin. The final sale prices depend on the specifics of the negotiation process, the amount of available funds, an evaluation of the parcel's agricultural quality, the extent to which applicants agree to sell easements below market value estimates (bargain sales), and other details of the methods that are used to select among easement sale offers.

Allocating Easements: Selection Systems

The design of the selection systems for choosing among potential easement purchases usually reflects two common objectives: (1) equity; that is, treating all easement sale applications systematically without bias; and (2) efficiency; that is, protecting as much high-quality agricultural land as possible given the available amount of money. Several PDR programs use explicit point-ranking systems to prioritize purchases. After ranking the parcels, such programs offer to buy an easement on those parcels that have among the highest scores and that meet other more qualitative criteria, such as satisfying a requirement for geographic distribution.

For all programs, agricultural quality is one of the leading criteria for purchase and is judged to increase with increases in such factors as size, soil quality, agricultural viability, environmental benefits, and location with respect to other protected lands.

Inclusion of development pressure is another common criterion. In most States, conversion pressure increases purchase priority. However, Connecticut negatively weighs nearby urbanization. Several other States, like New Hampshire, consider the cost of acquisition, which causes high-valued urban lands to be less of a priority when all else is equal. While all States consider the costs and benefits of an easement purchase, Massachusetts' program explicitly emphasizes the social value of preserved farmland in a cost-benefit framework. Only Vermont's program considers the effects of purchases on both the urban and agricultural sectors.

Under the bidding or ranking schemes used in Maryland and New Jersey, parcels receive higher priority for lower ratios of asking price to assessed market value. Such schemes attempt to impel farmowners to bid against each other and offer discounts so that the program can obtain more easements with the available funds. Other States less systematically value bid discounts.

Funding

Common methods of funding easement purchases include issuing bonds, imposing real estate transfer taxes, and earmarking general appropriations for the programs. Some States, such as New Jersey, require matching grants from local governments. Bond financing distributes the burden of paying for farmland protection to those who benefit most: current and future residents, whose taxes purchase the benefits derived from protected farmland after the question of whether a farmowner is entitled to compensation has been answered affirmatively. Easement donations and bargain sales that generate tax deductions partly shift the costs of easements from the local or State government to the Federal Government.[11]

Easement Valuation Issues

Current appraisal methods, which are based primarily on comparable sales, and the other rules of PDR programs establish easement prices that, in theory, can be far different from the economic value of easements as those might be viewed by farmowners. The methods PDR agencies use to price easements have been outlined earlier in this report. Demonstrating the point that these prices can systematically differ from the value of development rights requires an economic model which defines and determines this value. Since farmland can be thought of as just another asset, methods of valuation can be borrowed from the theory of finance.

The Farmowner's Conversion Decision as a Financial Option

In any given time period, farmowners have the following investment opportunities. They can give up the agricultural value of their farms and realize the urban value by converting the land to urban use. A farmowner can develop the land personally or, more typically, sell the land to a developer. Exercising the option to convert can be delayed but is usually irreversible once made. Urban land rarely reverts to farmland. (See Heimlich and others, 1991, p. 24.) As discussed in Pindyck (1991), these types of irreversible investment opportunities resemble financial

[10] See American Institute of Real Estate Appraisers (1983) for an indepth discussion of appraisal practices.

[11] For example, if a PDR agency acquired an easement valued at $11,000 for $10,000 under a bargain sale, the transaction would save the State government $1,000 but would cost the Federal Government $280 in lost taxes, assuming the donor faced a 28-percent marginal tax rate on sale.

call options. A call option endows its holder with the right to buy an asset for an "exercise" price at any time on or before a specified expiration date. The farmowner similarly can turn farmland into urban land (buy an asset) for an exercise price (the agricultural value plus the conversion costs) at any date believed to be optimal to convert. The option is said to be "in the money," meaning that its holder will earn positive profits when the urban-converted value of land exceeds its value in agricultural use plus conversion costs.

The value of this option depends on future urban and agricultural rents that are uncertain today. Irreversibility means that converting today entails not only permanently forfeiting the agricultural use of the farm but also giving up future possible new information—such as changes in government policies or food or housing prices—that might influence the timing and profitability of converting. Hence, in addition to the costs of conversion and the loss of agricultural value, there is an additional opportunity cost of converting today instead of waiting and keeping the conversion option alive for future possibilities.[12]

Implication of Optionlike Nature of Conversions

Existing methods of easement valuation do not explicitly recognize the opportunity costs of not waiting to convert and thus possibly misprice the easement. Setting easement prices equal only to today's urban value minus today's agricultural value, as PDR programs do when using comparable sales estimates, can fail to value properly the conversion option. A simple example, borrowed from Pindyck and adapted to the current situation, can illustrate the point. Consider a two-period model. The agricultural value per acre of the farm is known to be the same for both periods and equals $300. The urban value of the farm today is known and equals $500. The urban value in the next period, however, is uncertain and can take the values $900 and $200 with equal probability. Based on today's values, the price of an easement would be $500 - $300 = $200. This measure of value ignores the owner's opportunity of farming one period and afterwards deciding on whether to convert, depending on whether urban values have gone up or down. If the revealed urban value next period is $900, the easement would be worth $600, and if the revealed value is $200, the easement would be worthless, since the farm is more valuable remaining in agricultural use ($300 > $200). Today, ignoring discounting, the value of the waiting option is 0.5 x $900 + 0.5 x $300 = $600. Hence, the true value of the conversion option equals max($500,$600) = $600, while pricing the easement at $200 (instead of $300) assumes that the value of the conversion option is worth only $500 (today's urban conversion value).[13]

If easement prices correctly value the farmowner's market opportunities, the farmowner should be generally indifferent between the following two choices based on today's valuations:

1. Never converting, receiving an easement payment, and remaining in farming, and

2. Farming until the optimal date of conversion and then converting, as determined by expectations concerning future urban and agricultural rents.

By design in the example, the farmowner's optimal decision is to wait and convert next period if urban prices increase. However, a PDR program easement would be priced to compensate him or her for the lesser value of converting today, implying that the farmowner expects to lose financially by participating in the program. In summary, PDR easements are correctly valued (priced) from the perspective of the farmowner only if converting today happens to be his or her optimal decision, which generally it is not.[14]

Comparable Sales Methodology

Practical problems arise in using comparable sales as a method to estimate urban value. For example, in a geographic area tracing out a distinguishable spatial market, farm parcels only infrequently convert to urban use, and so appraisers cannot control for all financially important differences between parcels, which dilutes the degree of comparability.[15] The option interpretation of conversion further complicates this technique of valuation. On the urban fringe, each farm has some optimal conversion date, say 5 or 10 years later, when its owner's expected wealth is maximized. How-

[12] If conversions were fully reversible, this opportunity cost would be zero.

[13] To simplify the discussion, we have assumed that the farmowner does not attempt to make a PDR agency pay *more* than what could be achieved in the ordinary land market. A farmowner could attempt to sell his or her environmentally valuable land at the social value versus the urban value. A "bargaining" model would only further complicate easement valuation.

[14] By no means does this result imply that only farms about to be converted should be the target of easement purchases.

[15] The paper by Heimlich, Vesterby, and Krupa (1991) documents the relatively small amount of land that was converted to urban use over a 10-year period. Their results are particularly relevant since the unit of analysis was fast-growth U.S. counties where conversions are relatively frequent.

ever, comparable sales are based on actual market transactions for parcels that have already reached their now-known optimal date of conversion. Projecting today's urban value of a converted land onto an unconverted farm can overstate the farm's urban value. This can lead to overpricing of easements, depending on the differences in optimal conversion dates and market conditions.

The core problem is the assumption that a farmowner can convert the farm as if the optimal conversion date had already been reached. Another problem is as follows: a conversion of just one large farm might accommodate all urban demand for land in that locality for decades to come. In this latter case, the urban value of all surrounding farmland would be, with sufficient discounting, effectively zero, rather than the per acre value of the converted farm. In other words, the optimal conversion dates of nearby farms can be interdependent and can change with each conversion. This feature suggests that economic models of the urban fringe should be characterized as monopolistic and not as perfectly competitive, as is implicit in the comparable sales methodology.

Direction of Mispriced Easements

The previous two sections present conflicting results. PDR easements can be systematically underpriced, since the true (option) value of converting at the optimal date can be undervalued at today's suboptimal conversion value. PDR easements conversely can be systematically overpriced because, if optimal conversion dates are assumed to be today, this assumption might exaggerate the urban value that could have been realized with an actual conversion.

If the PDR agency knew or could rationally forecast future urban and agricultural rents, the overpricing problem would not exist. However, failing to value the waiting option would still lead to underpricing. On the other hand, if easement pricing exaggerates urban values, selling the easement today could be worth more than any present or future opportunity to sell in the real estate market, which would make the waiting-to-convert option inferior to selling the easement. As a rule, wealth-maximizing landowners will self-select and those who can do better in the development rights market than in the ordinary real estate market will be the ones who aggressively seek easement deals. These observations suggest that actual PDR transactions result in overpricing on average, though which influence dominates remains debatable.

Selling Easements Versus Converting

More support for the overpricing hypothesis follows from a comparison of the tax and related implications of selling easements compared with selling full rights to the property in the real estate market. Aiken's survey up to 1989 revealed that all 50 States have use value assessment laws. Thirty-one States authorize the taxing jurisdiction to recover deferred taxes (a "rollback"), and many of these States allow interest to be charged on the deferred taxes. These property tax laws endow selling easements with a tax advantage over selling the property for conversion, since rollback penalties apply only to a land use change. The easement price should decrease as the tax advantage increases, but no PDR program references this principle. Furthermore, the basis for Federal taxation of capital gains is lower (by the amount of use value) under an easement sale than under an ordinary property sale, imparting a second tax advantage. Similarly, Federal farm programs, such as price and income supports, increase the use value of farms and the opportunity costs of conversions. The price of easements should decrease as the level of support increases. As a practical matter, Federal crop programs in some States, such as those in the Northeast, may not be significant enough to influence true easement values.

Implications of Mispriced Easements

If the PDR agency underprices easements, farmowners would have little financial incentive to sell, since they would effectively be forfeiting wealth. If the PDR agency overprices easements, many farmowners would do better with this program than in selling in the real estate market, and their choice would encourage an excess supply of easements, given the available funds, and perhaps complicate the selection decisions. Correctly pricing easements, therefore, is essential to the success of buying easements as a conservation mechanism.

To repeat, one useful measure of the economic value of easements can be determined by the farmowner's indifference between two choices: (1) never converting and receiving the correct or equilibrium easement payment and (2) converting at the optimal date. When the easement price differs from its value, delaying the sale of an easement becomes a third choice and complicates the option valuation. For example, if the easements are overpriced today, the farmowner might forecast that they will be even more overpriced in the future, causing a delay in the decision on whether or not to convert or sell easements until the next period.

Such distortions would undermine the preservation objectives and confuse policy planning.

Other Issues

Other issues also present conflicting evidence as to problems in easement as a public policy. Four of these will now be considered.

Administration

Some PDR programs have experienced administrative difficulties. Uncertain funding can jeopardize the credibility of a PDR program and lengthen the acquisition period. For example, in 1991, Maryland's budget problems forced the PDR program to delay the purchase of several million dollars' worth of easements after commitments to buy were already made (Maryland Agricultural Lands Preservation Foundation, 1992). Depreciations in real estate values have reduced some of the urgency of farmland protection and forced some States to reconsider the extent of support for the programs. (See, for instance, the annual reports of Maryland and Vermont.) Misperceptions of the terms of the easement contracts have been an additional complication. In a few States, some farmowners thought that joining agricultural districts would automatically lead to payments for development rights, when in reality these owners were only then made eligible to apply. Some States have adopted well-defined point systems to justify selective purchases. Maryland's program attempts to reduce the uncertainty of participation by providing a series of pamphlets detailing various aspects of the easement sale process and its implications. Finally, monitoring and enforcing the terms of the easement can be burdensome for the PDR agency, as it would be for any organization involved in long-term contractual agreements.

Easement Externalities

Placing easements on some parcels is like squeezing a balloon; it can increase the urbanizing pressure on unprotected parcels and can result in leapfrog development even more disconnected than would have been the case without interference.[16] Zoning also simply redistributes, but not eliminates, development pressures. As easement purchases and zoning increasingly restrict the supply of land for potential urban use, the value of waiting to invest—that is, postponing urban conversions or easement sales—concurrently increases, reinforcing distortion of land markets and further undermining the easement program itself. Just as the urban values of nearby farms are temporally interdependent, the values of easements are also interdependent. PDR agencies ideally could include the effects of past acquisitions on future easement purchases and prices.

Public or private investment in roads, sewers, and related infrastructure can generate urban value on environmentally or agriculturally important lands. If a public agency purchases an easement of which the value results from prior public investment, the taxpayer originates and provides compensation for the unrealized urban-sector capital gain and so finances any additional value resulting from the protection of local aesthetic and environmental amenities. Some landowners can disproportionately benefit from such publicly funded investments, yet pay for such benefits only indirectly through taxes.

Incentives

Much of the previous discussion implies that the incentives of farmowners to sell easements can be quite diverse. If an easement on parcels raises the value of nearby unprotected parcels, some farmowners would support the program but would choose not to participate themselves. At the other extreme, if urban values are overestimated, the farmowners with the least opportunities to convert to urban use would have the most to gain by coming forward to negotiate an easement sale.

PDR program documents generally indicate a policy of paying no more, and preferably less, than the estimated fair market value of the easement. The farmowners with the most valuable agricultural land, however, may not be the ones willing to forfeit some of their wealth for the public interest. Hence, bidding schemes, such as the one used by Maryland's program, which attempts to impel landowners to offer competitive discounts, may actually deter easement sales on the most desirable land. The effectiveness of a PDR program is thus often tied to the characteristics of a particular land parcel and even to the socioeconomic characteristics of a particular farmowner. The timing of development can depend on such things as the farmowner's age and income. For example, a farmer who is currently ready to retire and take a pension in the form of a capital gain would have a strong financial incentive for not volunteering to sell an easement. Also, the path of urban development can depend on such matters as the location of existing infrastructure.

[16] Daniels (1991) notes the lack of empirical evidence on this issue.

Alternative Uses

Even "eased" land (on which development rights are separated and sold) can have a residual market value that exceeds the agricultural use value. Because of the protection against the negative effects of urban development and because the urban premium has already been paid by a third party, preserved lands can be attractive for strictly residential or recreational purposes. An individual seeking to buy a farm for the purpose of farming has to compete with these alternative uses. The public dollars that purchase the urban rights might enhance the ability of estate-seekers, who normally would also pay the urban premium, to outbid prospective farmers. In theory, a landowner's best strategy might be to sell development rights to the government and then if recreational value exceeds agricultural value, to sell the land as a preserved country estate, perhaps driving the total market value above its value under fee simple exchange of ownership. In effect, a PDR program can increase the owner's wealth beyond that which could be achieved without market intervention.

The existence of recreational land value requires a careful specification of what rights are conferred by owning development rights. Unlike land under full government ownership, the public does not automatically have access to land enrolled in a PDR program, as the land itself usually remains under the dominion of the original owner. Nevertheless, since the value of development rights can far exceed the value of the residual property rights, citizens may expect that they should have entitlement to use those lands for recreation. When preserved farmland adjoins rivers, ponds, and bodies of water which are public domain, the case for access is even stronger.

Some States, such as Vermont, add provisions to the easement contract for access, or continued access, by the public. Opportunities for such access are weighed favorably in the application review of several programs. In general, PDR programs implicitly or explicitly recognize distinctions between development rights, agricultural use rights, and further refinements of property rights to include access rights. The most flexible programs price each right separately: a farmer giving up both development rights and access rights receives a higher total easement payment than for an easement on an identical parcel that denies the public access rights.

The Role of Private Land Trusts

Land trusts are private, nonprofit organizations which acquire land or easements (development rights) by purchase or donation. Their primary goal is to protect lands, such as farmland, wetlands, or open space, that are historically or culturally significant, environmentally valuable, or generally beneficial to the public. In addition to acquiring land or easements, the trusts advocate the establishment and expansion of land conservation programs, advise policymakers about program design, provide stewardship over protected lands, inform landowners about available programs and the alternatives to selling land, explain the tax implications of donating land or easements, and assist and encourage estate planning. Some trusts directly administer conservation programs and receive partial funding from State or local taxpayers. The Land Trust Alliance (LTA), an umbrella organization in Washington, DC, maintains a directory of trusts and provides other related information.

According to a 1990 survey by the LTA, at least 889 local or regional land trusts are scattered throughout all 50 States, reporting a total membership of over 770,000. The number of trusts grew 50 percent from 1980 to 1990. About 16 percent of the land trusts named farmland preservation as their primary focus, and 38 percent explicitly include it among their program objectives. Because of development pressures, 42 percent of the land trusts are located in New England and another 17 percent in the Mid-Atlantic region. Land trusts own 437,000 acres outright, hold easements on another 450,000 acres, and have assisted in the protection of an additional 1.8 million acres.[17] Half the land trusts have budgets under $10,000, while 22 percent have budgets greater than $100,000. Over half of these organizations are all-volunteer; only 19 percent have more than one full-time worker. Funds for land or easement purchases primarily come from individuals (70 percent), as well as from government funds (10 percent), foundations (8 percent), and corporations (3 percent).

Some national trusts, such as the Nature Conservancy or the Trust for Public Land, have assisted the land acquisition goals of some Federal agencies, including the Department of the Interior's Fish and Wildlife Service, the National Park Service, and the Bureau of Land Management (*Washington Post*, 1993). An agency may use a trust to buy and hold land and then repurchase it from the trust when funds are available

[17] The acreage totals include all types of land, not just farmland.

and authorized for disbursement. As stated in the Department of the Interior's audit report on these transactions: "A bureau typically justifies this involvement based on concerns that the property will be sold to other parties and developed and will thereby be lost" (U.S. Department of the Interior, 1992, p. 5). In effect, the trust enables a Federal agency to move quickly to purchase targeted properties.

In lieu of selling, donors of land or easements to a trust may receive partial reimbursement of the value of the donation from taxpayers.[18] Since most land trusts are nonprofit, charitable organizations, Federal tax laws allow donations to be deducted up to 30 percent of adjusted gross income; any value that was not deducted due to the yearly limit can be successively carried forward until the residual value is exhausted or until 6 years of deductions have been taken, whichever comes first. By making a donation instead of selling and thus realizing a capital gain, the donor avoids Federal and State capital gains taxes and may also be able to avoid rollback taxes under use value assessment local property tax laws. The donation also reduces future inheritance and estate taxes, since the value of the estate declines. Hence, the donor can deduct a nominal value of the donation that can far exceed the effective, aftertax value.

Nominal Versus Effective Donation Value

An example of a hypothetical and intentionally extreme case of land donation can make clear the difference between nominal and effective donation values. Consider an individual who earns $100,000 per year for 6 years, donates a $180,000 farm to a trust, has a marginal tax rate of 28 percent, a State tax rate of 6 percent, and an accumulated rollback tax of 4 percent. Ignoring discounting and assuming State law does not permit deductions, the value of the deduction is 0.28 x 6 x 0.3 x $100,000 = $50,400 worth of reduced taxes. Had the individual sold the land, State and rollback taxes are 0.06 x 180,000 + 0.04 x 180,000 = $18,000. Federal taxes are 0.28 x (180,000 - 18,000) = $45,360, which reflects the Federal deductibility of State and local taxes. The aftertax value of the asset would be 180,000 - 18,000 - 45,360 = $116,640.

A nominal donation of $180,000 has an effective cost to the donor of just $116,640 - $50,400 = $66,240, the net value of the asset minus the tax savings. A reasonable measure of the effective cost to the Federal Government of saving this piece of farmland would be the value of the tax deduction ($50,400) plus the value of the forgone capital gains taxes ($45,360), which is equal to $95,760.

The value of the forgone State and local taxes is $18,000. To summarize, in the social accounting of preserving this $180,000 farm, the donor contributes $66,240, the State and local governments contribute $18,000, but the Federal Government contributes $95,760, well over 50 percent. As required, the three contributions sum exactly to $180,000. While the example is extreme in the sense that assumptions were made to magnify the Federal contribution, these figures nevertheless illustrate how the tax provisions encourage easement donations.

Further Considerations

Since States have different goals, we will describe the goals of the PDR programs, with another view of use value assessment.

The Goals of PDR Programs

A number of contrasts emerge in comparing the various PDR programs. Some States include urban pressure as a positive weight in the selection criteria, while other States attempt to avoid urban pressure and so to reduce easement acquisition costs. Some States want to cluster protected farmland, while others attempt to scatter purchases. Some States explicitly rank discounts from estimated easement values, while others do not. Disentangling the various goals of the programs partly explains the opposing designs.

If preserving agricultural viability is the preeminent goal, clustering easement purchases on the most productive farmland makes sense in order to exploit agglomeration economies. Under a clustering strategy, urban pressure and relatively higher easement costs might reduce instead of increase the urgency of protection. No agency has ever had the resources to buy easements on every eligible parcel. Those parcels that have accumulated substantial urban value would have to be sacrificed if cheaper substitute parcels of similar agricultural quality were available.

The desire of some PDR agencies to buy easements at discounts below true market value appears inconsistent with the clustering point of view. Long-term agricultural viability can be achieved by buying easements on parcels with little or no urban values, making the attempt to realize discounts unnecessary. Secondly, underpricing the easements relative to their true economic (option) value merely drives willing participants out of the market for development rights.

[18] See Code Sec. 170 of *Federal Tax Guide Reports*, Commerce Clearing House, Inc., 1991, p. 963.

If preserving open space or the environment is the preeminent goal, a considerably different strategy might be pursued. So that more people can benefit, scattering purchases makes more sense than clustering. If a nearby urban population demands and benefits from open space or environmental amenities, high urban values will be strongly and positively correlated with the amenities value. Such an association would justify ranking easement purchases based on urban pressure, in contrast to a cost-conscious clustering strategy of buying easements on land with relatively lower urban value.

Connecticut has the best example of the clustering strategy. In this State, the program's selection system positively weighs agricultural quality and proximity to other parcels, negatively weighs urban pressure, and mostly ignores bid discounts. New Jersey has the best example of the amenities strategy. Here, the program shares funds among counties to achieve geographic diversity and positively weighs environmental value and urban pressure.

Use Value Assessment Revisited

Use value assessment (UVA) property tax laws can facilitate the very farmland conversion they were designed to prevent. If the landowner is taxed on the realization instead of the accrual of a real estate capital gain, the laws can reduce the holding costs incurred by land speculators who buy property, defer their tax obligations, and wait for optimal conversion dates to arrive. Failure to charge back taxes would only make the speculator's strategy more profitable.

As noted before, many States have adopted rollback provisions to recoup deferred property taxes in order to make selling less profitable and to try to lengthen the landowner's holding period. However, the last goal is achieved only if the owner has committed to the program and then a rollback is imposed. But, in practice, UVA with a full rollback—that is, with interest on the deferred taxes—will actually make the owner "holding-period neutral," in the words of Auerbach (1991).[19] The aftertax rate of return on farmland would not depend on the holding period, since the optimal conversion date would not change. No matter when a sale occurs, full back taxes must be paid. So local tax policymakers face a quandary: If they enforce tax equity and tax gains from speculation, full rollback taxes must be charged. But these rollbacks do not lengthen a farmowner's holding period, and therefore do not assist farmland protection. In practice, most States have only a partial rollback, which strikes a tenuous compromise between wanting to lengthen the farmowner's holding period but not wanting to deter UVA participation, which might happen with a full rollback in place.

In our view, tax equity and farmland protection goals can only be reconciled to the extent that UVA alleviates a farmowner's liquidity problem. After a sale of land which eliminates the liquidity problem, full rollbacks could be imposed to recoup deferred taxes that were originally the obligation of all landowners to pay. When farmland protection is the goal, easements (which would be cheaper if rollback taxes applied) would have to be used as a separate policy instrument.

The Relative Values of Farmland

If the public goods and agricultural values of farmland together exceed its urban value, urban conversions signify a real loss of wealth to society. When the urban value of a farm exceeds only its agricultural value, farmland conversions provide a net addition to gross domestic product (GDP) because of resulting construction activity. However, GDP generally does not measure losses in nonmarket public goods. The loss in public goods wealth and the loss in agricultural market values may well exceed the gross addition of an urban conversion, and in such cases, a more accurate measure of GDP would show a loss, not a gain. When such considerations are taken into account, the funding uncertainties that sometimes arise for easement programs interfere with a perfectly legitimate and important public policy action.

This report has suggested that PDR programs would function best if easement prices accurately reflect the true economic value they are supposed to represent. Protecting farmland can generally be interpreted as a problem of information. PDR agencies need information concerning the public goods value, the urban value, and the agricultural value of farmland in order to make decisions on easement purchases. However, these values are difficult to estimate or even to define in the case of public goods and the social value.

Options pricing theory, which uses rigorous economic models to forecast urban and agricultural values and which imputes the joint effects of tax and related policies, would be a step towards responding to the pric-

[19] A proof of this proposition can be based on Auerbach's capital gains tax scheme in his Proposition 5, p. 174.

ing issue.[20] However, even if options theory provided better estimates of the values of remaining in farming versus converting, political mechanisms may not exist to implement an effective easement program. This is especially the case if citizens strongly disagree over the social value of preserved farmland. Economists call situations of this type "public choice problems."

Voting Over a Public Choice

Some States, such as California, have used bond referendums to reveal the public's willingness to pay for preservation. The mechanism has several attractive features in solving the public choice problem. Since the benefits of preserved farmland recur every year, ideally the tax burden would be distributed over time in a way that matches the distributed benefits. Bond financing, which generates a comparatively small increase in yearly tax burden, achieves that linkage better than a much larger one-time tax increase. In addition, purchased development rights can be interpreted as a community investment and asset like any other public works project, and governments generally finance public investments with bonds. Finally, submitting easement purchases to a vote renders a specific decision, however imperfectly, on any public debate regarding the social value of preserved farmland. Bond referendums could be more widely and frequently used to improve the reliability and political acceptability of PDR funding.

Origins of the Urban Value of Farmland

Population and income growth, which may not be directly controlled by policy, primarily determine the urban value of farmland. However, public investments in infrastructure, which policymakers can control, must be made to accommodate the growth. Coordinating infrastructure investments with easement purchases would help internalize potential conflicts in the objectives of different agencies within government as such conflicts relate to land use. For example, Federal and State grants-in-aid to cities can retard urban sprawl into agricultural areas when such aid relieves the many factors that have caused population and employment for decades to move to the suburbs.[21] However, similar aid to newer urban enclaves near the urban fringe would worsen sprawl. In short, urban and agricultural policies directly interact.

Federal tax laws can significantly contribute to the urban value of farmland. The deductibility value of mortgage interest payments and taxes to a whole community of new urban dwellers can potentially swamp the same deductibility value to the single farmowner-dweller whose land could be used to build the new community. The bias for urban uses over less dense, rural uses of land can be worsened in a more subtle way. Federal laws provide capital gains tax exemptions to homeowners who sell their existing homes and trade up to more expensive ones. When urban dwellers trade up by giving developers market signals to move out the urban boundary, the urban-valued bids for farmland capitalize the tax breaks and make the bids more attractive to the farmowner.

A New Federal Role

The Federal Government has recently experimented with a new and explicit subsidy role, in addition to the substantial but indirect tax incentives for farmland preservation. The "Farms for the Future" initiative in the 1990 farm legislation authorized the establishment of an Agricultural Resource Conservation Demonstration Program through USDA's Farmers Home Administration (FmHA). Under this program, a State PDR program can borrow up to $10 million from a lender, provided the program matches the loan by 50 percent. The Federal Government guarantees the loan and pays all interest costs for the first 5 years and partially subsidizes the interest costs for an additional 5 years. Loans can be used to purchase development rights or other interests in land, to pay the FmHA loan guarantee fee, and to invest for the purpose of generating earnings for future farmland protection efforts. In early 1992, as a demonstration case, Vermont was given the authority to apply to the program. Congressional appropriations for other States to participate had not been made as of January 1995.

Conclusion: The Economics of Easements and Future Research

This report sets out to survey the major economic issues pertaining to one of the best examples of creative public policy, purchase of development rights programs. The States' experiences with PDR programs provide a good context, but not the only context, for discussing the economics of easements. While a number of articles, reports, and conference proceedings by agricultural economists and policy commentators have extensively discussed such programs, this report has concentrated on the underlying economics of using easement contracts to organize a market for development rights. How well any easements program man-

[20] For example, the paper by Amin and Capozza (1991) provides an equilibrium model of agricultural land conversion decisions, though the context of their paper significantly differs from the issues here.

[21] Aid to improve central city infrastructure, for instance, would discourage suburban moves by businesses or residents.

ages the difficulties that arise in financing, pricing, and allocating funds ultimately determines how well it meets its basic goals. This report, however, was not primarily a performance analysis of individual programs. Rather, an attempt was made to point the way towards relating easement issues to more general economic theory. In this vein, we conclude with some suggestions for further research.

If prices are to function in the usual sense, the price of an easement should represent its economic value. Presumably, value refers to the value of the instrument to its holder. Such a value, though, is difficult to measure. It depends partly on the landowner's expectations of urban values, which in turn are contingent on public and private investments in infrastructure. If the investments are made, the urban value discretely goes up. Hence, stochastic jump processes for prices in an option-pricing framework would seem to capture best the underlying pricing issues. Also, how taxes and subsidies affect the returns from holding farmland as an asset in portfolio would add a useful perspective. Concepts from options theory and asset market equilibrium could be further explored to enhance present approaches to easement valuation. Even though the "market minus use values" approach now used by PDR programs usually approximates the true economic value of easements, formal modeling of the pricing issues could still prove fruitful for further research.

Designing a system for allocating easements is virtually the same as "mechanism design" in theoretical economics. Mechanism design theory (often called game theory) examines the alternatives that institutions use to choose actions, based on input from economic actors.[22] In the context of farmland, the economic actors are the landowners, and the mechanism designer is the PDR agency. The inputs are the easement sale offers, and the mechanism is a rationing scheme for choosing among the sale offers. The public action is only a list of easement purchases, based on the realization of the rationing scheme evaluated at the landowners' bids.[23] Many of the incentive and related issues discussed in this report can be interpreted from this perspective. Along with option theory, more formal work could be done with examining the equilibrium properties of easement incentive mechanisms. The implementation of social objectives via mechanism design provides a rigorous paradigm for a performance evaluation of the programs.

Models of the urban fringe could be developed to characterize the exact nature of "excess conversions of farmland," the underlying premise of farmland protection policy. Capturing the monopolistic versus competitive organization of the market for land conversions would be particularly informative, given spatial and temporal relations among easement values.

Tax and pricing issues could be explored. For example, in the full range of Federal, State, and local tax laws, the costs of easement purchases by public and private trusts are distributed among three levels of government. Measuring the shares of this distribution would be particularly relevant for public policy discussions about the future of farmland protection. As another avenue, perhaps an empirical methodology and data set could be used to assess whether easements are overpriced or underpriced. The first step would be to decide what it means when a price is considered too high or too low.

Finally, let us consider more closely the relevance of easements beyond farmland protection. For example, the Conservation Reserve Program purchases easements to assist in soil conservation, and the Wetland Reserve Program purchases easements to preserve and restore wetlands. Other uses of easements could be pursued. Development rights are only one of several use rights which could be priced and purchased. In the most sophisticated model, such rights could be traded in markets, along the lines of current air pollution permit programs or programs on the transfer of development rights.

[22] See Myerson (1985) for a survey.

[23] The paper by Buist (1993), using game theory, explicitly models Maryland's PDR program as an example of applied mechanism design.

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Appendix: Some Details on the State Programs

A summary of nine major State-level PDR programs is given below. The summary focuses on the main economic features of the State policies and does not try to comprehensively survey program operations, which proved difficult to characterize in a systematic fashion. The relations of these programs to the themes of the report is discussed where appropriate. The information provided has been compiled from program documents and telephone conversations with program administrators. Since State legislatures often change aspects of the program regulations, the reader must understand that the accuracy of the information decays with time. When this report was being prepared, the State of Delaware's program had yet to purchase easements, but its information is included for illustrative purposes.

See the table for a compact summary of recent information about the programs.

Connecticut

Connecticut's program began in 1978 and is administered by the Connecticut Department of Agriculture. Connecticut's statutes allow for joint acquisition with municipalities, although no such acquisitions have occurred to date. The State issues bonds to fund the program. The price of the easement is the estimated market minus use value. Appraised values of the property are based on comparable sales. Owners may present their own appraisals.

Eligibility is determined by having each application scored according to the following criteria (values in parentheses denote maximum points):

1. Probability of nonagricultural development (10).

2. Cropland yield per acre (productivity) (40).

3. Amount of land classified as prime or important farmland soils (40).

4. Active farmland and agricultural support services nearby (20).

5. Surrounding properties intensively developed (-10).

6. Costs of development rights $10,000 per acre (-5).

A minimum of 65 points is required to be considered for the program. While the scores allow a numerical comparison, the program does not strictly allocate purchases based on the scores. Note that item 1 is negatively correlated with items 5 and 6. In effect, Connecticut has a clustering strategy and strongly emphasizes agricultural quality.

Delaware

Delaware's program was authorized in 1991 but has yet to make purchases. The Agricultural Lands Preservation Foundation has been created for the purpose of establishing agricultural preservation districts of viable and productive farmland and forest land. The foundation will work with local zoning commissions. While the program remains without funding, the foundation may accept donations of land or easements. As always, the maximum price of any preservation easement will be the difference between the fair market value of the land and its agricultural value. Value will be determined by the foundation and will be based on an appraisal by an appraiser selected by the foundation.

A new feature will be the basing of eligibility on the Land Evaluation and Site Assessment score (LESA). LESA is a system set up by USDA to assess the long-run viability of county agricultural and forest land. An application must have a minimum LESA score of 170 points out of a possible 300. When making decisions to purchase, the foundation and zoning commission will consider:

(1) The extent to which the farmland or forest land is being actively used for agricultural purposes.

(2) The extent to which the long-term preservation of the farmland or forest land would be consistent with land use plans.

(3) The potential for expansion of the agricultural district and its compatibility with surrounding land use.

(4) The ancillary benefit of creating additional open space adjacent to existing established and protected open space.

No system yet exists for ranking eligible parcels. Present foundation administrators believe priority will be given to bargain sale parcels. In essence, the foundation will act as if it is a consumer in the real estate market for easements. The foundation will purchase parcels based on budget constraints and on whether or

not it considers the purchases to be the most advantageous.

Maryland

Maryland's program began in 1977 and is administered by the Maryland Agricultural Land Preservation Foundation (MALPF) in conjunction with county governments. The program has three means of funding: general appropriations, a portion of the agricultural transfer tax, and periodic bond issues. The easement price is the market minus use value minus the applicant's "bid discount." The appraised fair market value is the higher of two appraisals conducted on behalf of the State. Agricultural value is determined by a capitalization formula using an inflation- and risk-adjusted market interest rate and a statistical estimate of land rent.

MALPF has designed its easement allocation scheme so that applicants are encouraged to offer discounts from estimated easement prices. When deciding whether to accept a sell offer, MALPF ranks each application according to the formula:

$$\frac{\text{Farmowner's asking price for easement (per acre)}}{\text{Urban market value - Agricultural use value (per acre}}$$

where the ratio measures the degree to which the applicant offers to sell at a discount. Bigger discounts earn higher priority. Easements are purchased in two rounds. In the first round, MALPF sets aside an equal share of half its budget for each of 23 counties (1/46 each). MALPF then applies its ranking formula separately within each county. Buy offers are made in sequence, starting from the lowest asking-price-to-value ratio (having the highest county ranking) and ending when the county's share of funds is exhausted or when there are no more applications from the county. In the second round, MALPF adds any residual funds from the first round to the second half of its budget and pools all applications that did not receive first round buy offers. Using the same asking price (and formula) from round one, MALPF ranks these applications a second time and offers an easement in descending order of ranking, as funds permit. Note that MALPF's program mimics a sealed-bid auction and does not emphasize the issues of clustering, urban pressure, and agricultural value. It is much more formulaic and less qualitative than other programs, which tend to be less specific about the ranking procedures.

Massachusetts

Massachusetts' program began in 1977 and is administrated in conjunction with local governments. Cities and towns submit parcels to the State Agricultural Lands Preservation Committee for approval. Once the committee purchases a parcel, the relevant municipality is then responsible for the management of the parcel. Bond financing is the primary funding source of the program. Easements are priced in the usual manner of market minus use value. A distinction, however, is that use value is also appraised using comparable sales. Transactions of restricted parcels are frequent enough to use the same method as that used in estimating unrestricted market value.

Initial eligibility is determined by the participating local governments. Once a given city or town submits an application to the State committee, the committee bases its allocation decisions on:

1. The viability and productivity of the land for agricultural use.

2. The degree of conversion threat.

3. Consistency with the goals of agricultural preservation in the vicinity.

4. The environmental value of the land.

5. The extent to which the affected municipality will contribute toward the purchase.

6. The extent to which the expected benefits outweigh the acquisition costs.

An explicit point ranking system is not used. The criteria indicate that both urban pressure and clustering increase the likelihood of purchase, even though these factors originate from otherwise different preservation strategies. Item 6 indicates that the program directly considers the social value of preserved farmland in a cost-benefit type framework. This feature contrasts with other programs' emphasis on the costs of acquisition and bargain sales.

New Hampshire

New Hampshire's earliest program began in 1979 and evolved into the Land Conservation Investment Program (LCIP) in 1987. The State funds the program primarily through general appropriations. Several appraisal methods, such as comparable sales and capitalization formulas, are used to price the easements,

depending upon the type of property and the available data.

Applications are reviewed by an eligibility subcommittee, which recommends to LCIP's board of directors which applicants should be invited to submit formal applications. Completed applications are then ranked on the basis of the following scoring criteria (the values in parentheses denote maximum points):

1. Recreational, scenic, or historic value (14).

2. Provision of a wildlife habitat (22).

3. Special vegetation or geological features (15).

4. Provision towards public water supply (11).

5. Wetlands value (15).

6. High agricultural value such as soil quality (15).

7. A discount price (bargain sale) (20).

As is the case in Connecticut, scores do not strictly determine which parcels receive purchase offers. Since the LCIP program is not limited to agricultural land, a wide range of environmental and other concerns are considered. However, agricultural characteristics count most strongly.

New Jersey

New Jersey's program began in 1981 and is administered at all three levels of government—State, county, and municipal. The Farmland Preservation Bond Act of 1981 provided an initial $50 million in funding. In November 1989, voters approved the Open Space Preservation Bond Act, which provided an additional $50 million for the farmland preservation program. Local matching funds help defray State purchase costs. When determining easement prices, the county hires two independent appraisers who calculate the restricted and unrestricted market value of the property. As in Massachusetts, enough market transactions of restricted land take place for comparable parcel sales to be used to estimate the market and agricultural value of the property.

To be eligible, a farmowner's land must qualify for either the State's farmland preservation program or a municipally approved program. New Jersey's easement allocation process combines the approaches of Connecticut and Maryland. The application is initially evaluated according to the following criteria and weights:

1. Soil quality (30).

2. Proximity to other agricultural zones (20).

3. Local land use regulations which support long-term agricultural use (20).

4. Viability as farmland as well as financial support (20).

5. Size and density of land dedicated to farmland preservation (20).

Urban pressure, the geographical distribution of easements among counties, and historic and environmental contributions are more loosely considered.

Landowners must submit an asking price to the Agricultural Development Board. The board then ranks and approves or rejects the application, forwarding the survivors to the State Agricultural Development Committee. The committee then ranks the application a second time according to the formula:

$$\frac{\text{Market value - use value - asking price}}{\text{Market value - use value,}}$$

which is the same as Maryland's formula. Bigger discounts receive higher purchase priority. The committee fund will not pay more than 80 percent of the easement value.

Pennsylvania

Pennsylvania's program began in 1989 and is administered at the State and county level. The State Agricultural Land Preservation Board acts primarily as a supervisor to county programs and has final approval on the use of State funds. The board's 17 members include State and local legislators, representatives from various State government agencies, and a farmer and developer. Each county designs its own program, subject to the approval of the State board. Up to $100 million in State bond issues have been authorized for the Agricultural Conservation Easement Purchase Fund.

Individual counties determine eligibility and allocation criteria. Lancaster County, for example, heavily weighs the threat of urban conversion in deciding what to purchase. Agricultural quality and historic value also affect the decision. An explicit point ranking system is used.

Rhode Island

Rhode Island's program began in 1982 and is administered by the Agricultural Lands Preservation Commission, an 11-member board including representatives from various State institutions. The program relies solely on bond funding. The negotiated price of an easement cannot exceed the average of two independent appraisals.

An agricultural parcel must be at least 5 acres in size to be eligible for purchase. A technical scoring committee initially evaluates eligible applications on the basis of primary and secondary criteria. The four primary criteria considered are soil quality, development pressure, economic importance, and soil management.

Secondary criteria include the protection of watersheds or groundwater recharge areas and the preservation of open space and aesthetic values. This latter criterion includes historic, archeological, recreational, or ecological value. The committee totals the primary and secondary criteria scores and recommends a priority ranking to the PDR Commission, which makes the final allocation decisions.

Vermont

Vermont's program began in 1987 and is administered by the Vermont Housing Conservation Board (VHCB). The nine-member board is made up of representatives from State agencies and members of the public, one of whom must represent lower income residents and one of whom must be a farmer. The VHCB is funded by the State, and it relies heavily on leveraging (bargain sales) for its projects. State funding combines appropriations, a portion of the property transfer tax revenues, and bond proceeds. The price of the easement is the difference between the market and the agricultural use value of the land, as always, but is capped at no more than $975 per acre and $250,000 per farm. Exceptions are made for projects which have a particular significance or which offer a substantial reduction in cost under a bargain sale. Appraisers use comparable sales to estimate the market and agricultural values.

In determining the allocation of funds, the board gives priority to projects which combine the dual goals of creating affordable housing and preserving agricultural land. The following factors are the main criteria used for allocating funds:

1. Amount of cost savings (bargain sales).

2. Need to maintain balance between the dual goals in allocating resources.

3. Resources that will be required to sustain the project.

4. Expected long-term effects of a proposed project.

Unlike other States, Vermont's program compares the cost and benefits of committing resources to the residential, urban sectors versus the agricultural sectors.

Appendix table--State purchase of development rights programs, latest 1992 estimates

State	Year	No. of parcels	Total acres	Cost of easements	Main funding sources: General revenue	Transfer taxes	Bonds	Main influence on parcel rank: Matching grants	Price discounts	Urban pressure	Clustering
Connecticut	1978	144	21,500	$59,120,000			x			x	x
Delaware	1991	0	0	$0		to be determined			x		x
Maryland	1977	677	98,504	$97,268,517		x	x	x	x		
Massachusetts	1977	310	29,397	$78,000,000	x					x	x
New Hampshire	1979	379	100,000	$46,100,000	x		x			x	
New Jersey	1981	112	16,361	$94,722,546			x	x	x		
Pennsylvania	1989	214	25,298	$53,703,292		x	x	x	x	x	
Rhode Island	1982	30	2,428	$14,000,000			x			x	
Vermont	1987	72	24,128	$14,530,000	x	x	x	x	x		

Note: X=Policies followed by that State.

Qualifications and further information about this table:

* The ranking information for Pennsylvania pertains to Lancaster County; counties decide their own priorities.
* Maine changed its program from easement acquisition to fee simple purchase.
* California, New York, Pennsylvania, and Maryland have sizable separate county programs.
* Colorado, Florida, Michigan, and West Virginia considered or have begun PDR programs at the State and local level.
* North Carolina and Washington have inactive county programs.

U.S. Department of Agriculture
Economic Research Service

SUMMARY OF REPORT AH-702

Many States Restrict Landownership by Foreigners, Businesses

Month Year

Contact: Peter deBraal 202-219-0425

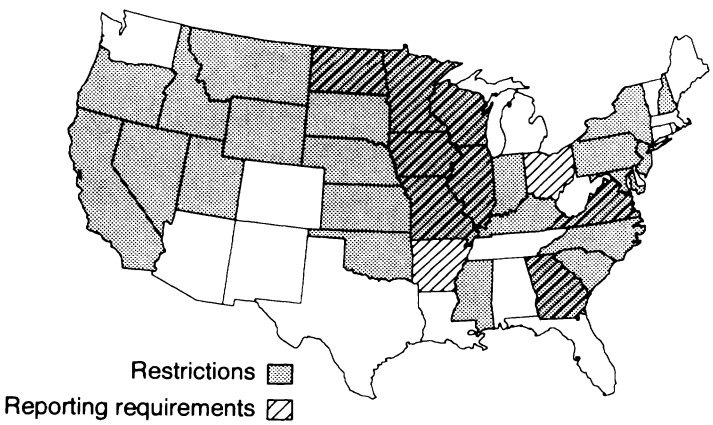
Many States have laws restricting ownership of U.S. land by foreigners and business entities. Others merely require such landholdings to be reported. A new report by USDA's Economic Research Service, *State Restrictions on Landownership by Aliens and Businesses, December 31, 1992,* summarizes those laws.

Most of the laws have been on the books for a number of years. Four States updated their landownership restrictions between 1990 and 1992. Kansas and Minnesota updated their corporate farming statutes to reflect the authorization of limited liability companies. Mississippi repealed its statutory restriction on purchases of State land by aliens and corporations, and Missouri repealed its constitutional (but not its statutory) restrictions on corporate landownership.

Restrictions on Foreigners

Twenty-eight States have some type of law restricting ownership of real property by foreigners. The restrictions vary greatly in the degree of their severity. Idaho, for example, merely restricts the acquisition of State-owned lands or interests therein by foreigners. Other States, Kansas for example, restrict the acquisition of land generally or agricultural land specifically. Still other States (Georgia, Kentucky, Maryland) limit their restrictions to "enemy" aliens. Indiana and other States restrict the amount of acreage that foreigners may hold. Finally, some States, Minnesota, for example, prohibit alien ownership of land, but they generally have exceptions to those prohibitions for certain land uses, such as for mining or research.

Landholding restrictions on foreigners, by State, 1992



Restrictions on Businesses

Thirteen States have laws restricting business entities from owning land or from farming in the State. Many of these laws restrict the ownership of agricultural land. But some restrict the ownership of real estate in general, while others restrict the purchase of State land. Several States, Iowa for example, have long lists of exceptions (such as for family farm corporations or authorized farm corporations) to the general restrictions. The 13 States are Arizona, Florida, Illinois, Iowa, Kansas, Louisiana, Minnesota, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, and Wisconsin.

To Order This Report...

The information presented here is excerpted from ***State Restrictions on Landownership by Aliens and Businesses, December 31, 1992,*** AH-702, by J. David Aiken. The cost is $12.00.

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