AGRICULTURAL LAND PROTECTION: IS GOVERNMENT INTERVENTION WARRANTED?

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> As this century nears its end, as demands for food and competition for land accelerate, the most important question to face our nation may well be: How can we direct urban development to less productive acres, and thereby protect our irreplaceable prime farm land acres from further encroachment?[1]

The National Agricultural Lands Study (NALS) is just one among many recent works expressing concern about the loss of prime agricultural land. Recent studies by the Council on Agricultural Science and Technology (CAST) show that land markets are not working properly and that the conversion of cropland to nonagricultural uses poses a major threat to future agricultural production.[2] During the past decade, an increasing number of individuals and organizations have suggested that land resources are too important to be left to the "whims of market forces." According to this view, there should be a shift from private ownership to social or political control of land use. Gordon Bjork, for example, suggests in his 1980 book, *Life, Liberty, and Property,* that planning policies should be instituted at the federal level to estimate the derived demand for agricultural land for 25 to 50 years into the future, with steps taken to ensure its availability. A similar conclusion was reached in the NALS.

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[1]National Agricultural Lands Study (NALS), *Where Have the Farmlands Gone?* (Washington, D.C.: Government Printing Office, 1979), p. 2.

[2]Council for Agricultural Science and Technology (CAST), *Preserving Agricultural Land: Issues and Policy Alternatives*, Report no. 90 (Ames, Iowa: CAST, 1981); CAST, *Soil Erosion: Its Agricultural, Environmental, and Socioeconomic Implications*, Report no. 92 (Ames, Iowa: CAST, 1982).

It is the thesis of this paper that the adoption of nonmarket measures to restrict the conversion of agricultural land to urban uses is likely to be counterproductive. There is a great deal of confusion both about the nature of the alleged problems and about the effects of the remedies proposed to deal with them. Specifically, the objectives of this paper are: to discuss the rationale for protecting agricultural land; to discuss the nature and effects of various programs proposed to protect agricultural land; to stress the inherent information and incentive problems in implementing all nonmarket land-use controls; and to show that the market is unique in its ability to allocate land to agricultural and other uses in a way that conforms most closely to present and future demands for land services.

A brief discussion of commonly cited reasons for protecting agricultural land will be followed by an analysis of market failure as a basis for government intervention in land markets. Various land-use control programs will be briefly described and analyzed in terms of their effectiveness in protecting agricultural land and the extent to which the programs are likely to increase the efficiency of land use. The paper concludes that increasing the role of government in land-use planning is likely to exacerbate rather than reduce land-use conflicts.

Rationale for Protecting Agricultural Lands

Several reasons are cited for protecting agricultural lands.[3] First, it is held that agricultural land must be protected to ensure production of sufficient food and fiber to meet the requirements of a growing national and world population. In some cases, it is argued, land should be protected to ensure the continuation of agricultural production in particular geographical regions. In this view, even if agricultural land is not required today, it *will* be required tomorrow.[4] Thus, we should maintain the option of using the land in agriculture at a later time.

Second, there are beneficial spillover effects (environmental amenities) associated with open space. And it is held that unfettered

[3]B. Delworth Gardner, "Allocating Agricultural Land via the Market versus Prime Land Zoning," paper presented at a conference on "Agricultural Land Preservation: Economics or Politics," Political Economy Research Center, Bozeman, Montana, December 2–6, 1981.

[4]See William Fischel, "Urban Development and Agricultural Land Markets: Why We Are Not Running Out of Farmland," paper presented at a conference on "Agricultural Land Preservation: Economics or Politics," Political Economy Research Center, Bozeman, Montana, December 2–6, 1981, p. 3.

land markets will not retain enough land in agriculture and other open space uses.[5]

Third, protecting agricultural land is deemed necessary to ensure more orderly urban development. Agricultural zoning is suggested as one way to increase land-use efficiency by protecting farming operations against nuisance suits and piecemeal residential development.[6]

Finally, protecting agricultural land is justified on the basis of the local economic benefits that derive from a viable agricultural industry. In analyzing the benefits of land-use planning in Wilson County, North Carolina, for example, a recent study concludes: "The importance of agriculture and agribusiness to the economy of an area is one of the major issues in land-use planning for rural areas."[7]

Arguments that agricultural land should be protected beyond the level dictated by market forces are often considered with reference to prime agricultural land; that is, land that is now highly productive of crops. Prime agricultural land, however, cannot be identified solely on the basis of physical conditions; other factors, including incidence of disease and proximity to markets or to processing facilities, must also be considered.[8]

What is happening to agricultural land? Controversy surrounds both the facts and their implications. The NALS concluded that in recent years, three million acres of agricultural land in the United States were converted annually to other uses.[9] Such data on the overall agricultural land base, including pastureland, rangeland, and forestland, however, tell virtually nothing about losses of cropland.[10] Luttrell demonstrates that the amount of cropland varies over time according to the relative demand for farm products. Moreover, contrary to the tone of the NALS, acreage of cropland harvested in the

[5]J.C. Hite and B.L. Dillman, "Protection of Agricultural Land: An Institutionalist Perspective," *Southern Journal of Agricultural Economics* 13 (1981): 43–53.

[6]Robert H. Nelson, "Agricultural Zoning: A Study in the Purposes, Consequences, and Alternatives to Zoning," paper presented at a conference on "Agricultural Land Preservation: Economics or Politics," Political Economy Research Center, Bozeman, Montana, December 2–6, 1981.

[7]Paul S. Stone and Leon E. Danielson, *Land Use and Development in Rural Wilson County*, Center for Rural Resource Development Report no. 1 (Raleigh: North Carolina Agricultural Extension Service, 1976), p. v.

[8]Gardner.

[9]National Agricultural Lands Study (NALS), *Final Report* (Washington, D.C.: Government Printing Office, 1981), p. 82.

[10]The accuracy of the three million figure—three times the historical rate—has been seriously challenged by Simon and others. See Julian L. Simon, "Are We Losing Our Farmland?" *The Public Interest* 67 (1982): 49–62.

United States *increased* dramatically from 1970 to 1980 in response to product price increases.[11] There is little, if any, basis for fearing that a general decline in U.S. farmland will cause a crisis in food production.

A significant reduction in cropland and other farmland often does occur at the county level in rapidly urbanizing areas. Even for geographical areas where the magnitude of the conversion of land is not in question, however, projections of current trends are likely to lead to wrong conclusions. As Mark Twain demonstrated in analyzing the fact that in the space of 176 years the lower Mississippi shortened itself 242 miles, or about one half mile per year, "any person can see that in 742 years from now the lower Mississippi will be only a mile and ¾ long and Cairo and New Orleans will have joined their streets together. . . . There is something fascinating about science. One gets such wholesale returns of conjecture out of such a trifling investment of fact."[12]

The important question with regard to soil losses or conversion of land to other uses concerns the significance of the data rather than the trends. There *are* geographical areas in which cropland and other farmland are being rapidly converted to nonfarm uses. Under what conditions is governmental intervention warranted? The NALS and CAST studies imply that the market process does not efficiently protect land resources. The key issue is not how many tons of soil are lost or whether one million or three million acres of agricultural land are being converted to urban uses each year. The basic issue concerns the relative merits of market versus nonmarket approaches in protecting soil quality and in achieving an efficient allocation of land resources for agricultural and other uses.

[11]Clifton B. Luttrell, "Our 'Shrinking' Farmland: Potential Crisis?", paper presented at a conference on "Agricultural Land Preservation: Economics or Politics," Political Economy Research Center, Bozeman, Montana, December 2–6, 1981, p. 12.

[12]Mark Twain, *The Family Mark Twain* (New York: Harper and Brothers, 1935), p. 87. Trend projections also lead to erroneous implications in the case of erosion. The recent CAST analysis of soil erosion states that the average annual loss of U.S. cropland by erosion is about five tons per acre. (See CAST, *Soil Erosion*, p. 14.) In and of itself, this fact does not warrant the conclusion that there is an erosion problem. (See CAST, *Preserving Agricultural Land.*) In fact, an analysis of national soil erosion surveys in 1934 and 1977 provides no support for the dire pronouncements that soil erosion has gone from bad to worse. In comparing these survey results, Mayer concludes that the nation's soil resources have vastly improved over the past half century. See T.W. Schultz, "The Dynamics of Soil Erosion in the United States: A Critical View," paper for a conference on "Soil Conservation," Agricultural Council of America, Washington, D.C., March 17, 1982; and Leo V. Mayer, "Farm Exports and Soil Conservation," *Food Policy and Farm Programs*, ed. by Don F. Hadwiger and Ross B. Talbot, *Proceedings of the Academy of Political Science* 34 (1982): 99–111.

Market Failure

The traditional view of welfare economics is that the land market is efficient if perfect competition prevails. Market failure in land (and other) markets is said to occur to the extent that markets do not conform to the norm of perfect competition. Perfect competition requires price-taking behavior and perfect markets, which means perfect communication, instantaneous equilibrium, and costless transactions.[13] Since these conditions are *never* attainable, the market failure result is inevitable when real-world land markets are compared with the perfect competition norm. Let us consider some alleged cases of market failure in land markets.

Monopoly and Speculation

Market failure stemming from imperfect competition is inevitable when a downward sloping demand curve is identified with monopoly and taken to be *prima facie* evidence of resource misallocation. There are at least two problems in branding all sellers who face less than perfectly elastic demand curves as socially harmful monopolists: First, many sellers clearly operating under competitive conditions, including the 10-year-old operator of a lemonade stand, will be classified as monopolists. Second, the welfare consequences of short-run entrepreneurial profits cannot be appraised strictly in terms of the immediate allocation of resources.[14] A producer facing competitive conditions in the longer run may be able to achieve above normal returns in the short run through early entrepreneurial alertness. A theory and a social policy that hold and act as though these short-run gains are unearned monopoly rents will inevitably discourage entrepreneurial alertness in the future.[15]

Speculation in land markets is often considered socially wasteful, even by people who appreciate the merits of speculation in other areas. The argument is made that while investments in steel mills,

[13]Jack Hirshleifer, *Price Theory and Applications*, 2d ed. (Englewood Cliffs, N.J.: Prentice Hall, 1980), p. 234.

[14]Israel M. Kirzner, *Competition and Entrepreneurship* (Chicago: University of Chicago Press, 1972).

[15]The erroneous labeling of entrepreneurial returns as unearned rents is a direct result of the use of long-run equilibrium theory in measuring the welfare cost of monopoly. The equilibrium model misinterprets and ignores the function of profits and losses in the real world market process. Entrepreneurial profits are taken to represent social waste, since there is no role for entrepreneurship in long-run equilibrium. In real world markets, however, where decisions of market participants never perfectly dovetail, there is always scope and need for entrepreneurial activity. See S.C. Littlechild, "Misleading Calculations of the Social Costs of Monopoly Power," *The Economic Journal* 91 (1981): 348–63.

grocery stores, and oil wells are necessary if their services are to be made available, land will be there whether anyone owns it or not. Accordingly, a recent economic analysis of land markets holds that "any long run investment in land is sterile from a social perspective, and any positive profits obtained from long-run land ownership are excessive, unnecessary costs to society."[16]

This criticism of speculators is rooted in the model of perfect competition where there is perfect knowledge and, consequently, no scope for entrepreneurship or speculation.[17] Real-world decision makers, however, are always faced with uncertainty and imperfect knowledge; in reality, all economic activity outside the stationary state involves speculation.[18] Thus, speculation in the competitive market process involves the discovery of information that is merely assumed in the perfect competition model.[19] When the uncertainty and imperfect knowledge of land markets are taken into account, the role of land speculators is no less beneficial (or different from) that of speculators in other markets.

Externalities

Spillover problems, like monopoly problems, appear to be pervasive when land markets are measured against the optimality conditions of the competitive norm.[20] A spillover occurs when an action by one person infringes on the property rights of another. The mere presence of a spillover effect, however, does not imply that there is a spillover problem. In order for a problem to exist, there must be incomplete compensation and the benefits of internalization must exceed the costs.

[16]James C. Hite, *Room and Situation: The Political Economy of Land-Use Policy* (Chicago: Nelson-Hall, 1979), p. 73.

[17]Notice how uncertainty, information problems, and transaction costs are implicitly assumed away in the following description of land speculation: "The new speculation on the urban fringe is generally associated with much wasteful land use. . . . Speculators purchase land from farmers, but having neither the interest in nor aptitude for farming, the speculators are apt to allow the land to lie fallow. In some cases, the land may be leased to farmers for agricultural use, but such leases may prevent speculators from selling out at a lucrative price in the middle of the growing season. Hence, the relatively small amount of income to be obtained from such a lease may not be sufficient to warrant foregoing opportunities for resale. . . The speculator, more often than not, is content merely to let the land ripen, i.e., let its price increase, without trying to use the land during the interim. . . ." See ibid., pp. 63–64.

[18]Ludwig von Mises, *Socialism* (London: Jonathan Cape, 1951).

[19]Dominick Armentano, *Antitrust and Monopoly: Anatomy of a Policy Failure* (New York: John Wiley, 1982).

[20]See John Burton, "Externalities, Property Rights and Public Policy: Private Property Rights or the Spoilation of Nature," in N.S. Cheung, ed., *The Myth of Social Cost*, Hobart Paper 82 (London: The Institute of Economic Affairs, 1978), p. 74.

Externalities will remain if there are transaction costs; if there are no costs associated with negotiating, concluding, and enforcing contracts, all spillovers will be internalized to the extent that the benefits exceed the costs. If the cost of internalizing a side-effect exceeds the benefits, the spillovers may be said to be optimal. Thus, once transaction costs are included in the constraints on individual and governmental behavior, it cannot be shown analytically that any particular spillover represents a deviation from an attainable optimum.[21] That is, once the constraints in the form of technology, tastes, information, transaction cost, and so forth have been specified, the logic of the framework must lead to an optimal outcome.[22] Specifically, if the constraints are descriptive of real world conditions in the case of a particular land market, it cannot be demonstrated that the existing pattern of land use is nonoptimal given *those constraints.*

In the traditional Pigouvian approach to welfare economics, a difference between private and social cost is simply postulated. It is not shown that another method can decrease the costs of internalizing spillover effects when contrasted with contracting through market exchange. It is merely asserted that people do not take into account the total effect of their actions.[23] If costs cannot be reduced by governmental intervention or some other arrangement, there is no basis for contending that social cost exceeds private cost.[24] In summary, when one takes into account transaction costs and the information and incentive effects that are inherent in all nonmarket allocation procedures, it cannot be demonstrated empirically that externalities associated with land use are "inefficient," i.e., constitute a deviation from an *attainable* optimum. Indeed, at the attainable optimum, any attempt to further reduce negative externalities will be inefficient; the marginal value of the resources used to further reduce external costs will be more highly valued elsewhere by consumers.

Uncertainty and Option Value

Because of major uncertainties about future conversion of farmland to nonfarm uses, possible long-run climate changes, future trends in agricultural productivity, and future water and energy supplies and

[21]Carl J. Dahlman, "The Problem of Externality," *Journal of Law and Economics* 22 (1979): 154.

[22]See ibid., p. 153.

[23]Ibid., p. 154.

[24]Aside from this problem with the Pigouvian approach, opportunity cost (the value of the best sacrificed alternative) is inherently subjective and cannot be measured by outside observers. See E.C. Pasour Jr., "The Economics of Natural Resources: An Austrian Perspective," paper presented at a conference on "The New Resource Economics," Political Economy Research Center, Bozeman, Montana, June 10–13, 1982.

costs, it is alleged that "preserving farmland for the future is like buying an insurance policy to provide for future contingencies."[25] This idea is closely related to the concept of option demand, which concerns the willingness to pay for retaining the option to use a resource that would be difficult or impossible to replace and for which no close substitute is available.[26] The option demand concept in the context of this paper implies that the appropriate social rate of time preference to be used in determining the present value of farmland is lower than the market interest rate.[27] The same problems arise in identifying examples of option demand, however, as for all other externalities associated with land use. A difference between the market interest rate and the social rate of time preference is *merely asserted,* but it is not shown that such a difference exists.[28] Moreover, when information, incentives, and transaction costs are taken into account, it *cannot be shown* that the social rate of discount for agricultural land is lower than the market rate.

The idea that farmland should be preserved through nonmarket means because of uncertainty ignores the advantage of decentralized markets in dealing with uncertainty. Uncertainty and constantly changing conditions pose problems for central direction, since no way has been found to coordinate and transmit information as fully as is done through market prices. In addition to information problems, there are incentive problems, which inevitably affect the implementation of all nonmarket land-use controls. Before discussing implementation problems inherent in all nonmarket land-use controls, several programs proposed to protect agricultural land use will be described.

Land-Use Controls

During the past decade, a number of measures have been proposed or instituted to affect agricultural land-use patterns. The programs may be classified as either voluntary, operating through economic incentives, or involuntary, involving regulation. Several incentive programs have been designed, at least in part, to protect agricultural land. Some 45 states have now enacted agricultural use-value taxation for farm and forest lands, legislation that permits qualifying agricul-

[25]CAST, *Preserving Agricultural Land,* p. 1.

[26]V. Kerry Smith, "Option Value: A Conceptual Overview," mimeograph (Chapel Hill: University of North Carolina, 1982).

[27]Colin Price, "To the Future: With Indifference or Concern? The Social Discount Rate and Its Implications in Land Use," *Journal of Agricultural Economics* 24 (1973): 396–97.

[28]See Pierre Crosson, "A Shortage of Agricultural Land," RFF *Resources,* 1982, p. 9.

tural and forestry lands to be assessed for property tax purposes on the basis of present use value instead of market value. The implementation of use-value legislation faces theoretical as well as practical problems.

Market-value and income approaches are used in implementing use-value legislation. In the market-value approach, data on recent sales of agricultural land, with little urban influence, in the same county are used to estimate use value. In counties with large urban centers, there is likely to be *no* agricultural land where price is not affected by urban influences. In cases where market values of all land are influenced by nonagricultural factors, sales data are not useful in determining agricultural use values. An alternative is to use the income approach, which requires estimates of net income per acre over time and the capitalization rate. Since there is a great deal of subjectivity in estimating future income and in selecting the capitalization rate, use values will be differently estimated by different people. Consequently, there is no way to avoid a high degree of subjectivity in making use-value estimates, since expectations about future income and discount rates will vary.[29]

Fee simple purchase, including public land banking, is also proposed as a way to protect agricultural land. In this approach, local and state governments might purchase lands either to provide environmental amenities associated with open space or to keep land in food production.[30] Land banking is not usually proposed as a way to protect land but rather to restrain land price increases through the "elimination of speculative profits."[31] There is no way to avoid speculation in a world of uncertainty; and when incentive and information problems associated with governmental activity are taken into account, public land banking is more likely to *increase* land prices.[32]

Instead of purchasing agricultural land in fee simple, the farmer might retain title to the land while local and state governments purchase only the rights to develop land for nonfarm purposes.[33] If

[29]E.C. Pasour, Jr., "Estimating Agricultural Use Values in New York State: Comment," *Land Economics* 55 (1979): 405–407.

[30]Fischel points out that concern in the NALS *Final Report* is focused on the adequacy of future food and fiber production. "Curiously enough the amenity values of farmland are hardly mentioned." See Fischel, p. 3.

[31]Jack Carr and Lawrence B. Smith, "Public Land Banking and the Price of Land," *Land Economics* 51 (1975): 316–30.

[32]E.C. Pasour, Jr., "Public Land Banking and the Price of Land: Comment," *Land Economics* 52 (1976): 558–64.

[33]Leon E. Danielson, *Land-Use Planning in Rural Areas: Policy Alternatives,* Center for Rural Resource Development Report no. 10 (Raleigh: North Carolina Agricultural Extension Service, 1978).

the power of eminent domain is used in the case of fee simple purchase or purchase of development rights, of course, participation is no longer achieved through economic incentives.

The creation of agricultural districts is still another means used to protect farming operations and provide economic incentives to preserve farmland. New York's Agricultural Districts Law, enacted in 1971, for example, grants tax relief and discourages urbanization through restrictions on eminent domain and local government ordinances that affect agriculture.[34] The property owner retains the option to sell his land at any time he chooses. While participation in the New York program is voluntary, a similar Wisconsin program initiated in 1977 is voluntary at the county level but not for the individual landowner.

The zoning ordinance remains the most common means of implementing land-use plans in the urban fringe[35] and has often been imposed to preserve open space, to manage growth, and so on.[36] Agricultural zoning, an involuntary regulation proposed to protect agricultural land from the standpoint of food supply, incompatible uses, or both, may be either exclusive or cumulative.[37] In an exclusive agricultural zone, agriculture and its related farm buildings are the only uses allowed.[38] Under cumulative zoning, both agricultural and nonfarm residences are permitted. There is a long history of political failure and corruption associated with zoning where approval for zoning changes is secured through political influence and payoffs.[39] In view of this, it is ironic that agricultural zoning is now proposed as a measure that "would significantly improve the efficiency of land use in farming areas."[40]

Evaluation

Of the two important questions concerning the effects of land-use controls, most agricultural economists have focused on the first: Are the controls effective in protecting agricultural land? In the case of use-value taxation, the qualifying landowner often obtains a significant reduction in taxes, but use-value legislation has had little effect

[34]Ibid.

[35]Ibid.

[36]Nelson.

[37]See ibid., p. 1.

[38]Danielson.

[39]John A. Gardiner and T.R. Lyman, *Decisions for Sale: Corruption and Reform in Land-Use and Building Regulation* (New York: Praeger, 1978).

[40]Nelson. p. 44. See also David Ervin et al., *Land Use Control: Evaluating Economic and Political Effects* (Cambridge, Mass.: Ballinger, 1977), p. 100.

on the conversion of agricultural land to nonagricultural uses.[41] Use-value taxation does decrease the cost of holding land in agriculture, especially in rapidly urbanizing areas. In such areas, however, potential gains from development are likely to swamp any tax advantages there may be in keeping land in agriculture. Thus, measures that are effective in retaining land in agriculture are likely to necessitate either *involuntary* controls or higher taxes for the non-farm population. Incentive programs, such as fee simple purchase, public land banking, and purchase of development rights *can* be effective in protecting land but involve a high, direct taxpayer cost.[42]

A second, more basic question about land-use controls to protect agricultural land has been largely neglected: Are such programs beneficial? If the government wishes to protect farmland or open space, an incentive program is clearly preferable to involuntary controls, since willingness to incur the required expenditures provides a test of the value placed on retaining farmland or open space. If, for example, open space is obtained through zoning and the cost is borne by owners of the zoned land, the demand for environmental amenities will be overstated. A more important issue, however, concerns the desirability of protecting agricultural land. Nelson suggests that agricultural zoning is beneficial since it can extend the life of farming in a region.[43] Fischel describes "right to farm" legislation as a "sensible approach" in protecting farmers from nuisance suits or other controls designed to restrict farm operations.[44]

The conclusion that zoning and other measures should be used to protect agricultural land ignores an important question: What is the "optimal" amount of land in agriculture? Nelson recommends "widespread adoption of agricultural zoning along with other features of agricultural districting" for farmland near metropolitan areas as a way to "maintain the existing farming way of life against threats of piecemeal residential intrusion."[45] Proposals to "protect agriculture from premature conflicts with residential uses" raise a number of questions: How does one define and identify cases of premature conflicts? At what point is the competition of land for non-agricultural uses not premature? Does the fact that a group of farmers desire to continue farming mean that the efficiency of land use will be increased if agricultural districts, zoning, or other measures are used to keep

[41]Danielson.

[42]Taxpayer cost is higher, of course, in the case of fee simple purchase than where only development rights are purchased.

[43]Nelson, p. 12.

[44]Fischel, p. 19.

[45]Nelson, p. 15.

land in agriculture? How does one ensure that regulations will not be used to keep land in agriculture when it has a higher value in other uses? Justifying the protection of agricultural land on the basis of local economic benefits ignores the fact that a tract of farmland is converted to nonfarm use only when its expected value in other use exceeds its agricultural value.

Zoning classifications can be conceived of as involving either permanent or transitional categories of use. A case can be made for transitional zoning as a way of minimizing land-use conflicts when incentive and information problems are minimized or ignored. However, agricultural zoning is now being recommended as a permanent rather than a transitional category of use, which means that it is designed to prevent converting land to other uses regardless of cost. Fischel suggests that the real forces behind the farmland preservation movement are local anti-development interests: ". . . zoning for farms appears to be a means by which initial nonfarmer immigrants effectively 'pull up the gangplank' to keep subsequent immigrants out."[46] Consequently, one cannot be confident that zoning originally conceived of as involving transitional categories of use will not become permanent zoning. At any rate, in evaluating the likelihood that nonmarket land-use controls will improve the efficiency of land use, it is important to take implementation problems into account.[47]

Implementation Problems

When real world political processes are compared with an ideal polity norm, government failure is as inevitable as is market failure in comparing real world markets with the perfect competition norm. Thus, finding market failure does not warrant government intervention unless it can be demonstrated that the outcome will be superior, given the inevitability of government failure. In evaluating the likelihood that nonmarket approaches will improve the efficiency of land use, first consider the information and incentive problems endemic in central direction.

Information Problems

The basic economic problem in the context of this paper is to secure the best use of land resources utilizing the knowledge of all members of society for ends whose relative importance only these individuals

[46]Fischel, p. 22. See also Ervin et al., pp. 161–62.

[47]Charles Wolf, Jr., "A Theory of Nonmarket Failure: Framework for Implementation," *Journal of Law and Economics* 22 (1979): 107–40.

know.[48] Market prices of land coordinate and transmit widely dispersed information more effectively than is possible through any other known method. Moreover, the factors that cause land prices to increase or decrease and thereby guide the behavior of decision makers are influences that would need to be taken into account in any conceivable system of coordinated economic activity.[49] Increased demand for land in housing, golf courses, and other uses is transmitted through the price system and reflected in higher prices paid for such land. The information influencing choices by buyers and sellers of land is decentralized and cannot be objectively determined except as revealed by the actions of market participants.[50] Thus, there is inevitably a loss of valuable information when land price signals are suppressed or overridden by zoning and other land-use controls. Moreover, the profit motive gives private entrepreneurs an incentive to discover new opportunities for satisfying consumer preferences, which makes land markets very responsive to ever-changing circumstances.[51] Land use planning through nonmarket methods, on the other hand, cannot readily adapt to change.[52]

What are the implications of viewing the market as an information and discovery process? Von Mises and Hayek demonstrate in the "economic calculation debate" that market prices are necessary in achieving efficient resource use.[53] The importance of the price system in coordinating and transmitting information, however, is ignored by most advocates of land-use planning. There is a failure to recognize the information problems that are inherent in *all* nonmarket allocation procedures. In proposals to institute "comprehensive land-use planning," for example, land classification is often suggested as a means of allocating land to various uses. A proposed land policy program for North Carolina recommends that all land in the state be classified on a county-by-county basis into one of five different classes:

[48]F.A. Hayek, *Individualism and Economic Order* (Chicago: University of Chicago Press, 1948).

[49]David Ramsay Steele, "Posing the Problem: The Impossibility of Economic Calculation Under Socialism," *Journal of Libertarian Studies* 5 (1981): 7–22.

[50]See Thomas Sowell, *Knowledge and Decisions* (New York: Basic Books, 1980), pp. 217–18.

[51]F.A. Hayek, *New Studies in Philosophy, Politics, Economics and the History of Ideas* (Chicago: University of Chicago Press, 1978), p. 236.

[52]E.C. Pasour, Jr., "Preserving Agricultural Land: Lessons from the Economic Calculation Debate," paper presented at a conference on "Agricultural Land Preservation: Economics or Politics," Political Economy Research Center, Bozeman, Montana, June 10–13, 1982.

[53]Karen I. Vaughn, "Economic Calculation Under Socialism: The Austrian Contribution," *Economic Inquiry* 18 (1980): 535–54.

developed, transition, community, rural, and conservation.[54] Preservation of "good agricultural land" is a major focus of the program, and it is recommended that local land classification plans should discourage urban development on prime agricultural lands except when no other alternative exists. Prime agricultural land, however, is quite often even more productive in nonagricultural uses. Moreover, alternatives are always available at some location. Thus, land classification is not a realistic alternative to market prices in resource allocation. The "comprehensive land-use planning" movement fails to recognize that, aside from the market, there is no objective procedure to determine which land parcels to retain in agricultural and other uses either now or in the future.

Information problems also arise in attempts to mandate optimal conservation practices. Conservation is an investment problem and should be judged by criteria similar to those used in evaluating other investments. Profitable management and conservation practices can be determined only by comparing the expected costs and benefits of these practices. Moreover, since costs and benefits occur over time, there is no reason to expect the evaluation of a particular conservation measure by an outside observer to correspond to that of the decision maker under real world conditions of uncertainty.[55] In evaluating investments in conservation measures, the economist has no objective procedure (aside from the survivor principle) to identify inefficient resource use. Thus, attempts to determine and mandate optimal levels of soil conservation face the same problems as other attempts to second-guess real world decision makers.[56]

Incentive Problems

Political problems also arise in instituting nonmarket land-use controls because of perverse incentives. First, when compared with the market, the political process is short-run oriented, since the political decision maker's power is frequently determined by the results of the next election.

Second, the incentive structure of government is such that the self-interest of the political decision maker dictates that he "play it safe." Decision makers in the private sector, receiving the benefits of good

[54]North Carolina Land Policy Council (NCLPC), A *Land Resources Program for North Carolina* (Raleigh: NCLPC, 1976).

[55]For a vivid description of the subjectivity associated with investments in equipment, see G.L.S. Shackle, *Epistemics and Economics* (London: Cambridge University Press, 1972), pp. 18–19.

[56]E.C. Pasour, Jr., "Conservation, 'X-Efficiency' and Efficient Use of Natural Resources," *Journal of Libertarian Studies* 4 (1979): 371–90.

decisions and bearing the costs of poor ones, have an incentive to use resources most effectively to accommodate consumer desires. In the case of government bureaucracy, where the payoff from a risky course of action does not accrue to the decision maker whereas the cost does, there is a strong incentive to avoid risk. This factor is likely to be important in changing zoning regulations and other land-use controls that once were instituted regardless of any potential increase in economic efficiency associated with change.

Third, in addition to the possibility of government failure in the implementation of land-use controls, such controls may also distort market behavior by affecting the decisions of landowners, anti-growth advocates, and other individuals. Regulation creates an incentive for landowners to obtain tax, subsidy, or regulatory favors rather than focusing on cost-saving methods of production. Agricultural zoning that prevents or restricts the conversion of agricultural land, for example, generates countermeasures, including landowners lobbying through farm organizations, hiring lawyers to find loopholes, and so on. Generally, an individual must act as part of an organized pressure group to be effective on an issue decided through the political process.

Fourth, although land-use planning through the political process is presumably based on widespread citizen participation, any land-use plan must be carried out by government officials. Decisions are reached through a political process dominated by special interest groups with narrow interests. When benefits or costs are highly concentrated, particular land-use decisions are likely to be decided by small groups. As a result, political decision makers are interested in "biased samples" of preferences: "So long as those who govern are held responsible by the governed through citizen participation, political decision makers and participants will seek advantages through the system by disadvantaging nonparticipants."[57]

Finally, governmental monitoring of activities relies on the cooperation of those whose interests are markedly affected by any reforms or changes that might be implied.[58] Consider, for example, an analysis of soil erosion by the Soil Conservation Service (SCS). How likely is it that a study conducted by SCS personnel at the local, state, or national level will conclude that there is a reduced need for conservation measures or for reduced public expenditures and SCS person-

[57]Ervin et al., p. 59.

[58]John A. Baden and Richard L. Stroup, "The Environmental Costs of Governmental Action," *Policy Review* 4 (1978): 23–26.

nel? This problem is graphically described by Brewer and Boxley in the case of the NALS:

> Can special analyses of agricultural land adequacy . . . be assured of objectivity? Many interested parties have a stake in the conclusions and recommendations of such inquiry. Payoff can be in the form of expanded bureaucratic turf, larger budgets for particular agencies, . . . or personal enhancement. . . . Absent a strong and neutral oversight body to shield researchers . . . their work is vulnerable to influence, to misrepresentation in the public media, or to being withheld entirely from the media.[59]

In view of the incentive and information problems inherent in nonmarket land-use controls, it can hardly be overemphasized that the actual incidence of governmental failure must not be confused with the incidence that would occur if decision makers in government were not constrained by information and incentive problems in following the dictates of welfare economics.[60]

Conclusions and Implications

The key issue in the case of land resources concerns the most effective way of allocating land to agricultural and nonagricultural uses. There are basically only two ways of planning land use: the market process; and central planning involving local, state, or federally administered land-use controls. Despite the widely acknowledged merit of the market in facilitating efficient resource use and material output, various measures are being proposed and implemented to change the pattern of land use. Use-value taxation, fee simple purchase, and purchase of development rights rely on financial incentives to induce owners of agricultural land to retain more land in agriculture. Nonvoluntary agricultural districts, agricultural zoning, land classification, and other regulations represent a transfer of decision-making authority from individuals to collective bodies.

There are two important questions concerning any land-use measure intended to protect agricultural land, whether based on economic incentives or regulations. First, will the measure achieve its stated goal? A land-use control that effectively retains land in agriculture will be costly in terms of tax revenue, or it must be involuntary. Second, will measures to protect agricultural land increase the efficiency of land use? Land shifts out of agriculture because it is

[59]Michael F. Brewer and F. Boxley, "Agricultural Land: Adequacy of Acres, Concepts, and Information," *American Journal of Agricultural Economics* 63 (1981): 886.

[60]Alan Peacock, "On the Anatomy of Collective Failure," *Public Finance* 35 (1980): 33–43.

economically more productive in other uses. Since the difference in the value of land converted from agricultural to nonagricultural uses is often quite high, a significant reduction in the conversion of agricultural land has a high opportunity cost.[61]

The theoretical foundation of nonmarket land-use controls is deficient in the sense that no way has been found to rationally allocate land to various uses through central economic planning due to the separation of knowledge and power. If the knowledge of market participants is *consciously* ignored, what criteria are to be used in land-use decisions? When information and incentive problems are considered, there is no basis for thinking that a more efficient pattern of land use can be achieved through central planning as suggested in the NALS: "The goals of protecting agricultural land and guiding urban growth are best achieved in combination with a comprehensive growth management system."[62] Yet, the failure to recognize the inherent limitations of comprehensive land-use planning as revealed by the "economic calculation debate" 50 years ago is not acknowledged by many economists, including some specializing in the economics of land use.[63] Raleigh Barlowe, a well-known land economist, summarizes the requirements for a successful farmland protection policy: "... official guidelines should be issued ... indicating the criteria that should be used to designate the area to be protected and also the quota of acreage that should be protected in each region or county."[64]

There are also incentive problems endemic to nonmarket land-use controls due to the separation of authority from the costs and returns associated with various programs affecting land use. Even if the person in authority could obtain the information necessary to act in the public interest, the bureaucratic advantages of increased personnel and budget favor actions by government officials that perpetuate and increase controls regardless of their effects on land use.

[61]*Crosson.*

[62]NALS, *Final Report*, p. 18.

[63]The implications of the Von Mises-Hayek arguments were apparently not recognized even at Chicago. In his recent discussion of the history and meaning of Chicago economics, Reder makes the following statement about the appointment of Oscar Lange, a central figure in the "economic calculation debate" and a leading proponent of "market socialism": "His work on the use of the price system to allocate resources in a socialist economy was widely considered to be a definitive answer to the Mises-Hayek attack on the economic efficiency of socialism...." See Melvin W. Reder, "Chicago Economics: Permanence and Change," *Journal of Economic Literature* 20 (1982): 4.

[64]Raleigh Barlowe, "Your Stake in a Land Use Policy," in *Pressing Land Use Issues*, MP416 (Columbia: Missouri Agricultural Extension Service, 1974), p. 2.

Conventional welfare theory suggests that agricultural land and soil resources should be preserved beyond the level dictated by market forces whenever there are spillovers.[65] Market failure based on the idealized perfect competition norm, however, offers no *prima facie* case for political land-use controls. All institutions fall short when judged against some ideal. When incentive and information problems are taken into account, the problem of government failure appears to be fully as important as market failure.[66] The relevant comparison is between real world markets and real world political institutions.

Land use in rural areas of the United States has been largely planned for 200 years without land-use controls. None of the reasons commonly cited for governmental intervention to protect agricultural land can withstand careful scrutiny. The success of American agriculture is ample proof that farmers are competent entrepreneurs, and there is no persuasive evidence that farmers shed their entrepreneurial ability when improving and maintaining soil resources. Moreover, since soil erosion is location specific, a nationally administered soil conservation program that is politically designed to provide funds and services to all geographic areas is bound to be a model of inefficiency.[67] Thus, whether in allocating land to various uses or in maintaining soil resources, there is no persuasive evidence that overriding market signals will be less damaging than political solutions have been in energy, credit, labor, and other markets.

Spillover problems arise when government fails to define and protect private property rights. Thus, the primary solution to spillover problems associated with the use of land and other resources is to clearly define property rights and make polluters legally responsible for the consequences of their actions. In a land-use system where property rights are well-defined and legally protected, externalities will be internalized.[68] In the case of public lands in the American West, there are "growing problems of overuse, overexploitation, and mismanagement of these lands—all of which derive from their essen-

[65]The conventional Pigouvian approach to natural resource policy abstracts from information and incentive problems and almost invariably concludes that intervention is warranted. See John Melnerney, "Natural Resource Economics: The Basic Analytical Principles," in J. A. Butlin, ed., *Economics of Environmental and Natural Resources Policy* (Boulder, Colo.: Westview Press, 1981), p. 54.

[66]See Bruce L. Benson, "Land-Use Regulation: A Supply and Demand Analysis of Changing Property Rights," *Journal of Libertarian Studies*, forthcoming, pp. 22–23.

[67]Schultz, p. 17. See also Christopher K. Leman, "An Era of Limits," RFF *Resources*, 1982, p. 5.

[68]Robert J. Smith, "Privatizing the Environment," *Policy Review* 20 (1982): 11–50.

tially being a commons."[69] Institutional changes to reduce property rights conflicts and improve land use is an alternative to administrative land-use controls. Privatization of agricultural land in the public domain, including BLM and Forest Service lands, would reduce the mismanagement of these lands.

Farm versus nonfarm conflicts over noise, odors, and dust from farm operations often arise when there is rapid nonfarm population growth in rural areas. Agricultural nuisance suit legislation is one approach to dealing with these conflicts. For example, North Carolina's legislation provides that agricultural operations will not legally become a nuisance because of changed conditions in the locality if the farm has been in operation for a specified period of time (e.g., more than one year) and if it is managed properly.[70] Even in the case of nuisance suit legislation, there is a question of whether it will improve the overall efficiency of land use. There would appear to be no more reason for *specific* nuisance suit legislation in the case of agriculture than for other industries giving rise to environmental spillovers. In fact, the stated purpose of the North Carolina legislation is not to reduce property rights conflicts but to conserve and protect agricultural land.[71]

In conclusion, the case for governmental intervention to protect agricultural land rests on two assumptions. First, it assumes that spillovers are important in all or many land-use decisions, Second, it assumes that spillovers from land-use controls to correct for market failure will be less than those that arise from voluntary decisions in decentralized land markets. The result of governmental regulations in a host of areas, including agricultural price supports, transportation, communications, and education, has been to stifle competition, increase consumer prices, and reduce the diversity of services offered. In view of the information and incentive problems inherent in *all* central planning, there is no reason to expect that the results of governmental intervention to protect land and soil resources will be different.[72]

[69]Ibid., p. 35.

[70]If the farm was outside the corporate limits of a city on the day the law was enacted (March 26, 1979), then all present or future local ordinances that would make the *operation a nuisance are null and void so long as the farm is properly managed* and without negligence. See Leon E. Danielson, *North Carolina's Agricultural Nuisance Suit Law*, AG-188 (Raleigh: North Carolina Agricultural Extension Service, 1980).

[71]Ibid.

[72]In view of the conflicts and misuse of forest, range, and other lands in the public domain, it is ironic that "comprehensive land-use planning," "protection of agricultural land," and other governmental measures are proposed to increase the efficient use of privately owned lands.

What is the role of the economist in agricultural land-use policy? In assessing the effects of government intervention, the economist should take a principled approach, evaluating every proposed land-use control for its likely legal, political, social, and ethical repercussions.[73] In land use (as in other areas), the role of the economist is *not* to determine the optimal pattern of land use on a local, state, or national basis; a task which is clearly impossible, given the information costs referred to in this paper. Instead, the economist *qua* policymaker should attempt to identify and explain the institutional framework necessary for individual decision-makers in land (and other) markets to effectively cooperate in pursuing their own diverse ends. It is also important to explain the inherent limitations of government officials in their attempts "to do good" and to promote the public interest whether in land use or in other areas.[74]

[73]Leland B. Yeager, "Economics and Principles," *Southern Economic Journal* 42 (1976): 559–71.

[74]Richard B. McKenzie, *Bound to Be Free* (Stanford, Calif.: Hoover Institution Press, 1982), p. 173.