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COMMENT ON "ACCOUNTING FOR THE SOCIAL BENEFITS AND COSTS OF DEVELOPMENT RIGHTS PURCHASE PROGRAMS"

BY BARRY C. FIELD AND RICHARD A. BARCLAY

Edward C. Gray

This paper by Field and Barclay (this *Journal*, Vol. VI, No. 1, April 1977) attempts "to construct some very basic expressions. . . [to] account for the primary social benefits and costs of development rights purchase programs. . . [and] to use these expressions to derive criteria useful to public agencies. . ."

The criterion that Field and Barclay do, in fact, derive can be obtained directly without resort to the initial step mentioned by them. If the nonagricultural alternative for housing differs from agricultural land only in its environmental value and in construction and public utility costs, then we can write immediately as the condition for withholding the latter from development:

$$(E-E_a) + (U-U_a) > (C_a-C) + (I_a-I) \quad (1)$$

here E , U , C and I refer to Environmental and agricultural Use value, Construction and Infrastructure cost respectively; and subscript a refers to the nonagricultural alternative. This of course simply says: withholding farmland from housing development is warranted as long as the savings in environmental and use values from using nonagricultural land are greater than the corresponding extra construction and infrastructure costs. The logic of the criterion expressed in this form is unassailable.

Field and Barclay's Condition (6) is not incorrect because it is really no different from our (1) when it is simplified and rearranged; but it employs a variable—the selling price of housing—that strictly is not required for the calculation of the lower bound of environmental-value differences that justify the preservation of agricultural land (p. 47). This follows because the selling-price variable (P_f or P_a) occurs twice but with opposite sign in Field and Barclay's (6), so there is cancellation.

The inclusion of an unnecessary variable is not, of itself, greatly significant, nor is it sufficient to discredit the analysis. Much more important, however, is the unwarranted confidence it gives to the "basic expressions" from which the final criterion is derived. We contend that the first of these—the net social benefits of housing on agricultural land—is certainly not accurately calculated by (1) on p. 44; nor is the second correctly described by (2), the case when alternative land is developed (seemingly, and rather curiously, for new residents in this specific instance!). To us, their (1) provides a correct calculation of the net social benefit of housing on agricultural land only if the (? per-acre) selling price of housing, P_f , reflects its full (social) value. Given

"competitive conditions and the marginal cost pricing of public utilities", Field and Barclay, however, set P_f equal to only the sum of (i) the marginal private agricultural value of the site land, (ii) the private construction costs and (iii) the public servicing costs. In these circumstances, their (1) collapses to $-V_s$ (net social benefit of housing equals negative "marginal social value of agricultural land"), and brings with it the unpalatable conclusion that housing should never displace agriculture with the economy working ideally, no matter how mediocre that agriculture might be or how important the site was to the orderly planning of urban growth.

When competitive conditions and marginal-cost pricing are assumed away, Field and Barclay appear to contend that the market price of housing is a reasonable measure of the social value of that land use. This much we must infer from their use of the actual housing prices of four selected Massachusetts communities (Table 2) in their "applications" section (pp. 47-48). An unfortunate consequence of this is the possibility of discrediting the performance of the economy as it relates to the allocation of land between agriculture and housing. (It can easily be calculated that housing prices fall short even of the sum of the value of the displaced use, construction and public utility costs only, in five of the twelve possibilities given by Table 2. Thus it might be argued that housing should not have been constructed in over 40 percent of the case situations analysed, if its value to society is truly captured by its market price.)

An alternative is to assume some element of subsidization in housing prices in these instances. The effect of this is to refute absolutely the contention that social value and actual market price are identical under imperfectly competitive conditions.

In actual fact, the market price of housing at some point in time is strongly influenced by supply and demand conditions at that time. These are shaped in turn by a host of forces, factors and expectations that may have little connection to the real social value of housing. Price established by the housing market from time to time is clearly not a satisfactory measure of social value in the circumstances.

An inadequate treatment of this question in the main analysis spills over to the calculation of the value of development rights (p. 49). The authors again use market price as an important determinant of the latter. If, however, we consider development-rights value to be the result of some intrinsic superiority of a specific property for housing over agricultural use which deserves compensation because change from the inferior to the superior use is denied the owner of that land, then this intrinsic higher potential—the real social value of the higher use—becomes the appropriate basis for valuation.

What, then, is the best measure of a property's intrinsic

Edward C. Gray is Associate Professor of Resource Economics, School of Agricultural Economics and Extension Education, University of Guelph.

higher potential? The question is an intractable one because the answer depends upon highly uncertain future conditions and events. It is much more complex than determining, for example, the minimum amount a farmer would want to receive for selling development rights to his property and feel sufficiently compensated for surrendering them. (This equals the highest present-value equivalent of some future high price he believes his land will reasonably command.) It is especially complex when development rights are being acquired for large blocks of farmland simultaneously, as part of a concerted program of purchase to alleviate development pressure on superior agricultural land resources. (Low development values tend to prevail in these circumstances, for reasons that are outside the scope of this comment.) We can do no better than list some of the critical uncertainties determined by Ciriacy-Wantrup as applying to programs of this kind:

"Should allowance be made for different dates at which individual parcels would have become ripe for urban development? Should geographical factors, such as distance to existing urban centers, be taken into account in combination with market transactions as benchmarks? In what way should other basic factors—climate, soils, and groundwater supply—be taken into account in valuation?"

Field and Barclay suggest that the economist's familiarity with benefit-cost analysis gives him some advantage over practitioners of other public policy disciplines. This may be so. In the final analysis, however, determining the social value of some particular land use is not absolutely necessary to devising rules to guide land allocation decisions. In the context of the problem posed by these authors, it is only necessary to assume that the social benefit of housing on agricultural land is really insignificantly different from housing on the nonagricultural, to permit us to proceed with the allocation question.

Field and Barclay could do worse than attend to this. Marginal analysis in its various forms is a very real strength of economics. In this instance it would have served the purpose of the exercise most simply, elegantly, and effectively.

REFERENCES

- Ciriacy-Wantrup, S. V. "The 'New' Competition for Land and Some Implications for Public Policy". *Natural Resources Journal* 4(1964):252-267.