VARIATIONS IN RURAL LAND VALUES IN THE WIREGRASS REGION OF ALABAMA

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Variations in Rural Land Values in the Wiregrass Region of Alabama*

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RURAL LAND VALUES exhibited large increases during the 1970's. The average value of an acre of rural real estate in the contiguous United States increased from $195 in 1970 to $456 in 1977, a 134-percent jump *(7,8)*. Translated to an average per farm basis, the increase in value of land and buildings was from $75,800 in 1970 to $180,300 in 1977.

Similar increases have been noted for Alabama. The average value of rural real estate in Alabama rose from $200 to $437 per acre between March 1970 and February 1977, a 119-percent increase *(7,8)*. Total value per farm increased from $37,600 in 1970 to $82,300 in 1977. These rapid increases have generated much interest in the rural land market from both agricultural and non-agricultural elements.

Various farm and non-farm factors have been suggested to explain this appreciation in value. These factors range from increases in net farm income and farm expansion in the agricultural sector to the urban growth, move to the country, tax shelter, and hedge against inflation reasons in the non-agricultural sector. Other reasons commonly offered relate to perceived future increases in the profitability of food and fiber production and the finite amount of productive agricultural land.

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OBJECTIVES

The general objective of this study was to analyze the rural land market in the Wiregrass Region of Alabama. Specifically, the study was designed to determine the impact and significance of factors influencing rural land value. Agricultural and non-agricultural factors were isolated and grouped so that their relative importance could be determined. The characteristics of buyers and sellers of rural land in the Wiregrass Region were summarized and included in the analysis.

PROCEDURE

In this study, only land sales outside city limits were used. Also excluded were special use categories, such as rural highways, railroads, airports, parks, wildlife refuges, national defense areas, and flood control projects. Other land transactions excluded were land trades, foreclosures, tax sales, sales among relatives, and sales transacted under compulsion.

A listing of qualified land transactions taking place between February 1976 and May 1976 in the study area was obtained from deed records of the nine counties in the Wiregrass Region. From this listing, a stratified random sample of small, medium, and large tracts was selected in proportion to their occurrence in the population, figure 1. Seventy-five transactions were selected.

Interviews with buyers and sellers were conducted to ascertain data on the physical characteristics of each tract and personal characteristics of the buyer and seller. These characteristics included tract size, acres of cropland and forest land, acres in ponds, and miles of streams, along with buyer and seller characteristics of age, education, and income. Other physical characteristics and location data were determined from county and State road maps. The Soil Conservation Service provided data relative to soil capability. Property tax data were obtained from tax office records in the respective counties.

Some of the factors considered for the analysis were: tract size, distance to major cities, distance to a navigable river, distance to a railroad loading point, amount of road frontage, value of improvements, soil classes, percentage of openland, reason for purchase, type of ownership, and source of financing. Multiple regression analysis was used to determine fac-

tors having significant impacts on rural land value. Standard significance tests were used. These factors were classified as primarily agricultural, non-agricultural, or transitional. An analysis of the magnitude and significance of each factor within the respective groups determined the relative importance of each group in explaining variations in rural land value.

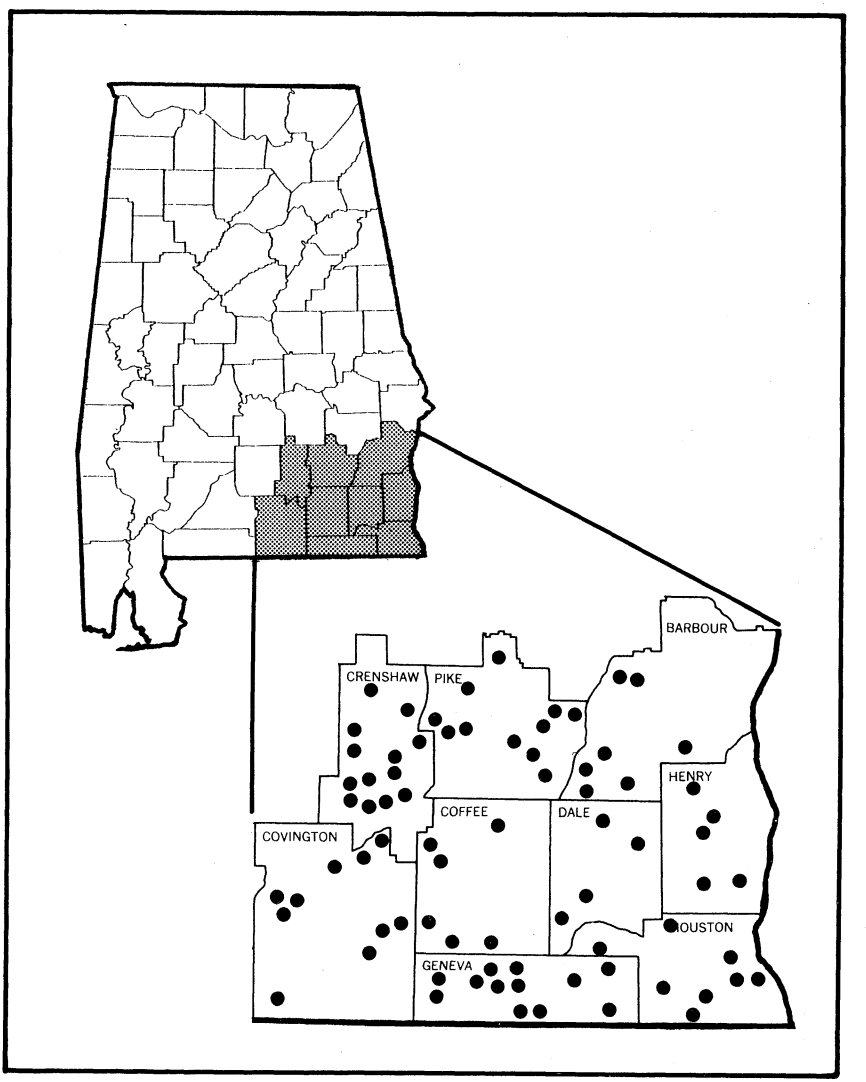

FIG.1. Location of Wiregrass counties and sample land transactions.

Characteristics of buyers and sellers were tabulated to provide a profile of the parties involved in land transfers in the study area. Inspection of these characteristics and the relative magnitude and significance of the factors determined previously permitted the determination of the structural components of the rural land market. These components included characteristics of individuals and firms buying and selling rural land, major uses for which the land was bought, and major population centers and transportation routes influencing the market.

STUDY AREA

Agriculture in Alabama is diversified due to differences in physical, biological, economic, and institutional characteristics inherent to particular areas of the State. The rural land market is affected by variations in and interaction of these factors. An analysis of variations in rural land value should concentrate on regions having similar general characteristics. Since soil type has a definite impact on agricultural production, study areas could be chosen based on the major soil areas of Alabama. This study was concerned with rural land located in the Wiregrass Region (southeastern Lower Coastal Plains) of Alabama.

The Wiregrass Region includes nine southeastern counties in Alabama. It is part of the Coastal Plains belt that extends from Virginia to Texas. The land consists of gently rolling to hilly woodlands that are dominated by pine trees. There are large areas of open land used for cultivated crops and pasture. Deep soils with sandy surface layers are common *(4)*.

Major income producing agricultural enterprises in the Wiregrass region *(1)* are peanuts ($99,616,000 in 1976), cattle and calves ($48,402,000 in 1976), hogs ($31,780,000 in 1976), and broilers ($31,174,000 in 1976). Other major enterprises are soybeans, corn, eggs, and milk. Major manufactured products include clothing, textiles, steel buildings, and processed meat. Sand and gravel, clay, bauxite, and iron ore are some of the minerals found in this area. Forest products also are a major source of income.

The Chattahoochee River is a navigable waterway that borders Alabama's east boundary and the Wiregrass Region. Other sources of water in the area are the Conecuh River, Pea River, and Walter F. George Reservoir (Lake Eufaula). Recre-

ational resources include, in addition to the major bodies of water, the Conecuh National Forest, State Parks, smaller rivers and lakes, and campgrounds.

Although there is not an interstate highway system through any of the nine counties, there are five major State-Federal highways: 29, 84, 231, 331, and 431. The railroad system is adequate and there is a major airport in Dothan. Some of the larger cities are Dothan, Ozark, Troy, Eufaula, and Andalusia. Fort Rucker is a military installation in the Wiregrass Region.

As with other areas of the South, the Wiregrass has the potential to grow and develop. This study should be beneficial to decision makers involved in planning, acquiring, and using land in both the public and private sectors.

ECONOMIC FRAMEWORK

Since the market value of rural land is determined by the interaction of supply and demand, it is necessary to know the determinants of supply and demand for rural land. The supply of land is assumed fixed in the short-run, which is the period of this study, since there is no time to reclaim land from wasteland. With supply fixed, then demand factors influence the value of rural land. In an open market (one that allows all buyers an equal opportunity to purchase a specific tract of land), the value of land will be determined by the aggregate influence of the demand-satisfying characteristics it possesses. The theoretical influences of these factors are discussed in the following sections.

Location

Land is fixed in location and found at varying distances from the centers of economic activity. Costs are involved in moving land products to market and in bringing capital, labor, and other inputs to land. Therefore, locational differences play a significant role in determining economic uses that can be made of land and in affecting the rent and value levels associated with its use.

As distance to population and industrial centers increases, the number of alternative uses for a tract of land decreases. This leads to reduced competition for land and decreasing values. In contrast, rural land near centers of economic activity has increased demand for residential and industrial uses and this normally results in higher relative values.

Distances from agricultural processing and marketing facilities influence the value of farm land by affecting transportation costs and production and marketing feasibility of alternative enterprises. Net farm income would decrease as transportation costs increase. Also, the availability of market outlets for certain products could affect the feasibility of purchasing a particular tract of land. A tract of land near a desirable marketing facility would be more valuable than a tract of land farther away.

Nearness to recreational areas also influences the value of land. These areas attract people who demand food, lodging, and other services, which increases demand for land and boosts its value.

Distance from various types and qualities of transportation routes would have an inverse relationship with the value of a particular tract of land. Accessibility to an interstate would be worth more than accessibility to a dirt road. Location near a railroad could be beneficial for an industrial site. Close proximity to other transportation facilities, such as a navigable river or an airport, would tend to increase the value of land. An increase in accessibility due to road frontage would be expected to increase land value. All of these factors would influence the value of land through transportation costs and convenience.

Population density, measured in persons per square mile, was expected to affect land value. As population increases in a particular area, the demand for land for non-agricultural uses also increases. More land is needed as sites for residences, industries, transportation, and shopping centers. Population density was expected to be positively related to land values.

Physical Characteristics

Physical characteristics of a parcel of property influence land use and thus land value. Physical characteristics include topographic features, mineral deposits, improvements, soil capabilities, and water sources.

Land use classifications include cropland, pastureland, wasteland, idleland, and woodland. Cropland and pasture uses were expected to have a positive effect on land value relative to other land uses because of their income-producing potential. Relative to cropland or pasture, wasteland and idleland were expected to have a negative effect on land value

because they have no productive uses without reclamation. Returns from forestry enterprises have traditionally been lower than returns from cropland or pasture enterprises. Thus, woodland was expected to have less effect on value than cropland or pasture.

Soil classifications were used as a measure of the productivity of land. Land with high productivity was expected to be valued higher than land with low productivity because the more productive land should provide a greater income stream. A greater income stream should increase the value of land.

Other physical features, such as the presence of lowland and water, were expected to affect land use. Periodic flooding of lowland prohibits its use for residential or industrial development and reduces its suitability for agricultural uses. Value of a tract of land was expected to be inversely related to the amount of lowland present. However, such water resource features as streams or ponds were expected to have a positive effect because of the increases in land use alternatives. Water resources can be used for livestock, fish production, or recreational purposes.

Houses, barns, fences, and livestock facilities are improvements that were expected to influence land value. Since the value of improvements is a component of real estate value, the real estate value was expected to rise as the value of improvements increased. These improvements also may express some degree of development on the land which would be beneficial to the value of the entire tract. Therefore, improvements were expected to have a positive effect on the value of land.

The value of timber also is a component of real estate value. Timber was expected to have a positive influence on the value of the land.

Another physical characteristic was the availability of community water. Community water being available increases the number of uses to which the land may be put, particularly for residential use. Therefore, the presence of community water was expected to have a positive effect on land values.

Sale Variables

Sale variables are factors which might make a certain parcel of land more attractive to a particular buyer. These factors might influence the willingness or ability of a buyer to pur-

chase the land. The sale variables included tract size, tax rate, buyer's reason for purchase, the distance the buyer and seller live from the property, type of sale, financing terms, and size of peanut allotments.

Tract size was expected to influence land value. Since size of a tract of land is directly related to amount of investment required to purchase it, the number of potential buyers was expected to decrease as tract size increased. Also, high value uses such as residential developments or industrial sites require less land than the amount needed for lower value uses such as farming or forestry. Small tracts of land were expected to bring higher prices per acre than large tracts.

The tax rate was expected to be a factor that would influence the value of rural land. An increasing tax rate would boost the annual tax cost, causing the net income derived by a buyer to decrease. Therefore, the tax rate was expected to have a negative impact on the value of land. Historically, however, taxes have not had an important impact.

The buyer's specific reason for purchase was expected to influence the value of land. A positive effect on value would be expected if the buyer purchased the land for a homesite or for a recreational retreat. When reason for purchase was farming, developing an industrial site, or speculation—income-producing uses—a positive effect on the value of land would be expected. Relative to other high value uses such as residential or industrial development, farming might have a negative effect on value.

The distance the buyer or seller lived from the tract of land was expected to affect the value. If the sale property joined land a buyer owned or leased, the buyer would be expected to have a strong desire to own the property. Thus, the influence that this factor would have on the value of that particular tract was expected to be positive. If the seller lived on the property or had owned it for a long time, the value was expected to be affected in a positive manner. The seller might place some sentimental value to the property and would be less willing to sell unless offered a price above the average market price.

Financing terms and arrangements were expected to have an effect on the value of land. A low down payment would allow more buyers to enter the market. Since the initial capital requirement would be less, the buyer could afford to pay

more. Also, a low interest charge would allow the buyer to pay a higher price for the land. These favorable financing terms were expected to have a positive effect on land value. A buyer who paid cash would expect a lower price than one who financed the transaction through the owner, a local bank, or another financial institution such as the Federal Land Bank or the Farmers Home Administration. Since the "cash" purchaser would have the capital to invest only when a "good deal" was offered, paying cash was expected to have a negative effect on value. Paying cash could be correlated with tract size, however, because a smaller tract requires a lower capital investment. More people would be able to pay cash for smaller tracts. Since smaller tracts were expected to bring higher prices and paying cash was expected to bring lower prices, the effect of paying cash was not hypothesized.

The size of peanut allotments on a tract of property would be a benefit to someone wanting to purchase the property for peanut production. Allotments, which are rights to produce and market peanuts, have acquired considerable value. The value of the peanut allotments would be a component of the property value. Peanut allotments were expected to have a positive effect on value.

Type of Ownership

Four types of ownership were considered in this study: individual, partnership, corporation, and estate. Since estates would not be expected to buy land, they were considered only as sellers.

The financial resources available would be expected to influence the price for land. Since available financing would increase with increasing numbers of people who jointly buy property, a corporation or partnership would be able to pay more than an individual for a tract of land. However, businesses will not necessarily pay more than individual buyers if they have alternatives.

Property could be sold by any of the types of ownerships considered. The effect on price received when the seller was an individual, partnership, or corporation was not hypothesized. However, the value of land sold by an estate was expected to be affected by the type of seller. The ownership of land by an estate is a result of the owner dying and leaving the land to the heirs. The heirs might lack knowledge

of the property or they might not be interested in managing it. Thus, property sold by an estate is often sold for the purpose of dividing the value among the heirs. This type of ownership was expected to result in lower prices for rural land.

ANALYSIS

Analysis of data gathered in the study are reported under four headings in this section. These sections deal with (1) characteristics of rural land transfers and the participants in these transfers; (2) a real estate value model explaining variations in rural land value in the Wiregrass Region; (3) statistical results; and (4) example data that illustrate the value and use of the model.

General Characteristics

The average tract of land sold in the Wiregrass Region was 108 acres, table 1. An average of 48 percent of each tract was open land (cropland or pasture), with the remainder being idleland, wasteland, woodland, or ponds. Of those tracts with peanut allotments, there was an average of 8.9 acres of allotments per tract. Three percent of the tracts had a community water line available. An occupied dwelling was present on 19 percent of the parcels.

The sale price for rural real estate per acre averaged $428,

TABLE 1. PHYSICAL CHARACTERISTICS OF RURAL LAND TRANSFERS IN THE WIREGRASS REGION OF ALABAMA, 1976

Physical characteristics	Units	Average[1]	Range		Average[2]	Low[2]
			Low[1]	High		
Size	acres	108.3	11	750.0		
Cropland	acres	26.4	0	155.0	41.3	5.0
Pasture	acres	25.7	0	575.0	68.8	5.0
Idleland	acres	.9	0	38.0	12.8	3.0
Wasteland	acres	1.5	0	57.0	18.3	1.0
Woodland	acres	53.2	0	455.0	67.6	1.0
Pond	acres	.6	0	10.0	3.7	1.0
Stream	miles	.3	0	1.5	.4	.1
Peanut allotments	acres	3.9	0	41.0	8.9	.5
Lowland	acres	13.4	0	200.0	27.2	1.0
Tracts with community water present	percent	3				
Tracts with road frontage	percent	61				
Tracts with dwellings	percent	19				
Open land per tract	percent	49				

[1] For all tracts.
[2] For tracts that had the characteristic present.

TABLE 2. SALE CHARACTERISTICS OF RURAL LAND TRANSFERS IN THE WIREGRASS REGION OF ALABAMA, 1976

Sale characteristics	Units	Average	Range	
			Low	High
Real estate market value per acre	dollars	428	98	2,450
Total improvements per acre	dollars	50	0	1,750
Timber value per acre	dollars	12	0	130
Bare land value per acre	dollars	366	98	1,125
Transactions negotiated with broker	percent	16		
Cash transaction	percent	21		
Financed by local bank	percent	36		
Financed by owner	percent	31		
Financed by other financial institutions	percent	12		

table 2. This included an average of $50 per acre value of total improvements and timber value of $12, leaving an average bare land value per acre of $366. Only 16 percent of the transactions were negotiated through a land broker. The remaining 84 percent were negotiated between the owner and buyer. Twenty-one percent of the transactions were paid in cash. Of those that were financed, 36 percent were financed by a local bank, 31 percent by the owner, and 12 percent by other financial institutions.

Corporations purchased 8 percent, partnerships 19 percent, and individuals 73 percent of the parcels transferred, table 3. Seventy-two percent of the buyers owned additional property. The average age of individuals buying land was 42 years. The average buyer had 12 years of education and an income of

TABLE 3. CHARACTERISTICS OF BUYERS INVOLVED IN RURAL LAND TRANSFERS IN THE WIREGRASS REGION OF ALABAMA, 1976

Buyers' characteristics	Units	Average	Range	
			Low	High
Corporations	percent	8		
Partnerships	percent	19		
Individuals	percent	73		
Age	years	42	25	62
Education	years	12	0	21
Family annual income	dollars	19,800	5,000	100,000
Owns additional property	percent	72		
Reason for purchase				
Home	percent	5		
Home and farm	percent	21		
Farming	percent	52		
Speculation	percent	17		
Recreation	percent	3		
Development	percent	2		

TABLE 4. CHARACTERISTICS OF SELLERS INVOLVED IN RURAL LAND TRANSFERS IN THE WIREGRASS REGION OF ALABAMA, 1976

Sellers' characteristics	Units	Average	Range	
			Low	High
Corporations	percent	1		
Partnerships	percent	12		
Estates	percent	7		
Individuals	percent	80		
Age	years	58	28	86
Education	years	10	0	18
Family annual income	dollars	10,700	0	80,000
Reason for selling				
Income	percent	61		
Age	percent	29		
Divide among heirs	percent	7		
Distance	percent	3		

$19,800. Farming as reason for purchase accounted for 52 percent of the purchases.

Individuals made up the major group of sellers, accounting for 80 percent of the transactions, table 4. Only 1 percent was sold by corporations, 12 percent by partnerships, and 7 percent by estates. Sellers averaged 58 years of age and had an average of 10 years of education. Their average annual family income was $10,700. Sixty-one percent of the sellers sold the property for income, 29 percent because of age, 7 percent to divide it among heirs, and 3 percent because the distance from their residence was too great to effectively manage the property.

Real Estate Value Model

Multiple regression analysis was used to isolate and analyze the impact of the factors specified in the theoretical framework section on the value of rural real estate. The model was specified as follows:

$$V = a + b_1L_1 + b_2L_2 + b_3L_2^2 + b_4L_3 + b_5L_4 + b_6L_5 + b_7L_6 + b_8P_1 + b_9P_2 + b_{10}P_3 + b_{11}S_1 + b_{12}S_2 + b_{13}S_3 + b_{14}S_4 + b_{15}T_1 + U_1$$

where:

V = dollar value of rural land in terms of the real estate value per acre which was calculated as the quotient of total sale price divided by the size of the property in acres

The location variables were:

L_1 = population density (persons per square mile) of the county district in which a parcel of property was located

L_2 = distance (miles) a parcel of property was from a city of greater than 25,000 population by road

L_3 = distance (miles) a parcel of property was from a city of greater than 10,000 population by road

L_4 = distance (miles) a parcel of property was from access to a navigable river by road

L_5 = distance (miles) a parcel of property was from a railroad loading point by road

L_6 = distance (miles) a parcel of property was from access to a paved road

The physical characteristic variables were:

P_1 = value (dollars) of total improvements per acre

P_2 = value (dollars) of merchantable timber per acre

P_3 = 1 if a pond or an all-weather stream was present on the property and = 0 otherwise

The sale characteristic variables were:

S_1 = size (acres) of peanut allotments

S_2 = size (acres) of the property

S_3 = 1 if the buyer paid cash and = 0 otherwise

S_4 = 1 if the property was purchased for farming and = 0 otherwise

The type of ownership variable was:

T_1 = 1 if the buyer was an individual and = 0 otherwise

U_1 = error term

Many factors in the rural land market were considered and analyzed in formulating the theoretical model. The variables specified in the statistical model measured the influence of all the factors expected to significantly affect the market value of rural land. All of the location factors except population density and the curvilinear component of the city impact were expected to vary inversely with per acre rural land value. Thus, b_2, b_4, b_5, b_6, and b_7 were expected to be negative and b_1 and b_3 were expected to be positive. All of the physical characteristics (P_1, P_2, and P_3) and size of the peanut allotments (S_1) were expected to have a positive influence on per acre rural real estate value; i.e., b_8-b_{11} were expected to be positive. Size of tract (S_2) and purchase for farming (S_4) were expected to be inversely related to value; i.e., b_{12} and $b_{14} < 0$. The expected impacts of the buyer paying cash (S_3) and individual buyer (T_1) were indeterminate.

Several factors hypothesized to influence rural land values

in the economic framework section were not included in this model. Variables were excluded because sufficient data were not available to make valid inferences in some cases and also because some variables exhibited high correlations with other factors in the model. Thus, one of the highly related variables was excluded to lessen the impact of multicollinearity.

Statistical Results

Eighty-three percent of the variation in the market value of rural land was explained by the real estate value model with four variables significant at the .10 level, table 5. Two location variables had significant impacts on rural real estate value, distance to a city of more than 25,000 population and distance to a railroad loading point. The distance to the smaller popula-

TABLE 5. ESTIMATES OF STRUCTURAL COEFFICIENTS FOR FACTORS AFFECTING THE REAL ESTATE VALUE PER ACRE OF TRACTS OF RURAL PROPERTY IN THE WIREGRASS REGION OF ALABAMA, 1976

Factor	Coefficient	Standard error
	Dollars	*Dollars*
Intercept	817.00***	96.77
Location		
Population density of county district (L_1)	−.30	.74
Distance to a city of greater than 25,000 (L_2)	−22.57***	4.52
Distance squared to a city of greater than 25,000 (L_2^2)	.20***	.05
Distance to a city of greater than 10,000 (L_3)	2.91	3.09
Distance to navigable river access (L_4)	1.63	1.11
Distance to railroad loading point (L_5)	−6.21*	3.37
Distance to paved road (L_6)	−3.39	12.81
Physical characteristics		
Total improvement value per acre (P_1)	1.00***	.08
Timber value per acre (P_2)	−.05	.64
Presence of pond or stream (P_3)	52.41	40.84
Sale characteristics		
Size of peanut allotments in acres (S_1)	.71	2.77
Size of tract in acres (S_2)	−.24*	.14
Cash purchase (S_3)	−38.74	46.81
Purchase for farming (S_4)	−19.87	36.36
Type of ownership		
Individual buyer (T_1)	24.67	41.88
Coefficient of determination (R_2)	.83	
Standard error of estimate	143.01	

*Significant at .10 level.
**Significant at .05 level.
***Significant at .01 level.

tion center did not have a significant influence. This lack of significance may have resulted from a weak economic base in small communities.

The relationship between value and distance to cities with over 25,000 population was curvilinear, figure 2. As distance between a parcel of property and these cities increased, value declined at a decreasing rate. Value was fairly stable in the 40- to 70-mile range at about $320 per acre, with other things held

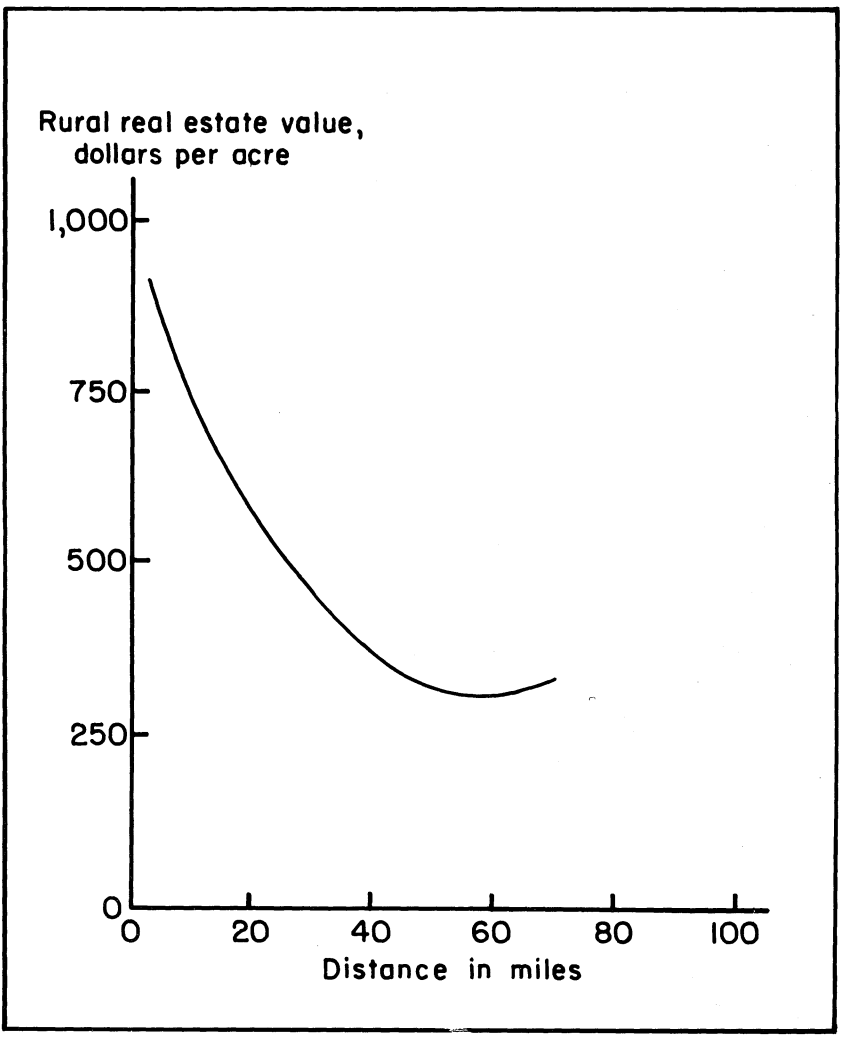

FIG. 2. Relationship of rural real estate value per acre to distance in miles to a city of greater than 25,000 population, with other factors entered at the mean.

equal. Beyond this level, projections were irrelevant because the relationship was outside the range of the data. Since the mean distance from a city of this size was 42 miles, the influence of another similar city generally became important as the prior city's influence diminished.

The other significant variable was distance to a railroad loading point. This coefficient had a negative sign, which was consistent with the inverse relationship hypothesized. For each mile increase in distance from a railroad loading point, rural real estate value decreased by $6.21 per acre.

One physical characteristic variable, total improvement value per acre, was significant. The sign of its coefficient was positive as hypothesized. The value of rural real estate increased by $1 per acre for each additional $1 of improvements per acre.

One sale characteristic variable was significant. The size of a tract in acres had a coefficient with a negative sign as was hypothesized. For each additional acre in a transaction, the rural real estate value decreased by $0.24.

Value and Use of the Model

As mentioned earlier, recent rapid increases in the value of rural real estate have generated considerable interest in the rural land market. Buyers and sellers of rural property and others interested in the rural land market desire to know the value of rural land. The three commonly used methods for determining property value are: (1) the market-comparison approach, (2) the income-capitalization approach, and (3) the replacement-cost approach. With each method, the appraiser assembles relevant physical, economic, and institutional information dealing with the subject property and comparable properties and derives an estimate of value.

The market-comparison approach relates appraised values to current supply and demand conditions. The appraiser estimates the value of a parcel of property by comparing it with sales values of similar properties near the date of appraisal. The appraiser compares physical aspects, social aspects, and market data pertaining to comparable and subject properties to determine similarities and dissimilarities. The lack of standardization among tracts of property and the general fluctuation in actual market prices for comparable properties compli-

cate the appraiser's problem. Also, information concerning comparable bona fide sales may be difficult to obtain.

The income-capitalization approach determines market value of property by discounting the present value of the expected future flow of its land rents. That is, value is directly related to the productivity or income-producing capability of the property. This approach involves the formula V=A/r in which "V" represents the value of the property, "A" represents the estimated average annual land rent or net return to land expected in the future, and "r" represents the rate of interest used in the capitalization process. The formula can be modified to account for expected variations in land rents and for interruption or discontinuation of returns to the property. The appraiser usually estimates future returns by using present and recent past returns. The appraiser considers physical and economic risks, liquidity of the investment, and returns on alternative forms of investment to determine the capitalization rate.

The replacement-cost approach assumes that properties should be worth their present replacement cost less an allowance for accrued depreciation and possible obsolescence. This method is commonly used in the appraisal of residential or urban-oriented property. Problems arise when estimates of replacement costs and allowances for depreciation become too subjective to be meaningful. This method is seldom used to appraise rural land.

All of these methods involve subjective evaluations to some extent. This study did not attempt to show which method is best. It did attempt to determine some of the factors that influence the value of rural land and the extent of these influences. Study of these methods of property valuation facilitates an understanding of the basic components of value.

With this information and other theoretical and empirical observations as indicated in the early sections of this report, a model explaining variations in rural land value can be estimated using multiple regression analysis. This technique helps the researcher explain the separate effects of several variables which act to produce a single result, variation in land value in this case. The estimated model is not a substitute for the other methods of estimating land value. However, it can be used in combination with the other methods to add validity to the estimates of value.

TABLE 6. CHARACTERISTICS OF AN EXAMPLE PARCEL OF PROPERTY LOCATED IN THE WIREGRASS REGION OF ALABAMA TO BE USED IN ILLUSTRATING THE MODEL

Characteristic	Units	Quantity
Location		
Population density of county district	persons/sq. mile	50
Distance to a city of greater than 25,000 population	miles	30
Distance to a city of greater than 10,000 population	miles	10
Distance to a navigable river	miles	25
Distance to a railroad loading point	miles	10
Distance to a paved road	miles	0
Physical characteristics		
Value of improvements		
House ($10,000)	dollars/acre	175
Farm improvements ($4,000)	($14,000/80)	
Value of merchantable timber ($2,000)	dollars/acre	25
Property has a pond	1 or 0	1
Sale characteristics		
Size of peanut allotment	acres	15
Size of tract	acres	80
Transaction will be financed (not cash)	1 or 0	0
Purchased for farming (yes)	1 or 0	1
Type of ownership		
Individual buyer (rather than corporation or partnership)	1 or 0	1

For illustration purposes, let us select an example parcel of land in the Wiregrass area and use the model estimated in this study to predict value. Assume that the example parcel of property has the characteristics indicated in table 6.

Given the information in table 6 and the estimated model, the market value of the example property can be predicted as follows:

$$\begin{aligned}\text{Value per acre} = {} & 817.00 - .30(50) - 22.57(30) + .20(900) + 2.91(10) + \\ & 1.63(25) - 6.21(10) - 3.39(0) + 1.00(175) - .05(25) + \\ & 52.41(1) + .71(15) - .24(80) - 38.74(0) - 19.87(1) + \\ & 24.67(1) = \$535.06\end{aligned}$$

Thus, the predicted value for this particular parcel of property is $535 per acre, or $42,800 in total.

What are some important considerations in using this approach? First, the model has relevance only in the sample area from which the data were collected. Thus, it should not be used for property outside the Wiregrass area as identified in figure 1. Also, estimated values depend on the time when data were collected. Structurally the model coefficients should be

valid for several years, especially if the local economy changes little. Thus, estimates of value should be relevant when adjusted for appreciation in land values in the area. This can be accomplished by using USDA estimates of changes in farmland values or by using personal estimates of changes. For example, data for the estimated model were collected in early 1976. Assuming that land values have increased by 9 percent since then, our present estimate of value would be $583.22 ($535.06 × 1.09).

Again, this method does not exclude use of the other methods of valuation. Instead, it complements them. It affords the individual a means to estimate the value of property without necessarily collecting data on comparable sales but still the estimates would be based on transactions in the area.

SUMMARY AND CONCLUSION

The primary objective of this study was to isolate and analyze the impact of various factors affecting the price paid for rural land in the Wiregrass Region of Alabama. Because of the relatively fixed supply of land in the short-run, demand factors were expected to be the important determinants of rural land value. A random sample of transactions which had taken place between February 1976 and May 1976 was made. Data relating to the transactions and rural land market were obtained from tax office records and interviews with parties to these transactions and Soil Conservation Service personnel.

Characteristics of the tracts of land transferred and personal characteristics of the buyers and sellers were summarized. The average sale price of rural real estate was $428 per acre. Removing the value of improvements and timber resulted in an average bare land value of $366 per acre.

Multiple regression analysis was utilized to isolate factors having significant impacts on rural real estate value. In the general model, rural land value per acre was specified as the dependent variable. Factors expected to affect the demand for rural land were specified as independent variables. The four categories these factors were divided into were location, physical characteristics, sale characteristics, and type of ownership.

The real estate model, which explained 83 percent of the total variation in rural real estate values, had four important

variables. The relationship between value and distance to a city of greater than 25,000 population was curvilinear. As distance to a city of this size increased, value went down at a decreasing rate. For each mile increase in distance from a railroad loading point, the rural real estate value decreased by $6.21 per acre. Improvements added dollar for dollar to the value of rural real estate. Value per acre declined by $0.24 for each additional acre of land in the transaction.

From the results of this study, it was concluded that the rural land market in the Wiregrass Region of Alabama in 1976 was primarily agriculturally oriented. Of the 75 transactions in the study, 52 percent of the tracts were bought for farming purposes. Another 21 percent of the tracts were bought for a homesite and farming purposes. Improvements adding dollar for dollar to value indicated that buyers and sellers valued improvements for their utility or functional worth only. People were primarily interested in factors that might affect their net income streams.

The general characteristics of the market provided evidence of other structural components of the rural land market. The majority of land transfers were made between individual buyers and sellers without assistance from land brokers. Sellers averaged 16 years older than the average for buyers. Also, the annual family income of buyers was more than that of sellers. Seventy-two percent of the buyers owned other land at the time of the present transaction. Thus, the majority of buyers were adding property to existing holdings. People already owning land would find it beneficial to purchase extra land when it came on the market because of the uncertainty of the land being available in the future. The competitiveness of the market was evident from the fact that no single buyer was involved in a large number of transactions.

Location factors were major components affecting the rural land market. Properties located near cities of greater than 25,000 population sold higher than properties farther away. This distance also showed a curvilinear relationship with value. Property nearer a transportation facility, such as a railroad loading point, also had more value. Since land is fixed in space, the value of a tract of land was highly influenced by its location in relation to population centers and transportation routes.

Size of the tract was a significant variable. For each additional acre in the parcel transferred, the price paid decreased by $0.24 per acre. Although the magnitude of this coefficient was small, the relationship it displayed was important. Larger tracts of land received lower prices per acre. This is because larger tracts of land require larger capital investments, causing fewer people to be in the market for them.

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