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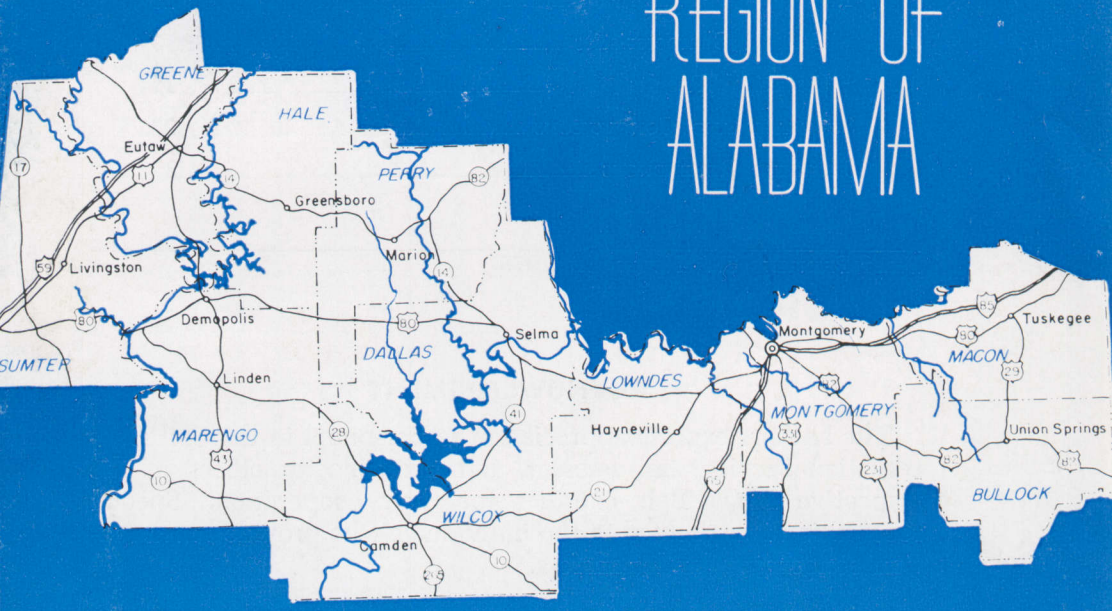
VARIATIONS IN RURAL LAND VALUES IN THE BLACK BELT REGION OF ALABAMA



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VARIATIONS in RURAL LAND VALUES in the BLACK BELT REGION of ALABAMA*

W. E. NELSON and J. L. ADRIAN**

As in other markets, the value of rural land is determined by the interaction of supply and demand. The supply of farm land in the United States decreased from 1,159 million acres in 1950 to 1,060 million acres in 1970 *(2)*. At the same time, the demand for rural land increased in response to such changes as population growth, technological progress, government policy, and increased leisure time. Factors influencing supply and demand in the rural land market have not been inherent to agriculture alone. Non-agricultural forces have become increasingly important.

The average value of farm real estate in the contiguous United States increased from $195 to $406 per acre between March 1970 and February 1976, a 108 percent increase *(3)*. The largest relative increase in value during this period occurred between March 1973 and March 1974 when the increase was 25 percent. Between November 1974 and November 1975, value increased by 12 percent.

Increases in the value of Alabama farm real estate were comparable to those noted for the United States. The average value of farm real estate in Alabama increased from $200 to $425 per acre between March 1970 and February 1976, a 113 percent increase *(3)*. In the period between March 1973 and March 1974, farm real estate value evidenced an increase of 27 percent. Be-

*This study was conducted under Hatch Project Ala.-397, supported by State and Federal funds.

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tween November 1974 and November 1975, value increased 8 percent. These large increases in farm real estate value have created considerable interest in the rural land market.

Agriculture in Alabama is widely diversified. This diversity results primarily from differences in physical, biological, economic, and institutional characteristics inherent to particular areas of the State. Interaction of these factors affect the rural land market. Thus, a meaningful analysis of variations in rural land value should focus on areas exhibiting similar general characteristics. Since soil type has a major impact on agricultural production, study areas could be selected based on the major soil regions of Alabama. This procedure was followed in this study. The results of the analysis of rural land located in the Black Belt region are reported here.

The Black Belt region is a geological area which includes large portions of 11 central Alabama counties. This area is characterized by dark colored calcareous clay soils and gray to red acid clay soils. The Black Belt region was originally developed by plantation owners for the production of cotton. With the coming of the boll weevil, cotton production was decreased and much of this area was converted to pasture and hay fields *(5)*. While cotton has remained an important crop in the area, beef, milk, catfish, and soybeans have become major income producing enterprises.

Natural resources in the Black Belt include soils, timber, wildlife, and water. Logs and pulpwood are major income producing products and the woodlands which produce these products also support an abundance of wildlife. The Alabama, Black Warrior, and Tombigbee rivers provide major sources of water for the area. These natural resources combined with mild temperatures have increased the recreational importance of the region.

Transportation facilities in the region include the three rivers mentioned above which are navigable by barge traffic plus several major highways. With the completion of the Tennessee-Tombigbee waterway and the development of Mobile's port facilities, docking stations in this area could become major stopping points for river traffic from the upper Mississippi River basin. Also, portions of three interstate highways (I-65 and I-85 in the East and I-59 in the West) cross the Black Belt region. The availability of good water and road transportation routes could make the movement of goods in and out of the region more economical.

All these considerations point to the Black Belt becoming an increasingly important region. The value of land in this region will reflect its development. This study should be helpful to decision makers in both the public and private sectors who will be active in planning, acquiring, and using land in the Black Belt region.

OBJECTIVES

The general objective of this study was to analyze the rural land market in the Black Belt region of Alabama. Specifically, the study was designed to determine the significance and impact of factors influencing rural land value. Agricultural and non-agricultural factors were isolated and grouped to determine their relative importance. The characteristics of buyers and sellers of rural land in the Black Belt were summarized and included in the analyses.

PROCEDURE

Rural land was classified as land located outside the confines of municipalities excluding such special use categories as rural highways, railroads, airports, parks, wildlife refuges, national defense areas, and flood control projects. Land contiguous to these excluded areas was included in the analysis. Also excluded were land trades, foreclosures, tax sales, sales between relatives, and sales transacted under compulsion.

A listing of qualified land transactions taking place between October, 1974 and August, 1975 was obtained from the deed records of the 11 counties in the region, Figure 1. From this listing, a stratified random sample of small, medium, and large tracts was selected in proportion to the number of transactions during this period. Forty-nine transactions were selected for analysis.

The physical characteristics of each tract such as acres of upland and lowland, acres of cropland and forestland, acres in ponds, and miles of streams and creeks were obtained from maps and interviews with the buyers and sellers. The interviews were also used to ascertain personal characteristics of the buyer and seller such as age, education, income, and additional land owned. Property tax data were obtained from tax office records in the respective counties. Data relative to soil capability were obtained from the Soil Conservation Service. Location data were

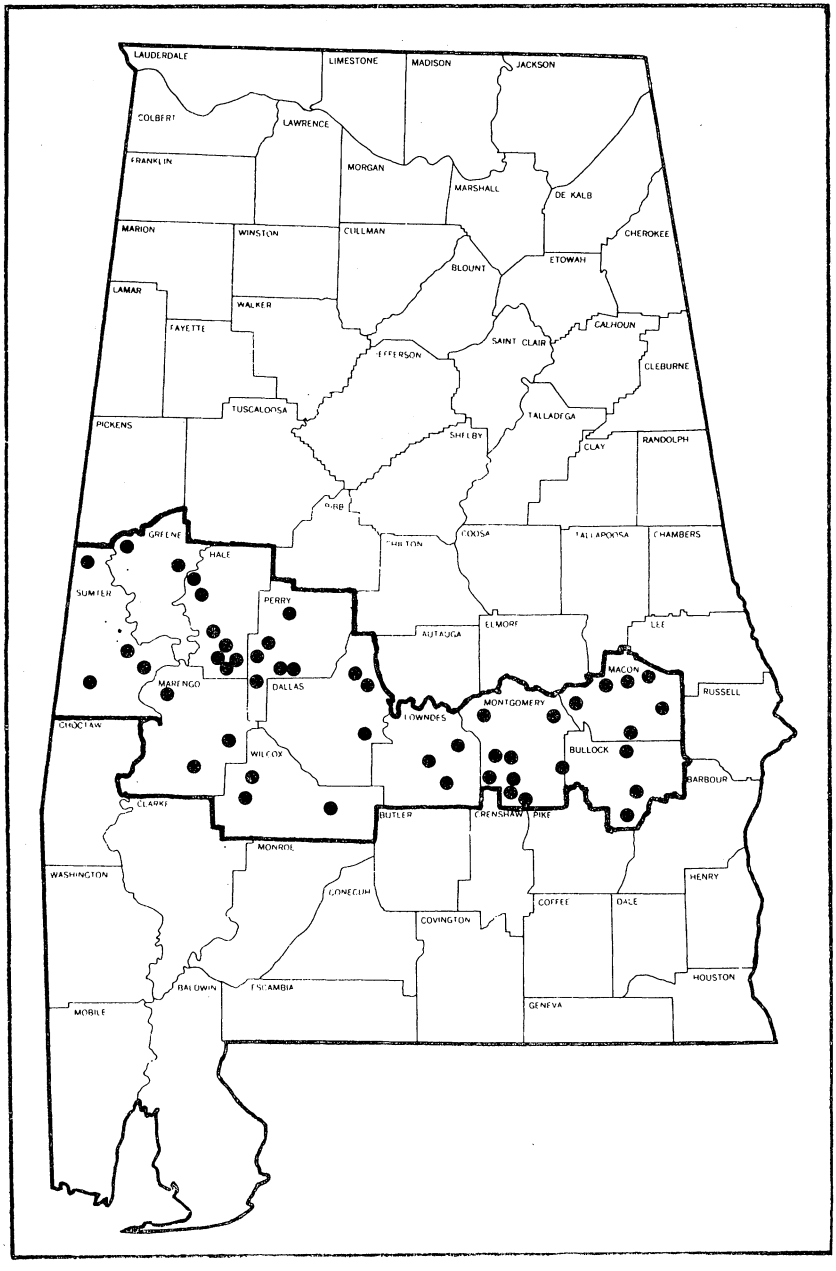

FIG. 1. Location of Black Belt counties and sampled land transactions.

determined from measurements using county and State road maps.

Some of the factors considered for explaining variations in rural land value were: tract size, distance to major cities, distance to major river or water impoundment, distance to interstate highway access, distance to state park, lake frontage, road frontage, value of improvements, soil classes, crops and livestock produced, buyer occupation and age, type of ownership, type of sale, pond acreage, and reason for purchase. Factors having significant influences on rural land value were determined using multiple regression analysis. Standard significance tests were used.

When possible, these factors were classified as primarily agricultural or non-agricultural. The remaining were transition factors which could pertain to both classifications. The relative importance of each group in explaining variations in rural land value was determined by analyzing the magnitude and significance of each factor within the respective groups.

Characteristics of the buyer and seller were tabulated to provide a profile of the parties to land transfers in the Black Belt region of Alabama. Given these characteristics and the relative magnitude and significance of the factors determined previously, the structural components of the rural land market were determined. These components included characteristics of individuals and firms buying and selling rural land, major uses for which the land was bought, major population and industrial centers influencing the market, and major transportation routes influencing the market.

ECONOMIC FRAMEWORK

As was mentioned previously, the market value of rural land is determined by the interaction of supply and demand. The supply of land in general and of specific types of land is fixed in the short-run due to the time required to reclaim land from wasteland or transfer land from one use to another use such as from forestland to cropland. Thus, changes in the demand side of the market will be most important in influencing the value of rural land in the short-run given the relative level of scarcity of land at that point in time. Therefore, assuming that all interested buyers have an opportunity to purchase a specific tract of land and that the sale terms are suitable to all, the value received for the property will be determined by the aggregate in-

fluence of the demand satisfying characteristics it possesses. These characteristics were separated into four categories: location, physical characteristics, sale variables, and type of ownership. In the following sections, the theoretical influences of these factors on value are discussed.

Location

Theoretically, location was expected to have the greatest influence on the value of individual tracts of land; i.e., measured in terms of distance from population and industrial centers, processing and marketing facilities, and recreational areas. Location was also considered in relation to transportation routes, road availability, and population density.

The distance to population and industrial centers was expected to be a major factor because of the increasing number of alternative uses land may have as the distance to these centers decreases. Transportation costs and convenience represent the core of this relationship. Developed transportation systems, improved standard of living, and a psychological desire to get back to nature have resulted in an increased demand for rural land for residential uses in city and town fringe areas. Also, these forces have created a desire in many urban dwellers for country retreats. The need to minimize the cost of transportation has also resulted in industries locating near major transportation routes. Industrial and population centers have developed along these routes and the introduction of new and expansion of present industries creates demand for additional land near these centers. Therefore, as the distance to these centers decreases the value of land was expected to increase.[1]

Nearness to processing or marketing facilities increases the net income to farmers by lowering the freight cost of crops and livestock being transferred. Therefore, an inverse relationship was expected between distance to marketing and processing facilities and land value.

In a 1964 study of the effects of roads and other factors on farm real estate values in Kansas, it was found that the difference in value relative to a gravel road over a dirt road was about $10 per acre *(4, p. 3)*. A tract of land located along a major

[1] The value of transferred parcels was suspected to vary non-linearly with distance to population centers of various sizes. This hypothesis was tested by utilizing a quadratic functional form.

transportation route such as an interstate highway or a railroad could possibly be a feasible location for an industry. This possibility would increase if the tract was near other means of transportation such as a navigable river or an airport. All these factors would affect the transportation cost of raw materials and manufactured goods and thus, the net income of an industry or farm. As the accessibility of the tract increases, due to increased road frontage, it would become a more attractive location for a subdivision or industrial park. Also, the accessibility of a tract affects the efficiency of farming operations in transporting inputs and products. Therefore, the effect of road frontage was expected to be positive. That is, as road frontage increases the value of land was expected to increase.

Population density was expected to affect land value. If the population of an area is relatively concentrated, there will be many potential buyers driving the price of land up and having a positive relationship to land value.

Physical Characteristics

Physical characteristics of land are the features which are below the surface, part of the surface, or attached to the surface of the earth. Physical characteristics include land use areas, soil capability, topographic features, improvements, and source of water.

The land use areas included cropland, pasture land, orchard land, wasteland, idleland, and forest land. Cropland, pasture, and orchard uses were expected to have a positive effect on land value relative to other land uses because of their income producing potential. Wasteland was expected to have a negative effect on land values because it has no productive use without reclamation. The effect of forest land on value was expected to be negative due to the long periods of time between harvest and the traditional expectation of low returns from forestry enterprises. This relationship was noted by Wise, Dover, and Miller in a study of rural real estate values in Georgia *(7, p. 20)*.

Water resources such as streams and ponds were expected to have a positive effect on land values because of the possible use for livestock, fish production, and recreation.

Improvements such as houses, barns, and livestock facilities were expected to affect land values. Value of improvements is a component of real estate value; therefore, as the value of

improvements increased the real estate value was expected to increase. Progressive farmers continually make capital investments to ensure the future of their operations. They also maintain and develop their land resources. Therefore, in addition to the component value added by the structures themselves, the degree of development of a property might be reflected by the value of improvements.

Value of timber is also a component of real estate value; therefore, as the value of timber on a tract increases, real estate value was expected to increase.

Another physical characteristic which was expected to affect the value of land was the availability of community water. With community water available, the number of alternative uses of a property would be increased, particularly for residential use. Thus, presence of community water was expected to have a positive effect on land value.

Sale Variables

The sale variables are factors which might influence the attractiveness of a particular parcel of land for a particular buyer. These factors might affect the desire of a buyer to own land or his ability to purchase it. For example, the location of a tract of land relative to other land owned by a potential buyer would affect his desire to own the land. That is, an individual owning land near the sale property may be willing to pay a higher price than a person without land in the area. Also, a low down payment might enable a potential buyer to purchase a tract of land which he otherwise would not be able to purchase. Other sale variables would include tract size, buyer's reason for purchase, the distance the buyer and seller live from the property, type of sale, and financing terms.

As the total acreage of a tract of property increases, the size of investment required to purchase it also increases. Thus, the number of prospective buyers would probably decrease because of the financial constraint on many buyers. Also, the amount of land needed for high value uses such as residential developments or industrial sites may be less than the amount needed for lower value uses such as farming or forestry. Therefore, small tracts of land were expected to bring higher prices per acre than large tracts of land.

There are many factors which might have a strong effect on the desire of a particular buyer for a specific tract of land. If the sale property joined land a buyer owned or leased or if the sale property was near the buyer's home or office, the desire of the buyer to own the property would probably be greater. Thus, the resulting effect on the value of that particular tract was expected to be positive.

Reason for purchase was also expected to have an impact on the price paid for land. If the buyer's reason for purchase was for a homesite or recreation retreat, the effect on land value was expected to be positive. Wise, Dover, and Miller found that purchase for retirement and purchase in a residential area were the two variables with the largest positive effect on the price paid for rural real estate *(7, p. 17)*.

Speculation was another reason for purchase expected to affect land value. A study of the land market in Wayne County, New York by Bryant indicated that 77 percent of the nonfarm absentee buyers were speculators *(1, p. 39)*. The increased demand caused by this factor was expected to have a positive effect on land value. Other reasons for purchase expected to have a positive effect on value were purchase for residential development and purchase for industrial site. A positive effect was expected because of the possibility of high returns to these buyers. A farming operation produces income, thus purchase for farming might be expected to have a positive effect on land value. However, relative to other high value uses such as residential or industrial development farming might have a negative effect on value. Thus, the effect on value of purchase for farming was not hypothesized.

The type of sale was expected to affect the price received for property. Two types of sales were considered, sale by owner and sale by broker. If the buyer negotiated the price with the owner, then it was termed a sale by owner. If the buyer negotiated the price with a broker acting for the owner, it was a sale by broker. A broker was expected to have better information on the land market and contact with more potential buyers than an owner. Thus, a sale by broker was expected to have a positive effect on the price paid.

Financing terms were expected to have an effect on the price paid for land. Favorable terms to the buyer such as a low down payment and low interest charges were expected to have a posi-

tive effect on land value. For example, if a low down payment was required, the equity restraint on the buyer would be less and he possibly could afford to pay more. Poor terms on the other hand were expected to have a negative effect on land value.

Type of Ownership

In this study, four types of ownership were considered: individual, partnership, corporation, and estate. Estates were not expected to be buying land; therefore, estates were considered only as sellers of land.

As the number of people who jointly buy property increases, the financial resources available for the purchase would increase. Therefore, partnerships would be expected to have more financial resources than individuals and corporations would be expected to have more than partnerships or individuals. Based on ability to pay, properties sold to partnerships or corporations could be expected to bring a higher price than those sold to individuals. However, businesses will not pay more than individual buyers if they have a choice. Because of these conflicting concepts no hypothesis was made concerning the effect that different types of buyers have on the price paid for property.

Property could be sold by any of the types of ownership considered. The effect on the price received when the seller was an individual, partnership, or corporation was not hypothesised due to the lack of *a priori* information relative to these situations. The ownership of land by an estate results from the death of the original owner. In many cases, the heirs have no knowledge of the property and are not interested in managing it. Thus, an estate is often sold for the purpose of distributing value. This attitude on the part of the seller was expected to result in lower prices for rural land sold by an estate.

MODELS

Two final statistical models were specified from the relationships discussed in the theoretical framework section. The first model included real estate value per acre as the dependent variable while the second model included bare land value per acre as the dependent variable. The bare land value model was included to determine whether a model with variation due to improvements value and timber value removed allowed a better analysis of structural relationships in the rural land market.

Real Estate Value Model

The real estate value model was specified as follows.

$$V = a + b_1P_1 + b_2P_2 + b_3P_3 + b_4P_4 + b_5P_5 + b_6P_6 + b_7L_1 + b_8L_2 + b_9L_3 + b_{10}L^2_3 + b_{11}L_4 + b_{12}L_5 + b_{13}L_6 + b_{14}S_1 + b_{15}S_2 + b_{16}S_3 + b_{17}S_4 + b_{18}T_1 + b_{19}T_2 + U_1.$$

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 property in acres.

The physical characteristics of a parcel of property were:

P_1 = values in dollars of total improvements per acre;
P_2 = value in dollars of merchantable timber per acre;[2]
P_3 = percent of the property which was open; i.e., cropland, pastureland, and orchard;
P_4 = 1 if a pond or all weather stream was present on the property and = 0 otherwise;
P_5 = 1 if the property had any type of road frontage and = 0 otherwise; and
P_6 = 1 if the property had a community water line available and = 0 otherwise.

The location variables were:

L_1 = population density of the County Census District in which a parcel of property was located measured in persons per square mile;
L_2 = distance property was from a city of greater than 500 population by road in miles;
L_3 = distance property was from a city of greater than 10,000 population by road in miles;
L_4 = distance property was from a city of greater than 50,000 population by road in miles;
L_5 = distance a property was from access to a navigable river by road in miles; and
L_6 = distance a property was from a railroad loading point by road in miles.

[2] Values for improvements and timber were based on valuations by the buyer and seller at the time of sale.

The sale variables related to the transfer of property were:

S_1 = size of the property in acres;
S_2 = 1 if the property was purchased for farming and = 0 otherwise;
S_3 = 1 if the buyer negotiated the price with the owner and = 0 otherwise; and
S_4 = 1 if the buyer paid cash and = 0 otherwise.

The types of ownership variables were:

T_1 = 1 if the buyer was a partnership or corporation and = 0 otherwise; and
T_2 = 1 if the seller was an estate and = 0 otherwise.
U_1 = error term.

In formulating the theoretical framework, many influences in the rural land market were considered and analyzed. The variables specified in final model measured the influence of all the factors expected to significantly affect the market value of rural land.[3] All of the physical characteristics enumerated in the final model were expected to have a positive influence on per acre rural real estate value; i.e., b_1—b_6 were expected to be positive. Similarly, all of the location factors except rural population density and the curvilinear component of the small city impact were expected to vary inversely with per acre rural land value. Thus, b_8, b_9, b_{11}, b_{12}, and b_{13} were expected to be negative and b_7 and b_{10} were expected to be positive. Size of the tract (S_1) and purchase for farming (S_2) were expected to be inversely related to value; i.e., b_{14} and $b_{15} < 0$. The expected impacts of type of sale (S_3), buyer paid cash (S_4), business buying (T_1), and estate seller (T_2) were indeterminate.

Bare Land Value Model

The bare land value model was specified as follows.

$$V = a + b_3P_3 + b_4P_4 + b_5P_5 + b_6P_6 + b_7L_1 + b_8L_2 + b_9L_3 + b_{10}L^2_3 + b_{11}L_4 + b_{12}L_5 + b_{13}L_6 + b_{14}S_1 + b_{15}S_2 + b_{16}S_3 + b_{17}S_4 + b_{18}T_1 + b_{19}T_2 + U_2.$$

The dependent variable (V) represented the value of rural land in terms of the bare land value per acre. Bare land value

[3] Several factors considered in the theoretical framework were combined or deleted in the final statistical model. These changes were necessary due to the presence of multicollinearity and insufficient data for some of the variables.

represented real estate value per acre less the value of improvements and timber. By removing the variation due to these factors the impact of the remaining variables were expected to be more apparent. The expected impact of these factors was the same as was specified in the real estate value model.

RESULTS

General Characteristics

The average tract of land sold in the Black Belt region was 175 acres consisting of 133 acres of upland and 42 acres of lowland, Table 1. An average of 57 percent of each tract was openland consisting of pasture, cropland, or orchardland. The remainder was timber or wasteland. Seventy percent of the property sold was comprised of class I, II, or III soil. Sixty-three percent of the acreage transferred remained in farming and 31 percent remained in forestry. Seventy-one percent of the tracts had either

TABLE 1. PHYSICAL AND SALE CHARACTERISTICS OF RURAL LAND TRANSFERS IN THE BLACK BELT REGION OF ALABAMA, 1975

Characteristics	Units	Average	Low	High
Physical:				
Size	Acres	175	10.00	960.00
Upland	Acres	133	0.00	940.00
Lowland	Acres	42	0.00	600.00
Openland per tract	Percent	57	0.00	100.00
Tracts with pond or stream present	Percent	71		
Tract with well present	Percent	22		
Tracts with community water available	Percent	12		
Tracts with road frontage	Percent	73		
Tracts with dwellings	Percent	28		
Portion of transferred acreage remaining in farming	Percent	63	0.00	100.00
Portion of transferred acreage remaining in forestry	Percent	31	0.00	100.00
Rural population density	People per square mile	24	8.00	124.40
Class I, II, or III land per tract	Percent	70		
Sale:				
Transactions negotiated with owner	Percent	73		
Cash transaction	Percent	20		
Transaction financed by local bank	Percent	23		
Transaction financed by owner	Percent	45		
Transaction financed by federal agency	Percent	12		
Real estate market value per acre	Dollars	402	96.36	3,950.00
Total improvements per acre	Dollars	41	0.00	3,150.00
Timber value per acre	Dollars	26	0.00	378.41
Bare land value per acre	Dollars	335	27.84	1,720.37

a pond or all weather stream on the property. Twenty-two percent of the tracts had a well and 12 percent had a community water line available. Some type of public road bordered or traversed 73 percent of the tracts. Twenty-eight percent of the parcels had an occupied dwelling on the property. Population density for the County Census District in which the property was located averaged 24 people per square mile.

The sale price for 73 percent of these properties was negotiated between the owner and buyer. The remaining transactions were handled through a land broker. Forty-five percent of the transactions were financed by the owner and the other financed transactions were divided between local banks and federal agencies. Cash was paid in 20 percent of the transactions. The sale price for rural real estate per acre averaged $402. Total improvements comprised $41 and timber value accounted for $26 of the average real estate value per acre.[4] Thus, the average bare land value per acre was $335.

Corporations purchased 6 percent, partnerships 8 percent, and individuals 86 percent of the tracts sampled, Table 2. Almost two-thirds of the buyers owned additional property and in one-third of the transactions, this property was adjacent to the purchased property. The reasons for purchase varied from farming which accounted for the purchase of 59 percent of the tracts to recreation which accounted for 4 percent of the purchases. Of the individuals purchasing land, 97 percent were males and 83 percent were white. The individual buyers averaged 43 years of age and had approximately 12 years of formal education. Their family annual income averaged $25,200.

Sixteen percent of the sampled tracts were sold by estates and the remaining tracts were sold by partnerships or individuals. No corporate sellers were involved in the sampled transactions. Seventy-six percent of the individuals selling land were males and 90 percent were white. They had an average age of 58 years and an average formal educational attainment of 14 years. Also, their average family annual income was $19,400. Sellers averaged owning the land 13 years prior to transfer of ownership.

[4] The $26 figure for the average timber value per acre is misleading due to the fact that much of the Black Belt is pasture or cropland. The average value of timber on timberland was $86 per acre. This average included some cutover timberland with no timber value.

TABLE 2. CHARACTERISTICS OF BUYERS AND SELLERS INVOLVED IN RURAL LAND TRANSFERS IN THE BLACK BELT REGION OF ALABAMA, 1975

Characteristics	Units	Average	Low	High
Buyer:				
Type				
Corporation	Percent	6		
Partnerships	Percent	8		
Individuals	Percent	86		
Sex—male	Percent	97		
Race—White	Percent	83		
Age	Years	43	23	68
Education	Years	12	0	20
Family annual income	Dollars	25,209	3,000	80,000
Owns additional property	Percent	63		
Owns adjacent property	Percent	33		
Reason for purchase				
Home	Percent	20		
Home and farm	Percent	22		
Farming	Percent	37		
Speculation	Percent	12		
Recreation	Percent	4		
Industrial and residential development	Percent	5		
Seller:				
Type				
Estates	Percent	16		
Individuals and partnerships	Percent	84		
Sex—male	Percent	76		
Race—White	Percent	90		
Age	Years	58	24	95
Education	Years	14	3	20
Family annual income	Dollars	19,410	0	60,000
Number of years owned	Years	13	1	50

Statistical Results

This section included an analysis of the estimated impact of physical and economic factors on rural land values. The dependent variables in the models were real estate value per acre and bare land value per acre.

Real Estate Value Model

Ninety-five percent of the variation in rural real estate value was explained by the factors included in the model, Table 3. Six of the independent variables had a significant impact on rural real estate value.

Two physical characteristics were significant at acceptable levels. The value of a parcel of rural real estate increased by $1.07 per acre for each additional $1 of improvements value per acre. Also, for each additional percent of open land on a parcel

of property, real estate value increased by $2.59 per acre. That is, a parcel of property being comprised totally of open land added $259 to value if all other factors were held constant. Both relationships were positive as was expected.

Two locational factors had significant impacts on rural real estate value, distance to cities with between 10,000 and 50,000 population and distance to access to a navigable river. Cities with populations in the range between 10,000 and 50,000 seemed to have the most important impact on value in the Black Belt region while distance to larger cities and small population centers did not have significant influences. This lack of significance

TABLE 3. ESTIMATES OF STRUCTURAL COEFFICIENTS FOR FACTORS AFFECTING THE REAL ESTATE VALUE PER ACRE OF TRACTS OF RURAL PROPERTY IN THE BLACK BELT REGION OF ALABAMA, 1975

Factor	Coefficient	Standard error
	Dollars	
Intercept	1,278.74***	261.63
Physical characteristics		
Total improvement value per acre (P_1)	1.07***	0.06
Timber value per acre (P_2)	0.83	0.53
Percent of openland (P_3)	259.13**	103.80
Presence of pond or stream (P_4)	42.86	85.12
Presence of road frontage (P_5)	114.65	79.32
Community water line available (P_6)	68.92	121.07
Location		
Population density of County Census District (L_1)	−0.28	2.08
Distance to town of greater than 500 (L_2)	−4.77	7.74
Distance to city of greater than 10,000 (L_3)	−43.79***	10.42
Distance squared to a city of greater than 10,000 (L^2_3)	0.60***	0.18
Distance to city of greater than 50,000 (L_4)	−0.74	2.01
Distance to navigable river access (L_5)	−7.14*	3.84
Distance to railroad loading point (L_6)	−10.50	9.01
Sales characteristics		
Size of tract in acres (S_1)	−0.39**	0.17
Purchase for farming (S_2)	−135.48*	72.56
Type of sale (S_3)	−44.89	73.27
Cash purchase (S_4)	−72.16	84.14
Type of owner		
Business buyer (T_1)	67.30	105.63
Estate seller (T_2)	−134.56	110.78
Coefficient of determination (R^2)	.95	
Standard error of estimate	193.45	

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

may have resulted from an insufficiently strong economic base in small communities and the relatively great distance that transferred parcels were from large cities in this region.

The relationship between value and distance to cities with between 10,000 and 50,000 population was curvilinear, Figure 2.[5]

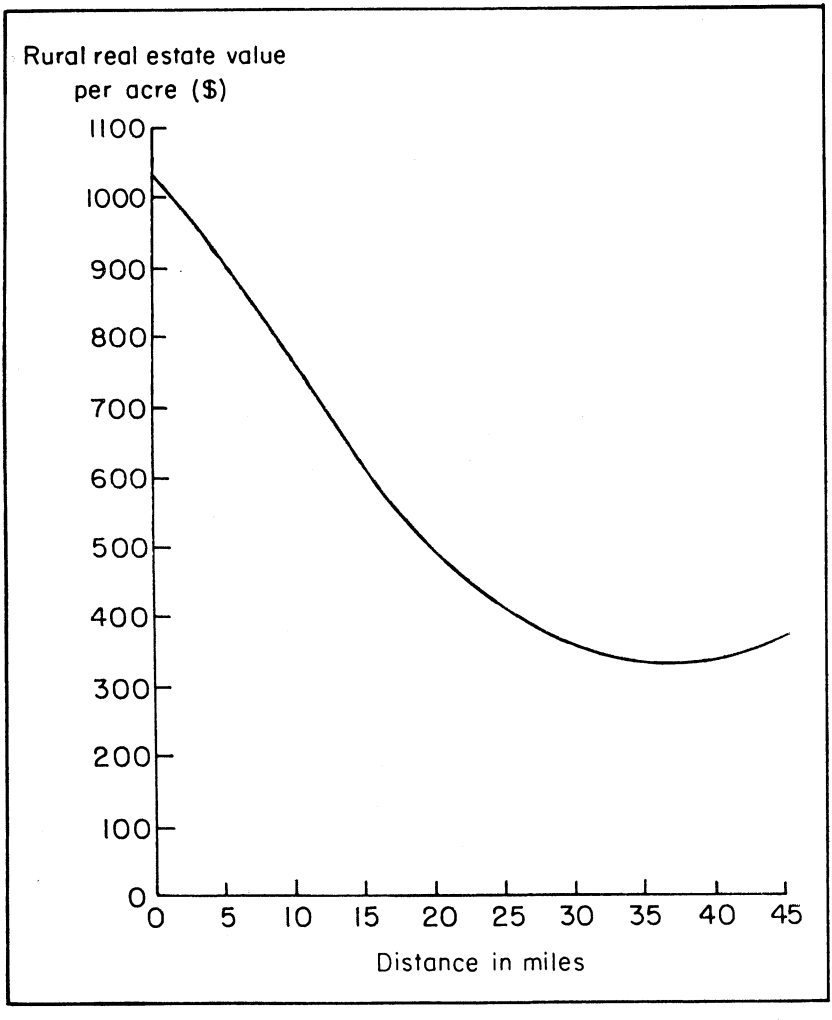

FIG. 2. Relationship of rural real estate value per acre to distance in miles to a city with between 10,000 and 50,000 population with other factors entered at the mean.

[5] Other distance factors were suspected of being non-linearly related to value. These hypotheses were tested using a quadratic functional form. However, none were found to be significant so they were entered in linear form in the final model.

As location of a parcel of property relative to these cities decreased, value increased at an increasing rate. Value was fairly stable in the 30-35 miles range at about $340 per acre, *ceteris paribus.* Beyond this level, projections were irrelevant because the relationship was outside the range of the data. Since the mean distance from such a city was 28 miles, the influence of another similar city became important as the prior city's influence faded.

Distance to access to a navigable river was inversely related to the real estate value per acre as was expected. As distance between a navigable river and a parcel of property increased, real estate value per acre decreased by $7.14 per mile.

Size of a tract in acres and purchase for farming were other significant variables. Real estate value per acre declined by $.39 for each additional acre added to the transferred tract. Also, rural property purchased for farming uses commanded a price which was $135 per acre less than prices paid for land purchased for non-farm uses.

Bare Land Value Model

This model differed from the prior model in that timber and improvement values per acre were excluded as independent variables and rural real estate value was adjusted to reflect the value of bare land. The bare land value per acre equaled real estate value per acre minus the per acre value of improvements and timber. With these component values removed from the value of the dependent variable, it was expected that variation attributable to other variables would be more apparent. The resulting model explained 79 percent (R^2) of the variation in the per acre value of bare rural land, Table 4. There were five significant variables in the model.

Percent of open land was the only physical characteristic significant at acceptable levels. As was hypothesized, bare land value increased as the percentage of open land increased on a tract. The value of bare land increased by $2.60 for each additional percent of open land available on a particular tract of property. If the tract was totally open, it would command a price which was $260 greater than a tract with no open land, *ceteris paribus.*

Distance to a city with between 10,000 and 50,000 population and distance to access to a navigable river were also significant

TABLE 4. ESTIMATES OF STRUCTURAL COEFFICIENTS FOR FACTORS AFFECTING THE BARE LAND VALUE PER ACRE OF TRACTS OF RURAL PROPERTY IN THE BLACK BELT REGION OF ALABAMA, 1975

Factor	Coefficient	Standard error
	Dollars	
Intercept	1,295.83***	247.01
Physical characteristics		
Percent of openland (P_3)	259.82***	92.38
Presence of pond or stream (P_4)	27.53	81.16
Presence of road frontage (P_5)	122.54	76.84
Community water line average (P_6)	79.78	118.99
Location		
Population density of County Census District (L_1)	−0.01	2.03
Distance to town of greater than 500 (L_2)	−5.73	7.59
Distance to city of greater than 10,000 (L_3)	42.61***	10.23
Distance squared to a city of greater than 10,000 (L^2_3)	0.57***	0.17
Distance to city of greater than 50,000 (L_4)	−0.76	1.90
Distance to navigable river access (L_5)	−6.84*	3.73
Distance to railroad loading point (L_6)	−12.01	8.77
Sales characteristics		
Size of tract in acres (S_1)	−0.40***	0.17
Purchase for farming (S_2)	−143.03**	70.57
Type of sale (S_3)	−52.40	72.01
Cash purchase (S_4)	−80.08	80.99
Type of owner		
Business buyer (T_1)	50.09	93.73
Estate seller (T_2)	−124.49	107.26
Coefficient of determination (R^2)	.79	
Standard error of estimate	190.99	

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

at acceptable levels in this model. The relationship between value and location relative to cities with 10,000 to 50,000 population was still curvilinear, Figure 3. Bare land value declined from approximately $1,000 per acre for tracts near such cities to approximately $275 per acre for tracts located 30 to 40 miles away.

As was expected, value and distance a parcel of property was from access to a navigable river were inversely related. Bare land value declined by $6.84 per acre for each mile a tract of property was located from access to a navigable river.

The size of the property in acres and purchase for farming were significant and inversely related to bare land value as was

expected. The bare land value per acre decreased by $.40 for each additional acre transferred. Similarly, tracts of property for farming had values which were $143 less than values for property purchased for other uses.

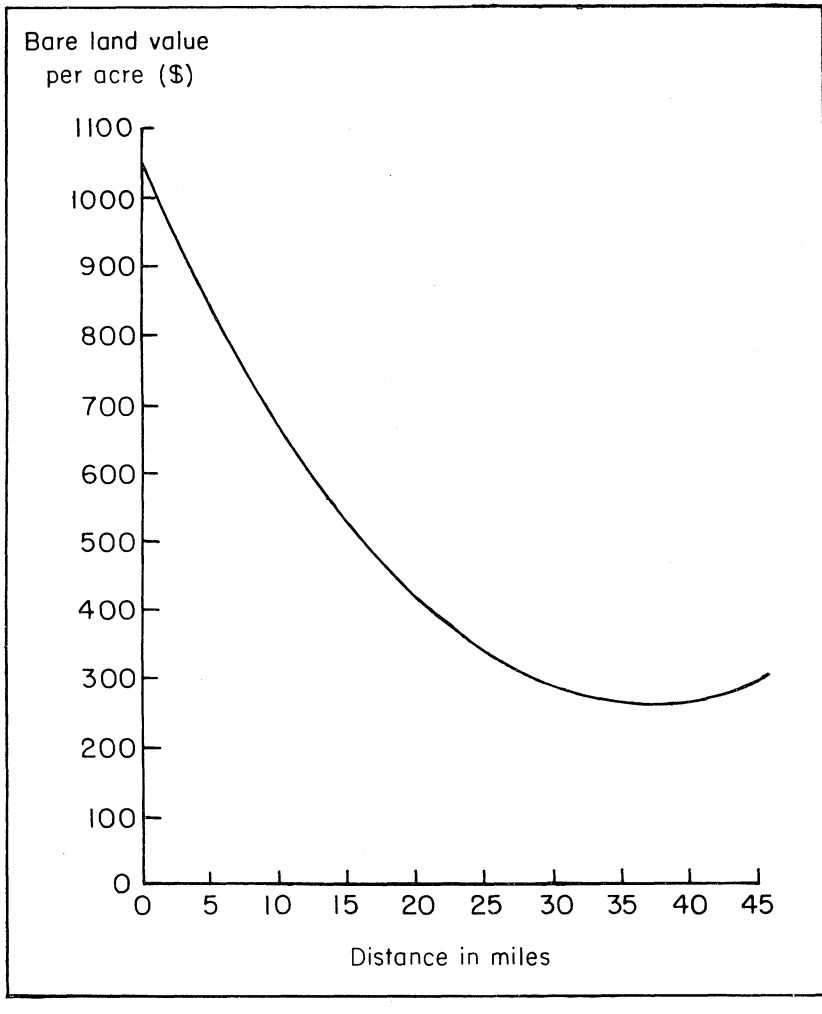

FIG. 3. Relationship of bare land value per acre to distance in miles to a city with between 10,000 and 50,000 population with other factors entered at the mean.

SUMMARY AND CONCLUSION

The primary objective of this study was to isolate and analyze the impact of various factors affecting the value of rural land in the Black Belt region of Alabama. A random sample of transactions which had taken place between October, 1974 and August, 1975 was made and the parties to these transactions were interviewed. Characteristics of tracts of land transferred and personal characteristics of the buyers and sellers were summarized. Other data relative to the rural land market were obtained from tax office records and the Soil Conservation Service.

Multiple regression analysis was used to isolate factors having a significant impact on rural land value. Two models were specified, one explaining variation in rural real estate value and the other explaining variation in rural bare land value. Factors affecting value were separated into four categories: physical characteristics, location, sale characteristics, and type of ownership.

The real estate value model explained 95 percent of the variation in rural real estate value. Six variables were significant: improvement value per acre, percent open land, distance to a city with greater than 10,000 population, distance to access to a navigable river, size of tract, and purchase for farming. Improvement value and percent open land were positively related to value while distance to access to a navigable river, size of tract, and purchase for farming were inversely related to value. Value increased at an increasing rate for tracts located nearer cities having over 10,000 population.

A second model, bare land value, was estimated with improvements and timber value excluded to hopefully more clearly ascertain the component forces operating the rural land market. Except for the excluded factors, this model was very similar to the real estate value model. Seventy-nine percent of the variation in bare land values was explained with this model.

The rural land market in the Black Belt region of Alabama in 1975 was primarily agriculturally oriented. Ninety-four percent of the total acreage transferred remained in farming or forestry. Also, 59 percent of the parcels purchased were bought for farming. Thirty-three percent of the buyers owned property adjacent to the purchased tract.

The average per acre value of real estate in the Black Belt region was $402 with improvements and timber values com-

prising $41 and $26 of this total, respectively. The average value of land excluding timber and improvements was $335 per acre.

Distance to cities with between 10,000 and 50,000 population influenced rural real estate values in the Black Belt region significantly. Tracts of property located 30 to 40 miles from such cities brought approximately $340 per acre while tracts near these cities commanded prices in the $900 to $1,000 range. Small population centers and large cities seemed to have little impact on real estate values in this area. The level of economic resources in the small communities and the relatively great distance to large cities may have been the primary factors contributing to these relationships.

Other structural components were evident. Value declined by $7.14 per acre for each additional mile a parcel of property was away from a navigable river. This relationship probably reflected the value assigned to location near water for either recreational or agricultural benefits. Two other factors reflecting primarily agricultural value were percent open land on a tract and purchase for farming. Each additional percent of open land on a tract added $2.59 to value while tracts purchased for farming rather than other uses commanded $135 less per acre. The impact of large money capital outlays was reflected by the tract size variable. The impact was not large, but value did decline by $.39 for each additional acre included in the tract.

Other structural components were evident from the general characteristics of the market. Land transfers were mostly between individual buyers and sellers without assistance from land brokers. The difference in the average age of the buyers and sellers was 15 years with older individuals selling to younger buyers. Also, the family annual income of buyers was more than that of sellers. The seller's side of the market had a higher percentage of estates and females than the buyer's side indicating that some market activity was initiated by heirs converting inherited land assets into cash. The competitiveness of the market was evident from the fact that no single buyer was involved in a large number of transactions.

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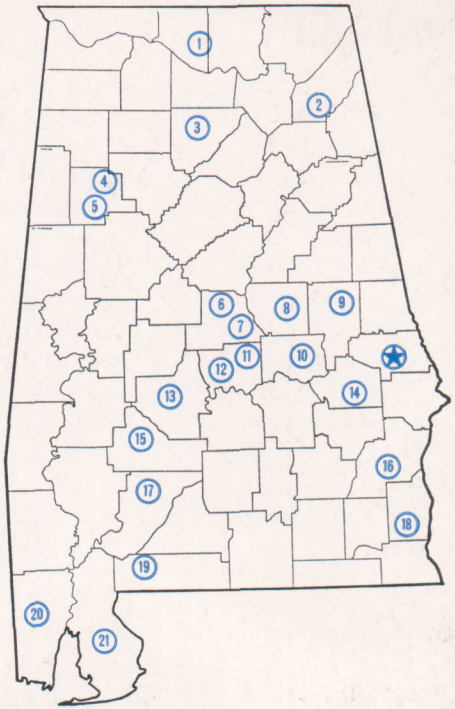

Research Unit Identification

★ Main Agricultural Experiment Station, Auburn.

1. Tennessee Valley Substation, Belle Mina.
2. Sand Mountain Substation, Crossville.
3. North Alabama Horticulture Substation, Cullman.
4. Upper Coastal Plain Substation, Winfield.
5. Forestry Unit, Fayette County.
6. Thorsby Foundation Seed Stocks Farm, Thorsby.
7. Chilton Area Horticulture Substation, Clanton.
8. Forestry Unit, Coosa County.
9. Piedmont Substation, Camp Hill.
10. Plant Breeding Unit, Tallassee.
11. Forestry Unit, Autauga County.
12. Prattville Experiment Field, Prattville.
13. Black Belt Substation, Marion Junction.
14. Tuskegee Experiment Field, Tuskegee.
15. Lower Coastal Plain Substation, Camden.
16. Forestry Unit, Barbour County.
17. Monroeville Experiment Field, Monroeville.
18. Wiregrass Substation, Headland.
19. Brewton Experiment Field, Brewton.
20. Ornamental Horticulture Field Station, Spring Hill.
21. Gulf Coast Substation, Fairhope.