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## SOCIO-ECONOMIC DETERMINANTS OF RURAL LAND VALUES IN GREENBRIER COUNTY, WEST VIRGINIA

Dale Colyer

Land values have tended to increase at a substantially more rapid rate than the general level of prices in recent years. There is a growing body of evidence that this is occurring due, in part, to factors other than agricultural opportunity costs, size of parcel, improvements and other factors historically related to land values (Bishop, Bryant, Pasour). Some other factors influencing rural land values seem to include urbanization, investment or speculation, and increasing wealth or incomes. Additional information on the determinants of land values is needed if these phenomena are to be more completely understood. This paper reports on a study of the relationships of socio-economic characteristic of land owners (buyers and sellers) and rural land values.

### PROCEDURES

Data on rural land sales in Greenbrier, County, West Virginia were collected from public transfer records, for the years 1970-75. *Bona fide* sales of all parcels, 10 acres or greater, located outside of corporate limits were used for the study. These sales were analyzed to determine average values, trends, and effects of such factors as size or location of the parcel on per acre values (See Maldonado for details).

A sample of the transferred parcels was used to select land sellers and buyers for personal interviews. From these interviews, information was obtained on the socio-economic characteristics of the buyers and sellers, their reasons for selling or buying, and the use of the land before and after the sale. Only those interviews where data were obtained on both the seller and buyer of a selected parcel were used in the analysis. There were 102 of these. The data from the interviews and transfer records were combined and regression analysis used to determine which factors had statistically significant influences on per acre land values.

Separate models utilizing the buyers' and sellers' data were used since many factors affecting sellers are apt to be different from those affecting buyers. The per acre selling price deflated by the GNP deflator was used as the dependent variable in both models. The independent variables are listed in Table 1. Those variables applicable to the parcel were included in both models while those applicable to only the sellers or buyers were included in the appropriate model.

### THE STUDY AREA

Greenbrier County, located in the southeastern area of West Virginia, is the second largest county in the State with 656,480 acres. About two-thirds of the area is forested, with less than one third (20 percent in 1974) in farms. The number of farms and area in farms has declined since 1900 when some 62 percent of the land was in farms. Beef cattle production, dominated by cow-

calf operations, is the most important agricultural enterprise. This enterprise is well adapted to the area since only about 5 percent of the land area is used for crop production while over 15 percent is used for pasture. In 1974, the County ranked sixth out of 55 in the value of farm marketings in the State.

The 1970 population of the county was 34,446 of which two thirds lived in rural areas including places of less than 1,000 population. The population of the County declined between 1950 and 1970, but has been increasing since 1970. Coal mines and limestone quarries are the most important nonfarm industries in Greenbrier County. About 60 percent of the coal in the County is produced by surface mining operations and therefore has important land use impacts.

### RESULTS OF THE ANALYSIS

For the 718 parcels of land transferred during the six year period, 1970-75, a total of 75,393 acres were involved. The average size was 105 acres per parcel with a range from 10 to 5,473 acres. The typical parcel had 11.6 percent cropland, 40.9 percent pasture land, 27.3 percent woodland and 20.2 percent other land. Thus, the typical parcel was better for farming than the County averages as reported by the 1974 Census of Agriculture.

The average per acre selling price was \$190 and ranged from \$2.48 to \$7,060. In 1970, the average price was \$112.40 per acre but by 1975 this had increased to \$402.24. After adjustment by the GNP deflator, the 1975 price per acre was about two and one half times as great as in 1970.

In general the sellers were older (63 years) than the buyers (42 years), had less education (9 years vs. 12 years) and had higher annual incomes (\$15,147 vs. 14,534). Nearly one-half of the sellers were farmers while nearly one fifth of the buyers came from each of the following occupations: farmer, laborer, sales or clerical, and professional. Many of the sellers were retired or did so after the sale, but few buyers were retirees. Thirteen sellers left farming after selling land and five buyers began farming.

The more important reasons for selling land were the need for money, age, and the "right" price. Most purchases were made for farming, as an investment, or for housing. While expanded and full time farm operations were important more of the parcels were purchased for part time farming than for other farming activities. Many of these part-time farms also would have been purchased as a place to live.

About 45 percent of the value of the land was paid for with the purchaser's funds and 55 percent was financed. Five purchases were completely self-financed, 72 purchases used financial institutions, 10 used the seller, and the rest were financed by other individuals or families.

#### Seller's Model

Results for the seller's model are shown in Table 2. Only the variables with statistically significant regression coefficients a 10 percent or better probability level are included. While factors related to the characteristics of the property, such as size of par-

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**TABLE 1.**  
Variables Used in the Regression Models

Size and value variables	Buyer's occupation after the sale (dummy variables)
acrage of the property	farmer
deflated per acre value of the improvements	professional
Location variables	administrative
total mileage to nearest town	sales or clerical
miles on dirt road	laborer
miles on slag road	retired
miles on one-lane paved road	other
miles on two-lane paved road	Buyer's reasons for buying the land (dummy variables)
miles on four-lane paved road	for farming income
Present use variables	for rental income
acres of cropland	for second home
acres of pasture	for future sale
acres of forest or woodland	Seller's personal characteristics
acres of other land (idle, services and wasteland)	seller's age
Best use variables	seller's education
acres of tillable land	seller's income
acres of pastureland	Seller's occupation before the sale (dummy variables)
acres of timberland	farmer
acres of wasteland	professional
Water supply variables (dummy variables)	administrative
water supply from a spring	sales or clerical
water supply from a pond	laborer
water supply from a river	retired
water supply from a well	other
water supply from a public service district	Seller's occupation after the sale (dummy variables)
water supply from a cistern	farm work
Rights owned variables (dummy variables)	professional
surface rights	administrative
fee simple rights	sales or clerical
Buyer's personal characteristics	laborer
buyer's age	retired
buyer's education	other
buyer's income	Financial characteristics variables
Buyer's occupation before the sale (dummy variables)	percentage of sale price financed by buyer's funds
farm work	percentage of the sale price financed with credit
professional	rate of interest of the loan
administrative	Seller's reasons for selling land (dummy variables)
sales or clerical	money needed
laborer	right price to sell
retired	farming bad business
other	seller's age

cel, improvements, and rights sold were determinants of per acre values other factors also were important. Among these was the seller's income with the per acre price tending to rise with higher could bargain more effectively since they had less economic pressure to sell. This is reinforced by the coefficient of the dummy variable "needed money" which was negative.

The more important of the other seller characteristics were the occupation and reason for selling. Sellers who were farmers, laborers, or retired at the time of the sale tended to receive more per acre than those in other occupations. Sellers who sold because they needed money, because they thought the price was right, or because they thought farming a bad business tended to receive less than those who sold for other reasons. Except for selling because the "price was right" these results are as would be expected.

It also is interesting to note the variables that were not statistically significant in the model. These included location, proportion of cropland, pastureland, or timberland, road type, water supply, seller's age or education and use of the land. The proportions of the various types of land, would be expected to signifi-

cantly influence values, but did not appear to do so. Location also would be expected to be an important factor, but the variables used — distance to nearest town and type of road on which located — did not significantly affect per acre values.

#### Buyer's Model

The regression results for the buyer's model, again with only the coefficients of the statistically significant variables, are shown in Table 3. About 77 percent of the variation in the deflated per acre price was explained by the model. Variables for both the land and buyer characteristics had statistically significant coefficients. Among those related to the price were the per acre value of improvements, proportions of cropland and pastureland and location measured in road miles to the nearest town. The value of improvements, mostly buildings, was positively related and was in part a reflection of the value of the residence. The per acre price tended to increase as the proportion of cropland and pastureland rose, but distance from the nearest town was negatively associated with values.

TABLE 2.

Statistically Significant Regression Coefficients in the Seller's Model<sup>a</sup>

Independent Variables	Regression Coefficient	t Values
Size of parcel	-3.0622	-2.98
Value of Buildings per acre	1.0292	3.04
Sold Surface Only	-922.9082	-2.74
Sold in Fee Simple	370.5386	1.92
Seller's Income	0.0080	2.51
Seller's Occupation: <sup>b</sup>		
Farmer	112.1729	4.14
Laborer	1048.2634	2.56
Retiree	929.1216	3.04
Reasons for Selling <sup>b</sup>		
Needed Money	0477.0650	-2.95
Thought Price was Right	-496.0235	-2.29
Thought Farming was a Bad Business	-545.7802	-2.40

<sup>a</sup>R<sup>2</sup> = .718, F Ratio for explained vs. unexplained variance = 2.925 which was statistically significant at probability level of 0.0002.

<sup>b</sup>Dummy variables were "other occupations" and "other reasons" were omitted to maintain a nonsingular matrix.

TABLE 3.

Statistically Significant Regression Coefficients for the Buyer's Model<sup>a</sup>

Variable	Regression Coefficient	t Value
Value of Buildings Per Acre	1.36990	3.26
Proportion of Cropland and Pastureland	561.75064	2.38
Mileage to Nearest Town	-22.81861	1.75
Used for Farming Subsequent to Sale:	-399.93110	1.83
Buyer's Income	0.009949	1.63
Buyer's Age	-13.27740	2.01
Buyer's Occupation: <sup>b</sup>		
Farming	-2273.23760	1.93
Laborer	-2672.00149	2.05
Administrative Work	-2912.61058	1.89
Sales or Clerical	-2518.41163	1.83
Professional	-2809.49040	1.69
Retired	-1719.52945	2.01

<sup>a</sup>R<sup>2</sup> = .77, The F Ratio for the explained vs. unexplained variance = 2.72, which was statistically significant at the .0004 probability level.

<sup>b</sup>Dummy variables where "other occupations" was omitted to maintain a non-singular matrix.

The socio-economic factors of importance were the buyer's income, the buyer's age, the buyer's occupation, and the use made of the land after it was purchased. As would be expected the price tended to rise with the purchasers income, but fall with age. The occupations were entered as dummy variables and compared with "other occupations" of which self employed was the most common. The signs of the coefficients for the dummy variables of each occupation were negative, indicating that the "other" occupations tended to pay more per acre.

As in the seller's model the land characteristics were important determinants of the per acre prices but several factors considered important were not significantly related to land prices. Included in this category were the earnings from farming operations subsequent to the sale, water supplies, rights purchased, and size of parcel.

## SUMMARY AND CONCLUSIONS

Data on rural land transfers in Greenbrier County, West Virginia for 1970-75 were collected and analyzed. A sample of the transfers was used to select land buyers and sellers for personal interviews to determine the socio-economic characteristics, reasons for buying or selling land, and related data. These data were analyzed by the use of separate regression models for the buyers and sellers of the land.

A major finding was that the socio-economic characteristics of the buyers and sellers were important determinants of the land values. Many of the characteristics of the land that was transferred did not appear to be important determinants of value. Thus type of land, earnings from use of the land, and even location were relatively unimportant. The per acre value of improvements, however, was significantly and closely reflected

in per acre values. A large proportion of the purchasers moved to the property to live. Thus, the residence appears to be an important factor in the purchase of the land in the study area.

The buyer's or seller's occupation and reason for purchasing the land also were related to the land prices. The seller's and buyer's incomes were positively and statistically significantly related to the per acre price as was the buyer's age. Seller's with higher incomes tended to obtain higher per acre prices while those who sold because they needed the money received lower prices. Buyers with higher incomes also tended to pay more per acre.

These results apply only to the study area, but do tend to confirm the findings of the other recent studies of farm or rural land values. Land values appear related to factors other than their agricultural productivity or other measures of economic returns. The relationships to the socio-economic characteristics of the buyers and sellers leads to the inference that the ownership of rural land is taking on some aspects of a consumer good. Back to the land movements, a desire for rural living, and the rural renaissance of recent years seem to be aspects of this situation.

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