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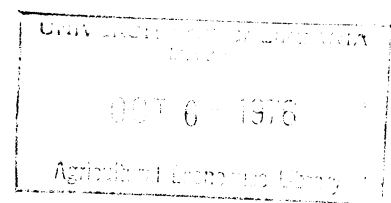
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PART-TIME AND FULL-TIME FARM OPERATORS:

SOME COMPARISONS

by

K. C. Schneeberger, University of Missouri

Sam Comer, Economist, Tennessee State University

Richard Edwards, Agricultural Economist, ERS, USDA
adjunct Professor stationed at Nashville, TN

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BIOGRAPHICAL STATEMENT

Kenneth Schneeberger is an Associate Professor of Agricultural Economics, University of Missouri-Columbia. His major area of specialty is farm management research and teaching.

Sam Comer is a research associate in the Rural Development Department at Tennessee State University. His M.S. is from Tennessee State University. He is currently directing a research project on "Competitive Position of Small Farmers in the South".

Richard Edwards is an Agricultural Economist with ERS, USDA and Adjunct Professor, Tennessee State University.

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PART-TIME AND FULL-TIME FARM OPERATORS: SOME COMPARISONS

Resource use decisions and adjustments to changing economic and technological conditions are a continuing interest of researchers and policy makers. These decisions and adjustments determine (a) the efficiency with which inputs are allocated in agriculture, (b) the profitability of farming (in the aggregate and for individuals) and (c) the survival of individual farm businesses over time.

There is evidence that existing practices on many farms deviate substantially from what theory suggests is operationally and organizationally most profitable. (Allison, Heady, Musser, Musser-White, Schneeberger) There is also a growing literature which provides tentative explanations for the deviations. That many operators are not profit maximizers and thus not subject to traditional production economic assumptions is a popular explanation. Substitution of off-farm income is another explanation. (Heady, 1952, Lin, Musser, 1975) The risk aversion hypothesis is another logical explanation, as is the "information gap" hypothesis. (Heady, 1952, Johnson Patrick) Some combination of the above may be the real explanation. (Hatch)

The likelihood of different farm operators' having different objective functions prompts interest in aggregate group responses. Do farm operator groups differ in their responses to the various economic forces? Are they likely

to respond differently to future programs or economic conditions? This paper summarizes data and responses from Tennessee farm operators, although some results from Missouri are also reported.

Hypotheses

Two hypotheses relating to operator choice of enterprises, management practices and adjustments over time were explored.

These were:

- Hypothesis 1. Farm operators groups do not differ in organization, management practices followed, or intensity of land resource use.
- Hypothesis 2. Adjustments on farms are independent of size and off-farm employment status.

Data and Definitions

Data for the study were obtained via personal interviews with 344 farm operators in west and south central Tennessee. The area is representative of western Tennessee, northern Alabama and Mississippi and southern Kentucky. A farm operator, for the purposes of this study, was (a) any adult person/family living in the open country on 10 or more acres and/or (b) realizing more than \$500 annual gross farm sales in 1974. Farm operators living in towns or unincorporated places with estimated population density greater than 100 persons per square mile were excluded. Thus, the sample, although random for the population as defined, was probably skewed towards smaller farmers and retired operators living in the open country.

There is no standard definition for large vs. small farmer or full-time vs. part-time operator. Previous work in Missouri, Tennessee and Texas suggested a classification of operators into large and small full-time, part-time and retired. In this paper the four operator groups are defined:

Full-Time Farmers: A household head, male or female, under 65 years of age who indicated farming was the primary income source and who worked off-farm for wages less than 1000 hours in 1974. Persons over 65 years who realized more than \$2500 in farm sales were classed full-time. This group was subdivided into:

- A. limited resource operators: realized gross farm sales less than \$20,000.
- B. large farm operators: realized more than \$20,000 in gross farm sales.

Part-Time Farmers: A household head who qualified for the sample and was employed more than 1000 hours, usually 50 or more weeks, in an off-farm job.

Retired Farm Operators: A household head 65 years old or older who qualified for the sample and realized less than \$2500 gross farm sales in 1974. The lower age limit was reduced to 62 years in a few cases, where it was clear the person was retired.

The sample had about equal numbers of small full-time, part-time, and retired operators (Table 1). The large full-time operator group was about 15 percent the total.

Small full-time (Sm FT) operators were more than 10 years older on the average, than large full-time (Lg FT) or part-time (PT) operators (Table 1). Sm FT operators also tended to have less formal schooling (consistent with their age) than Lg FT or PT operators.

Hypothesis 1: Is Farm Operator Type Related to Organization,
Management Practices and Land Use?

Organization: Osburn and West, et. al., have found that small Missouri operators tend to have about the same number of enterprises per farm as their larger counterparts and are no more likely to have labor intensive enterprises. (Schneeberger, West) This probably can be partially explained by (a) common custom, (b) characteristics of the land in a given locale and (c) access to similar input and product markets. That is, operators in a given locale are influenced by a similar set of social and economic forces.

If the labor resources of smaller operators are underemployed, we would expect them to substitute labor for capital and engage in more labor intensive enterprises. They do not do so; Hanson and others have explained the apparent inconsistency by dual employment, particularly among smaller farmers, who use their underemployed labor in part-time non-agricultural jobs. (Hanson, Bateman)

The tendency to have similar enterprises was also observed in Tennessee. However, smaller operators (Sm FT and PT) generally had fewer enterprises. Where Lg FT operators averaged 2 to 3 crop enterprises and one-plus livestock enterprises, the Sm FT and PT operators generally had 1 to 2 crop enterprises and one livestock enterprise. PT operators were less likely to have either dairy cows or hogs than full-time operators. PT operators also had a smaller proportion of total land in crops. (Table 1)

Management and Intensity of Use: Two techniques were used in an attempt to assess intensity and efficiency of resource use. First, operators were asked a series of questions on crop and livestock management practices. Those questions are summarized in Table 2. Second, computations were made for (a) proportion of reported cropland actually planted to crops and (b) acres not in crops per animal unit. It was recognized that following commonly recommended practices does not necessarily result in profit maximization. However, given the research time and money available this "proxy" approach was tried.

Table 2, Section A, summarizes the percentage in each operator group reporting that the crop practice listed was followed in 1974. There were statistically significant differences (χ^2 test, $\alpha = .05$ level) between the proportion of Lg FT and Sm FT operators reporting the practices and between Lg FT and PT operators. Sm FT and PT operators differed only on fertilizer and herbicide use. Retired operators were much less intensive users of recommended crop and pasture practices and differed significantly from the other groups.

Among livestock producers the big differences were observed in operators who raised hogs (Table 2, Section B). Lg FT operators were more likely to follow improved management practices. Only minor differences between Sm FT operators and PT operators were revealed. Significant differences were reported between LG FT operators and the other operator groups on four of the five common practices listed.

Among beef cattle producers the tendency to higher levels of management favored Lg FT operators, but the differences were not significant. Large dairymen were much different from small dairymen; however, the data were not tabled here because dairymen constituted less than 10 percent of the sample.

A comparison of cropland used for crops and acres of pasture and waste per beef or dairy animal unit showed (a) Lg FT operators were the most intensive users of the land resource, (b) Sm FT were similar to Lg FT on pasture, but less intensive users of reported cropland, and (c) PT operators used their resources less intensively than were either Lg FT or Sm FT (see Table 2, Section C).

Comparing capital turnover on Missouri commercial and part-time farms, Le Van found commercial farms had twice the sales volume per dollar of investment. This suggested more intensive, and/or efficient, resource utilization by the larger farmers. (Le Van)

Hypothesis 2: Are Adjustments Size Related?

All operators were asked about changes which (a) they had made in their operations in the last five years and (b) they anticipated in the future.

The responses of operators on past changes were relatively consistent with conventional agricultural wisdom (see Table 3).

Large full-time operators more frequently recalled trying a new crop or livestock practice and/or enterprise. There were statistically significant differences in group responses. Lg FT were also much more likely to have made land improvements or added land through rental or purchase.

Comparisons between Sm FT and PT operators showed the former more likely to emphasize crop changes and the latter to emphasize livestock changes. PT operators were more likely to have purchased additional land during the past five years. Sm FT operators were more likely to have reduced their farm business, but this can be explained by the age factor; the average age of operators in this group was 58 years.

The specific question on future plans was, "As you look forward to the next 3-5 year period, how will your farm business change?" The response to the question was probably influenced by the state of the area agricultural economy in 1974. The situation for beef and dairy was dismal, but was reasonably bright for hogs and most crops.

The predominant attitude for the future was one of "no change." (Table 4) Lg FT and PT operators were more interested in "expansion" than Sm FT, but one-fifth of the Lg FT group also indicated they would be cutting back on their operations. Operators who had beef cattle as the primary enterprise were the most pessimistic group.

Among operators planning to expand, the most frequently mentioned items were land purchases, land improvements (clearing or pasture improvements) and addition of facilities.

If one assumes farm adjustments are influenced by perceived ability to adjust, then knowledge of farmer attitudes is important. Thus, Tennessee operators were asked to rank the three factors most limiting farm expansions (Table 5).

Insufficient profits was the most important factor to the three operator groups. It was the number one limiting factor to one-third of the full-time operators. External and internal capital rationing were the next most significant limitations. Larger farmers placed more emphasis on ability to borrow and availability of credit, whereas small and part time operators placed as much emphasis on owner's equity and willingness to go into debt as on the external rationing factors. Availability of land to purchase (at a price the operator was willing to pay?) was the third most limiting factor to full time farmers, but was the first choice for many part time operators. This is consistent with an investment objective on the part of some PT operators (Hatch, Musser). It is note-worthy that land to rent was not frequently mentioned in the three counties, although larger operators did mention rental more often than the other two groups.

Labor availability and/or quality was an important variable to all groups, but more likely ranked second or third behind other primary factors. The response on labor, particularly for small farmers, was at variance with what is generally assumed about underemployed labor resources in farming.

Concluding Remarks

The study of Tennessee farm operators supports the hypothesis that full-time farmers organize small farms like large farms. However, farm operators who work off-farm 1000 hours or more per year tend to be less intensive users of cropland and are less inclined to have labor intensive livestock enterprises. Operators of larger farms are more likely to rent additional land and to consider land rental as a factor in expansion than small or part-time operators.

The data did not support the hypothesis that no difference in management practices or land use intensity existed. Large full-time operators were significantly more frequent users of recommended crop practices. Practices consistent with good health and productivity were also much more frequently followed on large hog farms. However, differences in beef management practices were minimal between operator groups. Large farmers used a relatively larger share of fertilizer than would be suggested by the proportion of cropland controlled. Larger operators were using both cropland and pasture land more intensively than smaller operators. This may be explained by the ability of larger farm operators to realize technologic economies of size.

The evidence did not support the hypothesis that adjustments are independent of size and employment status. A much larger proportion of large full-time operators had expanded operations or changed the enterprise mix in the most recent five year period. Small full-time operator and part-time operator responses were similar on many adjustments. However, part-time operators were more likely to have purchased land or made changes in livestock, primarily beef cattle, while small full-time operators had made greater adjustments in their cropping practices. About 20 percent of the large full-time and part-time operators planned to purchase land in the next five years. Small full-time operators were pursuing a no change/survival strategy.

All groups selected profits, capital constraints and availability of land to purchase (in that order) as the factors most limiting expansion of farms in the area.

Large full-time operators more frequently exhibited attitudes and management practices consistent with efficiency and the profit motive. Small full-time operators seemed to be attempting to hold their business together, but were less intensive in crops and crop management practices than large operators. Small operators had been much less responsive to changing technologic and economic conditions in the past. This might be explained by their perceptions of internal and external capital rationing coupled with limited incomes, hence limited capacity to take risk.

Part-time operators tended to be less profit oriented than full time operators. Their interest in expanding land holdings is consistent with an investment and/or inflation hedge objective. A situation of greater relative prosperity in the nonagricultural sector could result in significant changes in the ownership pattern of agricultural land; the losing group would be the small full-time operator group.

TABLE 1
FARM OPERATOR COMPARISONS: WEST
AND SOUTH CENTRAL TENNESSEE--1974

CHARACTERISTICS	OPERATOR GROUPS			
	Full-time Small	Large	Part- time	Retired
Age	58.6	44.4	48.1	71.2
Education	9.1	11.1	9.8	7.3
Acres	175.1	1068.2	93.0	70.0
Percent of sample in group (N=344)	30.5	14.5	29.4	25.6
Percent of total land controlled by group	21.1	61.2	10.7	7.0
Percent of cropland controlled by group	16.4	75.9	5.2	2.4
Percent of beef cows controlled by group	29.1	49.4	15.1	6
Percent of brood sows controlled by group	26.8	30.3	28.8	14.1
Percent of group with farm sales less than \$2500	31.5	---	75.3	100.1
Organization				
Avg. no. livestock enterprises per farm	1.1	1.5	1.1	n.a.
Avg. no. crop enterprises per farm	1.2	2.6	.7	n.a.
Land in crops as % of avg. acres per farm	24.0	53.3	13.3	2.3

TABLE 2

MANAGEMENT PRACTICES AND INTENSITY OF RESOURCE
USE AS EFFICIENCY INDICATORS

ITEM	OPERATOR GROUPS			
	Full-time		Part-	
	Small	Large	time	Retired
	-----Percent-----			
	A. CROP & PASTURE PRACTICES			
Soil test in last 5 years	33	64	35	16
Legumes in pasture	62	82	54	34
Fertilizer pastures regularly	47	86	47	28
Bulk fertilizer applied to crops	55	80	38	28
Liquid fertilizer applied to crops	28	50	21	19
Herbicide applied to cropland	44	72	32	
Pastures mowed annually	55	75	56	40
	B. LIVESTOCK PRACTICES			
<u>Hogs</u>				
Farrowing stalls and/or crates	8	59	22	20
Guard rails in farrowing fac.	24	41	17	27
Medicate navel at birth	12	18	17	7
Iron shots at birth	12	35	22	7
Castrate before weaning	72	82	70	40
<u>Beef Cattle</u>				
Vaccinate for Blackleg	68	73	63	39
Spray/dust/dip	78	71	82	61
Calves weaned by 9 months	72	75	80	70
	C. INTENSITY			
Percent of cropland planted to crops	64	89	47	22
No. acres "pasture" ¹ /animal unit	5.6	5.4	14.7	7.9

¹"pasture" in this case is all land not planted to crops.

TABLE 3

CHANGES REPORTED FOR LAST 5 YEAR PERIOD (1970-74);
WEST AND SOUTH CENTRAL TENNESSEE

Change	Full-Time		Part-Time
	Small	Large	
	-percent-		
Tried new crop/veg. practice	18.2	69.2	9.3
Tried new crop/veg. enterprise	27.3	25.0	9.3
Tried new livestock practice	9.1	34.6	18.8
Tried new livestock enterprise	1.3	5.8	8.1
Cleared land	26.0	61.5	26.7
Sodded, sowed impr. pasture	18.2	25.0	18.6
Constructed ponds/drainage	9.1	34.6	8.1
Purchased added land	2.6	28.8	16.3
Rented added land	24.7	55.8	16.3
Cut back crops	33.8	15.4	20.9
Cut back livestock	27.3	9.1	26.7
Rented out land	33.8	7.7	20.9

TABLE 4

FARM OPERATOR RESPONSE TO THE QUESTION: "As you look forward to the next 3-5 year period, how will your farm business change?", WEST AND SOUTH CENTRAL TENNESSEE; 1974.

Plans for Future	Operator Group		Part-Time
	Small	Large	
No Change	52	47	55
Expand	7	17	14
Reduce Operation	12	19	8
Retire	10	4	5
Don't Know	19	13	18

TABLE 1

FACTORS THAT LIMIT FARM EXPANSION AS PERCEIVED
BY FARM OPERATORS IN
WEST AND SOUTH CENTRAL TENNESSEE, 1974

	Percent of Operators		
	Ranking Factor:		
	Most Limiting	Second	Third
SMALL FARMERS			
No available land to buy	17.1%	5.7%	7.6%
No available land to rent	-	1.9	2.9
External capital rationing	13.3	21.0	15.2
Internal capital rationing	14.3	18.1	13.3
Ability to operate larger unit	1.9	1.0	2.9
Machinery and/or equipment	3.8	4.8	5.7
Labor	12.4	13.3	20.9
Lack of profits	28.6	18.1	12.4
No response/Other	8.7	17.1	19.1
LARGE FARMERS			
No available land to buy	13.0%	11.1%	7.4%
No available land to rent	3.7	3.7	7.4
External capital rationing	13.0	27.8	11.1
Internal capital rationing	9.3	16.7	13.0
Ability to operate larger unit	1.9	-	-
Machinery and/or equipment	-	1.9	5.6
Labor	9.3	14.8	24.1
Lack of profits	46.3	16.7	16.7
No response/Other	3.7	7.3	14.7
PART-TIME FARMERS			
No available land to buy	20.0%	5.3%	4.2%
No available land to rent	2.1	1.1	4.2
External capital rationing	15.8	22.1	10.5
Internal capital rationing	11.6	23.2	15.8
Ability to operate larger units	3.2	-	2.1
Machinery and/or equipment	2.1	3.2	7.4
Labor	16.8	12.6	23.2
Profits	19.0	16.8	13.7
No response/Other	9.4	15.7	18.9

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