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ON PART-TIME FARMING*

W. Lanny Bateman, Odell L. Walker, Raleigh A. Jobes

Economic logic and empirical observation suggest that increasing numbers of part-time farms can have important implications for organization of agricultural production and development of rural areas.¹ Production relationships on part-time farms may differ because:

- 1) Farm operators working off the farm may organize resources and respond to price changes differently than full-time operators;
- 2) Part-time operators may have different demand functions for production inputs, particularly land and labor, and
- 3) Part-time operators may achieve different levels of efficiency than their full-time counterparts.²

Differences in organization can be hypothesized on the basis of different sets of objectives for part-time versus full-time farmers. For example, attitudes concerning risk or the utility of another dollar of expected income from additional managerial activity logically may differ between a farmer with no sure off-farm income and one with an off-farm job which pays a regular income. Alternatively, the difference in response could be derived from the resources available to the operator, particularly operator and family labor. Subsequent empirical examples will look at the effect of labor on production response.

Demand for a production input such as land may

differ between part and full-time operators because of the relative weight placed on land control (rentership or ownership) for reasons other than production (e.g., rural living or recreation). At least, the incremental unit of land for a full-time operator is likely to be for production rather than for some form of direct consumption. The part-time operator is potentially a unique factor in the land market.

If the part-time operator is less efficient than the full-time operator, aggregate production could suffer with increases in resources controlled by the part-time component. Clearly, economic forces can operate so that resources reach the hands of the more efficient producer. However, differences in managerial objectives or in reasons for using certain sources may offset efficiency considerations.

Relationships which may make the magnitude of part-time farming important to rural development are:

1. Part-time farming implies a greater number of farm units for a given region. It freezes families to a locale (maybe several miles from the farm) and maintains local demand for public and private goods and services. Without part-time farming, the effects of the off-farm exodus of the 1950's would have been more severe on rural communities;
2. The rural manpower supply is enhanced by part-time farming, and

W. Lanny Bateman is assistant professor of agricultural economics at the University of Georgia; Odell L. Walker is professor of agricultural economics at Oklahoma State University, and Raleigh A. Jobes is assistant professor of agricultural economics at Clemson University.

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¹In an earlier contribution to this Journal, Schneeberger and West stressed a need to study marginal and part-time farms, partly to increase the equity of research and to contribute to rural economic development [4].

²The reader should note that the 1969 Census definition of a part-time farmer is one who works 100 days or more off-farm, has a gross farm income of \$1,500 to \$2,499 and is 65 years of age or less. Data discussed here are for farms with 10 or more beef cattle excluding calves and at least 50 acres or \$1,000 or more gross receipts from farming.

3. As a result population density derived from regular or weekend rural residents, land investment and improvements such as for homes, water, recreational facilities, rural roads, utilities, and appearance may be stimulated. Economies of size (population) could operate to make many of these feasible.

A broad analysis of effects on agricultural production and rural development is beyond the scope of this paper. In the following sections, preliminary results from a study of the possible effects of part-time farming on beef production are presented for a part of Oklahoma.

PART-TIME FARMING IN THE STUDY AREA

Census data for southern states (Table 1) show farm numbers declining from almost 1.3 million in 1964 to less than 1.1 million in 1969. In the same period, farms reporting off-farm work increased from 609,162 to 627,921. The number of farms with sales of \$2,500 or more and reporting off-farm work also increased. More than half the farms reporting off-farm work (for all farms as well as those with sales of \$2,500 or more) reported 200 days of work or more. It is apparent that off-farm work occurs on an increasing proportion of farms and commands a large part of the operator's time.

Table 1 also reflects the magnitude of part-time

Table 1. TOTAL FARMS, ALL FARMS, AND FARMS WITH SALES OF \$2,500 OR MORE REPORTING OFF-FARM WORK FOR 12 SOUTHERN STATES, OKLAHOMA AND A S-67 STUDY AREA IN OKLAHOMA, 1964-1969^a

Item	Total Farms		All Farms Reporting Off-Farm Work		Farms With Sales Over \$2,500 and Reporting Off-Farm Work	
	1969	1964	1969	1964	1969	1964
-- number --						
12 Southern states						
No. of Farms	1,081,800	1,272,500	627,921	609,162	248,690	199,829
Farms with Off-Farm work of:						
1 to 49 days			94,541	163,593	51,461	58,033
50 to 99 days			49,841		25,924	29,161
100 to 199 days			97,673		37,649	28,973
200 days or over			385,866	445,569	133,656	83,662
Oklahoma						
No. of Farms	83,037	88,726				
Farms with Off-Farm work of:						
1 to 49 days			7,395	11,609	5,185	4,799
50 to 99 days			3,806		2,529	2,564
100 to 199 days			7,643	36,318	4,210	2,819
200 days or over			31,628		14,646	7,968
Oklahoma Study Area						
No. of Farms	7,138	7,769				
Farms with Off-Farm work of:						
1 to 49 days			483	768	299	226
50 to 99 days			245		154	147
100 to 199 days			534	3,795	253	149
200 days or over			3,475		1,441	667

^a1969 Census of Agriculture, Alabama, Arkansas, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia.

farming in Oklahoma and in the area selected for the analysis presented later. In the Oklahoma study area approximately 23 percent of all farm acres, 23 percent of openland, 25 percent of beef cows, and 34 percent of the stockers were on part-time farms with operators working 100 days or more off-farm. Thus, if beef farms with part-time operators do in fact have different beef production parameters than farms with full-time operators, they are important enough to deserve consideration in research.

Southern Regional Research Project S-67, to which the authors contributed, provided data concerning the structure of the southern beef production plant (Table 2) [2]. An estimated 40 percent of the beef farms surveyed had operators who worked one or more days off the farm. Twenty-four percent of the beef farmers worked 250 days or more off-farm. The part-time farmers' primary employment varied with the area surveyed [3]. A wide pattern of jobs was apparent, including skilled and unskilled farm and nonfarm work, as well as professional work such as in schools and medical, health, and governmental services. The importance of the nearly full-time, off-farm job category is a significant finding of the survey.

Beef production resources are predominately in the hands of beef farmers. For example, in the southern states, 78 percent of the farm acres and 97

percent of the beef cows were on beef farms (as defined in Table 2). Only 57 percent of all farms were beef farms. According to the survey estimates, 26 percent of farm acres and 32 percent of all beef cows were on part-time beef farms. Thus, one can conclude that part-time farming is a significant sector of the South's beef production plant.

DIFFERENCES IN PART-TIME AND FULL-TIME BEEF FARMING ORGANIZATIONS AND RESPONSES

A linear programming model was used to study the part-time and full-time beef farm situations [1]. The full-time situation had 1,280 acres of land. The size was based on a minimum resource analysis which found that 1,280 acres would provide a \$6,343 net return to operator labor and management. In contrast, under the same price assumptions, a 280-acre, part-time farm, based on average size of surveyed farms, earned \$2,125 for operator labor and management. Part of the disproportionate labor return per acre (\$4.96 vs. \$7.59 on the part-time farm) resulted from the operator labor assumption of 2,500 hours for full-time and 939 hours for part-time, or 1.95 and 3.35 hours per acre, respectively. The full-time operator had to hire 2.8 hours per acre when optimally organized, compared to 1.23 hours per acre for the part-time operator.

Table 2. ESTIMATED PERCENTAGES OF BEEF PRODUCTION RESOURCES ON PART-TIME BEEF FARMS IN SELECTED AREAS OF 12 SOUTHERN STATES^a

Resource	All Farms ^b	Beef Farms ^c	Beef Farms on Which the Operator Works a Day or More Off Farm	Beef Farms on Which The Operator Works Off-Farm		
				1-99	100-249	>250
	(Percent of All Farms)		(Percent of All	of All	Beef	Farms)
Farms	100	57	40	6	10	24
Farm Acres	100	58	26	6	5	15
Openland Acres	100	76	29	9	6	14
Beef Cows	100	97	32	7	6	19
Cattle Fed or Graded ^d	100	100	25	7	6	12

^aData reported here are based on a survey conducted by cooperators in Regional Research Project S-67 [2].

^bIncludes all units 50 acres or more in size or with \$1,000 gross receipts from farming.

^cFarms with 10 or more head of beef, exclusive of nursing calves.

^dCalves carried past weaning on pasture or fat cattle.

The same forage and livestock activities were assumed available for each size of farm. These included intensive annual and perennial pastures, native range, hay crops, cows, and steers. Input-output coefficients were assumed equal for the basic analysis. However, results indicated that the part-time farm did not utilize machinery and equipment as fully as the full-time.

Three comparisons were made between part-time and full-time farms, in addition to the minimum size analysis. First, an analysis was made to determine if the two farms might be expected to have different organizations (sets of enterprises and production practices). The optimal organizations were very similar between farms except for the effects of the labor supply described earlier. Alternative optimal organizations were estimated by limiting the use of some activities. Availability of operator labor on the part-time farm allowed relatively more flexibility in the organizational choice. For example, deletion of the most profitable enterprise for each farm reduced labor returns for the full-time situation to virtually zero, but only to \$.64 per hour in the part-time situation. Optimal cow-calf systems were different for the two operations when the most profitable enterprise was deleted.

The second analysis examined the effects of higher production costs on the part-time farm, rather than equal costs. As previously mentioned, equipment utilization differed for the two operator categories. However, this would not necessarily mean higher costs for the part-time operator. Lower annual use could allow machinery to be used over more years to achieve costs associated with high annual use on the larger farms. Alternatively, used or smaller equipment and custom hiring might achieve costs

comparable to those on farms with higher use.

The equal cost result is presented in columns 1 and 2, Table 3. The similarity of the resource organizations is clear. The number of acres per animal unit was 2.36 for the full-time and 2.35 for the part-time situations. Non-land capital requirements were very close as well. Most of the differences in organizations could be attributed to differences in operator labor availability.

Column 3, of Table 3 reflects resource use on the part-time farm when non-land costs are increased. The land per animal unit increased to 3.62 acres for the part-time operator, and returns per hour of operator labor declined to \$1.10. Capital and labor use also were reduced.

Results indicate that overall efficiency of beef production would not necessarily be adversely affected by a high incidence of part-time farming, if costs structures faced by the two situations do not differ. The part-time operation would incur less cost per beef animal unit than the full-time, \$133 compared to \$159. However, if part-time farming has higher costs such as reflected in column 3, Table 3, more land and other inputs would be required.

The third analysis estimated the response of the two farm situations to changes in the beef price level. The same costs and efficiencies were assumed for both farms in this analysis. Results of programming at five price levels are summarized in Table 4. Acres per animal unit and non-land capital per acre are used to illustrate the intensity relationships. At the lower price levels, intensity of inputs is greater for the part-time farm. The higher operator labor supply per acre explains this result.

An appreciable change in intensity is evident for both farms as price increases. At the higher price

Table 3. COMPARISON OF SELECTED RATIOS FOR PART-TIME AND FULL-TIME BEEF FARMS ASSUMING EQUAL COSTS, AND HIGHER COSTS FOR THE PART-TIME SITUATION

Item	Units	Full-Time	Part-Time	
		Situation (1)	Situation (2)	(3)
Returns Per Hour of				
Operator Labor	dol.	2.54	2.56	1.10
Average Annual				
Stocking Rate	ac./A.U.	2.36	2.35	3.62
Labor Hired Per Acre	hrs.	2.8	1.23	0.28
Non-land Capital				
Per Acre	dol.	148.04	148.91	97.73
Cost Per Acre	dol.	67.44	56.79	50.00
Cost Per A.U.	dol.	159.16	133.46	181.00

Table 4. COMPARISON OF STOCKING RATES AND NON-LAND CAPITAL REQUIREMENTS PER ACRE FOR PART-TIME AND FULL-TIME BEEF FARMS AT FIVE PRICE LEVELS

Level	Beef Price	Acres Per Animal Unit		Capital Per Acre	
		Full-Time	Part-Time	Full-Time	Part-Time
1	22.50	3.9	3.58	88.45	101.54
2	27.50	2.87	2.67	124.59	133.00
3	32.50	2.36	2.35	148.04	150.70
4	37.50	2.32	2.33	150.70	150.18
5	42.50	2.1	2.1	163.17	163.17

Table 5. AVERAGE PERCENTAGE CHANGE IN BEEF ANIMAL UNITS PER 1 PERCENT CHANGE IN BEEF PRICE FOR PART-TIME AND FULL-TIME FARMING SITUATIONS

Price Level Change		Percent Response to a 1% Price Change	
		Full-Time	Part-Time
1 to 2	(\$22.50 to \$27.50)	1.6	1.5
2 to 3	(\$27.50 to \$32.50)	1.2	.8
3 to 4	(\$32.50 to \$37.50)	.1	.1
4 to 5	(\$37.50 to \$42.50)	.9	.9

Table 6. MOTIVATIONAL AND ATTITUDE CHARACTERISTICS OF 113 GEORGIA BEEF FARMERS

Attitude	Neutral Point ^a	Mean Score	
		Part-time ^b	Full-time
Economic Motivation	59.5	72.7	69.5
Scientific Orientation	66.5	82.4	82.2
Independence	66.5	78.1	80.3
Risk	56	63.7	60.2

^aThe questionnaire was designed to assign weights to question responses. Thus, if the summed responses on economic motivation equaled 59.5, then the individual could either be economically motivated or non-motivated.

^bOnly seven part-time farms are included, compared to 105 full-time.

levels, the intensity, if not the exact organization, is identical. The estimates suggest that under the assumptions used, a part-time farmer could profitably persist in intensive production longer as prices decrease. Alternatively, as depicted in Table 5, the response coefficients suggest that the full-time farmer could profitably increase production faster than the part-time operator as prices increase from lower price levels. For example, in moving from a price level of \$27.50 for stocker calves to \$32.50, the full-time operator could increase his cow herd by 1.2 percent

per 1 percent change in price, as opposed to an increase of .8 percent for the part-time farmer.

The results presented here depend on the assumption that the part-time farmer and full-time farmer have similar motivations and objectives. There is some evidence to support this contention. A survey conducted in Georgia in conjunction with S-67 attempted to measure motivations and attitudes of farmers.³ The results from 113 beef farmers (beef farm as defined in Table 2) measuring economic motivation, scientific orientation, independence, and

³Information furnished by John Allison and J. C. Elrod, Dept. of Agricultural Economics at the University of Georgia Experiment Stations, Experiment (Griffin), Ga.

risk acceptance are summarized in Table 6. The neutral point is presented for reference; a number higher than the neutral point in each case shows a tendency to be economically motivated, scientifically oriented, independent, or a risk-taker. For a lower score, the interpretation is opposite. In all cases but independence, part-time farmers had higher mean scores than full-time farmers. However, an "f test" indicated no significant difference between the scores.

SUMMARY

This paper documents the increasing importance in numbers of part-time farmers in 12 southern states. A significant amount of the beef production resources in the South are under the control of

part-time farmers. Economic logic and preliminary empirical investigations are presented to indicate that part-time farming has potential impacts on organization of beef production, beef supply response, and the rural economic environment.

A critical analysis of the empirical results presented must stress that the differences in organization and responses depend heavily on the labor assumptions and sizes of farms used. Further study is needed to determine the extent to which a part-time farm's production costs and input-output coefficients differ from those for a full-time farm and to further investigate the implications. In addition, the effects of increases in part-time farming on land prices and on the economy of industrially developing rural areas need to be studied.

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