



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

**SOURCES OF CAPITAL FOR COMMERCIAL FARM OPERATORS**

**Steven R. Koenig and Charles B. Dodson**

**Proceedings of a Seminar sponsored by  
North Central Regional Project NC-207  
“Regulatory, Efficiency and Management Issues Affecting Rural Financial Markets”  
Kansas City, Missouri  
October 16-17, 1995**

Department of Agricultural Economics And Rural Sociology  
221 Agriculture Building  
Fayetteville, Arkansas 72701

January 1996

*Copyright 1995 by author. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.*

## Sources of Capital for Commercial Farm Operators

*Steven R. Koenig and Charles B. Dodson<sup>1</sup>*

### Abstract

The 563,000 U.S. commercial sized farms manage over \$600 billion in capital to produce nearly 90 percent of the total annual value of U.S. farm production. Managed farm business capital consists of leased assets, owner supplied equity, and borrowed capital (debt). Landlords (leasing) were found to be a major source of capital, especially for young and low resource operators. Among all commercial farms, leased capital accounts for over one-third of total farm capital, while debt capital accounts for only 10 percent. The greater reliance on leased capital suggests that leasing terms and availability may have a greater impact on the survivability of young and low resource farmers than do Federal or State subsidized credit programs.

Commercial farm businesses, those with annual sales of more than \$50,000, require large amounts of capital to produce nearly 90 percent of the Nation's total supply of food and fiber. On average, the total farm business investment (value of owner equity, borrowed capital, and leased assets) of the 563,000 commercial sized farms exceeds \$1 million. Large amounts of capital necessary to control the means of farm production can act as a barrier to entry for beginning farmers or thwart the growth of farm firms with few financial resources. A major objective of Federal farm credit policy is to help these operators obtain control of productive assets through subsidized credit programs.

In the wake of the 1980's farm financial crisis, Boehlje and Pederson called attention to the need to develop new and imaginative approaches to financing production agriculture. They postulated that a recapitalization of US agriculture would require new equity owners which would likely be nonfarm investors or institutions. This would lead to more leasing by farm operators. Greater leasing would reduce the farmer's financial risk associated with debt financing by expanding the number of investors to absorb losses. However, there has been little published analysis which specifically examines how assets are being financed since the 1980's financial crisis. Previous published studies have examined the feasibility of long-term land leasing (Baker and Thomasine), factors influencing the choice of cash versus share rent (Allen and Lueck) and the effects of land tenure on profitability and solvency (Ellinger and Barry; Richardson, Lemieux, and Nixon).

This research tries to determine the importance of debt and leased capital to various groups of commercial farm operators during the 1990's. It examines age and wealth effects on

---

1 The authors are financial economists with the Rural Economy Division, Economic Research Service, U.S. Department of Agriculture.

capital use as well as differences in real estate and nonreal estate based capital. It also examines the income generating capacity of commercial farms and the relative importance that different lender groups have in supplying capital to the farm sector. The results from this study should provide insight into relevance of Federal farm credit policies, especially those trying to affect the overall capital availability for beginning, low resource, and other classes of operators.

## **Methodology and Data**

The capital structure of commercial farms was analyzed using the expenditure version of USDA's Farm Costs and Returns Survey (FCRS).<sup>2</sup> The FCRS is a multiple frame survey that provides farm expense, income, and balance sheet estimates along with operator characteristics for a calendar year. Estimates discussed represent averages of combined year end data for 1991-93. The averaging of three years of data was done to increase the reliability of estimates. The analysis includes assets and debt associated with the farm business, but does not measure that of nonoperator landlords. Consequently, it does not provide a complete accounting of the farm sectors assets and liabilities and is not directly comparable with data reported in USDA's Economic Indicators of the Farm Sector series.

### Defining Commercial Farms by Age and Wealth

USDA and Census define a farm as any establishment that sells or normally would sell at least \$1,000 of agricultural products in a calendar year. Using this definition there are now about 2 million U.S. farms. However, most of the value of U.S. farm production is attributable to commercial-sized farms, which produce over \$50,000 in farm products annually. These farms account for 25 percent of all farms, but produce nearly 90 percent of U.S. annual farm production. Many of the smaller farms are operated by part-time and/or lifestyle farmers who derive utility from the rural lifestyle and rely primarily on off-farm income sources. As a result, these operators may be willing to maintain greater investments in capital equipment and nonproductive assets than a commercial operator. Thus, excluding them should provide a more representative picture of the capital actually used to produce agricultural products.

Commercial-sized farms were divided into a young farmer group (under 40 years old) and a older farmer group (over 40 years). The two age groups were further divided

---

2 Other versions included a cost of production survey which is designed to estimate the total per acre cost of producing specific crops and a farm operator resource version. The expenditure version was used because it includes data on debt held by lenders.

Table 1. Defining farm operators

into three subgroups based on wealth (see table 1).<sup>3</sup> Groups were defined as to be somewhat homogenous. For younger farmers, the equity thresholds defining the low resource, moderate, and wealthy categories were lower than for the older group. For example, young low resource operators were defined as having less than \$150,000 in equity whereas older low resource operators were defined as having less than \$250,000. This was done to account for the overall increase in wealth with age. While thresholds are arbitrary, the low resource operator thresholds approximate the bottom 25 percent of all farms with respect to net worth.

Small farms - Under \$50,000 in annual sales
Commercial farms - Over \$50,000 in annual sales
- Young farmers - Under 40 years of age
Low resource - Less than \$150,000 net worth
Aspiring - \$150,000 - \$500,000 net worth
Wealthy - Greater than \$500,000 net worth
- Older farmers - Over 40 years of age
Low resource - Less than \$250,000 net worth
Traditional - \$250,000 - \$1,000,000 net worth
Wealthy - Greater than \$1,000,000 net worth

#### Defining Managed Capital

Managed capital is the total current dollar value of capital used in the farm business and includes leased assets, owner equity, and farm business debt. Excluded from debt capital are accounts payable balances and accrued interest. Debt capital includes loans secured by real estate and nonreal estate assets plus monies borrowed for annual operating expenses. FCRS balance sheet assets are valued at their current value and not their cost basis. The operator's actual cost of capital may be more or less than stated, depending heavily on when farm real estate assets were acquired.

The expenditure version of the FCRS did not collect data on nonfarm balance sheet items such as securities, equities, and the value of other nonfarm assets. Among most commercial-sized farm operations the farm operator household receives a majority of its income from the farm business and the majority of their net worth is invested in farm assets. Consequently, capitalization of the farm business is also very representative of the household.

---

3 Commercial farm total includes about 6,000 corporate farms that could not be allocated to either of the six subgroups.

## Estimating Leased Capital

The value of leased real estate capital was obtained from the FCRS. Survey respondents were asked the value of owned and leased real estate assets. Since survey respondents were not asked the value of rented nonreal estate assets, a value had to be imputed from other survey data. The imputed values were based on the annual rental payment of the leased asset. Capital leases and loans for nonreal estate capital have historically included terms which approximate the life of the asset. Hence, they would amortize over 7-10 years with a minimal salvage value. In recent years farm machinery values, especially for tractors and combines, have held their nominal value. For example, used machinery resale values for 10-15 year old tractors often are equal to their original sale value. This would suggest that a perpetuity would provide a more representative value. For this study, the value of leased nonreal estate assets was based on simple average of a perpetuity and a 7 year amortization of the rental payment at the current interest rate.

## **Results**

Probably the most striking result is the relatively minor importance of debt capital. Lenders supply only 10 percent of the \$638 million in total capital managed by commercial farms (table 2). Instead, most commercial farm capital is held either as owner equity (55 percent) or is leased (35 percent). Leased capital is primarily supplied by landlords. While low resource operators are more reliant on debt than other operator groups, leasing is their primary capital source. For low resource operators, over 60 percent of all capital is leased and only 15-17 percent is borrowed. As anticipated, the reliance on debt and leased capital financing decreases as age and wealth increase.

Capital used by commercial farms is concentrated in the hands of the largest farm operators. Wealthy young and older operators account for only 18 percent of commercial farms, but about 40 percent of the total value of commercial farm production and managed capital. The traditional farm group, which may best reflect the popular view of the American family farmer, accounts for 43 percent of all commercial farms, but accounts for only 32 percent of the total value of production.

The average amount of capital managed per farm for wealthy operators was also substantially greater than that of other groups. Older wealthy operators manage \$2.8 million per farm, while younger wealthy operators manage \$1.9 million per farm. In comparison, low resource operators appeared greatly undercapitalized, averaging under \$600,000 in total capital managed per farm. On average, wealthy operators reported the dollar value of annual farm production to be three or four times the amount of their low resource counterparts.

Yet, the groups with lower resources appear to achieve a more efficient capital utilization as indicated by the ratio of the value of farm production to capital managed

(figure 1). Additionally, these groups tend to have less capital managed per acre operated. This does not necessarily mean that lower resource operators are better managers. Groups with more equity reported higher returns on owned assets (ROA)<sup>4</sup>. When a charge is made to the farm business for operator labor and management costs, average returns become negative for many lower resource farms (see table 5). This suggests that many of these operators are accepting a lower than market return for their labor and management. One likely explanation is that wealthier operators achieve a more efficient utilization of their labor through larger and more modern equipment.

### Use of Debt Capital

Not only is debt a minor source of capital for farm businesses--its use is irregular. Thirty percent of all commercial operators report no debt (table 3). With the exception of aspiring young farmers, less than half of the farmers in any group owe any mortgage debt. With the exception of low resource operators, this is also true for nonreal estate debt. Average indebtedness for the six farm groups ranges from just over \$100,000 to under \$400,000, with \$166,000 being an average across all groups. Debt capital use was found to decrease with rising age and wealth.

On average, 75 percent of all indebted farms reported having either an operating loan or nonreal estate loan. However, use of all debt forms (mortgage, nonreal estate, and operating loan) by one farm was uncommon. Only 10 percent of all indebted farms reported owing all three debt forms. This finding questions the belief that full service lending is required to compete effectively in farm credit markets.

Indebted young and older low resource operators' greater reliance on credit is indicated by debt-asset ratios of 0.57 and 0.47, respectively. The mortgage debt-to-real estate asset ratio is even higher for these groups--0.82 for younger farmers. Thus, it is likely that many of these low resource operators utilize leased capital to the extent they do because they have no more borrowing capacity.

Although lenders supply only 10 percent of the total managed capital to commercial farms, for nonreal estate capital, lenders are a somewhat more important source. Roughly 17 percent of nonreal estate capital is borrowed. Again, age and wealth affects are evident, with more low resource and younger farmers using debt to control nonreal estate assets. Nearly 40 percent of nonreal estate capital used by young low resource operators was debt

---

4 Return on assets were calculated as: (Net farm income - management charge - unpaid family labor + interest paid) / total farm assets. Management charge was assumed to be 5 percent of the net value of production. Unpaid family labor was estimated based on the annual hours of unpaid family labor estimated by survey respondents \* farm wage rate obtained for USDA farm labor surveys.

financed. For older wealthier farmers, only 12 percent of their total nonreal estate capital was debt financed.

Commercial banks are a major source of nonreal estate capital to low resource operators, supplying over 20 percent. This is in sharp contrast to other lender groups who typically supply less than 5 percent of total nonreal estate capital. For real estate capital, all lender groups' share of total managed capital was less than 5 percent.<sup>5</sup> The U.S. Department of Agriculture's (USDA) targeting of credit to low resource operators is evident, with USDA supplying unmeasurable amounts to older and wealthier groups. Across all six age and wealth groups and regardless of the type of credit, the Farm Credit System (FCS) consistently supplies between 2-3 percent of total managed capital. In aggregate, the FCS appears not to be a significant source of capital for U.S. commercial farms.

These results may have implications for Federal and State agricultural credit policies. USDA Farm credit programs are increasingly being targeted to low resource young and beginning farmers. Yet for this low resource group, USDA direct lending supplies only 5 percent of the total capital managed by these commercial farmers. The FCS is even a less significant source of capital for low resource farms, supplying only about 2 percent of their total capital. Termination of the FCS's government enterprise status or the curtailment of USDA's direct lending programs may not have as much of an affect on low resource farmers, as many may believe. Given their reliance on leased capital, young and low resource operators may benefit more from policy efforts that improve efficiency of leasing arrangements over polices that focus on debt capital access.

### Use of Leased Capital

Leasing has always been one of the more common methods of "financing" the control of farm real estate. Farmers have historically viewed leasing as a temporary measure until funds are available to purchase land. The results from this analysis suggest that this trend could be changing with leasing being an important source of capital for older and wealthier operators.

About three-fourths of all commercial farm operators reported leasing some real estate with the percentage declining as age and wealth increase (table 4). Cash leasing as opposed to share leasing is a more popular type of arrangement with 30 percent of all acres operated under cash leases. Regardless of group, cash leasing is more common than share leasing. Yet, share leases still represent an important method of acquiring land for young and for low resource operators, with over 30 percent of these operators total farmed acres

---

5 This share does not take into account the amount of leased capital, primarily real estate, that these lenders may be financing. However, surveys of farm landlords indicate they owe little real estate debt.



being share leased. Wealthier and older farmers are better equipped to absorb the risks of cash leasing and are also less in need of the input financing which share leasing offers.

Leasing is also an important method with which to gain control of nonreal estate assets. For all commercial farms, 17 percent reported leasing machinery or equipment. Younger operators and older wealthier operators were found to be somewhat more likely to lease machinery. Younger operators may be using leasing because they may find themselves rationed out of regular credit markets. Wealthy older operators may find that leasing allows them to keep up with the latest technology at a lower cost or may find tax advantages to leasing.

The value of leased nonreal estate assets was estimated at \$6.5 billion which is about two-thirds of nonreal estate debt (excluding production debt) owed by commercial farms (\$9.5 billion). While the procedure used to estimate the value of leased machinery was somewhat arbitrary, it is clear nonreal-estate lenders are facing strong competition from machinery and equipment leasing.

Leasing was most common among cotton and grain farms, accounting for roughly half of their total managed capital (figure 2). This is likely because of the large amount of land that these enterprises use. Nursery/greenhouse, livestock, and fruit/vegetable operations rely heavily on owner equity, making it difficult for young and beginning farmers to become established in these enterprises. Contractors are an important source of capital to poultry operators and this is increasingly true for hog farms. On specialized poultry farms, it was found that over 50% of all farm production is covered by a production contract.

### Income as a Source of Capital

Building capital through internally generated funds can be difficult for some commercial farm operations, especially for low resource operators. Average net farm income was only \$17,471 for young low resource operators and \$16,073 for older low resource operators. The wealthy groups appeared to be the most likely to generate capital from farm income. Nearly 50 percent of older wealthy operators and 40 percent of young wealthy operators reported net farm incomes over \$50,000.

Off-farm income appears to be a capital source for wealthy older commercial operators, but not for many in the other groups. This group averages over \$47,000 off-farm income annually, whereas the other groups average between \$15,000 and \$25,000. Seventy-five percent of all farms reported less than \$25,000 in off-farm income. Less than 5 percent of young farmers reported over \$50,000 in off-farm income.

The potential for generating additional capital from off-farm income appears somewhat limited. Few commercial farm operators appear to have either the time to devote to an off-farm job or the training. Commercial operations average 2,200 hours of labor annually with many requiring between 2,000 and 3,000 hours of operator labor annually.

Among commercial operators under 40, who probably needed off-farm income the most, only 25 percent reported less than 1,500 hours of labor. With only 15 percent of young operators reporting a college degree, many may lack the necessary education to obtain off-farm incomes sufficient to help capitalize their farm business.

### **Implications**

The results of this study, while not astonishing, indicate the importance of leasing as a source of capital for commercial farms is much greater than that of debt capital. Debt capital share of total managed capital for commercial farms was only 10 percent, which compares to 35 percent for leased capital. As anticipated, the use of leased assets and debt capital was found to decline with increasing age and wealth of the farm operator. Also, lease capital use was found to vary considerably by enterprise.

The study shows that capital utilized by commercial farms is large--averaging over \$1 million. To gain control of productive assets, low resource farmers, particularly young operators, rely heavily on leasing. While debt capital represents a significant source of nonreal estate capital for low resource farmers, when real estate is considered it becomes much less important for this group. The research also indicates that internally generated capital from the farm business or the farm owner is often limited to wealthier commercial farms. This suggests that low resource are more likely to need to attract capital from equity investors (usually through leasing) to finance production expansions.

The findings of this research may help to rephrase questions relating to Federal and State credit policies that assist young and low resource farmers. Perhaps most interesting is the relative small amount of capital supplied by the Farm Credit System to commercial farmers, particularly young low resource farmers. Their 2 to 3 percent share of total real estate and nonreal estate capital brings into question the importance of FCS's role in supplying capital to the sector. Because of this small share, whether the FCS merits continued Federal support would then largely hinge on the degree of competition it might bring to farm credit markets. They are almost absent from financing young low resource farmers, bringing into question the lending competition they may offer these farm operators (Dodson and Koenig).

USDA lending resources are clearly directed toward low resource borrowers with about 5 percent of these operators' capital coming from USDA direct loan programs. A proposed redirection of USDA programs to young beginning farmers, would likely boost this share, but these operators would still rely mostly on landlords and commercial banks for much of their capital needs. The data does not account for loans guaranteed by USDA, but largely made by commercial banks.

Given their reliance on leased capital, young and low resource operators might benefit more from policy efforts that improve the efficiency or attractiveness of leasing

arrangements. At the Federal or the State level this might be accomplished through the tax code by giving favorable tax treatment to the lessee on leases involving low resource beginning farmers. The findings also yield thoughts on the direction of agricultural finance research. Historically, the agricultural finance literature has focused more on the issues of institutional credit delivery and supply. Perhaps, there should be more focus on the efficiency of alternative leasing arrangements and other investor equity financing arrangements. For example, what real estate leasing arrangement provides the optimal balance of risk and return for low resource or young farmers?

### References

- Allen, Douglas and D. Leuck. "Contract Choice in Modern Agriculture: Cash Rent Versus Crop Share." *J. of Law and Economics*, Vol. 35 (October 1992) pp. 397-426.
- Baker, Laurie and P. Thomasine. "Financing New Entrants: The Long-term Leasing Option." *Canadian Journal of Agricultural Economics*, Vol. 39 (1991) pp. 255-69.
- Boehlje, Michael and Glenn Pederson. "Farm Finance: The New Issues," *Choices* (Third Quarter, 1988) pp.16-19.
- Dodson, Charles and Steve Koenig. "Young Commercial Farmers: Their Financial Structure and Credit Sources." *Agricultural Income and Finance: Situation and Outlook Report, AIS -56*. U.S. Dept. of Agr., Econ. Res. Serv., Washington, D.C. (February 1995) pp. 40-44.
- Ellinger, Paul N. And Peter J. Barry. "The Effects of Tenure Position on Farm Profitability and Solvency: An Application to Illinois Grain Farms." *Agricultural Finance Review* (1987) Vol. 47 pp. 106-118.
- Richardson, James W., Catharine M. Lemieux and Clair J. Nixon. "Entry into Farming: The Effects of Leasing and Leverage on Firm Survival." *Southern Journal of Agricultural Economics* Vol. 15 No. 2. (December 1983) pp. 139-146.
- USDA. *Economic Indicators of the Farm Sector: National Financial Summary, 1993. ECIFS 13-1*. U.S. Dept. of Agr., Econ. Res. Serv., Washington, D.C. (December 1994)

Table 2. Sources of capital for various groups of commercial farm operators

	Young commercial		Older commercial		All commercial		
	Low resource	Aspiring	Wealthy	Low resource		Traditional	Wealthy
Number of farms:	40,260	66,845	33,062	180,194	240,105	67,576	562,866
Average annual farm production (dollars):	121,809	166,756	394,002	130,918	177,631	537,042	233,177
Share of: (percent)							
Total farm numbers	7	12	6	19	43	12	100
Total farm production	4	8	10	11	32	28	100
Total managed capital	3	8	10	10	36	30	100
	Million dollars						
Total capital managed	21,876	53,835	64,057	63,568	228,758	191,068	638,237
Non-real estate	4,298	13,364	17,828	13,615	60,097	51,036	163,884
Real estate	17,578	40,471	46,229	49,953	168,661	140,032	474,353
Share of total managed capital that is:							
Leased capital	69	52	27	60	34	21	35
Debt capital	17	12	10	15	10	8	10
Owner capital	14	36	62	25	56	71	55
Total	100	100	100	100	100	100	100
	Dollars						
Average total managed capital per farm	543,361	805,375	1,937,478	587,534	952,741	2,827,468	1,133,906

<sup>1</sup> Numbers may not add across because total includes corporations.

Table 3. Debt capital statistics for commercial farms

Category	All commercial		Young commercial		Older commercial	
	Low resource	Wealthy	Low resource	Wealthy	Low resource	Wealthy
Average amount of debt capital:	166,211	106,522	119,629	278,765	124,562	386,043
	Dollars					
Percentage of operators owing:	Percent					
Debt	70	86	83	72	73	56
Mortgage debt	48	47	62	51	44	43
Non-real estate debt <sup>1</sup>	53	71	67	53	61	40
Share of total real estate capital supplied by:						
FCS	3	1	2	2	3	3
USDA <sup>2</sup>	1	5	1	--	3	--
Banks	2	3	3	2	2	1
Individuals	2	3	2	2	1	1
All lenders	8	12	10	10	10	6
Share of total nonreal estate capital supplied by:						
FCS	3	2	3	2	3	2
USDA <sup>2</sup>	1	5	2	--	6	--
Banks	10	24	11	8	20	7
Individuals	2	3	2	2	1	1
Merchants & dealers	1	3	2	1	3	1
All lenders	17	39	21	14	36	12
Average debt-to-asset ratio for indebted farms:	23	57	29	20	47	17

<sup>1</sup> Includes annual operating loans.

<sup>2</sup> Credit programs of the former Farmers Home Administration.

Table 4. Leased capital statistics for commercial farms

Category	All commercial		Young commercial		Older commercial	
	Low resource	Wealthy	Aspiring	Wealthy	Traditional	Wealthy
Percentage of operators using:						
Leased capital	76	89	89	78	73	71
Real estate	74	87	85	76	71	65
Non-real estate	17	21	22	20	15	20
Percentage of operators with real estate under:						
Share lease only	16	20	15	12	15	9
Cash lease only	39	43	46	45	37	44
Cash and share	20	25	25	18	19	14
No land lease	26	12	14	25	29	34
Total	100	100	100	100	100	100
Percentage of total operator acres farmed:						
Under share lease:	17	34	31	13	19	5
Under cash lease:	30	52	41	27	29	24
Operator owned:	53	14	29	60	52	70
Total	100	100	100	100	100	100
Average acres farmed:						
	1,087	540	675	1,755	912	2,930

Table 5. Income statistics for commercial farms

	Young commercial			Older commercial			All commercial
	Low resource	Aspiring	Wealthy	Low resource	Traditional	Wealthy	
	Dollars						
Average:							
Net farm income (NFI)	17,471	32,534	74,394	16,073	32,979	95,273	39,376
Operator's Off-farm income	15,250	15,750	17,500	19,600	23,600	47,000	24,000
	Percent						
Average:							
NFI-to-debt ratio	19	32	35	18	33	43	33
Return on Assets (ROA)	0	2.8	3.8	-0.7	1.8	3.2	2.6
Share with negative NFI	25	21	23	28	21	26	23

Figure 1. Low resource farms produce more per unit

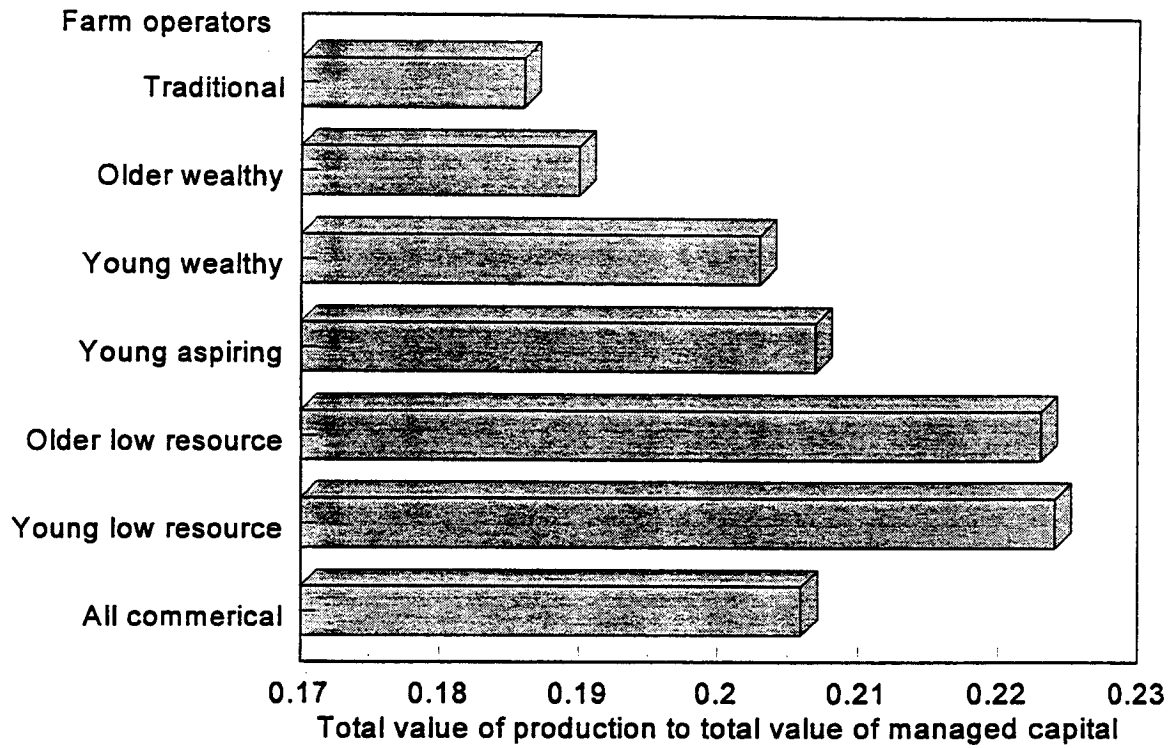


Figure 2. Nursery and poultry farms least likely to lease

