

Broiler Farms' Organization, Management, and Performance. By Janet Perry, David Banker, and Robert Green. Resource Economics Division, Economic Research Service, U.S. Department of Agriculture. Agriculture Information Bulletin No. 748.

Abstract

This study provides a comprehensive view of the organization, management, and financial performance of U.S. broiler farms. Using data from the U.S. Department of Agriculture's Agricultural Resource Management Study (ARMS, formerly known as Farm Costs and Returns Survey), we examine farm size, financial structure, household income, management practices, and spousal participation in decisionmaking. We compare broiler operations with other farming enterprises and their earnings with that of the average U.S. household. Because most of the 7 billion broilers produced in the United States in 1995 were raised under contract, we also explore the use of contracts and the effects of contracting on the broiler sector.

Keywords: Contracting, broilers, poultry, farm characteristics, farm income, farm operator characteristics, risk management strategies.

This report was prepared by members of the Farm Structure and Performance Branch, Resource Economics Division, Economic Research Service. Principal contributors and information sources are:

Branch chief: Jim Johnson(202) 694-5570
Publication coordinator: Janet Perry694-5583
Structure of broiler operations: David Banker694-5559
Organization and management: Janet Perry694-5583
Financial analysis: Janet Perry and David Banker . . .694-5583 or 694-5559
Data coordinator and table construction: Robert Green694-5568
Development of statistical procedures: Robert Dubman694-5563

Special thanks to Alden Manchester, Leland Southard, David Harrington, and Bruce Gardner for useful comments on previous drafts.

Contents

Summary	v
Introduction	1
Poultry Production in the United States	3
Background	3
Characteristics of Farms Producing Poultry and Eggs	5
Contracting in the Poultry Industry	12
Factors Influencing Use of Contracts	12
Farms with Poultry Production Contracts	14
Management and Performance on Broiler Farms	15
Development of Broiler Contracts	15
Who Are the Contractors?	16
What Part Does Management Play?	17
Financial Analysis of Broiler Farms	21
Household Characteristics	29
References	33

List of Tables

Table 1— Declining number of farms with chickens, increasing cash receipts, 1910-1992	3
Table 2— Average value of production, contracts, and sales for farms with any poultry or egg production, by sales class, 1995	9
Table 3— Number of farms and value of production of commodities produced on farms, with any poultry or egg production, by number of commodities on farms, 1995	10
Table 4— Value of production on farms with any poultry production, 1995	11
Table 5— Broiler production contract activity per farm, by region, 1995	15
Table 6— Farm value of production for farms with broiler contracts, by contract value, 1995	16
Table 7— Top 10 processors of broiler chickens, 1997	17
Table 8— Broiler contractors—ARMS evidence, 1995	18
Table 9— Strategies used on farms, for farms with broiler contracts and other farms, 1994	20
Table 10— Farm operation income statement for farms generating sales of \$50,000 or more, with broiler contracts compared with crops and livestock farms with no poultry, by region, 1995	23
Table 11— Farm operation balance sheet for farms generating sales of \$50,000 or more with broiler contracts, and crops and livestock farms with no poultry, by region, 1995	25
Table 12— Definition of financial ratios	27
Table 13— Selected financial ratios for farms generating sales of \$50,000 or more with broilers, and crops or livestock with no poultry, 1995	28
Table 14— Selected characteristics of farm operator households on farms with broiler contracts, by operator occupation, 1995	31
Table 15— Selected characteristics of farm operator households on farms with sales of \$50,000 or more with broiler contracts and no poultry, by region, 1995	32

List of Figures

Figure 1— Distribution of poultry cash receipts, 19955
Figure 2— Concentration of broiler sales, 1969 and 19926
Figure 3— Locations of major broiler processing/further processing plants8
Figure 4— Net farm income for broiler farms with sales of \$50,000 or more, 1991-9522
Figure 5— Distribution of variable expenses between operator and contractor on broiler farms, 199524
Figure 6— Broiler producers' debt repayment capacity use, 199528

Summary

The poultry industry models the type of business organization that may characterize much of U.S. farming in the future. It offers a vivid example of how various participants are interrelated and dependent on one another. All segments of the industry—producers, processors, hatcheries, geneticists, nutritionists, veterinarians, suppliers, marketing firms, and consumers—have combined to transform the industry from a minor sideline enterprise into a complex agribusiness. This report provides a comprehensive view of the organization, management, and financial performance of U.S. broiler farms.

Hen and egg production were common on most farms at the turn of the century, and production was primarily for home use. Before the 1950s, most farms raised chickens, but meat was a byproduct of the egg enterprise. Today, about 12,000 specialized farms produce more than 900 million birds for meat and 72 billion eggs per year. Poultry and poultry products account for \$19.1 billion, or about 10 percent of all farm receipts. Broiler production is concentrated in the Southeast, Delta, and Appalachian regions, although broilers are raised in other regions such as California and the Midwest.

Since mid-century, the industry has moved almost completely from a home industry to one dominated by contract production. Table eggs and hatching eggs are also contracted, but we have more information about the broiler industry. Retail and processing contractors place chickens on farms and provide feed and other inputs, while the farmer cares for the chickens until they reach processing size. Broiler production accounted for 62 percent of all receipts from poultry and poultry products in 1995.

Broiler farms with sales of \$50,000 or more were in fair financial condition in 1995. Their gross cash farm income averaged \$84,048, and net cash farm income was \$32,602. Depreciation charges, affected by special tax treatment, were largely responsible for net farm income being approximately half of net cash income, at \$15,969. Broiler producers were more highly leveraged than the average farm with comparable sales. They operated well under the financial stress point, however, using only 52 to 58 percent of their available credit. With assured cash flow coming from contracted fees, most broiler producers should face few financial risks. While broiler producers have lower net farm income, they also have less invested in the business. As a group, they work fewer hours on the farm—73 percent of broiler operators who said their major occupation was farming worked 2,000 hours or more, compared with 85 percent of crop and 94 percent of livestock operators on farms of comparable sales.

Because of relatively high costs of assembling live birds for processing, many broiler operations are located near a processor through which they contract their production. Our data show that contractors pay about 15 percent of the variable costs of raising the chickens. In addition to paying these variable costs, contractors incur the costs of supplying chicks, and they pay the farmer for management and care of the birds to their maturity. Average duration of contracts with the same contractor was 9 years, with farms in the Southeast averaging 11 years. Besides satisfaction with the contract (farmer and contractor), this evidence of continuity suggests that contractors need to have a steady,

reliable supply of broilers, and that farmer-supplied resources tend to be immobile.

An interesting point about broiler producers is the involvement of spouses on the farm. On average, spouses were more heavily involved in decisionmaking and management, and worked more hours, on broiler farms than on other farms with comparable sales. Because many decisions are made through a contract, broiler producers reported using few production management strategies to manage risk, and when they used financial and marketing strategies, their use was at a lower rate than that of other farm operators. When they sought information about strategies, they often turned to their financial advisors and contractors.

Three-quarters of the broiler producers said that their major occupation was farming. These operators' household income was 78 percent of the average U.S. household's income, largely due to lower off-farm income. Broiler producers are more likely to be younger than the average U.S. farmer and their average educational level is lower. Many broiler producers live in rural areas where employment opportunities are already few, and low educational attainment usually translates to even fewer off-farm income opportunities, making the broiler operations more important to the households. Because the calculation of farm household income is sensitive to treatment of depreciation, care should be taken when comparing incomes of households that might have large depreciation expenses. When farming was not the operator's major occupation, and broilers were a part-time venture, their income was about the same as that of the average U.S. household. The wealth of broiler producers, full-time or part-time, is largely composed of farm-related assets.

Broiler Farms' Organization, Management, and Performance

Janet Perry, David Banker, and Robert Green

Introduction

As the number of chickens produced in the United States continued to increase over the past several decades, the structure of the industry changed dramatically. Since mid-century, the industry transformed from a backyard industry, which fed the immediate family and local markets, to specialized hatchery and broiler operations which produce more than 900 million birds for meat and 72 billion eggs yearly, mostly under contract. Poultry farming went from largely a sideline to big business in just a few decades (Madison and Harvey, 1997; Manchester, forthcoming). Today, the chicken broiler industry is one of the most tightly coordinated of the major commodity subsectors in the U.S. food and agricultural sector (Schrader, 1981). A 1994 *Feedstuffs* editorial stated, "The increasing use of contracts is changing everything we know about agriculture—growing commodities, shipping them, selling them, and using them."

The traditional economic model used to analyze agriculture is the perfectly competitive model that includes buyers and sellers, diffused market power, and no control over price. The market's operation hinges on the entrepreneurial farmer who provides the day-to-day management, makes the decisions, controls the marketing of the products, and owns and controls the inputs (Paul, 1974). Contracting alters the parameters of farmer entrepreneurship by separating ownership, management, and labor. These changes, however subtle, result in changes in the way that returns are distributed (Harris).

Few industries have enjoyed the success of the poultry industry in gains in production and marketing efficiencies (Lasley, 1983). Contracts are an essential ingredient in that change. Recently, however, the sparkle of sure returns from contract poultry farming has been tarnished by reports of slimmer margins for

farmers and complaints about the process of determining returns to farmers (Morison, 1996a; Russell, 1996; and Strain, 1996).

Several things have happened to bring on this discontent. Record-high corn prices in 1995 raised the cost of chicken feed, while the competing cattle industry was liquidating herds at low-cycle prices. Domestic per capita poultry consumption has been flat since 1995, after growing steadily for more than a decade. Exports were imperiled as China proposed a 100-percent tariff on top of its 45-percent levy on U.S. poultry. In 1996, Russia temporarily banned chicken imports while threatening to impose more lasting quotas. More recently, the European Union delayed imports of poultry from the United States after disputes over poultry inspection and processing methods (California Poultry Industry Federation, 1996). Broiler production has increased about 5 percent per year, and exports continue to rise. Still, Morison (1996b) and Lee (1996) assert that flagging domestic demand required that contractors cut back on their placements, and/or lower their payments to farmers producing broilers. Recent perceived declining returns to farmers raising poultry generated complaints about the nature of contracting in broiler production (Morison, 1996a and 1996b; Guebert, 1996; Russell, 1996; National Contract Poultry Growers Association).

As the channels of production from farmer to consumer are realigned, the distribution of earnings will change. The poultry industry is often cited as a model of the organization that may characterize most of U.S. farming in the future. This report provides a unique look into broiler farm structure, management, and financial performance. This report, the first study about broiler farms to incorporate farmer responses from a nationwide survey, provides the following:

- An overview of the poultry industry;
- An overview of contracting, with special attention to broiler contracts that account for 62 percent of all poultry receipts;
- A presentation of the financial structure of broiler operations with sales of \$50,000 or more;
- A comparison of the financial returns to broiler operations generating sales of \$50,000 or more with other farming enterprises with no poultry;

- Management characteristics of farmers producing broilers, including who makes the farming operation management decisions; and
- Household and operator characteristics of broiler producers.

Such information contributes to our understanding of the broiler industry and of a possible future for some other segments of agriculture. It provides an empirical analysis that integrates the farm-side structure of broiler production with the returns to farming and the well-being of broiler farm operator households.

Poultry Production in the United States

The term “poultry” refers to domesticated fowl raised for meat or eggs. In the Agricultural Resource Management Study (ARMS, formerly known as Farm Costs and Returns Survey (FCRS)—see box), poultry includes chickens, turkeys, ducks, geese, emus, ostriches, and game birds. Most poultry operations raise only one species of poultry for a single purpose. Farms will keep hens to produce eggs for human consumption or for breeding purposes. Some raise “starter” pullets—baby female chicks raised to adult size for laying hens. Others concentrate on raising chickens or turkeys for meat production.

Background

In 1915, a poultry enterprise was found on most farms and in the yards of many homes of rural and small town families (table 1). Flocks were small and used for the production of household consumption of eggs and some local retail egg sales. Chicken meat was considered a byproduct of the egg enterprise, although turkeys, ducks, and geese were raised for meat. Reporting during this era concentrated on the number of chickens more than 4 months of age, a practice that

Table 1—Declining number of farms with chickens, increasing cash receipts, 1910-92

Year	Farms with chickens*	Cash receipts for chickens and broilers**
	Percent	\$Million
1910	87.7	127
1920	90.5	317
1925	86.4	306
1930	85.4	333
1935	85.6	235
1940	84.5	268
1945	83.6	1,004
1950	78.3	946
1954	71.4	1,000
1959	58.5	1,045
1964	38.3	1,070
1969	18.5	1,531
1974	15.2	2,456
1978	14.9	3,715
1982	10.6	4,873
1987	8.3	6,177
1992	5.6	9,176

*Before 1969, only farms with chickens 4 months or older were counted.

In 1969, the definition was changed to chickens 3 months and older, and broilers were counted separately. The percentages reported here include broilers in 1969 and following years. No turkeys, ducks, or geese are included. Only chickens on farms were counted. In the early years, many families raised chickens in their backyards. **Includes all chickens sold for meat 1910-59. After 1959, includes only broilers.

Source: U.S. Department of Agriculture's 1954, 1964, 1969, 1978, 1992 U.S. Agricultural Censuses, and Steele 1990.

would exclude broilers or fryers which are now sold at 6 to 8 weeks (U.S. Dept. of Commerce, 1954).

Producing eggs was not considered a commercial endeavor until mid-century, mainly due to problems of disease and lack of technology to identify unfertilized eggs. In the late 1940s, a set of new conditions emerged in the technological, market, and policy areas of broiler production that significantly lowered production costs and allowed for increased sales (Reimund, Martin, and Moore, 1981). These changes substantially altered the production processes and the size of flocks. Some insight into the size of flocks at mid-century is found in Stewart (1946) who classified flocks according to the income they produced. Small flocks with 10 to 50 chickens were called “backyard” flocks and produced eggs and meat for the family. Larger flocks of 50 to 100 were used for “pin-money” (spending money for the family) as well as eggs and meat for the table. Commercial flocks were substantially larger, with 400 layers or more. According to Manchester (1954), most transactions were based on regular but informal (handshake) relationships.

In the 1940s, agricultural research brought new technologies to the poultry industry. Included were the introduction of new breeds for meat, better nutrition and disease control, better management of confined poultry, processes that correctly sexed chicks, and the candling of eggs. These practices introduced U.S. farmers to the possibilities of raising broilers and fryers for commercial consumption. Chicken flocks grew, and Fink (1986) reports that in 1974, testimony before a U.S. House Subcommittee showed that a medium-size farm would have 100,000 hens (U.S. House of Representatives, 1974:25). Today, large hatcheries have flocks as large as 350,000 hens or more.

As the poultry industry changed, providing chicken meat to compete with beef and pork, Americans' eating habits changed. In the 1940s the average American ate less than 20 pounds of poultry (boneless weight) per year— mostly surplus roosters and pullets raised for marketing as young birds and fowl sold from egg-producing flocks. Production and consumption, therefore, were highly seasonal (Lasley et al., 1988). The industry concentrated on providing consumers with a constant product stream of chickens grown for meat rather than their egg-laying abilities. By 1995, the per capita consumption of poultry by Americans was 63 pounds. Most of the increase in poultry consumption was in broilers, and this segment

Data Sources and Coverage

Data for this report come from USDA's Agricultural Resource Management Study (ARMS). Formerly known as the Farm Costs and Returns Survey (FCRS), this report uses data from the 1995 questionnaire. ARMS is composed of several questionnaire versions (for technical documentation, see Morehart, Johnson, and Banker, 1992). All versions include the same core group of questions related to farm income, expenses, and operator characteristics. USDA administers the survey each spring in the 48 contiguous States through personal enumeration. Usable sample data in 1995 were obtained for 8,784 farm and ranch businesses.

The target population of ARMS is operators associated with farm businesses representing agricultural production in the United States (excluding Alaska and Hawaii). A farm is defined as an establishment that sold or normally would have sold at least \$1,000 worth of agricultural products during the year. Farms can be legally organized as proprietorships, partnerships, family corporations, nonfamily corporations, or cooperatives.

Data are collected from only one operator per farm. Operators are variously referred to as farmers, producers, or growers. The primary farm operator is the one who makes most of the day-to-day management decisions. This one-farm, one-operator survey design gives us good financial information for the farming business and farm operator's household, but limits information about income and equity-sharing when more than one operator is involved. Others, such as contractors, share-rent landlords, and partners or shareholders, provide inputs to the farm and receive income from production. ARMS does not include information on these entities, except as they relate to the farm business.

ARMS is a probability survey. Probability surveys are designed on the premise that every unit in the population has a known probability of being selected. An expansion factor, or weight, is established for each reporting unit (sample) which allows ARMS to expand to the USDA official number of farms.

Estimates based on an expanded sample differ from those based on a complete enumeration (as in the Census of Agriculture). Differences in these estimates relate to sampling and nonsampling errors. Sampling errors are usually random and can be measured by a standard error statistic; the larger the standard error, the lower the reliability of the estimate. The relative standard error (RSE) is expressed as a percentage and found by dividing the standard error of the estimate by the value of the estimate. For some estimates, the RSE is sufficiently large to make the estimate unreliable; these instances have been marked in the tables. For other items, sample size is not sufficient for statistical reliability or does not meet legal disclosure requirements, and the estimate is not provided.

Evaluation of coverage by comparison to the Census of Agriculture is precluded by the difference in reporting years (1992 for the Census of Agriculture and 1995 for ARMS). The only alternative source of national estimates is USDA's official farm sector income data. Data for this series are obtained from a variety of survey and administrative sources. The sector estimate of cash receipts for poultry and eggs in 1995 was \$19.1 billion, compared with an ARMS-based estimated value of production of \$14.5 billion. Some differences in the estimates result from differences in measurement tools for the sector and at the farm business level by the survey, and from enumeration as described above.

is expected to continue to increase from 49 pounds in 1995 to 64 pounds in 2005. The increase in chicken meat consumption led to the disappearance of the market for chickens not specifically grown for meat. By the mid-1980s, large operations specializing in contract production of broilers year-round clearly had market advantage.

The poultry industry offers a vivid example of how various agricultural sectors are interrelated and dependent on one another (see Lasley, Henson, and Jones, 1985). All segments of the industry (farmers, processors, hatcheries, geneticists, nutritionists, veterinarians, suppliers, marketing firms, and consumers) have combined to transform the industry from a minor sideline enterprise into a complex agribusiness. The use of white meat in new products and health issues have been major factors in the industry's ability to expand the market and change the production process to get the new products. In the early 1990s, the popularity of restaurant appetizers such as "buffalo wings" (chicken wings in a spicy sauce) caused the industry to scramble to meet the demand by consumers, restaurants, and convenience food processors. The shift in consumer tastes for chicken products is partly the result of convenience, packaging, and marketing of prepared or semi-prepared chicken meat products. Coupled with the new technologies to produce birds for meat, this new consumer demand coincided with the change of poultry being produced on independent farms to broilers being produced under contract (Lasley, 1983).

"Broilers" is the industry name for young chickens raised for meat. Most of the early commercial market for broilers was led by independents financed by feed dealers who extended them credit. Typically, birds were sold by auction. Dealer credit quickly evolved into a share contract because of the great risk of loss on one or more of the four lots of broilers that most growers could produce in a year (Manchester, forthcoming). By the 1960s, integrators (mostly feed dealers with their contract growers) bought or built slaughter plants, or produced broilers on their own farms, or both. Integrators and processors soon came under common ownership.

The poultry industry currently produces more than 7 billion chickens per year. Including chickens, eggs, turkeys and other poultry and poultry products, the official U.S. Department of Agriculture (USDA) estimate of cash receipts in 1995 was \$19.1 billion, or

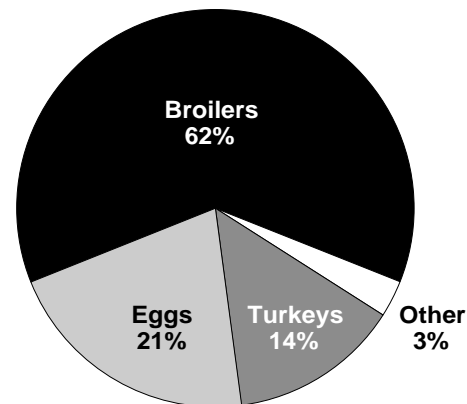
about 10 percent of total receipts for all commodities. Following cattle and calves, dairy products, corn, and soybeans, broilers were the fifth leading source of farm sector cash receipts in 1995. Nearly 97 percent of poultry cash receipts are accounted for by chickens raised for broilers, chicken eggs, and turkeys (figure 1). Broilers are the single largest commodity in the poultry group, accounting for \$11.8 billion or about 62 percent of the cash receipts for poultry products.

Characteristics of Farms Producing Poultry and Eggs

Based on the USDA survey, 49,716 farms produced poultry or eggs valued at \$14.5 billion in 1995.¹ Poultry and egg production represented about 9 percent of the total value of all commodities produced and about 17 percent of the value of livestock products. Until mid-century, chickens were raised on most farms and in many backyards, but today, poultry production is concentrated on farms in the eastern half of the United States. Nearly 83 percent of U.S. farms producing poultry are found in the Northeast, Appalachian, Southeast, Delta, and Corn Belt regions (figure 2). Four regions (Northeast, Appalachian, Delta, and Southeast) accounted for nearly 70 percent of the total value of U.S. poultry and egg production in 1995. About 29 percent of all farms are in these regions; they produce 25 percent of the value of agri-

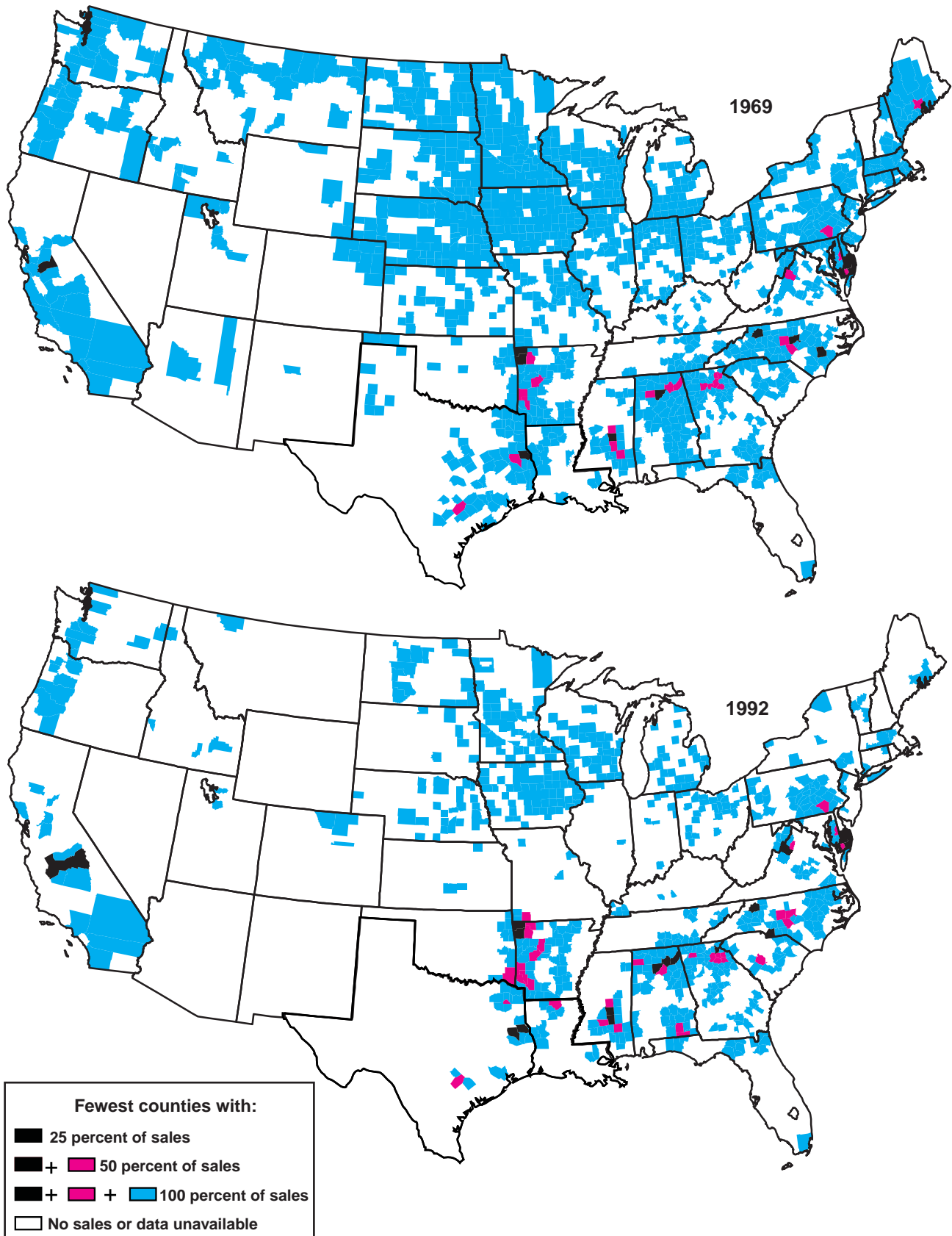
¹ Compared with Census of Agriculture information, ARMS significantly undercounts the number of farms with poultry and egg production.

Figure 1
Distribution of poultry cash receipts, 1995



Source: Sector estimates from ERS Internet homepage (<http://www.econ.ag.gov/Briefing/fbe>)

Figure 2
Concentration of broiler sales, 1969 and 1992



Source: Compiled by ERS using census of agriculture data

cultural production. Poultry operations are, on average, smaller in the Corn Belt. This region represents 26 percent of all farms producing poultry or eggs, but accounts for only 4 percent of the total value of poultry production.

Traditionally, farm products were produced close to the source of inputs or close to consumers, and chickens were raised on almost every farm in the country. Since mid-century, however, poultry production has shifted to the South, with turkeys and eggs following broilers.

According to Lasley, Henson, and Jones (1985), changes in costs and relative profitability have led to interregional shifts and concentration in poultry production. First, because of transportation and packaging improvements, formerly dispersed commodities can be produced in specific locations, then moved far from the point of production or processing. Second, raising poultry may be attractive to Southern farmers because, as Lasley (1983) indicates, the region may have the comparative advantage of climate, low-priced land and less-productive soils, and areas that lack alternative uses for land and labor. Climate may heavily contribute to the location of producers (Lasley, 1983). Birds are susceptible to extremes in temperature and require access to plenty of water. Thus, they can be housed less expensively in the warmer parts of the country, although they require cooling during the summer months. Low-cost feed ingredients gave the Midwest an early lead in poultry production, but many Midwestern poultry farmers found it more profitable to devote their resources to enterprises other than poultry. In addition, Midwestern farmers, now specializing in corn, soybeans, and hogs, may have seen a different choice of commodities as more stable because of government programs for grains. Finally, poultry production in the South may be an attractive economic alternative, given fewer off-farm employment opportunities than in the Midwestern States.

During the regional shift of production, these newer poultry production areas began using direct ownership and contract growers, whereas independent growers who coordinated their sales through marketing contracts were more prevalent in the Midwest. Contractors have substantial investments in hatcheries, feed mills, and processing facilities. To reduce transportation costs for chicks, feed, and broilers, grower facilities cluster around contractor facilities

(Lasley et al., 1988). In addition, birds do not travel well, so having farms close to the primary processor reduces losses in transit (figure 3). The close coordination of marketing with specialized complexes, complete with a well-developed infrastructure of local support services, now provides a competitive advantage for the southern regions of the United States.

Poultry production is concentrated on large farms. By numbers, smaller farms—those with gross sales of \$100,000 or less—were the majority (more than 54 percent) of farms delivering poultry or eggs in 1995 (table 2), but they produced just 12 percent of the value of production. By contrast, the 3 percent of the top poultry producers, those with sales of \$1,000,000 or more, dominated production, accounting for one-third of the total value of poultry and egg production.

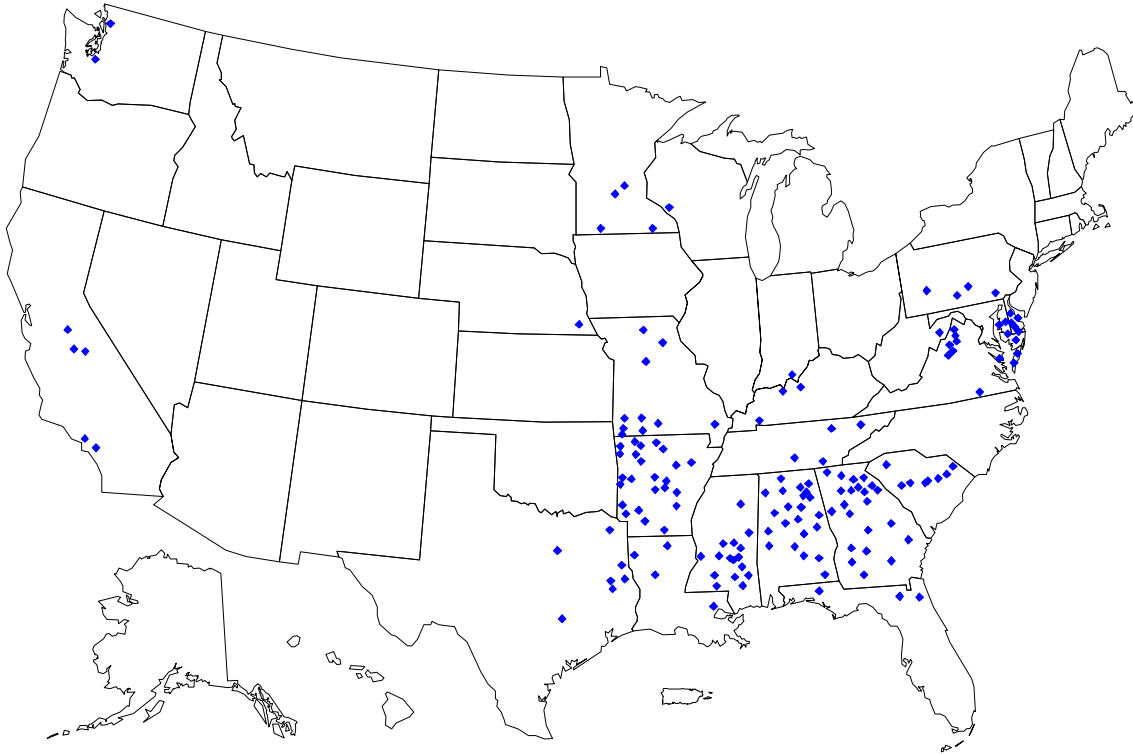
Poultry farms are highly specialized with respect to the commodities they produce. Table 3 indicates that 75 percent of the total value of poultry and egg production occurs on farms producing either poultry or eggs alone, or poultry or eggs plus one additional commodity. On average, the additional commodity accounted for less than 1 percent of the total value of commodity production on those farms. Farms producing up to two other commodities besides poultry and eggs accounted for 94 percent of the total value of poultry and eggs, and the other commodities amounted to less than 4 percent of their total value of production. Other commodities on farms producing poultry and eggs included cattle, hogs, dairy products, corn, soybeans, and hay.

Table 4 shows that poultry production is not land extensive, and the average farm with poultry and egg production operated 134 acres, compared with more than 400 acres for the average U.S. farm. Approximately 78 percent of farms operated fewer than 180 acres and accounted for 73 percent of total value of poultry and egg production. Poultry growers do not rent much of the land on which they operate their businesses. Over three-fourths (77 percent) of the value of poultry and egg production occurred on the 66 percent of farms that owned all of the acreage they operated. The remaining 34 percent of farms rented in some or all of the land they operated.

Farmers producing poultry were more likely than other farm operators to report their occupations as farming. About half of all U.S. farm operators say that their major occupation is something other than

Figure 3

Locations of major broiler processing/further processing plants



Source: Poultry Digest; internet homepage (<http://www.wattnet.com>)

farming. On poultry operations, however, 61 percent of operators reported farming as their major occupation. These poultry farmers accounted for 71 percent of the value of poultry and egg production. Another 4 percent of operators reported themselves as hired managers or retired farmers and produced 15 percent of the value of poultry and egg production. The 35 percent of operators who reported their occupations as something other than farming accounted for the remaining 14 percent of the value of production.

Most poultry and egg operations fully employ at least one person. Nearly half the value of poultry products was produced by full-time operators who worked 2,000 hours or more during 1995. An additional 35

percent of the value of poultry and egg production was on farms where the operator worked between 1,000 and 1,999 hours annually. Poultry operators tend to be slightly younger than other U.S. farmers, and their average educational attainment is less.

As on other farms, nearly all (95 percent) poultry farms were organized as legal partnerships or individual operations. These farms accounted for 72 percent of the value of poultry and eggs produced. The remaining 28 percent of the value of poultry and egg production occurred on the 5 percent of farms organized as corporations or cooperatives.

Table 2—Average value of production, contracts, and sales for farms with any poultry or egg production, by sales class, 1995

Item	Gross annual sales				All poultry and egg farms
	Less than \$100,000	\$100,000-\$499,999	\$500,000-\$999,999	\$1,000,000 or more	
	<i>Number</i>				
Farms	27,035	17,065	4,038	1,578	49,716
	<i>Percent</i>				
Percent of farms	54.4	34.3	8.1	3.2	100
	<i>Million dollars and percent</i>				
Value of all commodities produced	**2,000	5,573	3,046	5,087	15,706
Percent of value of production	**12.7	35.5	19.4	32.4	100
Value of poultry and egg production	**1,669	5,216	2,799	4,778	14,463
Cash sales for all products	*358	*456	*442	*2,499	3,755
Percent of cash sales	*9.5	* 12.1	11.8	* 66.6	100
Value of poultry and egg cash sales	**66	NA	NA	*2,009	*2194
Value of all contracts	**1,645	5,194	2,841	2,920	12,599
Percent of value of contracts	** 13.1	41.2	22.5	23.2	100
Value of poultry and egg contracts only	**1,603	5,129	2,768	2,770	12,269
	<i>Dollars/farm</i>				
Average value of production for all commodities	*73,975	326,568	754,461	3,224,528	315,915
Average value of poultry and egg production	**61,728	305,663	693,260	3,029,070	290,907
Average value of cash sales for all products	13,252	26,726	*109,388	*1,584,178	75,532
Average value of poultry and egg cash sales	2,440	NA	NA	*1,273,462	44,121
Average value of all contracts	60,832	304,359	703,510	1,851,216	253,430
Average value of poultry and egg contracts only	59,288	300,535	685,558	1,755,608	246,786

NA=Not available. Rounded percentages may not add to 100. CV=(Standard Error/Estimate)*100. CVs less than 25 are unmarked. *=CV is between 25 and 50.

**=CV is between 51 and 75.

Source: U.S. Department of Agriculture's 1995 Agricultural Resource Management Study (previously known as the Farm Costs and Returns Survey).

**Table 3—Number of farms and value of production of commodities produced on farms, with
any poultry or egg production, by number of commodities on farms, 1995**

	Poultry or eggs only	Farms producing poultry or eggs with:				All farms producing poultry or eggs
		One additional commodity	Two additional commodities	Three additional commodities	Four or more additional commodities	
<i>Number</i>						
Farms	14,280	11,720	*11,792	*6,804	**5,118	49,716
<i>Percent</i>						
Farms	28.7	23.6	*23.7	*13.7	**10.3	100.0
Total value of production	45.3	24.7	*20.1	5.2	4.7	100.0
Livestock production	46.6	25.3	*20.0	4.5	3.5	100.0
Crop production	0.0	*4.3	*24.9	*27.1	*43.7	100.0
<i>Dollars/farm</i>						
Total value of production	497,670	330,963	*268,324	*119,254	*145,444	315,915
Livestock	497,670	329,262	*258,423	*100,565	*105,364	306,482
Poultry	445,168	272,885	*133,468	**51,901	**54,536	236,579
Eggs	*52,502	*49,226	**100,264	**25,322	**3,838	*54,328
Cattle	0	6,692	*8,842	**2,496	*13,226	5,378
Hogs	0	NA	NA	**7,998	*17,668	*5,203
Dairy	0	0	**6,101	**12,743	*15,487	*4,786
Other livestock	0	NA	NA	NA	609	*208
Crops	0	*1,701	*9,901	**18,689	**40,080	9,434
Corn	0	NA	**802	**5,615	**15,426	*2,582
Cotton	0	0	NA	**651	NA	*269
Hay	0	*204	*987	**418	**3,601	*710
Peanuts	0	NA	**249	**805	NA	*189
Soybeans	0	NA	*916	**5,381	**12,854	*2,369
Tobacco	0	NA	NA	584	**1,123	*653
Other crops	0	** 636	NA	**5,235	**5,584	*2,662

NA=Not available. CV=(Standard Error/Estimate)*100. CVs less than 25 are unmarked. *=CV is between 25 and 50. **=CV is between 50 and 75. Rounded percentages may not add to 100. Source: U.S. Department of Agriculture's 1995 Agricultural Resource Management Study (previously known as the Farm Costs and Returns Survey).

Table 4—Value of production on farms with any poultry production, 1995

Item	Farms		Total value of	Poultry value	Average value
	<i>Number</i>	<i>Percent</i>	poultry production	of production	of poultry production
			<i>\$ Million</i>	<i>Percent</i>	<i>Dollars</i>
All poultry operations	49,716	100	14,463	100	290,907
Gross annual sales:					
Less than \$100,000	27,035	54.4	1,669	11.5	61,728
\$100,000 - \$499,999	17,065	34.3	5,216	36.1	305,663
\$500,000 - \$999,999	4,038	8.1	2,799	19.4	693,260
\$1,000,000 or more	1,578	3.2	4,778	33.0	3,029,070
Operator occupation:					
Farming	30,415	61.2	10,289	71.1	338,294
Hired farm manager	NA	NA	NA	NA	NA
Other occupation	17,141	34.5	2,065	14.3	120,453
Retired	NA	NA	NA	NA	NA
Operator age:					
34 years or younger	NA	NA	NA	NA	NA
35 - 44 years	13,264	26.7	4,139	28.6	312,076
45 - 54 years	16,900	34	5,239	36.2	309,998
55 - 64 years	11,186	22.5	2,933	20.3	262,224
65 years or older	3,244	6.5	1,208	8.4	372,391
Operator education:					
Some high school or less	12,125	24.4	1,929	13.3	159,089
High school	24,341	49	7,745	53.6	318,186
Some college	8,320	16.7	2,947	20.4	354,269
College	4,930	9.9	1,841	12.7	373,480
Operator hours worked:					
499 hours or less	NA	NA	NA	NA	NA
500 - 999 hours	4,855	9.8	1,213	8.4	249,832
1,000 - 1,999 hours	16,682	33.6	5,021	34.7	300,970
2,000 hours or more	22,817	45.9	6,988	48.3	305,852
Tenure classification:					
Tenant	NA	NA	NA	NA	NA
Part owner	14,334	28.8	3,060	21.2	213,493
Full owner	33,000	66.4	11,066	76.5	335,340
Acres operated:					
49 or fewer acres	23,444	47.2	4,963	34.3	211,703
50 - 179	15,621	31.4	5,664	39.2	362,563
180 - 499	8,504	17.1	2,130	14.7	250,441
500 - 999	1,549	3.1	1,100	7.6	709,817
1,000 or more	NA	NA	NA	NA	NA

NA= not available.

Source: U.S. Department of Agriculture's 1995 Agricultural Resource Management Study (previously known as the Farm Costs and Returns Survey).

Contracting in the Poultry Industry

Business coordination has become an important method of organization of agricultural production in numerous commodity areas—fruits and vegetables for canning, livestock feeding, and dairy production and marketing to name a few (USDA, 1996). Contracts are an integral part of the production of broilers, turkeys, and eggs. The poultry industry is often cited as a model of the organization that may come to characterize much of U.S. farming in the future.

Broadly speaking, a contract is a written or oral agreement between parties involving an enforceable promise to do or refrain from doing something in return for a monetary consideration. Besides specifying quality requirements, contracts can also dictate prices and quantities. The form of the contract, specific provisions, degree of control, and other terms can vary greatly between farmers and among contractors. Contracts have become an integral part of the production and marketing of poultry products, including broilers, turkeys, eggs, and breeding stock (Lasley, 1983; Lasley, Henson, and Jones, 1985). For poultry, contracts are agreements between farmers and companies (or other farmers) that specify conditions of producing and marketing chickens and other poultry products. By specializing in the various phases of production, contracting can reduce participants' exposure to production or price risk.

We identify two types of contracts—marketing and production contracts. For more information about marketing and production contracts see *Farmers' Use of Marketing and Production Contracts* (USDA, 1996) which examined the use of contracts on all U.S. farms. That report provided some specific detail about the nature of contracts, with processing vegetables and broilers as examples, using data from the 1993 survey. Here, we examine broiler contracts in somewhat greater detail.

Factors Influencing Use of Contracts

Contracting can be an effective way to manage the risks presented by the market. Farmers benefit by having a guaranteed market, price, or access to a wider range of production inputs, allowing them to concentrate their management efforts on a particular part of the production process. Because most contract arrangements reduce risks in comparison with traditional production or marketing channels, income is more stable over time. Farmers receive a steady cash

flow received from contract fees, giving them a safe position from which to conduct business. They also benefit from technical advice, managerial expertise, market knowledge, and access to technological advances (such as proprietary genetics) not otherwise available (Doye, Berry, Green, and Norris, 1996).

Processors and other entities enter contracts to reduce the risks and uncertainties in the production and marketing process by controlling input supply, improving response to consumer demand, and expanding and diversifying their operations (Kolmer, Kirtley, Smith, and Porteus, 1963). The incentive is the expectation that their profit opportunities are improved by controlling the quality and quantity of their products, thereby enhancing their market position. The poultry industry has been a leader in product quality, standardization, and identification, while smoothing seasonal supplies and expanding market share. Contracting has been key to achieving a higher level of product consistency. Broilers have been produced under contract since mid-century, and today, 85 percent of chickens are grown under contract. Most of the remaining chickens are grown on farms owned and operated by the integrator (Manchester, forthcoming).

When contracting began, broiler contracts had a per-bird payment or a simple per-pound fee (Aho, 1988; Doye, Berry, Green, and Norris, 1996). Today, contracts usually provide three types of compensation for grower services: (1) the base payment, (2) an incentive or performance payment, and (3) the disaster payment. The base payment is a fixed fee per pound of live meat produced. The incentive payment is a percentage of the difference between average settlement costs of all contractor flocks during a specific period and costs associated with the individual grower. Settlement costs are obtained by adding chick, feed, medication, and other customary flock costs divided by total pounds of live poultry produced (Vukina and Foster, 1996).

Contracts usually provide for incentives and penalties for management of the flock. Growers are penalized when their cost per pound of live meat produced is above the average cost per pound for the pool of growers. For below-average settlement costs (above-average performance), the grower receives a bonus (Vukina and Foster, 1996). Extremes in the costs per pound of live animal produced are typically removed from the calculation of average costs per pound. Thus, all other growers are not rewarded or penalized

because of the actions of just one grower. Different contractors use different methods to calculate incentive payments. Vukina and Foster note that some contracts include a payment mechanism that considers the differences between average market price and average variable cost. As prices decline, this mechanism transfers some market price risk from the integrator to the grower. The overriding concern is to give growers incentives to manage the poultry enterprise in a way that maximizes net returns to the integrator. The integrator has an incentive to support successful growers. The grower then attempts to maximize net returns within the constraints of the contract. Finally, contracts often provide causality clauses that compensate the grower in cases of natural disaster, such as for a flood, excessive heat, fire, or for damage or loss of potential production.

While the specific contract terms vary from company to company, most broiler contracts outline the division of responsibility for providing inputs and compensating growers (Gallimore and Vertrees, 1968). The grower cares for the chickens, and usually provides land and housing facilities, utilities, labor, and other operating expenses, such as repairs and maintenance. Depending on the contract, the farmer may also be responsible for manure disposal and chicken house cleaning. The contractor provides chicks, feed, veterinary supplies and services, management services or field personnel, and transportation for the birds to and from the farm. Rogers (1979) reports that feed is the largest expense and one of the most critical inputs in poultry production. Bird costs are the second largest expense, followed by labor and overhead costs, with energy costs being of minor importance. Expenses for fuel and litter can be shared or paid by either party, depending on the nature of the contract. Occasionally, the contractor may compensate the farmer for some fixed costs, such as insurance, or provide financing for capital purchases. Contractors make many significant production decisions, such as the capacity and construction of the technological unit (chicken house), the technology of production, size and optimal rotation of flocks, genetic characteristics of the birds, and specific feed ingredients.

With contracting, receipts from farm production are distributed to nonfarmers, with the contractors receiving the larger share of receipts from production (Lipton, 1997). Because contractors typically own the poultry, they bear a large share of production and price risk and earn most of the net income from the

commodity's production. Farmers may benefit from contracting by expanding their operations more rapidly than otherwise possible, perhaps with less debt and fewer financial risks.

Not all aspects of contract arrangements are viewed positively. Harris (no date, pages 110-113) asserts that contracting reduces entrepreneurial capacity by removing opportunities for human capital development through decisionmaking. Rather than buying inputs and supplies of the quantity and quality desired and from anyone who offers them at the best price, farmers respond to conditions stated in the contracts. Under contracts, many production practices are specified to bring a uniform product to market. Practices specified may include schedules of feeding, construction of buildings, and the types of inputs used. However, since the farmer is the flock caregiver, there is still room for good management, and most contractors reward skillful managers with bonuses.

Kolmer et al. (1963) indicate the possibilities of exploitation when there is unequal bargaining power. Farmers may be placed in a position to accept an unattractive distribution of risk and profit or to go out of production. Ideally, the division of gains or losses should be based upon the relative amount of inputs supplied by the different parties. Farmers, while free from uncertainty of receipts because income is fee-based and contractually determined, have little opportunity to profit from rising markets. The more coordinated a production process, the less flexible are the possible management decisions. Poultry producers invest in single-use chicken houses on the expectation of continuing contracts. If the contract is rescinded, the producer may be left with liabilities that cannot be repaid and assets that cannot be converted to other agricultural uses (*Progressive Populist*, 1996).

That some activities are closely coordinated does not guarantee efficient production and marketing. Contracting is a tool that farmers and contractors use because of profit incentives. The farmer is the judge as to whether the tradeoff of income stability and a confirmed market is a fair exchange for a loss of independence (Harris, no date). Contracts should clearly note who owns the product and holds the risk of loss in the crop or livestock, and when, if at all, ownership passes from one party to another. More information about contracting on broiler farms and for other commodities can be found in *Farmers' Use of Marketing and Production Contracts* (USDA, 1996).

Farms with Poultry Production Contracts

Our data show that 52 percent of almost 50,000 farms with poultry or egg production in 1995 reported the use of a production contract, including contracts for broilers, turkeys, other poultry, and hatching and table eggs. The value of poultry and eggs produced under contract on those farms accounted for 85 percent of the total value of all poultry and egg production. Farmers without contracts tend to be large owner-integrated operations, or independents providing poultry and poultry products to local markets. Broilers accounted for almost half the value of all poultry production under contract. The remaining value was distributed among eggs, turkeys, other types of chickens, and other poultry.

We examined the financial structure and other characteristics of farms that reported broiler production to understand farm operations that contract. While some farms may produce poultry for sale in the cash market, or through a marketing contract, our data are too sparse to make reliable estimates for this group. We limited our investigation to broiler producers, as these farms represented most poultry production, and the survey provided an adequate sample for detailed analysis. Broilers are chickens raised specifically for meat and are ready for processing approximately 6-1/2 weeks after hatching.

Management and Performance on Broiler Farms

U.S. farmers are seen as exemplary entrepreneurs who make all the decisions in the production process—what to produce, how to produce the commodity, and at what price to market it. Contracting is a formalization of the process of decisionmaking, with contractors having much to say about the means of production. As contracting becomes more prevalent for many commodities, this division of the entrepreneurial function will continue. This section provides background material on the development of broiler contracts, who the contractors are, what part management plays, and who makes decisions on broiler farms. Next, financial performance of broiler farms is presented, with emphasis on the interpretation of standard financial ratios on broiler operations and on farms producing other commodities. Finally, characteristics and income of the households associated with broiler operations give insights into the economic well-being of the people who decide to participate in contracts.

Development of Broiler Contracts

Broiler contracts are the most widely publicized livestock production contracts, although cattle have been fed on contract for many years, and about one-quarter of the hogs are produced under contract. Broiler operations are localized, with more than 82 percent of the 13,319 farms with broiler contracts found in the Appalachian, Southeast, and Delta regions of the United States (table 5). As mentioned before, this concentration in the southern parts of the United States may be the result of the current location of processors and the advantages of warmer weather. We have anecdotal evidence of processors locating a hatchery or processing plant, then recruiting nearby

farmers to grow out the birds (Hickerson, 1996). Chickens require 24-hour monitoring by the caregiver and cannot tolerate temperature extremes. Warmer weather means lower heating bills, but possible risks from heat in the summer. Aho (1988) suggests that people of the rural South, with fewer economic opportunities and lower skill levels, were willing to accept contract rates that were lower than in areas of the country where alternative economic activities were more plentiful.

Because broilers are high-value products, farms on which they are produced tend to be farms with annual sales of \$50,000 or more, and only a few hundred farms have lower sales. Farm size is based on the value of the products sold, not on the contract-fee income received. Broiler operations seem large when compared with all other farms. The definition of a farm includes farms producing products valued at \$1,000 or more; more than 60 percent of the Nation's 2.1 million farms had sales less than \$20,000 in 1995. In contrast, more than 90 percent of farms with broiler contracts had a gross value of sales of \$100,000 or more in 1995. Six percent had sales valued at \$1 million or more. Farms with gross value of sales between \$100,000 and \$999,999 accounted for 75 percent of the value of broiler contract production, while the farms with sales valued at \$1 million or more accounted for 24 percent of the total. In reality, broiler operations more closely resemble small to midsize farms in the income generated, because farmers receive a management fee that represents only a portion of the market value of the broilers. Later in this report, we examine more closely the farm operations with sales greater than \$50,000, comparing income, expenses, assets, and liabilities of broiler operations with those of other nonpoultry farms in the same sales classes.

Table 5—Broiler production contract activity per farm, by region, 1995

Item	Unit	Region				Farms with broiler contracts
		Appalachian	Southeast	Delta	Other regions	
Farms with broiler contracts	Number	*2,620	4,158	*4,164	*2,377	13,319
Farms with broiler contracts	Percent	19.7	31.2	31.3	17.8	100.0
Birds under contract	Thousands	635,736	1,221,222	*1,116,443	*604,612	3,578,014
Birds under contract per farm	Average number	242,669	293,692	*268,130	254,307	268,635
Per unit contract fee received	Average dollars	0.23	0.24	0.24	0.22	0.23
Fee received per contract	Average dollars	54,719	69,431	64,915	54,761	62,507

NA=Not available. CV=(Standard Error/Estimate)*100. CVs less than 25 are unmarked. *=CV is between 25 and 50.

Source: U.S. Department of Agriculture's 1995 Agricultural Resource Management Study (previously known as the Farm Costs and Returns Survey).

The average value of chickens raised on broiler farms varied considerably. Fifty-five percent of the broiler farms had contracts for birds valued at less than \$381,000 during 1995, while 21 percent had contracts valued at \$571,000 or more (table 6). Farms with lower value contracts (\$381,000 or less) tended to be less specialized; these farms produced 51 percent of the value of crops produced on broiler farms, while farms with higher value contracts (\$965,000 or more) produced only 4 percent.

As mentioned in the previous section, broiler producers are not diversified with respect to enterprise, in that they are specializing in the raising of chickens. While almost two-thirds of the broiler farms produced other commodities, such as cattle, corn, hay, or soybeans, those commodities accounted for less than 15 percent of their total value of commodity production. On one-third of broiler farms, operators raised only chickens.

Who Are the Contractors?

While the industry has approximately 54 integrated broiler companies, and many more independent contractors, brokers, and processors, it is dominated by a few very large integrators (table 7). Thornton (1996) reported that broiler processors produced an average of 542 million pounds of ready-to-cook meat each week. Tyson Foods is by far the largest integrator, and the company produces more than twice as many pounds of ready-to-cook chicken as its next two competitors—Goldkist and Perdue Farms. Knoeber and Thurman (1995) suggest that the integrator companies' costs of bearing risks are reduced in the publicly traded companies, because shareholders can diversify. These risk-bearing costs are similarly reduced in other

multi-product private companies because these firms spread their risks over diversified product markets.

Survey data on broiler contracts show the type of contractor rather than the name of the business. The 1995 data show that most of the contractors for broilers were processors or integrators (table 8).² (Farmers can report more than one contract; this is reflected in table 8, which shows 13,386 contracts on the 13,319 broiler farms.) Farmers in the Southeast used the widest variety of contractors, including processors, integrators, other farms or farmers, and cooperatives. Broiler contracts with other farms or farmers showed up in the Northeast, Southeast, and Delta. No broiler contracts were reported with brokers or investors, or with another segment of the same company. Most "processors" with whom farmers had contracts are, in an organizational sense, integrated companies, but since the farmers contracted with the processing part of the company, the respondents apparently considered the business to be a processor.

The possibility of termination of a contract confronts farmers with additional risks—that of contract risk rather than price or yield risk. Since the operator must make a large investment in buildings and equipment, loss of a contract could be financially difficult. Poultry facilities are single-use buildings, and different contractors may require completely different equipment to care for and monitor the birds. We measured continuity by the length of time that farmers operated under the current contract. From the survey, we found that the average duration for the current contract was 9 years. Farmers in the Southeast had

² All integrators are processors; nearly all processors are integrated.

Table 6—Farm value of production for farms with broiler contracts¹ by contract value, 1995

Item	Size of broiler contract				Farms with broiler contracts
	Less than \$381,000	\$381,000 - \$570,999	\$571,000 - \$964,999	\$965,000 or more	
	<i>Number</i>				
Farms with broiler contracts	*7,361	*3,112	*2,125	*721	13,319
	<i>Percent</i>				
Farms with only broiler contracts	*55.3	*23.4	*16.0	*5.4	100.0
Value of production	*27.5	*22.7	*28.1	*21.7	100.0
Livestock including broilers	*27.1	*22.9	*28.1	*21.9	100.0
Broilers	*23.6	*24.1	*28.6	*23.6	100.0
Crops	*51.4	*15.2	*29.1	*4.2	100.0

¹Of the 13,319 farms with broiler contracts, 12,479 had contracts for broilers only. These data present all farms with broiler contracts.

CV=(Standard Error/Estimate)*100. CVs less than 25 are unmarked. *=CV is between 25 and 50. **=CV is between 50 and 75.

Source: U.S. Department of Agriculture's 1995 Agricultural Resource Management Study (previously known as the Farm Costs and Returns Survey).

Table 7—Top 10 processors of broiler chickens, 1997¹

Name of company	Weekly average production	Market share
	<i>Million pounds</i>	<i>Percent</i>
Tyson Foods	125	21.9
Goldkist	50	8.8
Perdue Farms	45	7.9
ConAgra Poultry	30	5.3
Pilgrim's Pride	30	5.3
Hudson Foods	30	5.3
Wayne/Continental	22	3.9
Cagle's	16	2.8
Foster Farms	14	2.5
Seaboard Farms	14	2.5

Source: Thorton, 1997

1/ The top 10 processors' market share was 66.2 percent.

been with the current contractor for the longest time, an average of 11 years. Current contract duration was shortest in the Corn Belt and Northeast regions, most likely because broiler contracts are new to these regions. Length of time with current contractors did not seem to vary much among the processor or integrator categories—probably because certain contractors could be placed in both categories, as noted above. The long duration of contracts is evidence of contractors' need to have a steady, reliable supply of broilers, and of the lack of mobility of the farmer-supplied resources needed to produce broilers.

What Part Does Management Play?

Farmers and contractors, as businesspeople, adjust their management decisions in response to and in anticipation of changes in their working environment to provide income stability and to ensure that their businesses survive. Farmers face risk on three interrelated fronts—production, marketing, and financial. For contract broiler producers, many of these interrelationships are formalized in their agreements with contractors. Contracts can enhance or inhibit the response to feedback from the market. A combination of information from 1993 to 1995 surveys presents a picture of farm operators who are conservative in their production practices, but more flexible in their financial decisionmaking processes.

Management Styles

Management data for broiler producers are sparse, but a few generalities can illuminate the subject of their management styles in responding to feedback from the agribusiness sector. They do not consider themselves risk-takers. Very few said that they were will-

ing to try new technologies, compared with 36 percent of all farmers operating farms that generate sales of \$50,000 or more. In describing their management style, most broiler producers surveyed in 1993 said that they used the same practices that other farmers use, or that they waited to see how other farmers were doing before trying a new practice. These responses may reflect the nature of contracting—one purpose of contracts is to standardize production practices with the goal of producing a homogeneous commodity. Consequently, farmers are limited in the changes they make in production practices in the absence of contract renegotiation. Innovation in production processes may occur at a slower rate than on farms without production contracts.

Most farmers said they used their own judgment when deciding to use certain management strategies, but some used outside sources of information. In 1995, broiler producers cited their primary sources of outside information as coming from (in order of frequency of use) banks and other financial institutions, their contractors, input suppliers, or their accountant/bookkeeper or lawyer. Contractors have a stake in providing farmers with sound production management advice, and some will also provide financial advice or even financial resources.

Production practices are closely specified and many inputs, including baby chicks, are supplied by the contractor. Because the chickens are owned by the contractor, the farmer's role in marketing is limited to choosing a contractor and negotiating the terms of the contract. Although many production and marketing decisions are stipulated by the agreement between the farmers and the contractor, farmers can employ other management strategies to reduce the risk of farming. Information from the 1994 survey gives us a picture of farmers with fewer opportunities to alter production and marketing practices, but more flexibility in financial decisions.

Broiler operators said they used management strategies, including maintaining equity in cash or easily converted assets (59 percent), spreading sales over the year (45 percent), keeping an open credit line (29 percent), and choosing a commodity because it generates a stable income, leasing or renting land, and hiring custom feeding or contract labor (all at 28 percent). Just over 20 percent of broiler producers said they had renegotiated or prepaid a loan agreement or land contract in 1994. The purchase of crop or livestock insur-

Table 8—Broiler contractors—ARMS evidence, 1995

	Region			All regions
	Appalachian	Southeast	Delta	
	<i>Number</i>			
All contracts	2,631	4,158	4,219	13,386
Type of contractor:				
Other farms or farmers	0	NA	NA	NA
Processor, mill or gin	NA	NA	1,978	6,060
Co-op or elevator	0	NA	0	NA
Seed, feed, or other input company	0	0	0	NA
Broker or investor	0	0	0	0
Integrator	1,292	2,862	NA	5,748
Another segment of the same company	0	0	0	0
Other contractors not listed	NA	0	NA	NA

Note: Farmers indicated who their contractor was. This list was not inclusive and did not reflect the economic function or industry standard.

Some farmers had contracts with more than one type of contractor. NA=Not available due to disclosure requirements.

Source: U.S. Department of Agriculture's 1995 Agricultural Resource Management Study (previously known as the Farm Costs and Returns Survey).

ance was a strategy for few broiler growers— probably because production contracts provide a guaranteed base income for the producer even with the loss of the flock due to disease, heat, or natural disaster.

In contrast, nonbroiler farmers with comparable sales used production strategies such as forward pricing inputs, choosing a commodity known to produce a stable income, hiring custom work, participating in government commodity programs, and leasing land more extensively than did broiler operators. Over 72 percent of comparable nonbroiler operators purchased crop or livestock insurance. And, they were more than twice as likely to have nonfarm use of land (recreational, hunting, mineral leases, etc.), probably because they operate more land than broiler producers. On the marketing side, nonbroiler farmers with sales of \$50,000 or more were three times more likely to use hedging or the futures markets (may be commodity specific), and more likely to spread sales over the year. Nonbroiler farmers used financial strategies almost twice as often as broiler-producing farmers.

Broiler producers making the management decisions covered on our list were more likely to have larger farms in terms of sales, income, and assets. They also have larger, though for most not unmanageable, debt. This may be a reflection of their risk-taking capacity since they can probably handle and be comfortable with larger debt. However, financial position might be less secure for those heavy users of management strategies. If a risk-taker pushes the farm business' debt repayment capacity and the market declines, financial stress may result.

Agriculture continues to be pressured to respond to enhanced awareness of the effects of production practices (Pampel and van Es, 1997). In particular, the public has expressed a concern about the effect of intensive livestock production methods on the environment and on the welfare of animals. Consequently, one of the greatest challenges for poultry growers and contractors is the adoption of management practices that control for environmental impact, particularly waste management, while maintaining economic returns (Goff, 1997; and Poultry Digest, various issues).

Who Makes Decisions?

Because contracts specify so much of the production and marketing decisions that farmers can make, it is interesting to compare this set of intensely formalized decisionmaking with that of farmers who operate in a more open market. In 1994, the ARMS questionnaire contained a list of duties typical of farm managers. For each management decision, we asked the respondent who made that decision for his/her farm. The decision list included:

- Obtaining financing for operation or expansion
- Developing the plan of production
- Buying or selling land
- Renting more or less land
- Trying a new production practice

- Producing a new crop or new breed/type of livestock
- Scheduling work and hiring labor
- Buying major farm/ranch equipment
- Marketing products
- Whether to take a job off the operation

By definition, the respondent-operator is the person making most of the day-to-day decisions. Until the 1940s, the poultry business was dominated by farm wives. Iowa State College (now University) estimated that a flock of 100 to 200 chickens could supply enough income to pay the grocery bill. This number of free-range chickens could be taken care of with part-time labor and by making efficient use of what chickens could scavenge in a farmyard, including spilled grain. Labor was considered free because farm analysts did not accord women's labor a monetary value in the farm economy. Marketing was accomplished by taking eggs directly to the local retailer (Fink, 1986:137).

By 1956, an analysis of trends in the poultry industry stated that the major obstacle to eliminating small flocks and expanding the industry was that "on many farms the income from the farm flock goes to the housewife" (Wisconsin State Extension Service, 1956:46). Technology in egg grading and sexing, culling flocks, practices allowing the raising of caged birds rather than free-range, and the development of new Leghorn varieties led to larger flocks. As flocks grew, feed and labor became more measurable. With increased government demand during WWII, for the first time entrepreneurs could make profits by building "egg and broiler factories." According to Fink, those entrepreneurs were usually men. Regulations about candling eggs and a minimum wage for hatchery workers began to increase production costs. Larger flocks required increased capital, but women were often denied loans without a male cosigner until the 1968 Consumer Credit Protection Act. In addition, growers were receiving slimmer marketing margins, squeezing out backyard operations (Fink, 1986:153).

The record of women's involvement in poultry declined as flocks became larger and more attention was directed to keeping financial and production records and supplying full-time labor. The

Agricultural Census collects data from one operator for each farm and allowed no register of operator's gender until 1978, or for spouses to be recorded as operators. The distribution of operator duties was (mostly) assumed to go to the male operator. New evidence now points to a greater involvement in the farming operation by farm spouses than previously has been visible in the data.

Many farm families consist of a husband and wife sharing management decisions (Perry and Ahearn, 1994). However, wives were most often thought of as farm helpers rather than farm operators and the farm operator/decisionmaker was the husband (Rosenfeld, 1985:10). Since today's broiler production is heavily dominated by contractors, we expected that farm operators would say that many decisions were made by someone other than the operator or the operator's spouse.³ What we found was that on about half of broiler farms, the operator's spouse (on about 6 percent of all farms), or the spouse and operator together (on about 45 percent of farms), were making the management decisions—a vastly different situation than on nonpoultry farms with sales of \$50,000 or more, where very few spouses alone and 20 to 30 percent of operators and spouses together were making these same decisions (table 9). Just as on other comparably sized nonpoultry farms, the operator made most decisions on broiler farms. However, this level of spousal (female) participation in the management decisions of the farm is not found for other groups of farms, with the exception of dairies.

Sample size makes it difficult to say with certainty that most broiler operations reveal this participation by the spouse. However, evidence shows that spouses of broiler producers in the Appalachian and Delta regions (where operations are smaller) are more involved in the management of the farm. Broiler operations in the Southeast also show evidence of spousal participation in conjunction with the operator, but very few respondents said that the spouse unilaterally made decisions. Whether this is a result of sampling or of less involvement by the spouse cannot be

³ In 1994, the ARMS questionnaire did not query for the gender of the operator, neither did it determine whether the operator was married. Previous research shows that 88 to 90 percent of operators are married, but we do not know which farms in 1994 had spouses (male or female) available to work on the farm. Our information does show how many hours spouses worked and whether they participated in making farm decisions.

Table 9—Strategies used on farms, for farms with broiler contracts and other farms, 1994

Item	Broilers	Farms with no poultry	
		Crops	Livestock
Number of farms with sales of \$50,000 or more	12,892	286,921	235,840
Percent of farms	2.3	52.0	42.8
Decision/person making decision			
Obtain financing		<i>Percent</i>	
Operator	40.2	65.2	54.9
Spouse	5.9	NA	NA
Operator/spouse	40.3	25.8	35.8
Someone else	0.3	**1.3	2.2
Develop plan			
Operator	46.2	82.6	75.6
Spouse	5.9	NA	NA
Operator/spouse	44.1	11.1	20.4
Someone else	0.1	* 1.7	* 1.8
Buy/sell land			
Operator	32.3	43.7	38.6
Spouse	5.9	NA	NA
Operator/spouse	42.1	33.5	41.9
Someone else	0.3	1.3	2.2
Try new practice			
Operator	38.1	78.1	66.7
Spouse	6.0	NA	NA
Operator/spouse	30.9	10.6	23.0
Someone else	0.8	* 3.0	*2.9
Schedule work			
Operator	45.4	75.7	63.8
Spouse	5.9	NA	NA
Operator/spouse	30.0	13.0	21.5
Someone else	NA	7.1	8.4
Buy new equipment			
Operator	47.1	59.6	54.9
Spouse	5.9	NA	NA
Operator/spouse	35.7	31.7	38.1
Someone else	NA	* 1.8	2.4
Market product			
Operator	47.8	74.7	67.3
Spouse	1.8	NA	NA
Operator/spouse	22.3	17.3	26.23
Someone else	2.0	2.0	* 1.6

CV=(Standard Error/Estimate)*100. CVs less than 25 are unmarked. *=CV is between 25 and 50. **=CV is between 50 and 75. NA = Not available. Categories may not add to 100 because operators may have responded that the decision was not applicable, or they may have refused.

Source: U.S. Department of Agriculture's 1994 Agricultural Resource Management Study (previously known as the Farm Costs and Returns Survey).

addressed here. Spousal participation does not appear to vary much with size of farm. Operators of the largest broiler operations (those that depend more on hired labor, which tends to displace spousal labor) continue the tendency toward making joint decisions about the farm with their spouses.

The allocation of decisions toward spousal involvement is more pronounced by size of farm in three instances. First, work scheduling by spouses was more likely on broiler farms with sales of \$50,000 to \$250,000. Second, the decision to take an off-farm job was overwhelmingly a joint decision for those operating this size of broiler farm. Finally, marketing decisions were more likely made by the operator and spouse together for the largest farms.

Interestingly, a significant proportion of broiler producers, particularly those in the Southeast, indicated that the listed decisions were not applicable for their farm. The contract is an agreement between the grower and contractor that specifies many of the management decisions. Perhaps the farmer was disinclined to say that someone else was making the decision, but was also unable to say that the decision was his/hers alone. Decisions to obtain more land or equipment may be less relevant for confined livestock operations, particularly broilers, than for other types of farms. And, trying a new production practice or new commodity probably has little relevance for a broiler producer under contract. Marketing the product was another decision that was heavily marked as "Does not apply." A major reason for farmers to contract is to guarantee markets, so decisions about where and how to market are decided by the contract and not on an ongoing basis by the operator as in a cash market.

Another decision farmers make is the allocation of their own time to the running of the business. The average number of hours of labor reported by broiler operations is about 45 percent lower than the average reported by other operations with sales of \$50,000 or more. Hired labor is significantly lower, with broiler operations relying mainly on family and other unpaid labor. Confirming the management role of spouses, time supplied by spouses on broiler operations is 20 percent of total hours compared with less than 10 percent on other operations of comparable size. Broiler operations are fully employing the operator for an average of 2,234 hours per year (2,000 hours is considered full-time work at a wage job. Self-employed

persons usually report more than 2,000 hours). Broiler farmers in the Delta region averaged the most hours at 2,472 annually, while operators in other regions report 1,600 hours. Farmers running farms of comparable sales but without poultry averaged 2,600 hours of farm work annually on crop farms and 3,370 hours on livestock operations, reflecting their relatively larger scale of operation. Additional analysis of part-time and full-time employment is presented in the section on operator characteristics and household income.

Financial Analysis of Broiler Farms

Several measures can be used to evaluate financial performance of a business. Typically, after an income statement and balance sheet are produced, standard financial ratios are constructed. These ratios measure the ability of a business to earn a net income from sales, to generate a return to assets used in the production process, or to provide cash flow to service debt and replace depreciated assets (Farm Financial Standards Council, 1995). In addition to traditional financial ratios, the Economic Research Service (ERS) has developed a categorical framework that combines net income and debt measures placing farms into four groups describing the farm's ability to continue to be a viable business (Morehart, Johnson, and Banker, 1992). A final measure of financial stability is characterized by combining information about management decisions made by farmers, their use of market and educational information, and the income generated by the business.

Income, Assets, and Debt for Broiler Operations

To construct a more homogeneous group, we restricted our financial analysis to the 12,613 broiler operations with sales of \$50,000 or more. For contract broiler producers, it is important to distinguish between value of production and income received from contracting. Value of production is the value of commodities produced, while income received from contracting is the fee the farmer receives for the management and services provided during production. Farmers who sell their products in the open market, by definition, receive the full market value of the commodity when it is sold. For broiler operations, however, the fees the farmer receives for caring for the chickens are different from the value of the chickens. The contractor retains ownership of the chickens throughout the growing stages and thus retains a large portion of their market value. In the income state-

ment, fees received by farmers for contract production are recorded in the line item for “other farm-related income” because the fees are payments for management and services. Farmer-growers who are under contract for more than 1 calendar year could also receive payments from flocks removed during the previous calendar year. Similarly, they could be owed payments for chickens removed during the present calendar year— this item is recorded as an asset under “accounts receivable” on the balance sheet.

The box-plot in figure 4 presents the range of the nominal net farm income for the middle 50 percent of U.S. broiler farms with sales of \$50,000 or more over the period 1991-95. The means and medians of farm income are printed with the box-plot, with the mean always printed on the left of the plot. The top of the bar shows the 75th percentile; the bottom of the bar shows the 25th percentile. The length of the bars shows that the net farm income range for the middle 50 percent has narrowed since 1992. The 1995 mean has decreased, from more than \$25,000 in 1991 down to almost \$16,000. The median level of net farm income (to the right of the bar) was between \$21,000 and \$29,000 until 1995, when it was \$7,000 to \$15,000 lower. While it appears that net farm income is lower and the range has narrowed, some variation year to year may be partially attributed to sampling, since the number of interviews with broiler producers is few. In addition, our perspective may change with data from additional years since we have only a data series of 5 years. The amounts are shown in nominal dollars, and although inflation was lower during the time period, the decrease in average income is an even larger decrease in ability to cover expenses.

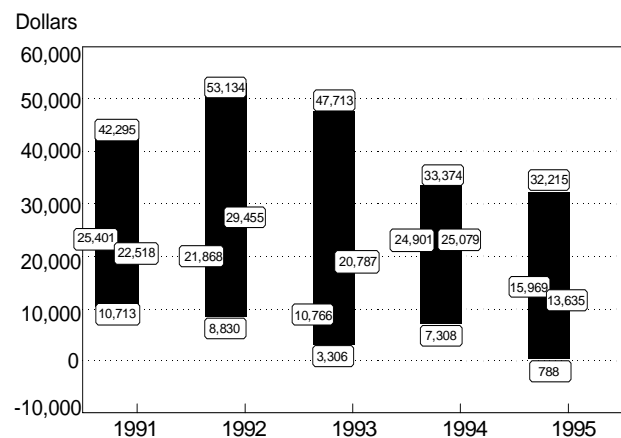
First, we compared a regular income statement for the average broiler operation generating sales of \$50,000 or more, by region of the country (table 10), with income statements from crop and livestock farms in the same region that were generating similar receipts. When classifying farms according to size, we typically use value of sales. By this measure, as mentioned before, most broiler operations have sales more than \$50,000. However, we see some important differences.

As for gross income, broiler producers’ sales run about 40 percent lower than those of many other farms with sales of \$50,000 or more, and they may

appear to show little profit because they have lower net farm income. Average gross income for broiler producers was only \$86,048, compared with the U.S. average of \$250,478 for farms with no poultry that generate sales of \$50,000 or more. Broiler operations’ average net farm income was \$15,969 in 1995, compared with more than twice that amount for the average net farm income for a typical farm with sales of \$50,000 or more. Across regions, broiler operations in the Delta had the lowest average net farm income, at about \$15,000 (this region also has many poultry farms with sales under \$50,000). Broiler farms with sales of \$50,000 or more in the Appalachian region had the highest net farm income, at more than \$25,000.

However, broiler operations’ comparatively low sales and low income are somewhat misleading. Broiler operations appear more profitable per dollar of production. While the average farm operation generating sales of \$50,000 or more retains about 21 cents for every dollar of sales, the average broiler producer retains 39 cents. Having lower sales is not the only difference among broiler farms and other farms generating this level of sales. An examination of the components of the income statement for broiler operations shows how they differ from other operations, with emphasis on the contractor relationship.

Figure 4
Net farm income for broiler farms with sales of \$50,000 or more, 1991-95



Note: Graph shows the top 75 percent level and bottom 25 percent level on each bar, as well as mean income to the left and median income to the right of the bar.
 Source: U.S. Department of Agriculture's 1995 Agricultural Resource Management Study (previously known as the Farm Costs and Returns Survey).

Table 10—Farm operation income statement for farms generating sales of \$50,000 or more, with broiler contracts,¹ compared with crops and livestock farms with no poultry, by region, 1995

Item	Appalachian			Southeast			Delta			Other regions			Farms with sales of \$50,000 or more	
	Broilers	Farms w/o poultry		Broilers	Farms w/o poultry		Broilers	Farms w/o poultry		Broilers	Farms w/o poultry		Farms with broilers	Farms with no poultry
		Crops	Livestock		Crops	Livestock		Crops	Livestock		Crops	Livestock		
Number of farms in region/category	*2,555	18,939	11,562	4,158	15,678	*8,039	*3,522	10,739	5,751	2,377	246,688	191,047	12,613	508,442
Percent of value of production in category	*7.0	51.9	31.7	13.9	52.6	*27.0	*15.5	47.3	25.3	0.5	55.2	42.7	2.4	94.8
	*15.2	41	30.6	18.9	50.2	17.9	*24.0	37.2	19.1	*0.9	48.9	46	4.1	89.8
Gross cash income (\$)	78,543	187,828	158,699	93,076	374,664	254,223	77,041	272,530	148,293	*95,165	244,410	261,566	86,048	250,478
Livestock income	*5,039	8,329	131,926	*11,459	6,835	*215,330	*6,417	*3,534	126,456	**28,983	12,536	219,288	*12,054	96,910
Crop sales														
(incl. net CCC loans)	**12,678	166,729	13,625	*8,416	328,370	*25,052	L	220,704	**2,027	**7,364	188,374	22,719	*6,790	121,659
Government payments	L	2,594	*1,523	*702	3,068	*1,050	L	20,308	*2,099	**713	10,565	5,166	*495	7,762
Other farm-related income 2/	60,269	10,175	*11,625	72,498	36,391	**12,790	70,354	27,984	**17,711	58,104	32,934	14,393	66,708	24,146
Contract fees	58,392	L	**6,321	70,810	L	L	68,516	0	L	56,633	*3,050	*4,208	64,981	3,384
Cash expenses (\$)	44,225	125,187	132,555	63,055	306,606	203,988	42,325	213,536	133,605	*63,027	186,001	214,046	53,446	197,050
Variable	27,456	99,999	112,726	43,863	254,718	178,005	30,723	170,312	113,565	*46,157	141,224	179,067	37,302	157,643
Livestock purchases	L	*679	*13,040	**466	454*	*4,820	L	*156	L	8,391	2,517	34,900	**1,754	14,825
Feed	**1,224	1,568	36,533	*2,516	1,982	54,142	*2,672	*1,004	52,645	**10,088	3,149	60,656	3,725	26,742
Other livestock-related 3/	*833	281	3,780	2,300	*594	*8,562	2,694	*110	3,075	**917	833	10,036	1,946	4,462
Seed and plants	*3,161	8,968	2,562	992	24,393	*3,163	L	11,303	*1,204	*1,175	12,325	4,094	781	8,965
Fertilizer and chemicals	*4,360	28,202	12,799	*4,724	69,473	*13,913	**1,036	75,338	6,534	NA	37,189	12,263	2,951	28,021
Labor	*4,360	27,127	15,845	*5,226	76,364	46,219	**4,862	27,713	*12,132	*4,560	36,402	17,760	4,823	29,514
Fuels and oils	6,161	8,803	4,716	11,295	12,640	4,571	5,644	13,273	7,428	*2,506	9,132	6,323	7,020	8,068
Repairs and maintenance	4,058	9,371	8,474	7,098	18,908	11,438	*3,813	19,786	8,029	6,987	13,674	12,165	5,542	13,020
Machine-hire and custom work	*617	1,897	5,758	*913	18,769	*5,718	L	8,392	6,129	NA	6,936	6,526	767	6,935
Utilities	3,710	2,769	3,880	6,436	6,027	*8,012	*5,380	5,107	3,963	6,009	6,712	5,533	5,509	5,992
Other variable expenses 4/	*1,946	10,335	5,341	1,897	25,115	*17,446	L	8,131	5,831	*2,225	12,356	8,811	*2,483	11,100
Fixed	*16,770	25,187	19,829	19,192	51,888	25,983	11,602	43,223	20,040	16,870	44,776	34,978	16,144	39,407
Real estate and property taxes	1,609	*2,270	2,454	1,703	5,813	*4,634	1,634	1,270	*1,828	*2,743	4,267	4,395	1,861	4,162
Interest	*11,171	7,394	9,461	11,881	17,360	*9,827	*6,378	10,165	12,457	*10,557	13,681	15,853	9,951	14,140
Insurance premiums	2,029	4,117	3,317	3,309	9,675	*4,117	3,474	7,025	3,406	2,478	6,583	4,200	2,939	5,551
Rent and lease payments	*1,961	11,406	4,597	*2,299	18,770	*7,406	**116	24,764	2,349	*1,092	20,246	10,531	*1,394	15,555
Net cash farm income (\$)	34,318	62,641	26,144	30,021	68,058	*50,235	*34,716	58,994	**14,687	32,138	58,409	47,520	32,602	53,428
Less: Depreciation	14,641	11,188	17,211	18,403	29,868	*27,284	22,183	17,940	23,341	18,730	21,285	22,327	18,710	21,520
Labor, non-cash benefits	L	488	*1,283	**113	1,033	9,228	**882	697	1,095*	L	681	1,281	*357	932
Plus: Value of inventory change	NA	**6,870	NA	NA	NA	NA	NA	NA	NA	NA	7,711	**156	**4,061	*3,559
Nonmoney income 5/	5,596	5,285	5,093	7,975	3,685	*4,005	4,917	2,738	*5,741	7,409	3,936	5,083	6,496	4,432
Net farm income (\$)	25,452	63,119	**10,420	NA	*37,364	**25,221	**15,265	*42,412	NA	21,551	48,090	28,839	*15,969	38,966

1/ Includes only broiler producers, farms with other poultry are excluded. 2/ Income from machine-hire, custom work, livestock grazing, land rental, contract production fees, outdoor recreation, and other farm-related sources. 3/ Includes livestock leasing, custom feed processing, bedding, and grazing. 4/ Supply, transportation, storage, general business expenses, and registration fees. 5/ The value of home consumption plus an imputed rental value of farm dwellings. NA=Not available. CV=(Standard Error/Estimate)*100. CVs less than 25 are unmarked. *CV is between 25 and 50. **CV is between 50 and 75. ***CV is between 75 and 100. L= Disclosure withheld due to small sample size. Rounded percentages may not add to 100.

Source: U.S. Department of Agriculture's 1995 Agricultural Resource Management Study (previously known as the Farm Costs and Returns Survey).

One might expect that since broiler producers are livestock operations, the farm's income statement would show expenses for the livestock enterprise. However, broiler farms show few expenses for livestock purchases and feed in relation to their sales, unlike other livestock operations. Why? The answer lies in the sharing of production costs, marketing risks, and income.

In general practice, farmers decide which commodity to produce, how to produce it, and what resources to use. Inputs, supplied entirely by farmers themselves or with others such as contractors, are combined into activities or enterprises to produce a variety of crops, livestock, and other outputs. Independents have the total responsibility for all planning, producing, and marketing. They must provide houses, equipment, birds, feed, all supplies, and management. Independents assume all the risks of production, but their profit (or loss) reflects the full value of the product. In contrast, under contract production, contractors are intensely involved in the risks of broiler production—they own the birds and provide feed, medical services, management advice, and a market outlet—and they earn a large proportion of the income.

The 1995 data confirmed these general relationships (figure 5). In addition to supplying the chickens (livestock purchases) and feed, contractors paid approximately 15 percent of the farm's variable expenses. Veterinary expenses (included in "other livestock-related costs") were paid by the contractor for most

farms reporting broiler contracts. Expenses for utilities, labor, and repairs and maintenance, most of which were paid by the farm operator, accounted for one-third of average cash expenses. Farmers also paid fixed expenses for interest, insurance, taxes, and lease payments that accounted for another one-third of cash expenses on their farms. Contractors paid approximately 60 percent of the variable expenses (including chicks and feed). Fees paid to the growers were another 15 percent of the value of broiler production.

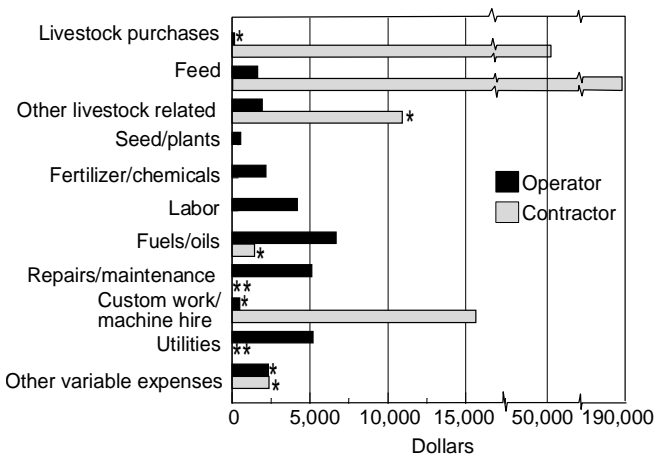
Broiler operations' balance sheets are different from those of other livestock operations, with a particular exception being in the value of their current assets (table 11). Because poultry operations do not own the chickens that they grow, nor produce crops requiring storage, very little product value is in inventories. Contractors provide or reimburse the farmer for many purchased inputs such as feed and livestock supplies. The category "other assets" includes accounts receivable, which may be substantial for farmers receiving fee payments in installments.

The largest component of assets on broiler farms generating sales of \$50,000 or more was for land, buildings, and equipment, and averaged \$406,206. Housing for the chickens is a substantial investment for farmers and, over the years, the cost of acceptable housing has increased as design and equipment have become more sophisticated. In 1960, as little as \$10,000 was required to build a single small grow-out house in the Southeast (Aho). While in some areas the inexpensive, open, curtain-sided, dirt-floored housing was still used, many contractors will specify enclosed, floored housing, with proper climate control and manure disposal. Management of the flock and environmental impact of confined livestock will be discussed in the next section.

Other nonpoultry farms with sales of \$50,000 or more have similar investments in land and buildings, but their full investment in noncurrent assets is 40 percent higher than on broiler operations. Particularly in the Southeast region, these nonpoultry farms have much higher investments in farm assets than the region's broiler operations.

Broiler operations have slightly higher debt-to-asset ratios than the other poultry-producing operations. At the end of 1995, broiler operations had average farm liabilities of \$107,338, resulting in an average

Figure 5
Distribution of variable expenses between operator and contractor on broiler farms, 1995



*=CV is between 25 and 50
**=Contractor data not available.
Source: Farm Costs and Returns Survey

Table 11—Farm operation balance sheet for farms generating sales of \$50,000 or more with broiler contracts, and crops and livestock farms with no poultry,¹ by region, 1995

Item	Appalachian				Southeast				Delta				Other regions				Farms with sales of \$50,000 or more	
	Broilers		Farms w/o poultry		Broilers		Farms w/o poultry		Broilers		Farms w/o poultry		Broilers		Farms w/o poultry		Farms with broilers	Farms with no poultry
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent		
Farms	*2,555	18,939	11,562		4,158	15,678	*8,039		*3,522	10,739	5,751		2,377	246,688	191,047		12,613	508,442
Farms in region/category	*7.0	51.9	31.7		13.9	52.6	*27.0		*15.5	47.3	25.3		0.5	55.2	42.7		2.4	94.8
Value of production in category	*15.2	41	30.6		18.9	50.2	17.9		*24.0	37.2	19.1		*0.9	48.9	46		4.1	89.8
Farm assets 2/	459,453	538,029	786,794		533,715	1,045,519	1,877,054		511,868	516,602	*798,647		465,398	805,609	828,413		499,691	821,938
Current assets	*25,717	99,618	101,558		39,650	167,623	243,762		*31,408	*133,587	83,810		**20,854	166,164	150,300		30,981	155,908
Livestock inventory	*2,972	5,052	43,464		*8,685	4,783	60,353		*9,898	*2,849	67,671		**8,294	6,709	59,398		7,892	28,678
Crop inventory	*2,961	45,886	13,827		*2,658	34,983	*7,893		*1,781	L	*6,487		**6,467	64,158	38,464		3,193	50,054
Purchased inputs	*289	3,181	2,685		L	3,748	*1,612		**28	1,495	*1,760		**881	7,093	5,094		*427	5,728
Cash invested in growing crops	**273	2,037	*935		**202	*14,160	*969		L	4,890	L		**32	8,575	1,936		*143	5,542
Prepaid insurance	507	1,029	829		827	2,419	*1,029		869	1,756	852		620	1,646	1,050		735	1,388
Other assets 3/	*18,713	*42,432	*39,818		*26,687	107,530	L		L	67,089	*6,854		**4,552	77,984	44,358		18,691	64,518
Non-current assets	433,736	438,411	685,235		494,065	877,895	*1,633,292		480,460	383,015	*714,837		444,554	639,445	678,113		468,710	666,030
Investment in cooperatives	*1,934	*2,768	*2,671		*2,025	7,120	L		*1,488	*3,936	*470		**518	4,245	3,008		1,572	3,995
Land and buildings 4/	343,405	333,790	528,383		433,117	723,130	*1,353,524		420,687	210,722	*559,471		405,192	472,600	476,072		406,206	487,107
Operator's dwelling	71,061	59,376	52,821		83,339	44,932	*48,059		*61,600	27,320	33,303		L	44,102	49,260		75,647	46,734
Farm equipment	76,167	93,062	90,846		52,849	139,544	73,518		53,063	166,528	76,262		*30,964	153,838	107,039		53,508	130,237
Breeding animals	*12,230	8,791	63,337		6,074*	8,101	*193,121		*5,222	*1,829	78,634		**7,879	8,762	91,994		7,424	44,817
Farm liabilities	115,866	61,384	111,571		111,822	166,102	*102,500		*96,022	63,805	121,053		*107,093	145,184	170,485		107,338	148,783
Current liabilities	*20,638	21,207	28,158		*35,007	63,969	*29,732		L	40,029	*50,657		*46,880	57,205	70,805		*40,061	59,651
Notes payable within one year	**2,259	9,056	11,028		*12,690	15,069	*7,254		*5,337	4,962	14,402*		*36,624	34,989	47,585		*26,271	37,765
Current portion of term debt	*13,968	6,737	*11,821		3,223	4,639	*2,874		*2,772	1,662	3,482		*6,174	11,562	14,269		9,668	12,337
Accrued interest	3,344	1,679	3,188		1,161	6,830	*3,830		*862	6,745	1,509		*3,090	4,036	4,846		3,137	4,177
Accounts payable	*1,068	3,724	2,121		1,161	6,830	*3,830		*862	6,745	1,509		*991	6,619	4,105		1,027	5,371
Noncurrent liabilities	94,841	40,177	*83,413		76,815	102,133	*72,768		*40,502	23,776	70,397		*60,214	87,978	99,680		67,277	89,133
Nonreal estate	*25,899	*14,119	**20,403		*26,210	*27,427	*5,220		**8,248	*12,366	**35,420		*5,022	17,790	24,965		*17,003	29,592
Real estate	68,942	26,058	*63,010		50,605	74,707	*67,549		*32,254	11,410	34,976		*55,192	70,188	74,715		50,274	68,540
Farm equity	343,587	476,644	675,224		421,893	879,416	*1,774,554		415,846	452,797	*677,594		358,305	660,425	657,928		392,353	673,155

1/Excluded from this analyses are farms raising poultry other than broilers. 2/ Commodity Credit Corporation crop loans were excluded from both assets and liabilities. 3/ Includes accounts receivable, certificates of deposit, checking and savings balances, and any other financial assets of the farm business. 4/ The value of the operator's dwelling and any associated liabilities were included if the dwelling was located on the farm. NA=Not available. L = Disclosure withheld due to small sample size. CV=(Standard Error/Estimate)*100. CVs less than 25 are unmarked. *CV is between 25 and 50. **=CV is between 50 and 75. Rounded percentages may not add to 100.

Source: U.S. Department of Agriculture's 1995 Agricultural Resource Management Study (previously known as the Farm Costs and Returns Survey).

debt/asset ratio of 0.22. Farms with any poultry production averaged assets of \$501,388 and liabilities of \$120,165, for a debt/asset ratio of 0.24. For those farms where contract broiler production was the only enterprise, land and buildings represented almost 89 percent of total assets. This single-commodity group also had a higher debt/asset ratio, on average, than multiple-enterprise farms with broiler contracts. However, with fewer production and marketing risks, broiler producers may be as financially healthy as other producers with lower ratios.

Financial Ratios Analysis

For those interested in the financial aspects of broiler operations, this section presents the details of financial ratio analysis. Information here will compare measures of liquidity, returns to assets and equity, operating expense ratios and debt coverage ratios, as well as other financial measures. Financial ratios that indicate the returns to assets or equity and financial efficiency are better measures than net income or net worth for comparing investments among farm businesses (see definitions in table 12). Because the income statements and balance sheets for broiler producers show few statistically significant differences by size of farm or by region, financial ratios will be reported for all broiler farms generating sales of \$50,000 or more (table 13). The relationship between the grower and the contractor leads to interesting notes about financial ratio analysis on broiler contract farms. Financial ratios are calculated using the relationships among the value of owned assets, expenses, and level of income generated. This section suggests that unless one considers contractor involvement in the production process, standard financial ratios may be poor concepts to measure financial performance of a farm business. Broiler operators do not own or supply all assets used in the production process, nor do they pay all the production expenses or bear any market risks. Income risks and production risk are mitigated with disaster clauses in most contracts.

Liquidity is a measure of a farm's ability to meet financial obligations. The *current ratio* is a liquidity measure that shows the extent to which the sale of all current assets would be sufficient to cover current liabilities. The smaller this ratio, the more difficult it is for the farmer to continue operation without disrupting ordinary business. Broiler operations do not have large livestock inventories because the contractor owns the birds, and other items normally counted in inventory, such as feed, may also be supplied by the

contractor. Broiler operations are also very specialized. Most do not carry crop inventories, nor do they have investments in growing crops.

On average, crop and livestock operations with sales of \$50,000 or more have a *current ratio* of 2.25 or more. As indicated in the previous section of this report on the balance sheet, broiler operations do not have current assets (which include inventories of animals and feed) that are common for farmers who operate in the cash market. For broiler producers with sales of \$50,000 or more, an average current ratio of 0.77 shows high current liabilities compared with current assets. If cash flow becomes a problem for a farmer with a low current ratio, alternative financial arrangements (refinancing or restructuring a loan) may have to be made to satisfy any creditors. However, because they contract, broiler producers have few unknown costs, encounter reduced production and marketing risks during the year, and receive regular preset payments, which mitigate cash-flow problems.

Two ratios, the asset turnover ratio and the operating expense ratio, indicate the farm's financial efficiency. The *asset turnover ratio* measures the income generated per dollar of assets used in production. For broiler operations, this measure suggests that the business generates 18 cents in revenue (mostly contract fees) for every dollar of asset value owned by the operation. The asset turnover ratio increases with farm size, with broiler farms in the \$1 million or more sales category generating 23 cents per dollar invested. Still, our data show that broiler operations have lower asset turnover ratios than the average for comparable non-poultry farms, showing less efficient use of their assets. Another interpretation is that required investments are high for broiler producers compared with their expected income.

On the other hand, because many costs of production are paid or reimbursed by the contractor, some ratio analyses show that broiler producers with sales of \$50,000 or more are more efficient than their counterparts. The *operating expense ratio* measures the extent to which cash income generated by the business is absorbed by the annual costs of production. A lower ratio suggests that the average broiler farm with sales of \$50,000 or more is more effective in generating returns than firms with higher ratios. The average broiler farm's operating expense ratio is 63 percent, lower than the same ratio for comparable nonpoultry

Table 12—Definition of financial ratios

Ratio	Computation method	Significance
Liquidity ratios:		
Current	$\frac{\text{Current farm business assets}}{\text{Current farm business liabilities}}$	A measure of ability to meet financial obligations without disrupting ordinary business.
Solvency ratios:		
Debt/asset	$\frac{\text{Farm business liabilities}}{\text{Farm business assets}}$	Indicates the degree of security for the lender and the relative use of the owner's capital.
Repayment capacity ratios:		
Term debt coverage	$\frac{\text{Net farm income} + \text{term interest payments} + \text{depreciation}}{\text{Interest} + \text{principal payments}}$	Measures the farm business' ability to repay both term interest and principal on term debt.
Financial efficiency ratios:		
Asset turnover	$\frac{\text{Value of farm production}}{\text{Total farm assets}}$	Measures the gross farm income generated per dollar of farm business assets.
Economic cost to output ratio	$\frac{\text{Operating expenses} + \text{noncash expenses} + \text{charge for operator and family unpaid labor}}{\text{Gross farm income}}$	Measures the amount of gross farm income absorbed by all factors of production.
Operating expense ratio	$\frac{\text{Cash operating expenses}}{\text{Gross cash farm income}}$	Measures the proportion of gross cash farm income absorbed by cash operating expenses.
Profitability ratios:		
Return on assets	$\frac{\text{Returns to debt and equity capital}}{\text{Total farm business assets}}$	Measures how efficiently the farm business uses its assets.
Return on equity	$\frac{\text{Returns to equity capital}}{\text{Farm business net worth}}$	Measures the returns to equity capital employed in the farm business.
Profit margin	$\frac{\text{Net farm income}}{\text{Gross farm income}}$	Measures profits earned per dollar of the value of gross receipts.

crop farms (76 percent) or livestock operations (82 percent).

The term debt coverage ratio provides a measure of the farmer's ability to cover all term debt payments. Although the business may generate sufficient annual earnings to cover all term debt, cash generated may not be sufficient to make timely payments. Comparable farms with no poultry had higher term debt coverage ratios than broiler operations, particularly for crop farms. However, overall term debt coverage ratio of 2.57 for broiler operations suggests that they generated more than twice the income required to cover debt payments in 1995. Approximately 63 percent of broiler farms were in a favorable financial position, with positive income and debt-to-asset ratios less than 0.40. This compares well with crop farms. Many livestock operations (other than poultry) had negative income in 1995, placing additional livestock

operations in the marginal income category and only 53 percent in the favorable category.

Debt repayment capacity is a measure of the use of credit available to farmers. Farmers can use internal funds (savings) or borrowed funds to invest in land, buildings, equipment, and machinery. This use of debt provides a valuable source of capital that can lead to improved productivity and higher profits. Lenders generally require that no more than 80 percent of a loan applicant's available income be used for repayments of principal and interest on loans. By measuring the income available for debt service (measured as net cash income plus interest) analysts can determine the maximum loan payment the farmer could make. Using interest rates of 7.5 percent and 10 percent, and a 7-year repayment period, we calculated the maximum feasible debt lenders would normally allow (Ryan and Morehart, 1992).

Table 13—Selected financial ratios for farms generating sales of \$50,000 or more with broilers, and crops or livestock with no poultry, 1995

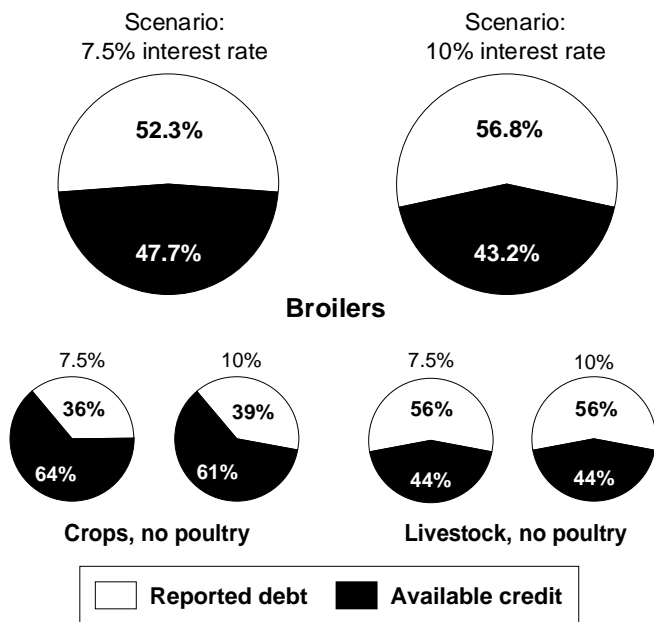
Item	Unit	Broiler operations with sales of \$50,000 or more	Comparable farms with no poultry	
			Crops	Livestock
Farms with sales of \$50,000 or more	Number	12,613	292,043	216,399
Liquidity:				
Current ratio	Percent	*0.77	2.94	2.25
Solvency:				
Debt/asset ratio	Ratio	21.48	17.44	18.92
Income solvency class:				
Favorable	Percent	62.9	63.9	53.0
Marginal income	Percent	*15.5	17.8	25.3
Marginal solvency	Percent	*14.5	11.3	12.7
Vulnerable	Percent	NA	7.0	9.0
Profitability:				
Return on assets	Percent	#1.07	3.62	**0.74
Return on equity	Percent	#-1.17	2.33	*-1.26
Operating profit margin	Percent	#6.04	11.02	**2.48
Repayment capacity:				
Term debt coverage ratio	Ratio	2.57	3.99	2.61
Financial efficiency:				
Asset turnover ratio	Ratio	0.18	0.33	0.30
Operating expense ratio	Percent	62.11	76.19	81.96
Economic cost to output ratio	Ratio	1.05	0.94	1.03

NA=Not available. CV=(standard error/estimate)*100. CVs less than 25 are unmarked. *=CV is between 25 and 50.

**=CV is between 50 and 75. # CV is too large for the estimate to be considered reliable. Large CVs are indicative of widely dispersed data, or data distributed around zero. Rounded percentages may not add to 100.

Source: U.S. Department of Agriculture's 1995 Agricultural Resource Management Study (previously known as the Farm Costs and Returns Survey).

Figure 6
Broiler producers' debt repayment capacity use, 1995



Source: U.S. Department of Agriculture's 1995 Agricultural Resource Management Study (previously known as the Farm Costs and Returns Survey).

Farm debt repayment capacity use (actual debt expressed as a percentage of maximum feasible debt) effectively measures the extent to which farmers are using their available line of credit. The ratio measuring debt repayment capacity suggests that, in 1995, broiler farmers whose farms generate sales of \$50,000 or more used slightly more than 50 percent and 57 percent of their lines of credit, at interest rates of 7.5 percent and 10 percent, respectively (figure 6). Their use of lines of credit is higher than the 36 to 39 percent for comparably-sized crop farmers, but about the same as the nonpoultry livestock farm businesses.

Broiler growers rely on contractors to provide some inputs (e.g., chickens, feed, and medicine), and receive only a share of the gross value of sales, thus receiving a lower income from which the debt repayment capacity can be calculated. Their maximum feasible debt is about \$150,000 less than that of other comparable farms, and their income available for debt coverage is \$30,000 less. Much of a farmer's debt comes from financing land and buildings. Broiler operators have additional money available in their lines of credit, but because their incomes are lower than those of other comparably sized farms, they may

have less potential to expand without assistance from the contractor.

Approximately 63 percent of broiler operations and nonpoultry crop farms were in a favorable financial position (positive income and low debt-to-asset ratio). Broiler producers receive regular, planned income from fee payments, and few were in a vulnerable position (negative income and high debt-to-asset ratio). Because broiler operations have higher debt-to-asset ratios overall, it is not surprising that more were in a marginally solvent position (positive income and high debt-to-asset ratio). Fifty-three percent of nonpoultry livestock operations were in a favorable position in 1995, largely due to eroding income in the cattle sector in that year.

Household Characteristics

We conducted an analysis at the household level to examine the economic well-being of the people earning income from the farm. The composition and organization of the household unit affect farm decisionmaking, ownership and control of capital, and labor resource allocation. Thus, the household is a basic economic unit of analysis for comparisons within groups and between groups in the United States. Income for farm operator households is designed to be consistent with the definition used by the U.S. Department of Commerce for household income so that comparisons can be made with nonfarm groups. First, we estimated money income from farming (net cash farm income minus depreciation), then allocated the share received by the operator household. Farm income was then added to the off-farm income earned by household members to arrive at total household income. Operator household farm and nonfarm assets and debt were similarly allocated. Farm operator household income is different from the net income that a farm business receives. Readers are referred to Ahearn, Mary, Janet Perry, and Hisham El-Osta (1993), *Economic Well-Being of Farm Operator Households, 1988-91*, for a full discussion of the implications of estimating income accruing to the household of the primary operator of the farm.

As with comparable operations, most broiler producers farm as their major occupation. The 71 percent reporting farming as their occupation accounted for almost two-thirds of the value of contract broiler production. The remaining value of contract broiler production was grown by the 29 percent of operators reporting something other than farming as their major

occupation. Nearly all (90 percent) farms with broiler contracts were legally organized as individual operations (individual or family proprietorships). These farms accounted for 81 percent of the value of contract broiler production. The distribution of production also closely matches the landownership distribution. Just over 64 percent of farmers own all the acreage they operate, and the value of broilers they produced is 66 percent of the total broiler value of production. Most of the additional value of production (33 percent) occurred on the 36 percent of farms that rented some of the land they operated.

On average, broiler operations generating sales of \$50,000 or more fully employ the operator (table 14). When broiler growers reported farming as their major occupation, they worked on-farm full-time with an average of 2,631 hours per year. However, only 73 percent of broiler operators reported more than 2,000 hours, compared with 85 percent of crop farm operators and 94 percent of livestock operators. Fees for broiler production accounted for most of the farm-related income on broiler operations. Even within this major occupation group, however, more than 60 percent of average operator household income was derived from off-farm endeavors. Nonfarm income is collected for the household and is not attributed to the person earning it. While we do not know which household members have off-farm employment, off-farm wages and salaries averaged about \$18,000 in 1995. Household income from all sources was \$36,668, or 79 percent of the average U.S. household's income. Nearly all (94 percent) operator household assets, debt, and net worth for this group were farm related.

Growers with sales of \$50,000 or more who reported an occupation other than farming worked an average of 1,200 hours per year on the farm. Their household income was near the average for all U.S. households and most of it (98 percent) originated from off-farm sources. Off-farm wages and salaries for this group averaged \$37,245 in 1995. Much of their net worth was attributable to farm-related assets, although they did report off-farm assets valued many times more than the value of off-farm assets owned by operators whose main occupation was farming.

On a regional basis, broiler farm operators in the Delta (with annual sales of \$50,000 or more), where almost 80 percent worked 2,000 hours or more, were the most likely to work full-time on the farm (table

15). Yet, their average farm-related household income was about \$3,000, compared with more than \$14,000 in off-farm wage and salary income. Households associated with broiler operations in the Delta region had, on average, the lowest household income, at less than 50 percent of the income for the average U.S. household. Broiler farm operator households in the Appalachian region received the highest share (43 percent) of their income from farm-related sources, averaging \$17,893 in 1995. Appalachian broiler producers' average household income was on a par with the average U.S. household, as were broiler producer households in the Southeast.

In contrast, operators of nonpoultry farms generating sales of \$50,000 or more worked more hours on the farms, were more likely to say farming was their major occupation, and had household income that was similar to that of other U.S. households. And, on crop

farms, a larger share of total household income came from farming. Before money income is passed from the farm to the household, depreciation is subtracted from net cash farm income. Depreciation for broiler operations is high compared with nonpoultry operations, reducing the amount of money income from the broiler operation passing through to the household. Tax laws that allow faster depreciation of broiler-associated assets will affect this calculation.

Operator household net worth for all farms with broiler contracts averaged \$409,148, with farm-related assets accounting for most of the total. Household net worth for comparably sized nonpoultry farms approaches \$600,000. Again, inventories account for considerable wealth for farmers, especially on livestock operations. However, on broiler farms, inventories of feed and chickens usually belong to the contractor.

Table 14—Selected characteristics of farm operator households on farms with broiler contracts, by operator occupation, 1995

Item	Operator's major occupation						Sales of \$50,000 or more					
	Farming			Other than farming			Broilers			Farms w/o poultry		
	Broilers	Farms w/o poultry Crops	Livestock	Broilers	Farms w/o poultry Crops	Livestock	Broilers	Crops	Livestock	Broilers	Crops	Livestock
Operator households 1/	9,059	247,560	192,175	*3,545	34,549	20,502	12,613	282,109	212,677			
Operator households	71.8	87.8	90.4	28.1	12.2	9.6	100.0	100.0	100.0			
Operator age	50	49	49	45	50	55	49	49	49			
Hours per year operator worked on farm	2,631	2,783	3,569	1,221	1,453	1,519	2,234	2,620	3,371			
Share of farm operators working 2,000 or more hours on farm	73	85	94	**31	22	27	62	77	87			
Operator household income:												
Positive	87	86	80	87	95	27	87	87	82			
24% or less income from farming	*27	18	18	NA	58	58	*34	23	22			
25-74% income from farming	*28	28	28	NA	29	*29	*30	28	28			
75% or more income from farming	*33	39	34	L	NA	NA	*24	35	32			
Negative household income	*13	14	20	NA	NA	NA	*13	13	18			
Share of operator household income	100	100	100	100	100	100	100	100	100			
Earned income	93	87	85	90	87	90	92	87	86			
Farm related	41	60	53	**3	*17	**7	*28	53	43			
Off-farm business	*3	5	5	2	18	30	*3	7	*1			
Off-farm wages and salaries	50	22	27	85	53	53	61	27	33			
Unearned income	7	13	15	**10	13	*10	*8	13	14			
Operator household income compared with U.S. average 2/	79	138	95	*98	179	*239	84	143	109			
Operator household income												
Earned income	36,668	62,203	42,786	*43,826	80,628	*107,350	37,962	64,459	49,010			
Farm related	33,245	54,270	36,517	*39,340	70,234	*96,358	34,959	56,225	4,286			
Off-farm business	*14,563	37,373	22,645	**1,161	*13,479	**7,259	*10,794	34,447	21,162			
Off-farm wages and salaries	*984	3,281	2,275	L	*14,347	**32,573	*970	4,636	*5,195			
Unearned income	17,697	13,616	11,598	37,245	42,408	*56,527	23,195	17,142	15,929			
Operator household assets	2,423	7,932	6,269	*4,486	*10,394	10,991	3,004	8,234	6,724			
Farm related	496,497	733,170	741,534	606,835	613,744	683,231	527,530	718,545	735,913			
Nonfarm	468,492	656,307	693,064	471,369	498,442	532,612	469,301	636,974	677,596			
Operator household debt	28,005	76,863	48,470	**135,467	115,302	*150,619	*58,229	81,571	58,317			
Farm related	100,535	135,164	150,100	*163,992	127,888	*14,783	118,382	134,273	146,696			
Nonfarm	95,224	122,621	141,938	*117,174	90,617	78,313	101,398	118,701	135,804			
Operator household net worth	*5,311	12,543	8,162	L	*7,271	**36,471	L	15,571	10,891			
Farm related	395,962	598,007	591,434	442,843	485,856	568,448	409,148	584,272	589,218			
Nonfarm	373,268	533,686	551,126	354,194	407,826	454,299	367,903	518,273	541,792			
	22,695	64,320	40,308	*88,649	78,031	*114,159	*41,244	65,999	47,426			

1/ Limited to farms legally organized as individual proprietorships, partnerships, and family corporations. Excludes farms organized as non-family corporations, cooperatives, and farms operated by hired managers.
 2/ Operator household income divided by average household income for the U.S. in 1995 (\$44,938) from the Current Population Survey (U.S. Dept. of Commerce). NA=Not available. Rounded percentages may not add to 100. CV=(Standard Error/Estimate)*100. CV is less than 25 are unmarked. *=CV is between 25 and 50. **=CV is between 50 and 75. L=Disclosure withheld due to small sample size.
 Source: U.S. Department of Agriculture's 1995 Agricultural Resource Management Study (previously known as the Farm Costs and Returns Survey).

Table 15—Selected characteristics of farm operator households on farms with sales of \$50,000 or more with broiler contracts and no poultry, by region, 1995

Item	Appalachian				Southeast				Delta				Other regions				Farms with sales of \$50,000 or more	
	Farms w/o poultry		Farms w/o poultry		Farms w/o poultry		Farms w/o poultry		Farms w/o poultry		Farms w/o poultry		Farms w/o poultry		Farms w/o poultry		Farms w/o poultry	
	Broilers	Crops	Broilers	Crops	Broilers	Crops	Broilers	Crops	Broilers	Crops	Broilers	Crops	Broilers	Crops	Broilers	Crops	Broilers	Crops
Operator households 1/	*2,555	18,728	11,125	*7,654	4,258	13,911	*7,654	10,045	5,433	2,377	239,425	18,464	12,613	282,109	12,677			
Operator age	48	50	50	50	53	51	50	Years	49	49	49	49	49	49	49	49	49	49
Hrs per yr operator worked on farm	2,359	2,694	3,076	2,419	2,318	2,643	2,419	2,472	2,519	3,529	2,617	3,423	2,234	2,620	3,371			
Farm operators working 2,000 or more hours	59	84	83	*70	59	81	*70	Percent	79	84	97	88	62	77	87			
Operator household income	42,012	74,218	49,942	47,311	44,582	85,600	47,311	75,572	24,151	20,319	75,572	49,741	37,962	64,459	49,010			
Earned income	38,936	69,233	42,619	*34,864	*40,463	70,312	*34,864	70,432	*20,285	*18,206	70,432	43,202	34,959	56,225	42,286			
Farm related	17,893	*43,248	*12,165	NA	**13,128	35,803	NA	*42,202	NA	*3,071	*42,202	22,881	*10,794	34,447	21,162			
Off-farm business	L	*1,675	*6,641	L	**759	L	L	*15,477	L	L	*15,477	*4,880	*970	4,636	*5,195			
Off-farm wages and salaries	19,500	*24,310	*23,813	26,576	21,653	21,653	L	12,753	*24,285	*14,245	12,753	15,441	23,195	17,142	15,929			
Unearned income	*3,077	4,986	*7,322	*12,447	*4,119	*15,287	*12,447	L	5,141	L	5,141	3,866	*2,290	8,234	6,724			
Share of operator household income	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
Earned income	93	93	85	82	91	82	74	90	93	90	93	86	95	87	86			
Farm related	43	58	*24	NA	*29	42	NA	*15	56	*15	56	43	*22	54	46			
Off-farm business	4	*2	*13	**29	**2	**15	**29	4	*20	*11	*11	*10	*3	7	*11			
Off-farm wages and salaries	46	*33	48	*22	60	25	*22	70	17	33	33	72	61	27	33			
Unearned income	*7	*7	15	*26	*9	18	*26	NA	7	14	14	*13	*8	13	14			
Operator household income compared with U.S. average 2/	93	165	111	*105	*99	190	*105	**45	168	*54	138	111	84	143	109			
Operator household assets	474,404	521,602	747,823	908,363	585,837	903,434	908,363	503,983	587,544	592,912	503,983	732,484	386,061	718,545	735,913			
Farm related	44,261	490,885	667,539	829,831	521,667	745,571	829,831	430,449	544,570	499,650	430,449	650,757	359,791	636,974	677,596			
Nonfarm	*30,143	*30,717	*80,285	*64,171	*157,864	78,533	*64,171	*73,535	*42,975	*58,229	*73,535	*56,642	*26,270	*58,229	58,317			
Operator household debt	125,916	61,942	117,573	111,513	112,432	149,254	111,513	69,903	106,229	118,382	69,903	151,010	90,070	134,273	146,696			
Farm related	113,642	56,309	110,434	108,598	108,598	125,038	*87,784	101,398	96,565	101,398	125,785	140,383	*87,844	118,701	135,804			
Nonfarm	*12,274	*5,633	*7,139	*3,833	*3,833	*24,216	23,729	L	12,486	L	12,486	10,627	*2,226	15,571	10,891			
Operator household net worth	348,488	459,660	630,250	473,405	473,405	754,180	796,851	434,081	481,315	409,148	434,081	581,474	295,991	584,272	589,218			
Farm related	330,619	434,576	557,105	413,068	413,068	620,532	742,047	367,903	*448,004	367,903	373,032	524,972	271,947	518,273	541,792			
Nonfarm	*17,869	*25,084	*73,146	*60,337	*60,337	*133,648	*54,804	41,244	*61,049	41,244	*61,049	65,477	*24,043	65,999	47,426			

1/ Limited to farms legally organized as individual proprietorships, partnerships, and family corporations. Excludes nonfamily corporations, cooperatives, and farms operated by hired managers. 2/ Operator household income divided by average household income for the U.S. in 1995 (\$44,938) from the Current Population Survey (U.S. Dept. of Commerce). NA=Not available. Rounded percentages may not add to 100. CV=(Standard Error/Estimate)*100. CV's less than 25 are unmarked. *CV is less than 25 and 50. **CV is between 25 and 50. ***CV is between 50 and 75 percent. L = Disclosure withheld due to small sample size.

Source: U.S. Department of Agriculture's 1995 Agricultural Resource Management Study (previously known as the Farm Costs and Returns Survey).

References

- Ahearn, Mary C., Janet Perry, and Hisham El-Osta (1994). *Economic Well-Being of Farm Operator Households, 1987-90*. Agriculture Economic Report No. 666, U.S. Department of Agriculture, Economic Research Service.
- Aho, Paul (1988). "Broiler Grower Contracts in the United States," *Broiler Industry*. October, pp. 26-31.
- California Poultry Industry Federation (1996). "Economic Impact," American InfoMetrics, URL www.ainet.com/cpif/economic.htm
- Doye, Damona, Joe Berry, Parman Green, and Patricia Norris (1996). "*Broiler Production: Considerations for Potential Growers*." Stillwater: Oklahoma State University, Oklahoma Cooperative Extension Service, OSU Extension Facts, F-202.
- Farm Financial Standards Council (1995). *Financial Guidelines for Agricultural Producers*. Recommendations of the Farm Financial Standards Council (Revised), Norwalk, Connecticut: Financial Accounting Standards Board.
- Feedstuffs* (1994). "Contracts Will Change Fundamentals of Agriculture," Editorial Opinion, April 18, p. 8.
- Fink, Deborah (1986). *Open Country Iowa: Rural Women, Tradition and Change*. Albany: State University of New York Press.
- Gallimore, William W., and James G. Vertrees (1968). *A Comparison of Returns to Poultry Growers Under Contract and Operating Independently*. MRR-814. U.S. Department of Agriculture, Economic Research Service, February.
- Goff, Larry (1997). "Environmental Issues Are Concerns of Integrators, Growers," *Poultry and Egg Marketing*. November/December, p. 22.
- Guebert, Alan (1996). "Think the Cattle Industry's a Mess? Take a Look at Poultry." Copyrighted by the author and reprinted by the National Contract Poultry Growers' Association.
- Harris, Marshall (no date). *Entrepreneurship in Agriculture*. Iowa City: University of Iowa College of Law, Monograph No. 12.
- Hickerson, Michael (1996). "Poultry in Motion." *UT Agriculture*. Summer, pp. 2-4.
- Kolmer, Lee, M. B. Kirtley, Norton Smith, and Homer Porteus (1963). "*Business Coordination in the Livestock Industry*." Pamphlet 296, Ames: Iowa State University Cooperative Extension Service, April.
- Knoeber, Charles R., and Walter N. Thurman (1995). "Don't Count Your Chickens...Risk and Risk Shifting in the Broiler Industry," *American Journal of Agricultural Economics*. Vol. 77 (August), pp. 486-496.
- Lasley, Floyd A. (1983). *The U.S. Poultry Industry: Changing Economics and Structure*. Agricultural Economic Report No. 502. U.S. Department of Agriculture, Economic Research Service.
- Lasley, Floyd, William L. Henson, and Harold B. Jones, Jr. (1981). *The U.S. Turkey Industry*. Agricultural Economic Report No. 525. U.S. Department of Agriculture, Economic Research Service.
- Lasley, Floyd A., Harold Jones, Jr., Edward Easterling, and Lee Christensen (1988). *The U.S. Broiler Industry*. Agricultural Economic Report No. 591. U.S. Department of Agriculture, Economic Research Service.
- Lee, Louise (1996). "Weak Poultry Sales Are Putting Squeeze on Smaller Growers." Staff reporter for the Wall Street Journal, National Poultry Growers Association, URL <http://www.web-span.com/pg>
- Lipton, Eric (1997). "Poultry Poses Growing Potomac Hazard: Chicken Production Employs Many But May Taint Water for Many More," *Washington Post*, Sunday, June 1, p. A10.
- Madison, Milton, and David Harvey (1997). "U.S. Egg Production on the Sunny Side in the 1990s," *Agricultural Outlook*. U.S. Department of Agriculture, Economic Research Service, May, pp. 12-14.

- Manchester, Alden (1954). *Supply Areas and Marketing Channels for Eggs in New England*. Bulletin No. 480, Massachusetts Agricultural Experiment Station, August.
- Manchester, Alden (forthcoming). "The Industrialization of U.S. Agriculture." U.S. Department of Agriculture, Economic Research Service.
- McKnight, Larry (1996). "Do You Have a Stake in the Chicken Wars? All Farmers Have a Stake in Our Chicken War." Mississippi Contract Poultry Growers Association President, address to the National Contract Poultry Growers Association. URL <http://www.web-span.com/pga>
- Morehart, Mitchell, James Johnson, and David Banker (1992). *Financial Performance of U.S. Farm Businesses, 1988-90*. Agricultural Economic Report No. 661, U.S. Department of Agriculture, Economic Research Service.
- Morison, Carole (1996a). "Are the Independents Making a Come Back?" National Contract Poultry Growers Association. URL http://www.web-span.com/pga/op_ed/mdag.html
- Morison, Carole (1996b). "Contract Poultry Farming," National Contract Poultry Growers Association. URL <http://www.web-span.com/pga/contracts/contfarm.html>
- National Commission on Small Farms (1998). *Time To Act: A Report of the USDA National Commission on Small Farms*. Miscellaneous Publication 1545, U.S. Department of Agriculture, January.
- National Contract Poultry Growers Association, Internet homepage, URL <http://www.web-span.com/pga/ncpga.html>
- Pampel, Fred, and Jan van Es (1977). "Environmental Quality and Issues of Adoption Research," *Rural Sociology*. Vol. 42, Issue 1, Spring, pp. 57-71.
- Paul, Allen B. (1974). "The Role of Competitive Market Institutions," *Agricultural Economics Research*, Vol. 26, No. 2, April.
- Perry, Janet, and Mary C. Ahearn (1994). "Farm Women Blend Farm and Off-farm Work," *Rural Development Perspectives*. Volume 9, Issue 3, June, pp. 24-31.
- Perry, Janet, and James Johnson (1997). "Farm Financial Management: Outlook in a Changing Environment," Organized symposium paper at the annual meetings of the American Association of Agricultural Economists, Toronto, Canada, July 28-31.
- Poultry Digest*. Various issues. URL <http://www.wattnet.com>
- Progressive Populist* (1996). "Poultry Processors Drive Growers to the Brink," *Monthly Journal of the American Way*. February.
- Reimund, Donn, J. Rod Martin, and Charles V. Moore (1981). *Structural Change in Agriculture: The Experience for Broilers, Fed Cattle, and Processing Vegetables*. Technical Bulletin 1648, U.S. Department of Agriculture, Economics and Statistics Service.
- Rogers, George B. (1979). "Poultry and Eggs," *Another Revolution in U.S. Farming?* (Lyle Schertz, ed.) Agricultural Economic Report 441, U.S. Department of Agriculture, Economic Research Service, December, pp 148-189.
- Rosenfeld, Rachel (1985). *Farm Women: Work, Farm, and Family in the United States*. Chapel Hill: University of North Carolina Press.
- Russell, Kelly (1996). "Poultry Growers, Processors Settle Dispute," *Mississippi Business Journal*. URL teclink.net/mbj/mbj961125/dispute.html
- Ryan, James, and Mitchell Morehart (1992). "Debt Repayment Capacity of Commercial Farm Operators: How Much Debt Can Farmers Afford?" *Agricultural Income and Finance: Situation and Outlook Report*. AFO-45, U.S. Department of Agriculture, Economic Research Service, May.
- Schrader, Lee (1981). *Chicken Broiler Pricing in the United States*. Agricultural Experiment Station. Station Bulletin No. 325, West Lafayette, Indiana: Purdue University, Department of Agricultural Economics.

- Steele, Cheryl (1990). *A Historical Look at U.S. Farm Income*. Statistical Bulletin Number 807, U.S. Department of Agriculture, Economic Research Service, May.
- Stewart, George F. (1946). "Eggs and Meat from Iowa Poultry," *A Century of Farming in Iowa, 1846-1946*. Ames: Iowa State College Press, pp. 154-166.
- Strain, Marinell (1996). "Franchisees and Contract Farmers—We've Got a Lot in Common," Oklahoma Contract Poultry Growers Association.
- Thornton, Gary (1996). "Top Ten U.S. Broiler Companies," *Broiler Industry*. (January):18-28.
- U.S. Department of Agriculture (1995). *Poultry Production and Value: Final Estimates 1988-93*. Statistical Bulletin Number 910, National Agricultural Statistics Service, May 12.
- U.S. Department of Agriculture, (1996). *Farmers' Use of Marketing and Production Contracts*. Economic Research Service, Agricultural Economic Report No. 747.
- U.S. Department of Commerce (1954). *Poultry Producers and Poultry Production*. U.S. Agricultural Census, Vol. III, Part 9, Chapter IV.
- U.S. Department of Commerce. Various years. *U.S. Agricultural Census*.
- U.S. House of Representatives (1974). "Egg Price Situation." Hearing before the Subcommittee on Domestic Marketing and Consumer Relations, Committee on Agriculture, 93rd Congress, 2nd Session, April 30.
- Wisconsin State Extension Service (1956). *Trends in the Poultry Industry: Effects on the Midwest*. Bulletin 523. Madison: University of Wisconsin Agricultural Experiment Station.
- Vukina, T., and W.E. Foster (1996). "Efficiency Gains in Broiler Production Through Contract Parameter Fine Tuning," *Poultry Science*, Vol. 75, November, pp. 1,351-1,358.