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Determinants of Farm Size and Structure

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Hornbaker and Denault/Recent Changes in Size and Structure of North Central Agriculture: A Study of Selected States in the North Central Region

Ahearn, Whittaker and Glaze/Cost Distribution and Efficiency of Corn Production

Atwood and Hallam/Farm Structure and Stewardship of the Environment

Casler/Firm Level Agricultural Data Collected and Managed at the State Level

Carlin and Saupe/Structural Change in Agriculture and Its Relationship to Rural Communities and Rural Life

Tweeten/Government Commodity Program Impacts on Farm Numbers

Helmets, Watts, Smith and Atwood/The Impact of Income Taxes on Resource Allocation and Structure of Agriculture

Cooke and Sundquist/Scale Economies, Technical Change, and Competitive Advantage in U.S. Soybean Production

Janssen, Stover and Clark/The Structure of Families and Changes in Farm Organization and Structure

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THE STRUCTURE OF FAMILIES AND CHANGES IN FARM ORGANIZATION AND STRUCTURE

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Introduction

Recent research review papers have emphasized the importance of identifying factors influencing successful farm management and successful families (G. Johnson, 1988; Defrain and Stinnett, 1988). U.S. social norms and many public policies continue to favor "family farms" over alternative methods of organizing production agriculture. Many factors, exogenous and endogenous, influence the direction and magnitude of structural changes in U.S. production agriculture. Farm management and family management are two key endogenous factors that influence the success or failure of farm firms. Our thesis is that family farm survival chances are enhanced by strong management of the farm business and by strong families.

Glenn Johnson (1988) highlighted needed research on managerial processes and urged farm management researchers: (a) to redevelop a multidisciplinary, holistic approach to management issues, (b) to summarize and integrate management concepts from several disciplines and focus on variables that are controllable by managers, and (c) to conduct a combination of case studies and large scale empirical studies of farm management behavior.

Defrain and Stinnet (1988) indicated family researchers and agricultural economists have each spent about 70 years developing methods for respectively measuring: (a) family strengths and weaknesses, and (b) financial success of farm operations. They suggest that "it's about time the two research traditions started talking with each other" (p. 138).

This paper is written within the spirit of these authors' suggestions. The next section contains a selected literature review of: (a) structural changes in American families - implications for farm families, and (b) characteristics of "successful" families. Extensive amounts of agricultural economics literature are available on characteristics of "successful" farm managers and is reviewed elsewhere. The remaining sections are a report of selected empirical findings from a 1989 multidisciplinary study¹ (economics, sociology and home economics) of 549 South Dakota farm families and their family farm operations. Appropriate comparisons to other recent empirical studies of farm family behavior are also presented. Empirical results are discussed for the following topics: (a) work roles of farm

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couples; (b) decision making roles of farm couples; (c) farm management and farm financial position; (d) family functioning (satisfaction, coherence, stress and agreement) and farm financial position; and (e) farm couple goals concerning continuation of the farm operation and farming lifestyle.

Review of Literature on U.S. Family Life

Structural Changes in U.S. Families

Like farming, the American family has experienced many changes in the past 50 years. Key structural changes in the American family are identified and the effects of these changes on farm families are discussed.

Current American marriages and families are characterized by diversity and changing family design in the number of family members and relationships between members. For example, there are fewer children per family today than in the 1950's. However, few people are aware of the tremendous swings in the average number of children per couple that has occurred in the past 60 years. An examination of fertility rates suggests that during the Great Depression, white females had an average 2.1 children, during the Baby Boom era of the 1950's they averaged 3.6 children, and in the early 1980's they average 1.7 children (Thornton and Freedman, 1983).

There is considerable evidence that young people are delaying marriage and having children. The age of first marriage for both males (25.9) and females (23.6) is the highest in this century. Furthermore, the average age of women having their first child has increased from 22 to 25 years.

Divorce rates are another way of looking at the design of the American family. Divorce rates in the United States increased gradually from the mid-1800's to the 1950's, but more than doubled in the 1960's and 1970's! There is some evidence that the divorce rate has stabilized in the 1980's. If current trends continue, the probability is about 50% that a marriage started in the late 1980's will end in divorce (Norton and Moorman, 1987). Between 70 - 75% of divorced people remarry.

A fourth change in the design of the American family is in the number of adults per household. In 1984, 25% of all U.S. families were single parent families compared to only 13% of families in 1970. The proportion of single parent families is continuing to increase rapidly. "The impact on society is only now being measured, but the trend is already redefining our concept of the all-American family." (Newsweek, July 15, 1985, p. 42)

Only 74% of U.S. households involve a "family". The remaining households are single people (23%) or two or more unrelated people sharing quarters (about 3%). The

number of single person households increased by more than 60% from 1970 to 1980. Combining the number of households in which someone lives alone with the number of single parent households, we find more than one-third of all households contain only one adult (Hacker, 1983).

Another method for examining change in design is to identify the distribution of roles (parent, provider, homemaker etc.) within the marriage. A profound change involving the distribution of roles has been the movement of married women into the work force. In the late 1940's, less than 20% of all wives worked (part-time or full-time) in the paid labor force (Bianchi and Spain, 1986). By 1987 more than 60% of all married women worked outside of their home and the percentage is still climbing (Otten, 1988). While the proportion of wives working full-time has always lagged the proportion that worked part-time, the gap has narrowed to 8 percentage points, 54% part-time workers and 46% full-time workers (Jorgensen, 1986). At present, no more than 30% of all married women are full-time homemakers. These trends indicate that the U.S. family is most often a two-wage earner family and many are dual career families.

The movement of married women into the labor force has led to substantial research effort to determine how this change effects the internal functioning of the family. Szinovacz (1984) thorough review of contemporary empirical and theoretical work on this topic indicates that most women are assigned a helping, and not coprovider, role in the economic support of their families. Second, although there has been a modest increase in the husband's performance of household and child care tasks, the wife still maintains responsibility for those tasks and continues ". . . to carry the major burden of family work and to spend considerably more time than their husbands in the performance of household and child care chores." (Szinovacz, 1984, p. 194 - 195). Furthermore, the husbands' authority and power in the marriage flow from their position as family provider....Despite wife's increasing labor force participation rates, the husband's position as major family provider has not been truly challenged" (Szinovacz, 1984, p. 180).

Each of the changes in U.S. family design (structure) has affected farm families, but there are also some substantial differences in the degree of changes. For example, married farm women have more children than nonfarm married women, but the gap has narrowed over time. Secondly, marriages of farm couples are far more stable than are marriages between nonfarm couples. In 1980, over 87% of all farm women who had been married were still living with their first husband compared to only 71% of nonfarm women (Hacker, 1983). Third, a considerably lower proportion of farm households are single parent households, a factor directly related to lower divorce rates.

Two major studies (Breault and Kposowa, 1987 and Shelton, 1987) using different methods and primary data sources attempted to explain significantly lower divorce rates in rural open-country areas compared to small town/city and metropolitan city/suburban locations. The most important factor explaining rural-urban differences in divorce rates was greater social integration - a sense of community - found in many rural areas.

In other respects, family trends occurring in farming communities are producing a U.S. farm family with characteristics similar to those of nonfarm families. For example, farmers are also delaying marriage (Sanders, 1985). Secondly, off-farm labor force participation rates for U.S. farm women have doubled from 22% in 1960 to 44% in 1980. Third, educational levels of farm men and women have increased substantially during the past 50 years.

Characteristics of Successful Families

Changing trends in American families provides many challenges for contemporary behavioral research on characteristics of "successful families." Research approaches and findings with strong potential application to analysis of farm families are briefly reviewed herein.

Two distinctly different models have been used to assess quality of life in families. Objective measures have provided data about specific social and economic indicators, such as income, availability of community resources, etc. These measures, however, have failed to acknowledge personal perceptions about life situations: are the objective items a person/family possesses related to their satisfaction with life? The subjective approach, which uses personal perceptions, has been adopted as another appropriate measure that can be combined with objective measures (Campbell, Converse, and Rodgers, 1976; Jurich, Schumm, and Bollman, 1986; Stoeckeler and Gage, 1978).

Family Quality of Life and Satisfaction

Research findings have consistently indicated that a strong relationship exists between quality of life and reported level of satisfaction with family life (Andrews and Withey, 1976; Campbell, Converse and Rodgers, 1976; Bubolz, et al., 1980; Bharadwaj and Wilkening, 1977; Schumm, et al. 1986. In most instances, satisfaction with family life was one of the most important predictors of quality of life, especially among women. Farm wives also reported more satisfaction with life overall than was reported by other women (Knaub et al., 1988).

Joint decisionmaking, similar views about gender role orientation, and a feeling of spousal support were highly correlated with marital satisfaction and quality of life in farm couples (Schumm & Bollman, 1981, Bokemier & Maurer, 1987; Keating, 1987). Working off the farm decreases wife's life satisfaction in part due to handling most housework and child rearing tasks.

Quality of life research has also shown family income, financial position and education levels are positively associated with life satisfaction for farm and nonfarm couples (Light, Hertsgaard and Martin, 1985). Other factors including occupation and job satisfaction, residence, health and home management have also been pinpointed as

important to overall life satisfaction. Little information is available about how these factors relate specifically to farm families. The Light, Hertsgaard and Martin (1985) study indicates that life satisfaction of farm men and women is largely influenced by the same factors that influence life satisfaction of urban men and women.

Family Cohesion and Adaptation

The quality of life approach to identifying successful families has yielded useful measures of satisfaction, but it fails to explain how families develop a sense of satisfaction with their quality of life. The family stress and resources approach explains processes leading to satisfactions. Angell (1936), in studies of Depression families, first identified family integration and adaptability as fundamental resources of crisis resistant families. A considerable volume of research (Olson, et al. 1983) has confirmed the importance of these characteristics to effective family functioning.

Recent studies have combined the advantages of the two approaches, providing a basis for identifying successful farm families. A pertinent study by Antonovsky and Sourani (1988), combining quality of life and family stress concepts used a current definition of family success as adaptation or fit -- fit between family members and fit between the family and the outside community. These adaptation definitions assume successful resolution of problems associated with stressors should provide one with a sense of satisfaction about family life (Antonovsky and Sourani, 1988, p. 89). Using couple data, they found that a family's sense of coherence showed a strong relationship to family adaptation.

Prior research on family success (whether it emphasizes family satisfaction or family cohesion) has determined there are several intervening factors which have an important bearing on interrelationships among family members. Four factors important to farm families are: (1) stress, (2) decisionmaking styles, (3) extent of couple agreement or disagreement, and (4) work roles of farm men and women, especially off-farm employment.

Stress

While farm families often report greater satisfaction than urban families, they also report more stress symptoms and higher levels of stress than urban families (Walker and Walker, 1987). The greater stress reported by farm families has led to development of measures (Walker and Walker, 1987; Weigel, Weigel and Blundall, 1987) to identify the most stressful features of farm family living. In the farm population, as well as the general population, death of a spouse or family member ranks as the most severe type of stressor; divorce also is a major stressor. Beyond these major disruptions, farm family members experience considerable stress from farm crises such as machinery breakdown, production loss, or weather-caused delays.

Family Decisionmaking and Couple Agreement

Family decision-making styles have been identified as crucial in family success. For example, three basic styles of family decisionmaking have been identified by Retting (1987) -- individualistic/competitive, group accommodative, and group collaborative. In a family where an individualistic/ competitive style is used, decisions provide situations for individuals to demonstrate their independence from the family. Families that use this decisionmaking style do not usually reach consensus on goals and standards, nor do they establish ways they all can work together (Constantine, 1983).

Harmony, loyalty, unity, and solidarity are characteristic of families that use the group accommodative style of decisionmaking. If a conflict of interest occurs, the group preference takes priority over the individual, and a high emphasis on cooperation and concern for others is present.

Families with a more collaborative decisionmaking style consider both individual and group needs. In using this decisionmaking style, family members work creatively to find solutions which will maximize the goals of all (Hocker and Wilmot, 1985). Research indicates that more successful families will use the group collaborative decision style (Constantine, 1983; Olson, Russell and Sprenkle, 1983; Hocker & Wilmot, 1985). Stress-oriented studies (Wilkening, 1981) indicate that this type of shared decisionmaking is an important characteristic of "crisis-proof" families.

Off-farm Employment

In response to social and economic changes in U.S. society and within U.S. agriculture, a majority of U.S. farm families rely on off-farm work by at least one adult. Although off-farm work has functioned as an adjustment to change, it also is important to note it has potential negative consequences. Walker and Walker (1987) found work overload was one of the major stressors affecting farming families, and concluded that off-farm work accounted for much of the stress.

A recent study of 933 North Dakota farm families indicates that financial stress was an important factor influencing farm family members to obtain off-farm employment. Off-farm earnings were primarily used to generate adequate cash flow for debt payments and for family living expenses. Other factors significantly related to the off-farm employment decision were: age (-), years of education (+), years of previous job experience (+), presence of and number of children (-), farm size (-), and beef farm/ranch (+). (Leistriz, Leholm, Vreugdenhil and Ekstrom, 1986).

Empirical Study of South Dakota Farm Families and Family Farms

The remaining sections of this paper are a discussion of selected empirical results from a winter 1989 survey of married couples operating family farms in South Dakota. The South Dakota Family Farm multidisciplinary project, funded by the Midwest Technology Development Institute, was developed to identify key characteristics which have enabled many farm families and family farms to succeed in the current economic and social environment. Faculty members from home economics, sociology and agricultural economics participated as members of the multidisciplinary team.

Two basic assumptions were used by team members to develop and execute the project. First, two components were needed to identify successful farm families: (1) financial/business viability and (2) quality of family life. Second, information should be obtained from a large scale representative sample of farm families and from the farm couple (both spouses) instead of just the farm operator.

Data Collection Procedures

The mail survey was sent to a random sample of 2000 farm households (6% of farm households in each county) in South Dakota.² Two separate questionnaires were sent to each farm household - one addressed to the farm operator and one addressed to their spouse. Each contained a core set of questions to be answered by both parties and another set of questions to be answered only by the operator or by their spouse. The data gathered includes: basic demographics, farm resources and enterprises, financial and income information, work roles and tasks performed, farm and family decision making, relationships within the family, and satisfaction with family life and farm life.

Approximately 750 of the 2000 farm families contacted returned the surveys. A total of 626 farm operators and 566 spouses completed their respective questionnaires (a survey was considered useable if most questions, excluding farm financial data, were completed). A total of 549 married farm couples completed both questionnaires and the empirical results are based on their responses. In all 549 cases, the husband was the farm operator.

Respondent Family and Farm Characteristics

Respondent farm operators are the same average age and operate somewhat larger farms (1605 acres vs. 1215 acres) than is the case with all farms included in the 1987 South Dakota Census of Agriculture (Table 1). South Dakota families operating small farms with annual gross farm sales of less than \$40,000 are underrepresented among respondents. These small farms are 53% of all South Dakota farm numbers (USDC, 1987) but only 21% of respondent farm operations. Otherwise, respondent characteristics appear to be representative of the farm population in South Dakota.

Table 1. Selected Respondent Family and Farm Characteristics, South Dakota, 1989

<u>Family item</u>	<u>Operator</u>	<u>Spouse</u>
Age-range (years)	25-86	21-82
Average age	49.2	46.3
<u>Education level</u>		
percent completing:		
High school degree	82.3%	91.5%
Four year college degree	17.0%	17.7%
Lived on farm as child (%)	94.5%	73.6%
Percent of families with:		
Any children living at home	64.0%	
Children under 5 years	19.3%	
Children 5-12 years	32.1%	
Children 13-18 years	23.3%	
Adult children	62.5%	
Adult children farming with parents	12.6%	
<u>Farm items</u>		
Partnership/corporations (% of farms)	17.0	
Land tenure: (% of farms)		
Full owner	20.8	
Part owner	64.4	
Full tenure	14.8	
Average number of		
Acres-operated	1577	
Acres-owned	838	
Gross farm sales (% of farms)		
Less than \$10,000	5.0	
\$10,000 - \$39,999	16.3	
\$40,000 - \$99,999	39.0	
\$100,000 - 249,999	29.9	
\$250,000 or more	7.8	

Source: South Dakota Family Farm Survey, 1989.

Stanton and Bills (1988) suggest that structural changes in U.S. agriculture results in the following farm classification system: (a) full-time commercial farms, (b) part-time commercial farms, and (c) residential farms.³ Sumner (1985) suggests that a family farm should "generate returns based on resources controlled by a single extended family or at most 2-3 families, provide income to support not more than a few owner-operator families, and provide at least one-half of full-time equivalent employment of family members" (p. 286). All 549 South Dakota respondent farm operations fit Sumner's concept of a "family farm" and Stanton-Bills classification of "part-time or full-time commercial farms".

Work Roles of Farm Couples

The intermix of technological, economic and gender role changes in American society has also influenced work roles of farm couples. Farm families increasingly rely on off-farm employment and greater participation of farm women in the farm operation.

Farm Couple Labor Force Participation

Deseran, Falk and Jenkins (1984) developed a typology of farm couple labor force participation characteristics that illustrates the effects of structural changes in U.S. agriculture on farm household economics. We applied their typology to examination of labor force participation characteristics of farm couple respondents. The farm couple labor force categories are based on the incidence of off-farm employment of husband and wife and are defined as: (1) traditional (husband and wife are employed only on farm); (2) traditional, part-time operator (husband works off-farm and on farm while his wife is involved only on the farm); (3) dual career (husband farms only and wife is employed off-farm); and (4) dual career, part-time (both spouses are involved on the farm and are employed off-farm).

Nearly half of South Dakota respondent farm families (47.7%) have one or both adults working off-farm. Compared to the United States, South Dakota has a much higher proportion of farm couples that are traditional or dual career households and a much lower proportion of traditional, part-time or dual career, part-time households (Table 2). These major differences by labor force category are largely accounted by differences between the economic structure of South Dakota and U.S. agriculture. South Dakota has few "residential farms", while as many as 40% of U.S. farm households may be "residential farms" (Stanton and Bills, 1988). Residential farm households are largely dual career, part-time or traditional, part-time households depending on the wife's employment status. Conversely, South Dakota has a much higher proportion of "full-time commercial farmers" which would be classified as traditional or dual career households.

It is important to note that a similar proportion of farm women in each sample (42.3% vs. 44.7%) have off-farm employment. This suggests that the impacts of dual career

status on farm family functioning and economic well-being may be similar in South Dakota and in the United States. The major difference between South Dakota and U.S. farm families is in the incidence and extent of operator off-farm employment.

Extent of Farm Work and Off-farm Work

The above classification system does not measure the extent of time involvement of operator or spouse in farm work or off-farm work. Based on respondent's work data, we classified their annual farm and off-farm labor as: (1) minimal/none, (2) part-time/seasonal, or (3) full-time (see Table 2 for specific definitions and data). In this classification system, part-time refers to amount of hours worked instead of incidence of off-farm or farm employment. Results indicate substantial work time by men and women.

Nearly two-thirds (65.7%) of South Dakota farm operators worked full-time, year around and 34.3% worked part-time/seasonal on their farm. About 30.6% of farm operators reported working 60 hours or more per week in all but the winter season! Nearly one-fifth (19.5%) of farm operators had off-farm employment. Most farmers working less than 1500 hours per year off-farm, worked full-time hours on their farm. Farmers with full-time off-farm employment usually worked part-time hours on their farm operation

Nearly one-eighth (12.8%) of farm women reported working full-time, year around on farm-related tasks, 43.6% reported part-time/seasonal farm work and 43.6% reported minimal involvement with farm-related tasks. A total of 42.3% of farm women reported off-farm employment, with about 26.3% employed in full-time off-farm work and 17% employed part-time (Table 2). Three-fifths of farm women with off-farm employment also reported minimal involvement in farm work. Nearly 70% of farm women with no off-farm work, also report working part-time or full-time on the farm.

Performance of farm tasks and family/household tasks followed distinct gender roles. Certain farm tasks (tillage operations, chemical applications) were mostly performed by men. Several farm tasks (harvesting crops and hay, taking care of livestock, running farm errands, and keeping farm records) were shared by a majority of South Dakota respondent farm couples. Farm women regardless of their extent of off-farm employment or farm work, assumed most household tasks with occasional or no help from their husband, (Clark, Janssen and Stover, 1990).

Table 2. Employment Structure, Farm Labor Profile and Off-farm Labor Profile of South Dakota Farm Couples, 1989.

A. Employment Structure

Employment Structure	Off-Farm Employment		S.D. Farm Couples, 1989 ^a	U.S. Farm Couples, 1977 ^b
	Husband	Wife	-- percent of farm couples --	
Traditional	No	No	52.3	28.8
Traditional, part-time operator	Yes	No	5.4	26.5
Dual Career	No	Yes	28.2	13.3
Dual Career, part-time operator	Yes	Yes	<u>14.1</u>	<u>31.4</u>
			100.0	100.0

B. Farm Labor and Off-farm Labor Profile

Extent of Farm Work ^c	Operators		Spouses		Extent of Off Farm Work ^d	Operators		Spouses	
	--percent of respondents-- ^a					--percent of responses-- ^a			
Minimal	0.0		43.6		None	80.5		57.7	
Part-time	34.3		43.6		Part-time	10.4		17.0	
Full-time I	35.1		7.3		Full-time I	1.4		9.8	
Full-time II	<u>30.6</u>		<u>5.5</u>		Full-time II	<u>7.7</u>		<u>15.5</u>	
	100.0		100.0			100.0		100.0	

Source: South Dakota Family Farm Survey, 1989

^aBased on responses from 520 of 549 South Dakota farm couples completing the South Dakota Family Farm Survey 1989.

^bBased on 1,772 farm households in the 1977 U.S. Current Population Survey as reported in Deseran, Falk and Jenkins (1984).

^cFarm work classification is based on the average number of hours worked in each of four seasons (Spring, Summer, Autumn and Winter).

Minimal - Farm work is less than 20 hours per week in each season.

Part-time - Farm work exceeds 20 hours per week in 2-4 seasons, but is less than 40 hours per week in at least one season.

Full-time I - Farm work is 40 hours or more per week in all seasons, but is less than the amount reported as Full-time II.

Full-time II - Farm work is 60 hours or more in at least 3 seasons and 40 hours or more per week in the other season.

^dOff-farm work classification is based on number of hours and months worked per year.

Part-time - 100-1499 hours of off-farm work per year

Full-time I - 1500 hours or more of off-farm work per year including

(1) 9-10 months of full-time work or

(2) 12 months of work, 30-39 hours per week

Full-time II - 12 months of off-farm work, 40 hours or more per week

Decision Making Roles of Farm Couples

Family life research indicates that successful families are much more likely to use shared decisionmaking (group collaborative) styles than other family decisionmaking styles. Respondent operators and spouses identified how decisions were made in their family in areas related to both farm and family management (12 questions). Each person indicated if he/she made the decision alone; if the spouse made the decision; if he/she made the decision with his/her spouse; or if the decision had never come up.

Responses to all twelve questions (Table 3) indicate that many of the families used a collaborative style (made the decision with their spouse). Percentages ranged from 19.5% in response to the decision to try a new agricultural practice to 84% collaborative response to the selection of family goals. A majority (84.0%-54.5%) of families (both spouse and operator) indicated they used the collaborative style in making the following types of decisions: (a) selecting family goals (b) selecting leisure activities, (c) attending church, (d) buying major household appliances, (e) buying or selling land, and (f) renting more or less land (Table 3). In almost all cases where less than 50% of respondent couples used a collaborative decisionmaking style, the decisions related specifically to farm management and were designated as individual decisions by the operator (the operator said he made the decision and the spouse said the operator made the decision). Specific examples include buying major farm/ranch equipment, producing a new crop, trying a new agricultural practice, etc.

Farm Management and Farm Financial Position

Management is universally considered an important variable that can make or break a business. Farm management is the application of planning, implementation and control concepts to the activities of production, marketing and finance. Managerial activities include psychological, sociological, administrative, and economic dimensions and are best understood in a multidisciplinary framework (Boehlje & Eidman, 1983; Johnson, 1988).

Excellent examples of the multidisciplinary approach can be seen in numerous research reports from the North Central region's Interstate Managerial Study conducted in the late 1950's and successive studies from the Management Factor in Farming project conducted in the 1960's (Johnson et al, 1961; Justus and Headley, 1968). In brief, successful farm managers were found: (1) to maximize both monetary and nonmonetary values defined by the multiple sets of goals established by the family, (b) to acquire accurate knowledge and information quicker and at lower cost than other managers, and (c) to ensure and control outcomes instead of passively reacting to the economic and social environment that they faced.

Table 3. Couple Decision Styles Indicated in Responses to Farm and Family Decisions by Percent, South Dakota, 1989.

Style Decisions:	Decision				
	Individual Operator	Individual Spouse	Collabo- rative	Disagreea	Never ^b
Buy or sell land	7.8	0.2	64.1	23.9	3.9
Rent more or less land	15.3	0.2	54.4	27.5	2.6
Buy major farm/ranch equipment	23.1	0.0	48.0	28.7	0.2
Produce a new crop or type of livestock	34.0	0.0	30.5	33.5	2.0
Try a new agriculture practice	50.6	0.0	19.5	28.4	1.5
When to sell agricul- tural products	44.7	0.2	27.9	27.2	--
Work on non-farm job or family business	1.9	0.2	41.1	45.9	10.9
Buy major household appliance	0.6	3.3	75.1	20.8	0.2
Attend church	0.7	2.8	76.8	17.7	2.0
Select family goals	0.8	0.4	84.0	13.8	1.0
Delegation of house- hold tasks	0.2	5.4	80.3	13.2	0.6
Selection of leisure activities	0.6	0.9	83.1	14.7	0.7

^aIncludes styles such as competitive (each says they decide by themselves), operator or spouse says they make decision and the other person says they make it together.

^bBoth respondents reported the decision has never been make.

Source: South Dakota Family Farm Survey, 1989 completed by 549 farm couples.

In response to major changes in the economic and social environment in the 1980's (ie. the farm finance crisis), many farm managers have changed their management practices to ensure survival of their family farm and to position their firm for future growth. Barry, Ellinger and Eidman (1987) noted that a majority of farm families facing financial stress react by seeking off-farm employment; reducing capital expenditures, living costs or farm production costs; reducing and renegotiating debt; and selling the more liquid assets and inventories. A North Dakota study (Ekstrom, Hardie, and Leistritz, 1987) of actual management adjustments in the face of financial stress indicate that postponing capital purchases, reducing farm operating expenses and reducing family living expenses were the most frequent management adjustments made. In almost all cases, the incidence of management adjustments was significantly greater for producers with higher debt/asset ratios.

The above studies emphasized management changes of financially stressed farm families. We examined farm management practices and adjustments made by respondent farm families across the entire range of reported financial position. We hypothesized that the incidence of off-farm employment, the use of farm management records for decisionmaking purposes, and numerous changes in farm management practices are strongly related to the financial leverage and net farm income position of the farm operation. Also, farm operations that have made many management changes are more likely to be "successful" from a farm income viewpoint and have greater financial viability. In other words, they have been "acting to ensure and control outcomes".

Data limitations of a cross-sectional survey precluded use of a long term measure of farm financial success, such as earned net worth change or cumulative net farm income generated over a several year period. Instead a short-term measure of farm financial viability, based on farm firm debt/asset ratio and 1988 net farm income, is used. Since 1985, a similar approach has been used by USDA in their national studies of farm financial stress and farm financial viability (Johnson et al., 1986 and 1987; Reimund, Brooks, and Velde, 1986; Harrington and Carlin, 1987).

Financial Position of Respondent Farm Operation

A total of 420 South Dakota respondent farm firms were classified by the following financial positions: (a) favorable, (b) marginal income, (c) marginal solvency, and (d) vulnerable (Table 4). An additional 129 farm couples did not provide sufficient data on farm assets, debts, income and/or expenses to classify their farm by financial position.

Financial stress is still evident on many South Dakota farms. Overall, only 50% of the 420 classified farm firms were in a favorable financial position, 16.8% were in a marginal income position, 21.8% were in a marginal solvency position, and 11.4% remained in a vulnerable financial position (Table 4). One fifth of these farm couples reported no farm debt.

Table 4. Farm Financial and Income Indicators by Farm Financial Position, South Dakota, 1989.

	Financial Position ^a				All Classified Farms
	<u>Favorable</u>	<u>Marginal Income</u>	<u>Marginal Solvency</u>	<u>Vulnerable</u>	
Number of responses	210	70	92	48	420
----- Thousand of dollars -----					
Total Assets	\$ 436.9	\$ 230.8	\$ 424.3	\$ 233.6	\$ 377.3
Current Assets	199.5	105.4	230.0	125.5	182.5
Real estate assets	237.4	125.4	194.3	108.1	194.8
Total Debt	61.6	30.1	272.5	152.7	113.6
Current Debt	25.1	15.0	123.9	86.7	52.4
Real estate	<u>36.5</u>	<u>15.1</u>	<u>148.6</u>	<u>66.0</u>	<u>61.2</u>
Net Worth	\$ 375.3	\$ 200.7	\$ 151.8	\$ 80.9	\$ 263.7
Gross Farm Income	131.1	57.2	168.2	70.1	120.1
Gross Farm Expense	<u>91.3</u>	<u>57.8</u>	<u>134.7</u>	<u>71.9</u>	<u>93.1</u>
Net Farm Income	+ 39.8	(-0.6)	+ 33.5	(-1.8)	+ 27.0
Government payments	+ 19.5	+ 9.5	+ 27.5	+ 10.6	+ 18.6
Debt/Asset ratio (%)					
Total	14.1	13.0	64.2	65.4	30.1
Current	12.6	14.2	53.9	69.1	28.7
Long Term	15.4	12.0	76.5	61.0	31.4
Asset Turnover (%)	30.0	24.8	39.6	30.0	31.8
Net Farm/Gross Farm (%)	30.3	(-1.0)	19.9	(-2.6)	13.4
Return on Equity (%)	10.6	(-0.3)	22.1	(-2.2)	10.2
= Net Farm Income/Net Worth					

Source: South Dakota Family Farm Survey, 1989.

^aDefinition of farm financial position:

Favorable: Total debt/asset ratio is 0.0-0.40 and 1988 net farm income exceeds \$10,000

Marginal Income: Total debt/asset ratio is 0.0-0.40 and 1988 net farm income is less than \$10,000

Marginal Solvency: Total debt/asset ratio exceeds 0.40 and 1988 net farm income exceeds \$10,000

Vulnerable: Total debt/asset ratio exceeds 0.40 and 1988 net farm income is less than \$10,000

Not Classified: Insufficient financial and farm income data to classify farm

Key findings from analysis of farms by financial position are:

- (a) Average total assets of farms in a favorable and marginal solvency position are nearly double the amount of total assets of farms in a marginal income or vulnerable financial position. These larger farms (based on total assets) have substantially higher average net farm incomes and higher average rates of return to equity;
- (b) Government farm payments were about 15% of gross farm income and a high percent of net farm income in all farm finance classes. Overall, Federal farm payments were about 68% of net farm income;
- (c) Higher asset turnover rates, higher net margin percentages and subsequent higher rates of return on equity were the key differences between favorable (>\$10,000) and less favorable (<\$10,000) net farm income levels. These financial indicators indicate producers achieving higher net farm incomes are not only larger in average size (based on total assets and gross farm income) but also achieve higher unit production levels and lower unit costs.
- (d) Nearly 47% of farm operators in a favorable or marginal solvency position reported gross farm sales (excluding government payments) of \$100,000 or more, compared to less than 23% of farmers in a marginal income or vulnerable position.

Selected Respondent Characteristics by Farm Financial Position

Key demographic characteristics of respondents are also related to farm financial position and help explain farm and family management differences by financial position. For example, farm couples on highly leveraged farms (marginal solvency and vulnerable financial position) are an average of 8.5 -9.7 years younger than other farm couples (Table 5). Few operators (<2%) of highly leveraged farms are 65 years of age or older compared to 18% of farm operators in a lower leverage financial position.

The differences in average ages of farm couples led to differences in household size and proportion of families with children less than 13 years of age living at home. Operators were an average of 24 years old when they were married and their spouse was 22 years old, with little difference by financial position. In general, farm couples operating highly leveraged farms are often in an earlier position of the family life cycle than many farm couples operating farms in a lower leverage position. This result likely occurs because younger families are more likely to be in an expansion phase of their farm business and are more dependent on debt capital.

Off-farm Employment

Farm couples operating highly leveraged farms are much more likely to report off-farm employment than other farm couples (Table 5). Operators of farms in a vulnerable financial position are much more likely to have off-farm employment (45.6%) than operators of other farms (14.4% - 19.4%). A majority of spouses living on highly leveraged farms have off-farm employment compared to 34% - 41% of other farm spouses. Overall, off-farm employment decisions are strongly associated with age and life cycle position of the farm couple, with farm size and with farm financial position.

Over three-fifths of farm couples reporting off-farm employment indicate that "a family member has taken off-farm work to help meet expenses". Farm couples operating highly leveraged farms are much more likely to report that off-farm work is necessary to make "ends meet".

Family Health and Financial Adjustments

Operators and spouses operating farms with low net farm incomes (marginal income and vulnerable financial position) were twice as likely to report health problems that limit the amount of work that they can perform (Table 5). Incidence of health problems are more related to low net farm income than to the farm couples age!

Farm couples with low net farm incomes are almost twice as likely to report "postponing medical care to save money". Furthermore, farm couples operating highly leveraged farms report much higher incidence of "reducing or cancelling medical insurance" in the past two years to reduce outlays. Clearly, the degree of farm financial stress, incidence of health problems, and vulnerability to further health and financial problems are interrelated.

Farm financial position and incidence of family financial adjustments are closely related. A majority (55%) of farm couples have made one or more of eight possible family financial adjustments in the past two years (Table 5). Over four-fifths of farm couples operating highly leveraged farms made family financial adjustments compared to about two-fifths of other farm couples. Four family financial adjustments were each used by more than 20% of respondent farm families: (a) off-farm employment, (b) postpone medical care, (c) reduce or cancel medical or life insurance, or (d) fall behind in paying bills. This data clearly indicates the lingering effects of the farm finance crisis for many farm couples.

Farm Management Characteristics by Financial Position

Production, marketing and financial management are key ingredients of successful farm management. King and Sonka (1985) suggest that successful management practices differ in response to major changes in the environment faced by farm managers. Managing information and managing business/financial risks are two major farm management issues in today's economic environment.

Farm Operator's Use of Farm Management Records for Making Decisions

Numerous management studies have shown the importance of using farm records for making management decisions. Recent studies indicate farmers regard the preparation and use of management records as very important to their success in the modern "information era" (Carlson, 1988; Mu'min and Hepp, 1988). However, actual behavior of most farmers indicates that managing information is not a priority use of their time and is ranked low in terms of task enjoyment (Carlson, 1988).

More than three-fifths of respondent operators reported using these records for making management decisions: (a) yield or production records, (b) net worth statements, (c) income statements, and (d) annual cash flow statements (Table 6). Enterprise budgets were periodically used by 42% of farm operators, while 30% reported using multi-year cash flow plans for making decisions. Few producers (10.3%) formulate written business goals. Farm couples using farm records in making decisions, regardless of financial leverage position, reported higher average net farm incomes!

Table 5. Selected Respondent Characteristics by Farm Financial Position, South Dakota, 1989.

N ^b =	Financial Position ^a					All Farms
	Favorable	Marginal Income	Marginal Solvency	Vulnerable	Not Classified	
	210	70	92	48	129	549
	----- average (mean) number of years -----					
<u>Age-years</u>						
Operator*	50.2	53.1	41.7 ^c	43.4 ^c	53.0	49.2
Spouse*	47.6	50.0	40.0 ^c	41.4 ^c	48.4	46.3
Number of years married	25.7	28.4	19.7 ^c	19.5 ^c	26.8	24.8
	----- average number of people -----					
Household size	3.1	3.0	4.0	3.7	3.3	3.3
	--- percent of respondents reporting off-farm employment ---					
<u>Off-farm employment</u>						
Operator**	16.7	19.4	14.4	45.6	18.0	19.4
Spouse**	41.2	34.3	51.7	65.2	36.4	43.1
	-percent of respondents reporting limiting health condition-					
<u>Health condition limiting work</u>						
Operator*	11.0	20.3	12.0	22.9	17.8	15.0
Spouse*	7.8	14.5	8.9	16.6	13.4	11.0
	----- percent of families making adjustments -----					
<u>Selected adjustments made in past 2 years due to financial need</u>						
Family member has taken off-farm work to help meet expenses***	19.7	24.6	44.0	55.3	27.0	29.2
Postponed medical care to save money***	12.1	24.6	31.9	51.1	23.8	23.2
Reduced/cancelled medical insurance***	15.3	17.4	28.3	42.6	18.9	21.0
Fallen behind in paying bills***	9.8	11.6	41.3	51.1	20.5	21.5
Any adjustment****	39.0	45.7	75.0	91.7	55.0	55.0

Source: South Dakota Family Farm Survey, 1989.

^aSee Table 4 for definitions of financial position.

^bN = number of responses. A few respondents did not answer questions on health conditions or financial adjustment and are not included in any calculations.

^cWaller-Duncan K-ratio t-test was used to evaluate significant differences between mean number of years by financial position. A 'c' indicates that the average (mean) number of years is significantly different ($p = .05$) from the average (mean) number of years reported for respondents in a favorable financial position.

^dChi-square probability level of significance

* = 0.05, ** = 0.01, *** = 0.001

Based on data for farms where financial position is classified.

^eAny financial adjustments includes any of the four most common adjustments listed

above and any of the following adjustments: (a) sold possessions or cashed in insurance, (b) borrowed money from friends or relatives, (c) unable to pay property taxes, and (d) used public assistance programs.

Table 6. Farmers Use of Farm Management Records, Overall and by Farm Financial Position, South Dakota, 1989.

	Financial Position ^a				All Farms
	<u>Favorable</u>	<u>Marginal Income</u>	<u>Marginal Solvency</u>	<u>Vulnerable</u>	
N ^b -	210	70	92	48	549
	- percent of farm operators using specific - --- records for decision making purposes ---				
<u>Type of Farm Management Records:</u>					
Yield or production records ^{***c}	64.6	50.8	80.0	64.6	61.8
Crop or livestock enterprise budgets ^{***}	39.9	26.6	68.5	45.8	41.8
Net worth statement ^{***}	59.7	57.6	78.9	75.0	62.2
Income statement ^{***}	61.1	56.7	80.0	70.8	62.8
Annual cash flow ^{***}	57.2	48.5	87.9	79.2	63.0
Multi-year cash flow plan [*]	26.8	29.7	41.8	35.4	30.0
Business goals for this year [*]	74.3	71.0	84.8	83.0	74.7
Written business goals	7.0	10.8	14.3	10.9	10.3

Source: South Dakota Family Farm Survey, 1989.

^aSee Table 4 for definitions of farm financial position. All farms include responses by 129 farms that were not classified by financial position.

^bN = number of responses. Some operators did not respond to some specific questions on farm management records.

^cChi-square probability level of significance

* = 0.05 ** = 0.01 *** = 0.001

Based on data where financial position is classified.

No * implies chi-square distribution is not significant at 0.05 probability level.

Overall, farm operators in a marginal solvency position were most likely to report using farm records. Farmers in a marginal income position were least likely to report using farm records of any kind. In general, farmers in a higher leverage position were more likely to report using financial records, in part because their lenders were requiring preparation of these statements.

Changes in Farm Management Practices

Farmers, as entrepreneurs, are involved in managing changes in their operation in response to many sources of risk and profit seeking opportunities. In the 1980's, many farmers were forced to make numerous changes in their operation in efforts to insure long-term business survival. Data in Table 7 indicates that most respondent farm operators have made numerous changes in farm management practices in the past five years.

Reducing short-term debt and long-term debt have been priority management changes for 70% of farmer respondents. Purchasing crop insurance is a management change for nearly half (48.6%) of respondents. Expanding by renting more acres is a management change for nearly 40% of the farm operators. All of these management practices are examples of reducing financial risk - which is a major objective of many producers and lenders (Table 7).

Many farmers have been forced to reduce the scope of their operations by reducing machinery inventory or renting less land. However, very few respondents (<6%) reduced their operation by selling land or transferring land to the seller or lender.

The following changes in management practices were strongly related to farm financial position: (a) raising new crops, (b) forward contracting, (c) purchasing crop insurance, and (d) reducing farm debt, both long-term and short-term. Again, each of these changes in management practices are methods to reduce adverse consequences of business/financial risk or are profit-seeking opportunities. These results are generally consistent with recent studies indicating that farmers perceive greater risk in marketing and finance, but their management responses emphasize changes in financial and production management (Boggess, Anaman and Hanson, 1985; Branch and Olson, 1987; Ekstrom et al. 1987; Mu'min and Hepp, 1988; and Carlson, 1988).

Management Profile of Farmers by Financial Position

Farmers in a marginal solvency position are in the forefront of making management changes in their farm operations. They are more likely to make changes in production, marketing and financial practices that enable them to reduce adverse consequences of risk in their operation and to engage in profit-seeking opportunities. This same group is more

Table 7. Changes in Management Practices in Past Five Years by Farm Financial Position, South Dakota, 1989.

	Financial Position ^a				All
	Favorable	Marginal Income	Marginal Solvency	Vulnerable	
N ^b =	210	70	92	48	549
----- percent of farm operators adopting practices -----					
Selected Management Changes:					
Raising new crops ^{*c}	32.8	24.2	45.1	31.9	34.2
Raising livestock	27.1	31.7	35.2	35.6	30.6
Low input farming	24.1	17.7	31.4	15.9	23.8
No till farming	20.1	25.0	24.1	13.0	20.9
Forward contracting*	19.3	13.8	32.2	8.7	20.1
Futures/Options	15.0	14.8	20.2	11.1	15.7
Crop insurance**	47.8	36.1	62.2	42.6	48.6
Computer analysis of farm finances	17.2	11.9	22.5	15.2	17.4
Reduce long-term debt*	68.2	63.3	79.6	76.1	70.4
Reduce short-term debt***	65.5	61.3	83.2	80.0	70.5
Purchase land	33.0	18.6	30.0	24.4	26.2
Sold land	6.5	5.1	4.5	6.5	5.8
Transfer land back to lender/seller	2.0	3.5	5.5	6.7	3.6
Rent less acres	15.2	20.0	16.5	19.6	16.8
Rent more acres	38.8	35.6	48.3	32.6	39.7
Reduce machinery	8.2	17.5	16.7	10.9	11.9

Source: South Dakota Family Farm Survey, 1989.

^aSee Table 4 for definitions of farm financial position. All farms includes responses by 129 farms that were not classified by financial position.

^bN = number of responses. Some operators did not respond to some specific questions on management changes.

^cChi-square probability level of significance

* = 0.05 ** = 0.01 *** = 0.001

Based on data where financial position is classified.

No * implies chi-square distributions not significant at 0.05 probability level.

likely to use various Federal and state programs, including: (a) Federal crop insurance, (b) farm financial counseling and or farmer/lender mediation, and (c) 1988 drought assistance programs. Finally, this group of farmers are more apt to prepare and use various farm management records in making decisions.

Farmers in a vulnerable financial position have also made many changes in their operation. However, they are not as likely to use farm management records for decisionmaking purposes and have not been able to make as many changes that simultaneously reduce risk and increase their profit potential.

Farmers in a marginal income position have made the least amount of management changes, were less likely to use Federal and state programs, and were the least likely to use farm management records for making decisions. Farmers in a favorable financial position, while similar in age to those in a marginal income position, had many management characteristics similar to those in a marginal solvency position. This group was much more likely to make changes that permitted expansion of their operation, with some attention to reducing financial risk.

Family Functioning and Farm Financial Position

Contemporary investigations of "successful family" life are focused: (a) on the extent that participants are satisfied with their family life; (b) on the extent of cohesion within the family; (c) on the stress endured by family members; and (d) on the amount of agreement on basic issues within the family. Family life satisfaction and the extent that a family operates as a cohesive social unit are generally considered as direct measures of "successful family life", while family stress and couple agreement are usually considered as intervening variables. Based on the literature review, we have developed Likert-scale index measures of family life satisfaction, family cohesion, family life stress, and couple agreement based on questions answered by operators and spouses.⁴

Family Satisfaction Index

Successful, stress-resistant families are assumed to have a strong sense of well-being or satisfaction with life -- successful adaptation to family circumstances. The 10-item Family Adaptation Scale (Antonovsky and Sourani, 1988) was used in this study, along with four additional items on satisfaction with their spouse and with their marriage. The Family Adaptation Scale asks respondents to assess their level of satisfaction from "completely satisfied" to "dissatisfied" on a 1 - 5 scale. Items in this scale reflect family life, for example: "extent to which family members are close to each other" and "how the family fits into the neighborhood".

The responses of each operator and of each spouse are separately summed and divided by the number of items involved. The end result is a mean score across all satisfaction items for each operator and for each spouse. This mean score is the Family Satisfaction Index. The same procedure is used to develop the indexes on family coherence, family stress, and couple agreement.⁵

Family Coherence Index

Individual coping skills and social support can reduce the impact of stress on physical and mental health. Furthermore, a family's collective coping and support resources can provide resistance to negative outcomes. A shortened version of the Family Sense of Coherence Scale (FSOC) (Antonovsky and Sourani, 1988) is used to measure stress-resistance of respondents.

The FSOC scale assumes that stress-resistance originates in a general perception or "world view" that events make sense (are comprehensible), that the demands presented by events can be met (are manageable), and that these demands are challenges rather than catastrophes (have meaning). Items in the FSOC represent these three basic components -- comprehensible, manageable and meaningful. Space limitations prevented the use of all items in the FSOC scale. Twelve items considered most pertinent for research on farm families were selected for inclusion, with an equal number of items (4) selected to measure each basic component. Both operator and spouse were asked to answer each of the 12 forced response items using a 1-5 scale. The mean score for each respondent is their Family Coherence index.

Family Stress Index

Perceived stress was measured by a shortened version of the Family Stress Inventory (FSI), a standardized instrument developed by Walker and Walker (1987) to measure occupational and personal stress associated with stressors of a farming lifestyle. The shortened version of the FSI used in the present study contained 12 items. Six items are stressors specific to farming and a rural lifestyle (examples are "no control over weather or commodity prices" and "traveling long distances for services, health care and shopping") and six are related to family stressors (examples are "conflict with spouse" and "relationships with children"). For each stressor item, respondents indicated their degree of perceived stress on a 1-5 scale. The mean score for each respondent is their Family Stress Index.

Couple Agreement Index

Family life research indicates most married couples have disagreements in their relationships. However, family functioning depends on their general agreement on "core issues" important to their family. We identified 12 core issues important to farm families including making major decisions, child rearing, household finances and nine other items. Each respondent was asked about their extent of agreement (or disagreement) with their spouse on each issue, using a 1-5 scale from "always agree" to "always disagree". Their response to each issue was summed and divided by the appropriate number of items. For each spouse, their mean score is the Couple Agreement Index.

Family Functioning Indices and Farm Financial Position

For each index, paired operator and spouse responses are highly correlated with each other. Farm operators and spouses generally expressed high levels of family life satisfaction with an average operator score of 1.71 and average spouse score of 1.82 (Table 8). Only 3% of respondent operators and 5% of spouses had satisfaction scores of 3.0 or above, which indicates that few respondents were generally dissatisfied on a majority of items or "very dissatisfied" on several items.

Family coherence index scores are considerably lower than family life satisfaction scores for both operators and spouses. These results correspond with previous research (Antonovsky and Sourani, 1988) which indicate respondent's self-reported satisfaction scores are higher than coherence index scores.

A review of respondent family life satisfaction scores and their stress index scores indicates farm couples have generally high satisfaction levels and moderate-to-high levels of stress. These results correspond with the Walker and Walker (1987 and 1989) study. The average stress index is almost the same (2.40 vs. 2.42) for respondent operators and for spouses. About 17% of respondents have average stress index scores of 3.0 or higher.

Most respondents report fairly high levels of agreement with their spouse on each of the 12 core issues. The average couple agreement index score are 2.04 for operators and 1.97 for spouses. Only 5% of respondents reported general disagreement with their spouse on a majority of the 12 items.

Respondent average index scores for family coherence, family life satisfaction, family stress and couple agreement are systematically related to the financial position of their farm operation. Respondent's sense of coherence is significantly lower ($p=0.05$) for those operating farms in a vulnerable financial position than those in a favorable financial position. Respondents operating highly leveraged farms have significantly lower levels of family life satisfaction than other farm couple respondents. Also, respondents operating

Table 8. Farm Couple Stress, Agreement, Satisfaction and Coherence by Farm Financial Position.

N ^b -	Farm Financial Position ^a				All Classified Farms
	Favorable 210	Marginal Income 70	Marginal Solvency 92	Vulnerable 48	
	----- mean (average) index -----				
<u>Coherence Index (1-5)^{c,d}</u>					
Operator**	2.17	2.10	2.14	2.36*	2.12
Spouse**	2.14	2.13	2.11	2.51*	2.19
<u>Satisfaction Index (1-5)^{c,d}</u>					
Operator**	1.65	1.64	1.84*	1.71	
Spouse**	1.76	1.61	1.95*	2.11*	1.82
<u>Stress Index (1-5)^{c,d}</u>					
Operator***	2.26	2.39	2.50*	2.75*	2.40
Spouse***	2.31	2.32	2.56*	2.73*	2.42
<u>Agreement Index (1-5)^{c,d}</u>					
Operator**	1.96	1.99	2.19*	2.21*	2.04
Spouse**	1.89	1.93	2.05*	2.25*	1.97

Source: South Dakota Family Farm Survey, 1989.

^aSee Table 4 for specific definition of farm financial position.

^bNumber of responses.

^cSatisfaction index, coherence index, stress index and agreement index are Likert-scale indices with a range of 1.0 - 5.0. An index value of 1.0 represents, respectively, the highest level of satisfaction, highest coherence level, lowest amount of stress or highest level of agreement. An index value of 5.0 represents, respectively, the least level of satisfaction, least coherence level, highest level of stress or least amount of agreement.

^dA one way ANOVA test was conducted for each index where average index score (of operator and spouse) = f (Farm financial position). A ** indicates the ANOVA F-value is significant at the 0.01 probability level. A *** indicates the ANOVA F-value is significantly at the 0.001 probability level.

^eThe Waller-Duncan K-ratio T-test was used to test if any specific mean index values are significantly different from each other by farm financial position. A * indicates the mean index value has a statistically significant difference (p = .05) from the mean index value shown for those in a favorable financial position. The Waller-Duncan option of the PROC GLM program in SAS was used to develop the statistical information presented in this table.

highly leveraged farms report significantly higher stress levels and lower levels of agreement with their spouse on core issues.⁶

These results provide substantial support for the hypothesis that farm family functioning and farm financial position are strongly and systematically related to each other. However, it is also important to note that family functioning variables are not perfectly correlated with economic measures of "farm business viability". Further theoretical and empirical research is needed to identify the direction of causation and feedback loops between family functioning measures and farm business viability measures.

Farm Couples' Assessment of Their Farm Operation

Discussion of these farm couples is incomplete without their assessment of and expectations about their farm operation. Overall, respondent operator's assessment of their farm operation is more favorable than the spouse's assessment. More than 90% of farm couples reported that their farm is an "ideal place to raise their family" and is a major source of satisfaction for them. Nearly 90% of farm operators, but only 60% of spouses, indicated their farm "offers me a good place to put my own ideas into operation". This response is directly related to the extent of spouse involvement in the farm business.

Between 62% - 65% of farm operators agreed that their farm operation is "financially successful" and "provides us with a good income". However, only 55% of spouses agreed with these statements. Nearly 20% of spouses and 17% of operators disagreed with a favorable economic assessment of their farm operation, while the remainder were uncertain. As expected, farm couples' assessment of the income and financial elements of their farm business is strongly related to their farm financial position. Three-fourths of farm operators in a favorable financial position, but only one-third of those in a vulnerable financial position, perceived that their farm provided a good income and is financially successful.

A majority (55% of operators and 52% of spouses) reported that "if I were starting over today, I would choose farming/ranching" as their occupation or business. Twenty percent of operators and spouses disagreed with this statement and the rest were uncertain. This overall assessment of family farming was unrelated to their age or financial position.

Expanding farm size is a high priority objective for 30% of farm operators. Another 60% placed high priority on maintaining the present size of their farm business, while 10% wanted to reduce the size of their existing farm operation. These objectives were related to operator age, but unrelated to their farm financial position.

Seventy percent of farm operators fully expected to continue operating their farm or ranch for at least another five years. Another 6% expected to retire or quit and another 24% were uncertain about their future plans. Almost 86% of farm operators indicated that improvements in their farm financial position over the past 5 years would permit them to

farm another five years or more, if they choose to do so. Nearly 80% of farmers in a favorable financial position fully expected to continue operating their farm, compared to only 50% of farmers in a high leverage financial position.

Nearly half (48%) of the respondents expect their farm operation will eventually be operated by one of their children and one-fourth of these respondents are already farming with their adult children. Another 27% expect their farm to remain in family ownership, but will be operated by someone else. Another 25% expect their farm to be sold to someone else or are uncertain about the future of their farm.

Summary and Conclusions

Recent research review papers have emphasized the importance of identifying factors influencing successful farm management and successful families (Johnson, 1988; Defrain and Stinnett, 1988). This paper contains: (a) a review of selected literature on characteristics of "successful families" and "successful farm management", and (b) a report of empirical findings from a 1989 multidisciplinary study (economics, sociology and home economics) of 549 South Dakota farm couples and their farm operations. These respondents are from a random sample of South Dakota farm families. All respondents operate farms or ranches that fit contemporary definitions of "family farms" and are "part-time commercial farms" or "full-time commercial farms" (Sumner, 1985; Stanton and Bills, 1988).

Structural Changes in U.S. Families

Key changes in the design (structure) of the American family over the past 50 - 60 years are: (a) decreased number of children per family, (b) divorce rates that have doubled since the 1950's, and (c) a greatly increased percentage of single parent homes. These changes have also occurred among farm families, but there remains a much lower divorce rate and incidence of single parent farm households. Research indicates the most important factor explaining rural-urban differences in divorce rates is greater social integration - a sense of community - found in rural areas.

The proportion of married women in the U.S. labor force has increased from 20% in the late 1940's to more than 60% in the late 1980's. Despite these major social changes, most married women assume a helping, and not co-provider, role in the economic support of their families and retain primary responsibility for childcare and household tasks.

Farm women are also assuming a greater role in the farm operation and providing economic support to their families. The off-farm labor force participation rates of U.S. farm women has increased from 22% in 1960 to 44% in 1980. Furthermore, the increasing segmentation of production agriculture into commercial farms and part-time farms implies

increased off-farm employment of farm operators. A majority of male farm operators (58%) in the U.S. also have off-farm employment.

Work Roles of Farm Couples

Almost half (47.7%) of respondent South Dakota farm families have one or more adults engaged in off-farm employment. Compared to U.S. totals, South Dakota has a similar percentage of farm women (42.3%) employed off-farm and a much lower percentage of farm operators (19.5%) employed off-farm. The primary explanation is that South Dakota has very few "residential farms" and a high proportion of "commercial farms".

A majority of South Dakota farm women (56%) report active involvement in the farm operation on a part-time/seasonal or full-time, year around basis. The extent of their active involvement in the farm operation is inversely related to their incidence of full-time off-farm employment.

Performance of farm tasks and family/household tasks followed distinct gender roles. Farm tasks were mostly performed by men or were shared. Farm women assumed most household tasks with occasional or no help from their husband.

Decisionmaking Roles of Farm Couples

Stress-oriented studies indicate that shared decisionmaking (collaborative approach) is an important characteristic of "crisis-proof" families and is a key characteristic of "successful families". Most South Dakota farm couples (75% - 84%) use a collaborative decisionmaking approach to family/household decisions and a majority use that approach to farm business decisions involving farmland rental or purchase. The operator is the principal decisionmaker on most other farm-related decisions.

Farm and Family Management

Previous multidisciplinary research findings indicate successful farm managers act to ensure and control outcomes instead of passively reacting to the economic and social environment that they faced (Johnson, 1988). Recent research reports emphasize farm and family management differences by farm financial position - a major component of the farmer's economic environment. For example, South Dakota farm couples operating highly leveraged farm are an average of 8.5 - 9.7 years younger and are much more likely to report off-farm employment than other farm couples. Farm operations with higher net farm incomes are not only larger in average size (based on total assets) but have higher asset turnover rates, higher net margin percentages and higher rates of return on equity than other farms.

Farmer's use of farm management records and many management changes in their operation are strongly related to their farm financial position. South Dakota farmers in a marginal solvency position have made the most management changes in their operation and are much more likely to use various farm management records in making decisions. Farmers in a vulnerable financial position were not as likely to use farm records for making decisions and have not been able to make as many changes that simultaneously reduce risk and increase profit potential.

Farmers in a marginal income position (low leverage and low net income) have made the least amount of management changes, are less likely to use Federal and state programs, and are the least likely to use farm records for making decisions. Farmers in a favorable financial position have made changes that permitted expansion of their operation, with some attention to reducing financial consequences of risk.

Family Functioning

Contemporary investigations of "successful" family life focus heavily: (a) on the extent that participants are satisfied with their family life; (b) on the extent of cohesion within the family; (c) on the stress endured by family members; and (d) on the amount of agreement on basic issues within the family. Family life satisfaction and the extent that a family operates as a cohesive social unit are generally considered as direct measures of "successful family life", while family stress and couple agreement are usually considered as intervening variables.

Likert-scale index measures of family life satisfaction, cohesion, stress and couple agreement were developed based on questions answered by respondent farm operators and spouses. In all cases, respondents' average scores for each measure are systematically related to the financial position of their farm operation. Respondents from highly leveraged farms have lower family satisfaction, lower coherence, higher stress and lower couple agreement on basic issues than respondents with farms in a favorable financial position.

Conclusions

High levels of family life satisfaction and coherence are major attributes of "successful families". These families also exhibit high levels of couple agreement on basic issues and have greater ability to handle stress. Production ability and timeliness, financial management, ability to handle changes and other stressors, and positive attitudes toward work, family and other key human relationships are major characteristics of "successful farm management". For most farm couples, successful farm business management and successful family life are very much interrelated.

Endnotes

1. The multidisciplinary study of South Dakota Family Farms was financially supported by the Midwest Technology Development Institute, Farm Enterprise Partnership. Matching Support was provided by the SDSU Agricultural Experiment Station.
2. The random sample of 2000 farm households were selected by SDASS (South Dakota Agricultural Statistics Service). Contractual agreement required the USDA agency to administer the mail survey (including two follow-up mailings), because they are required to maintain confidentiality of all names on their mailing list.
3. According to Stanton and Bills (1988) a full-time commercial farm is "an establishment where agricultural production and marketing is the primary occupation of the operator, and where 12 months or more of operator, family or regular hired labor are employed." A part-time commercial farm is an "establishment where agricultural production is an important contributor to family income and where 2 to 12 months of operator, family or hired labor in total are employed" (p. 18). A residential farm is an "establishment where agricultural production occurs, but is not an important contributor to family income; where less than 2 months of total labor are employed in agricultural production and marketing."
4. A copy of the specific questions used to develop each index can be obtained by contacting the authors. These questions are listed in Clark, Janssen and Stover, 1990.
5. In some cases, respondents did not answer all questions used to develop each index. To handle the issue of missing data, a set of minimum criteria was established. For each index, if information was missing for more than one question for either spouse, the case (consisting of both husband and wife) was dropped from the analysis.
6. It should be noted no financial related questions are included in the family life satisfaction and family coherence scales. Only one financial related question is included in the 12 stressor items in the family stress scale and only two financial related questions are included in the 12 item couple agreement scale. The conclusion that the average stress index score and average couple index score is systematically related to farm financial position is not changed if the financial questions are removed from each scale.

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