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Working Paper

THE CHANGING FINANCIAL STRUCTURE OF THE U.S. FARM SECTOR

by

Thomas A. Miller, Thomas A. Stucker,
Matthew Smith, Kenneth Krause and
David Harrington*

ANRE Working Paper WP:85-5
September, 1985

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THE CHANGING FINANCIAL STRUCTURE OF THE FARM SECTOR

INTRODUCTION

The current financial crisis and adjustment in U.S. agriculture is a very visible part of a deeper, longer term and significant change in financial structure. While some of the trends (e.g. family corporations, renting and leasing, and off farm income) have been present for years, they now appear to be accelerated by the new financial environment that has emerged in the 1980s.

The overall economic environment has significantly changed from the past decade. The 1970s were characterized by rising inflation, low and frequently negative real interest rates, worldwide economic expansion including rising U.S. agricultural exports (a relatively weak dollar), and optimism about agriculture and thus ready availability of credit. Since 1982, essentially the opposite has occurred: low inflation, high real interest rates, a stagnant world economy with a strong dollar and sluggish export markets, and consequently pessimism about the future of agriculture has increased. This new economic and financial environment has caused land values to decline, reducing loan collateral, and reducing credit availability to the farm sector. An immediate problem is that many farmers who made debt financed (leveraged) expansions during the favorable period of the 1970s are now faced with excessive debt, given the new economic and financial environment.

A less visible but potentially just as significant change has been the increase in financial risks in agriculture (Brake). Fluctuations in fund availability from some lenders along with lenders' nonprice responses to changes in financial markets has tended to destabilize farmers' access to credit. High and volatile interest rates and greater use of variable-rate loans have provided new sources of financial risk. The deregulation of the banking industry has further destabilized farmers' costs of borrowing. Risks arising from unanticipated changes in the rate of inflation and the loss of collateral value via land depreciation have become very apparent to both farmers and lenders. Public responses to inflation and later the side effects of policy to control inflation have in turn created additional risks. These risks are unlikely to diminish in the 1980s as the United States and world financial markets become more integrated. These increased financial risks represent an important and enduring factor now influencing the financial structure of U.S. agriculture.

As a whole, agriculture is strong and resilient and will adapt to the environment of the 1980s, just as it has adapted to the other major changes of the century. But this adaption is not without pain for some and will require substantial changes for many others. A key question is what financial structure will emerge to enable the farm sector to live comfortably with the new economic and financial environment. This question implicitly assumes that a substantial swing in financial and income variables back to the level and configuration of the 1970s is unlikely. Instead it focuses attention on adjustments that can be and are being made in response to the present situation.

The objectives of this paper are as follows:

- a. to review the principles of business finance and consider how these principles relate to current trends in the financial structure and organization of the U.S. farm sector,
- b. to provide some hypotheses concerning cause and effect, and
- c. to suggest what the future financial structure and organization of the farm sector will look like.

The general methodology is one of hypothesis formulation. It is hoped that the paper will help focus future agricultural economics research on the suggested hypotheses, as well as be of value to agriculturalists who are making long term financial management decisions in the new economic and financial environment of the 1980s.

FARM BUSINESS ORGANIZATION AND FINANCIAL STRUCTURE

We are now beginning to see a major transition in agriculture away from debt financing to alternative means of financing or otherwise obtaining access to resources. Only the passage of time and more empirical evidence will show the eventual extent of this shift. Nevertheless, the problems that many farmers (and lenders) had in the early 1980s with debt financing and shrinking collateral as land prices move downward will shape the way farms acquire access to productive resources, and perhaps the organizational structure of farms, for years to come.

A key factor or consideration affecting a farmer's choice of alternative sources of financing is the form of business organization. A farmer's choice of financing alternatives depends upon his organizational structure, management capabilities and ability to assume risks. Limited partnerships, venture companies, joint ventures, and incorporation all represent potential means through which farmers can attract off-farm equity capital (Penson and Duncan). As a result, changes in the form of business organization and the factors behind these changes must be considered concurrently with changes in methods of financing and financial structure.

Farm businesses are organized in three principal ways: sole proprietorships, partnerships, and corporations. The form of business organization has important implications in terms of Federal income and estate taxes, continuation of the farm when a farmer leaves the business through death or retirement, ability to bear risk, and most importantly, access to alternative sources of financing. Some farm families are turning from the traditional sole proprietorship form of organization to improve access to capital and to better manage increasing financial risks.

Farm Organization and Access to Equity Capital

Potential resource acquisition tools for the farm business are debt capital, leasing arrangements, and equity capital. Sole proprietorship

family farms generally have a rather fixed and limited equity in the short run, and therefore have a limited number of options to adjust the capital structure (and resources) of the farm. New additions of equity capital from outside sources are uncommon for the sole proprietorship farm. Lending institutions and traditional investors are reluctant to provide capital for a share of returns and future capital gains in lieu of interest because of the greater risk of displacement or interference in control of the firm. Farmers themselves are reluctant to give up any ownership rights to farm assets.

This situation contrasts sharply with that of nonfarm corporations where external equity capital provided by new shareholders is often an important source of investment funds. The new equity investors want a share in the firm's future profits (i.e., dividends and capital gains) but are only modest risk takers. They tend to diversify such investments among different firms to avoid becoming heavily affected by the risks of one particular investment.

Some family farms are adopting organizational forms other than the sole proprietorship business to increase access to external equity capital. Occasionally such equity capital is provided by public shareholders or institutional investors. More often it comes from closer friends and business associates or their extended family. The total number of shareholders in such cases is usually less than 10 and such corporations remain closely held by the farm family rather than becoming publicly held. This organizational change may involve acquiring a partner to obtain new equity capital, incorporating and allowing heirs to make additional equity investments in the business, or more complicated stock holding arrangements with business associates. Transfers of external equity capital through limited partnerships appear primarily in the livestock sector, with fed-cattle and poultry subsectors often utilizing capital derived from nonfarm equity sources.

In all but a few cases, such as integrators or tax-sheltering investors, such partnerships and corporations remain closely-held family farm operations. An important benefit is that they enable the farm firm to rely more on equity financing and less on debt financing.

Other Factors Affecting Farm Organization

Federal tax policies probably have more influence on the conversion of farms to the corporate form of organization than any other single policy or program of the Federal Government (Looney; Harrington, *et al.* p. 8.). Federal income tax policies, in particular, have encouraged farm business incorporation because corporate tax rates are lower than individual rates for taxable incomes above about \$25,000. Corporate income tax provisions enable farm corporations to increase internal equity capital through retained earnings at a faster rate than sole proprietorship or partnership farms. Further, Federal tax policies encourage certain nontaxable fringe benefits for corporate ownership.

Transferring shares of stock in a farm corporation is a relatively simple and convenient way to transfer farm assets to heirs (Krause). Transfer of stock prior to or at death may help to keep a farm business operating without any disruption. Estate taxes are lower and younger family members can be brought into the farm operation more easily. Off-farm heirs may be willing to

maintain their ownership and leave their inherited capital in the farm business via shares if they see that it will be operated efficiently and they will receive a reasonable return on their investment. Incorporation is therefore an important means of retaining the equity capital of off-farm heirs in the farm business.

Family farmers facing high taxable incomes also incorporate to facilitate firm growth. In this situation incorporation can result in more after-tax income available for reinvestment. Perhaps the strongest argument for incorporation is that it is "...expected to encourage farm growth and increases in farm size because larger after tax income is available for reinvestment." (Boehlje and Krause, p. 35). The farm growth aspect may be a stronger attraction than higher net income in the short run. In their 1981 publication, Boehlje and Krause recognized that "... the small and moderate size farmers' greatest competition for farm resources, particularly farm real estate, is coming from moderate and large size farmers. Some of the most competitive farmers are those who incorporated their businesses..." (p. 35).

Other considerations, such as the limited liability afforded by incorporation are further considerations in selecting the best organizational structure for the farm firm.

Incorporation Reduces Financial Risk

In addition to the above mentioned considerations, incorporation may also improve the risk bearing ability of the farm business. Increasing financial risks in agriculture have increased incentives for farm firms to adapt more complex business organizational forms to diversify asset and financial portfolios.

First, a working definition of financial risk is needed. Finance literature distinguishes between the effects of business risk and financial risk on the firm's total risk (Barry and Baker, 1984, p. 186). Business risk represents the risk faced by the firm independently of the way it is financed; examples are product price and yield risks. Financial risk is narrowly defined as the added variability of net cash flows to an owner's equity that is associated with debt financing. Under this definition financial risk is zero when no borrowed capital is used, and increases as increased amounts of capital are borrowed.

A broader working definition of financial risk is used in this paper with the goal of increasing understanding of the relationship between risk and the financial and organizational structure of the firm. Financial risk will be defined as the risk associated with the ownership, financing or other means of acquiring access to the resources required by the farm; business risk will be defined as the risk associated with the annual operating incomes generated with these resources. These risk components add to the same total risk defined by Berry and Baker, but now parallel the income streams generated by a resource: current income and appreciation (capital gains). This broader concept of financial risk lends itself better to the analysis of a wide range of financial structures. For example, full ownership financed by internal capital represents a different financial risk than renting, even though borrowed capital is zero in both cases.

Nonfarm corporate businesses avail themselves of many different sources of financing: debt holders have contracts (bonds) which promise to pay them fixed schedules of interest in the future; equity holders provide retained earnings (internal equity provided by existing owners of the firm) or purchase new shares (external equity provided by new shareholders); and there are others such as holders of leases, preferred stock, nonvoting stock, and warrants. The corporate organization provides both the firm and its investors with an effective means to spread and offset risk through diversification. Each financial category represents a different type and degree of risk, which the corporate firm spreads among many different categories of investors. The investors themselves are risk averse and minimize risk by owning diversified portfolios of investments in other firms, each providing a return that balances the individual investor's ability to bear risk with the riskiness of that specific investment. Each investor thus spreads or balances offsetting risks of each investment in a diversified portfolio. Finally, the different assets owned by the corporate firm also represent a diversified portfolio, each to some extent offsetting the risk of other assets held by the corporation.

These different levels of diversification provide efficient risk bearing for both the firm and its investors. In a large portfolio, an asset's own risk (variance in returns) is offset by covariances with other assets and much of an asset's own variance is diversified away. The risk premium that must be provided by the return from each asset or investment is thereby reduced, since it must cover only the asset's net contribution to the portfolio's total risk, and not the total risk of the individual asset. In this way, corporate financing reduces the cost of risk bearing for both the firm and its investors (Barry and Baker, 1984, p. 192).

In smaller, less diversified portfolios, an asset's own risk has much greater importance. The owner-operated sole proprietor family farm represents an extreme case, where the firm's major investment is typically in only one asset (land) and the firm's owner (the farm family) invests only in that firm. Returns to this investment must compensate both the firm and its owner for all of the risk, since none is diversified away. The absence of diversity for both the firm and its owner must be covered by higher risk premiums on the investment, to cover the increased cost of risk bearing.

As a result, the sole proprietor family farm is inefficient in bearing risk, compared to a fully diversified corporate firm and its many investors. This high cost of risk bearing provides an incentive to farm families to change their asset and financial structure and adapt more complex business forms that provide some of the risk bearing efficiencies observed in the nonfarm corporate world. This adjustment to risk has long been observed in the cattle feeding subsector (Reimund, *et al.*). Recent increases in financial risk may be accelerating similar adjustments in other subsectors.

Current Trends in Farm Organization

Historically, sole proprietorships have been and continue to be the dominant form of organization for U.S. farms. Sole proprietorships (87.3 percent of farms in 1978), are followed by partnerships (9.7 percent), and corporations (2.0 percent). Although sole proprietorships are ordinarily

thought of as family farms, all three types are chiefly family organizations. In partnerships, the partners are usually related by blood or marriage and most corporate farms are family owned and operated (Reimund). Corporations are more important in the larger sales classes, both in total numbers and as a proportion of all farms as shown in figure 1 (Harrington, et al.).

The growth in corporate farming during the seventies is almost entirely attributable to an increase in the number of family and other closely held farming corporations (Figure 2). More than 96 percent of all farm corporations are family-held. The number of family corporations increased from 45,418 to 52,652 between 1978 and 1982 compared to an increase from 5,852 to 7,140 for nonfamily corporations in farming (Table 1). The increase in family corporations is even more significant when measured in terms of farmland operated, value of land and buildings, or value of sales. Thus, while the corporate form of ownership is becoming increasingly important in the U.S. farm sector, most of this growth is accounted for by the increase in family corporations. Table 1 indicates a significant adjustment from sole proprietorships to family corporations is currently underway. Since 1974, the importance of sole proprietorships has declined, especially in terms of sales, which have fallen from 67.6 percent to 59.2 percent of total sales. Partnerships have increased slightly in importance, although appear to have stabilized since 1978.

These data do not support the common perception that nonfarm corporations are becoming heavily involved in farming. While the number of nonfamily corporations increased by 1,288 between 1978 and 1982, their share of land operated decreased and shares of sales remained constant at 6.5 percent. Instead, table 1 indicates that family farmers are becoming more and more aware of the advantages of the corporate form of organization.

Off-farm Income

Another response to both the changing economic environment and to increasing business and financial risk is to establish a broader portfolio of income sources by seeking off-farm income (Carlin and Ghelfi). Table 2 shows the proportion off-farm income provides to the total income of farm families has grown markedly in recent years to 71.8 percent in 1983. This off-farm income reduces risk in two ways, (a) its variation is generally not correlated with farm income variation so it tends to stabilize total annual income, and (b) it tends to be an additional source of liquidity and equity capital for the farm family in meeting severe and variable cash flow requirements. While the increased importance of off-farm income is also due to many other factors, at least a port of this increase can be explained as a response to the increasing risk in U.S. agriculture (Tweeten, p. 931). ^{1/}

^{1/} Off-farm income is closely interrelated with other adjustments in the production, marketing, and financial structure of the modern farm. This interrelationship makes it difficult to determine whether a given adjustment represents a response to risk or responses to other changes in the economic environment. For example, many responses to financial risk are also adjustments to the high real interest rates, low inflation rates and the decline in land values that currently face farmers.

Figure 1

Form of Business Organization, 1978

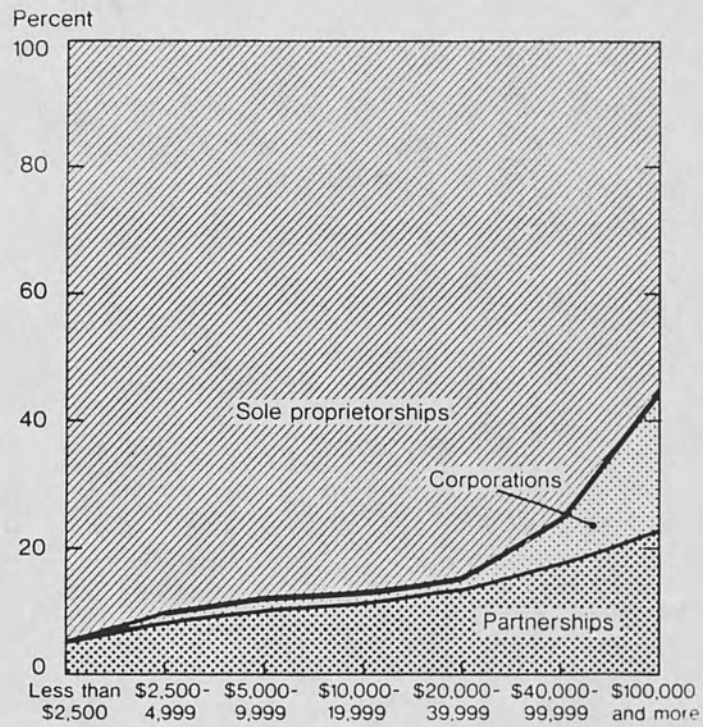


Figure 2. Recent Increases in Farm Corporations are
Chiefly Family Corporations

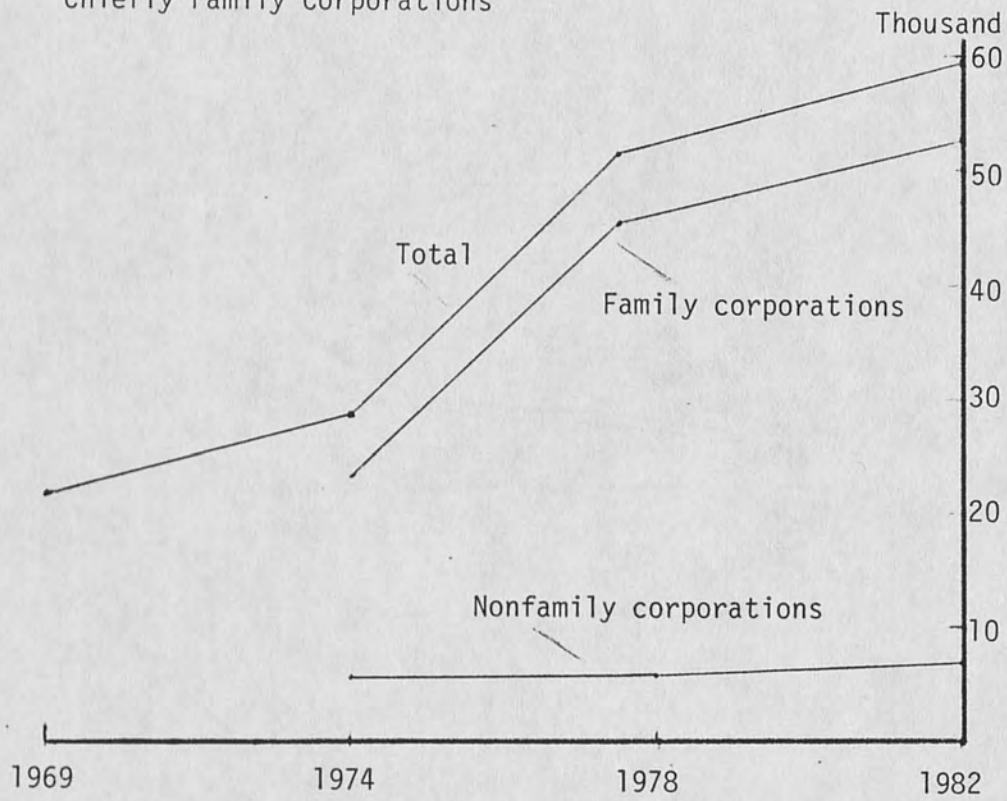


Table 1--Selected U.S. Farm Characteristics by Type of Organization
1974, 1978 and 1982

Item		Sole Proprietorships		Partnerships		Family Corporations		Nonfamily Corporations		All Corporations	
		Percent of U.S.		Percent of U.S.		Percent of U.S.		Percent of U.S.		Percent of U.S.	
Number of farms	1974 <u>1/</u>	1,517,573	89.5	144,969	8.6	*	*	*	*	28,656	1.2
	1978	2,175,437	87.8	241,290	9.7	45,418	1.8	5,852	0.2	51,270	2.1
	1982	1,945,639	86.9	223,274	10.0	52,652	2.4	7,140	0.3	59,792	2.7
Land operated - Acres	1974 <u>1/</u>	678,081,579	74.9	124,479,156	13.7	*	*	*	*	96,781,155	10.7
	1978	686,575,506	70.5	159,303,369	16.4	104,083,123	10.7	16,119,626	1.7	120,202,749	12.3
	1982	642,380,423	68.9	151,860,157	16.3	112,858,160	12.1	14,450,606	1.6	127,308,766	13.7
Value of Land and Buildings - \$1,000	1974 <u>1/</u>	241,235,783	78.1	41,306,927	13.3	*	*	*	*	24,555,940	7.9
	1978	480,508,032	74.9	100,114,700	15.6	47,877,551	7.5	9,501,923	1.5	57,379,473	8.9
	1982	546,915,894	71.7	119,493,881	15.7	76,139,314	10.0	13,779,883	1.8	89,919,197	11.8
Value of Sales - \$1,000	1974 <u>1/</u>	54,516,408	67.6	11,231,940	13.9	*	*	*	*	14,425,607	17.9
	1978	66,450,597	61.6	17,388,248	16.1	16,311,239	15.1	7,041,915	6.5	23,353,153	21.6
	1982	77,506,800	59.2	21,519,531	16.3	22,901,908	17.4	8,578,458	6.5	31,480,367	23.9

1/ 1974 data for farms with sales of \$2,500 or more

* = Data unavailable

Source: Census of Agriculture.

Table 2--Net farm income and off-farm income as percentage of total income of farm operator families

Year	Net Farm Income	Off-Farm Income
---Percent---		
1960	57.6	42.4
1965	50.3	49.7
1970	44.9	55.1
1975	51.7	48.3
1978	48.2	51.8
1979	47.9	52.1
1980	36.1	63.9
1981	43.7	56.3
1982	36.2	63.8
1983	28.2	71.8

ALTERNATIVE SOURCES OF FINANCING AND ACQUIRING RESOURCES

As described in the previous section the financial and ownership structure of the farm firm is determined by both the form of business organization used and the sources of financing or other means of acquiring resources. This section describes alternative sources of financing and/or acquiring the resources needed for the farm firm; (a) full ownership financed with accumulated equity (savings), (b) debt financing, (c) outside equity financing, (d) contracting and vertical coordination, (e) leasing and renting, and (f) custom hiring.

Farmer's choice among these alternatives depends upon the form of business organization, management ability, and his ability to bear risk. Each alternative has specific impacts on the risk faced by the farmer, as well as implications for management freedom and potential income streams. Table 3 summarizes the alternatives in terms of availability, advantages, and disadvantages.

Full Ownership

Perhaps the simplest means of obtaining access to resources in agriculture is through purchase with owned equity or savings; that is, buying required resources with cash from savings or obtained from the sale of other owned assets. This is the most traditional of all means of acquiring assets, an exchange of savings or current equity to obtain a needed resource.

Full ownership provides two important advantages (table 3). A full owner-operator has complete management control and receives all potential rewards of earnings and capital gains. He assumes all of the business risk of no income and no earnings, and he assumes all of the financial risk associated with resource ownership; capital gains, possible loss of value and wealth due

Table 3-- Sources of financing or means of acquiring resources for farmers

Source or means:	Availability	Advantages	Disadvantages
Savings/full ownership	Limited to established farmers with accumulated equity	Complete management control No financial risk from leverage	Severely limits growth Reduces funds for family living
Debt financing	For farms with some accumulated equity or cash flow ability	Rapid growth through leverage Inflation reduces real cost of borrowing Management control retained	Extremely high financial risk Cash flow problems in inflationary times
Outside equity financing	Not widely used but increasing	Rapid growth through outside capital Reduces financial risk Outside investors share business risk Reduces debt service costs	Loss of management control May require non-standard business organization
Contracting/Vertical coordination	Mostly confinement livestock feeding	Reduces total risk	Loss of management control
Renting/leasing	Widely used Land availability depends on local conditions	Flexibility Known costs High tax expense writeoffs Share leases reduce risk	No capital gains
Custom hiring	Widely used, but may be scarce in busy seasons	High tax expense writeoffs	Some loss of control in production

to economic circumstances, technological advances, etc. However, financing with internal equity does not add to financial risk through leverage (the so-called "principle of increasing risk"), since no debt capital is involved. Therefore, full ownership is a means of maximizing management control over the resource, while avoiding the increased financial risk that would be associated with debt financing. However, the remaining risk is borne solely by the farm family--none is shared by outside owners or investors.

A problem with full ownership financed by internal capital is that unless liquid savings are very large (which is unlikely), or the assets sold to obtain the new resource were either not needed or earning low returns, use of accumulated equity to obtain new resources does not expand the earning power of the firm. Therefore the growth potential of the firm is severely limited by relying entirely on accumulated capital to purchase full ownership of resources.

Debt Financing

This limitation on growth potential when using "savings" (either cash or noncash assets) encourages the use of debt capital to leverage the procurement of needed resources for the agricultural firm. Rather than using the proceeds from the sale of existing assets, assets are financed with debt capital which is secured by the collateral which their ownership generates.

Debt financing was the favored means of the 1960s-1970s for agricultural firms to expand. While in other industries the larger individual firms incorporated and "went public" to solicit equity financing, the family farm business entities in agriculture used existing capital in illiquid assets (such as land) as equity to borrow additional funds for expansion. This seemed rational because (1) net returns could be increased through increasing volume, (2) capital gains could be realized through borrowing while retaining control of the land resource, and (3) rapid inflation in the 1970s brought speculative gains to those who acquired land (farmland values had increased without interruption for three decades). Real interest rates were low and inflation covered most of the cost of borrowing during this period.

Particularly for those operators with sufficient beginning equity and cash flow to obtain and service mortgages, debt financing of farmland purchases is an attractive option. This is especially true for those with high enough income to benefit from interest deductibility and capital gains tax features during periods of rapid escalation of farm real estate values. During the economic environment of the 1970s, many farm operators pursued a strategy of debt-financed land acquisition to obtain higher total current incomes and long term capital gains, or some combination of these. By the mid 1980s, debt had ballooned to almost 300 percent of the level in the mid-1970s.

For operators able to meet downpayment requirements and with cash flows adequate to the level of debt incurred, debt financing may offer a number of advantages. One of the primary advantages of debt financed real estate purchases over the past forty years has been the potential for capital gains, but tax treatment is also important. Although land is a permanent asset and thus not depreciable, property taxes and interest payments are deductible from

ordinary income and any increases in value are taxed preferentially as capital gains.

Debt financing provides the farmer with leverage for firm growth, known fixed costs over a finite period (providing interest rates are fixed), and no interference in management (Table 3). However, debt financing greatly increases the financial risk faced by the farm firm. Lenders providing debt capital assume no management responsibilities, no share in the profitability of the firm and expect no capital gains. They want safety of principal and interest with minimum risk. From the farmer's perspective, obtaining an asset through debt financing typically requires a large initial equity in the property purchased (generally 20 to 30 percent of the purchase price), or significant unencumbered equity in other property as security, thus elevating the level of financial risk of the firm. Particularly during periods of high long-term interest rates, servicing debt places a heavy continuous burden on a farm's cash flow as well. In this situation a major change in the economic environment, such as occurred in the 1980s, can threaten the basic survival of the debt financed firm. Given the increasing volatility of financial markets and macroeconomic variables, both the costs and financial risks associated with debt financing is now forcing many farmers to seek alternatives.

Outside Equity Financing

An alternative to debt financing is to obtain off-farm equity capital. Equity capital can be provided by the current owner of the firm from internally generated funds (full ownership) or by outside investors who are willing to invest in the business in exchange for a share of future income and/or asset appreciation. External equity capital provided by new shareholders is often an important source of investment funds in nonfarm businesses. Some farmers now appear to be adjusting their financial structure in this direction as a means of dealing with the present financial crisis.

External off-farm equity capital has played an increasingly significant role in the livestock subsector in recent years. Investor ownership of cattle on feed, hog farrowing and finishing facilities, and poultry production facilities has become significant (Scofield; Penson and Duncan, p. 88). Citrus groves, fruit and nut orchards, and grape vineyards have in the past also attracted substantial amounts of equity capital, encouraged by "tax shelter" provisions that have in some cases now been eliminated.

A number of institutional and legal channels exist for transferring external equity capital to agriculture. As described earlier in this report, many of these involve changes in the legal organization of the farm firm. Moore provides a thorough description of these channels (pp. 74-77): direct investments by family heirs who have left agriculture or are not directly involved in management of the farm, direct farmland purchases by nonfarm investors, vertical integration by agricultural processors and first handlers, investors forming partnerships and limited partnerships to pool capital and share risks, real estate investment trusts, and both general and Subchapter S corporations. Many of these partnership, corporate, and trust arrangements remain closely held by the farm family.

An advantage of equity financing is that it can provide additional capital for firm growth, without the additional financial risk that would be associated with debt financing (table 3). With the high investment costs and financial risk associated with firm growth, outside equity capital is being looked to by an increasing number of farmers as a viable alternative. Although the present owner(s) of the farm give up a share of the potential profitability and capital gains from the investment, a significant portion of the business and financial risk is borne by the new equity investors.

Shifts from debt to equity financing are also a means used by some farmers to extricate themselves from serious debt/cash flow conditions (Riley). This adjustment involves contractually trading future income or asset growth with a current lender in return for a reduction in current debt service costs. The current firm owner is effectively selling a part of the business (now or in the future) in return for help through a difficult cash flow situation. The result is to establish enough working capital to meet current commitments, without losing control of the business. Farmers accept such arrangements in return for liquidation of a portion of their long term debt.

The investor/lender in such an arrangement typically wants no management responsibility, but wants to protect current loaned funds and is willing to accept a share in the firm's profits (both income and capital gains) to do so. Thus, they are modest risk-takers relative to outright investors. The farmer can lose control of the firm under certain conditions, but this is likely a more-controlled, "friendlier" takeover than foreclosure or bankruptcy.

Lenders accept this shift to equity accounts because reducing debt costs improves the farmer's ability to survive and prosper. This, in turn increases the farmer's potential to service the remainder of the debt. Second it reduces forced sales of property under depressed conditions, promoting a more orderly land market and improving the balance sheets of both lender and borrower.

Moves in this direction are not unique to agriculture. The sharing of equity in lieu of debt has been done in financing of personal residences for a number of years. Contracts to share in equity have been used in industry to reward managers for over a decade. Secondary markets in debt/equity account transfers have been used for long periods. Shift to equity from debt has a long history in reorganizing businesses. To date, actual use in agriculture appears to be increasing as more and more farmers are forced to work out of the financial crisis; however, no aggregate statistics are available to document this increase.^{2/}

A portion of the external equity investment in agriculture can be explained by Federal income tax provisions, which can provide strong

^{2/} Shared equity financing could be encouraged by a state or the Federal government. Either States or the Federal government could subsidize the secondary holders of the equity accounts. The willingness of investors in these secondary companies could be enhanced by rules for writing off potential losses, treatment of foregone interest as capital gains, depreciation of the contract and so on. Rules and regulations affecting who could invest or hold equity accounts would possibly be helpful.

incentives for high-income investors to enter agriculture (Moore, p. 73). In the past most of these incentives have involved the ability to convert current income to long-term capital gains or to defer current taxes to future time periods. Foreign investors are also attracted to U.S. agriculture due to tax preferences offered by offshore tax havens based on tax conventions or treaties with the United States. Retention of farmland ownership by surviving spouses and other heirs of operating farmers is also encouraged by Federal estate tax laws.

Despite these advantages, many farmers continue to view outside equity capital with distrust, particularly when farmland is involved. Many States have enacted legislation restricting outside equity investment in farmland by both foreigners and domestic corporations (Penson and Duncan). Much of this anxiety appears to be over issues of control and ownership of agricultural resources; farmers want to retain complete management control of the land resource, as well as the cultural and emotional values associated with ownership. Thus farmers tend to view outside equity investments with considerable apprehension.

The loss of management control associated with some forms of equity capital, as well as the need to move away from the traditional sole proprietor business form, continue to restrain the extent of external equity capital flows into agriculture (table 3). These features are perceived as important disadvantages by many farmers.

Contractual Arrangements and Vertical Coordination

Some sectors of agriculture routinely obtain access to capital and resources through contractual and vertical coordination arrangements with processing firms (Mighell and Hoofnagle). Such arrangements provide the farmer with credit, inputs, resources, and sometimes management assistance. The integrator or contractor also shares some of the business and financial risk of the farm. The farmer may give up some management control over the farm, and forego some potential benefits from gains in asset values, product prices, etc.

Following the lead of the poultry industry, red meat producers are increasingly using contractual arrangements to place livestock in feedlots. Custom feeding appears to be more prevalent among hog producers than among cattle feeders in the Midwest, primarily because hog producers are more financially stressed than either cattle feeders or cow-calf operators and thus may be more eager to accept such arrangements.

The broiler industry stands at the forefront of the poultry sector with about 90 percent of all broilers grown under contractual arrangements. Although these contracts can vary, facilities and labor are usually provided by the grower in return for a minimum base payment per pound of liveweight gain, plus bonuses for feed conversion efficiency. The nonfarm "integrator" owns the broiler throughout production and processing and provides the chicks, feed, medication, and supervision. The contract grower is not considered an employee of the firm, thus freeing the integrator of added expenses of social security, insurance, and other employee costs.

Whether other segments of the agriculture industry will grow in this direction is not known, although the pork industry could be in the initial stages of such a transition. Most of the producers of hogs on contract are doing so in response to credit needs.

Leasing of Resources in U.S. Agriculture

Access to resources can be obtained without changing the firm's capital structure or organization. Leasing is a method of acquiring the use of a productive asset without acquiring ownership of the asset itself (Suddendorf). Farmland has traditionally been the asset most commonly leased by farm operators, but leasing of other assets such as machinery and even some livestock has also become increasingly prominent in recent years (Penson and Duncan).

For the purposes of this discussion agricultural assets are divided into two groups: farm real estate, which is treated as a productive asset of infinite life (at least relative to the planning horizon of the individual farm owner or operator), and other productive assets such as machinery, equipment, and livestock which yield a finite flow of productive services. These physical differences affect the tax treatment of the assets and the calculation of their economic values, and thus have considerable impact on the nature of the purchased vs. lease decision facing the farm operator.

Leasing Farmland

Farmland is generally leased under one of two types of arrangements: the cash lease, which requires a fixed cash payment in exchange to use rights to the land for a specified period; or the share lease, which provides for a fixed portion of the crop to be turned over to the landlord in exchange for use of the land. Traditionally landlords have also provided some specified portion of variable production costs under share rental agreements, increasing the risk-sharing between landlords and tenants. The length and complexity of land rental arrangements may range from simple one-year oral agreements to fixed long-term leases for multiyear enterprises such as tree crop production.

Renting farm real estate offers a tradeoff between the potential wealth-accumulation advantages of ownership and the cash flow and current income advantages of renting. Because farm real estate leasing requires no down payment, use of the resource may be obtained at much lower initial cost than under purchase, and periodic payments for its continued use may also be lower, particularly during periods of high interest rates. This has traditionally been the major attraction of leasing for low-equity, beginning farm operators, and in fact has often been the sole available route into farming for many of these operators.

For established farmers, leasing farmland can also offer a number of advantages: it conserves equity and creditworthiness, allowing investment in other farm or nonfarm assets; it provides improved cash flow and realized after-tax income (lease payments are deductible in full as a cash expense); and it allows a greater flexibility in making year to year changes in acreage operated (provided land is available to rent). As farmland prices rose

relative to land rental rates during the 1970s, leasing became a virtual necessity for low-equity operators and increasingly attractive to established operators wary of the financial burdens associated with debt-financed ownership.

Farmland leasing may reduce both the financial and business risks faced by the farmers. First it is an important tool with which to manage the farm firm's financial risk by reducing leverage (Richardson, et. al.). Additionally, because share renting spreads the business risks of agricultural production between landlord and tenant, it offers farm operators an additional important risk management tool.

However, other aspects of farmland leasing may increase financial risk, given the broader definition of financial risk advocated in this paper.^{3/} Lease holders of course stand the risk of losing any potential capital gains from land value appreciation in the future. More importantly, the continuity or long term permanency of resource access is more uncertain under leasing compared to ownership, and may be subject to future rent increases, estate sales, competition from other prospective tenants, etc. Compared to debt financing, leasing decreases risk by decreasing the firm's leverage, but it may also be risk increasing in terms of added uncertainty about long term access and control of resources. Operators' attitudes toward these different risks are thus important in the decision to lease or buy farmland.

Farmland leasing has long been prominent in U.S. agriculture. In 1935, 42 percent of U.S. farm operators were tenants (meaning that they only operated land rented from other owners), and 44 percent of U.S. farmland was operated under lease arrangements (table 4). The proportion of tenant operators dropped continuously until the mid-1970s, reaching a low of 11 percent of U.S. operators in 1974. In 1982, 12 percent of U.S. farm operators were full tenants, and 41 percent of U.S. land in farms was operated by leaseholders. The total amount of land rented has increased slowly since 1950.

While the proportion of full tenants in U.S. agriculture has dropped since the 1930s, part owners (those operating some owned land and some rented land) have increased dramatically both as a proportion of total farm operators and in the fraction of total land controlled. By the 1980s, part owners made up approximately 30 percent of all operators and accounted for over 55 percent of all farmland operated. Since the mid-1950s, more leased farmland has been operated by part owners than by full tenants.

Leasing Machinery, Equipment, and Other Inputs

Machinery, equipment and other depreciable assets are generally leased under one of two types of arrangements. Operating leases provide short-term rental of an asset to an individual farmer at an agreed-upon hourly, daily, or other periodic rate. Equipment or other items rented on operating leases are typically used by a large number of operators over the asset's useful life.

^{3/} Financial risk defined as those risks associated with the acquisition of the farm's fixed resources or assets, as distinct from the business risk associated with the annual operating income from these resources.

Table 4-- Proportion of U.S. Farms and Farm Acreage Operated by Tenure Class, 1935-1982

Farms by Tenure				Operated Land by Tenure				Total
Year:	Full Owner	Part Owner	Tenants	Full Owners	Part Owners	owned	rented	total
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Lessees acquiring equipment under operating leases may or may not be required to pay maintenance, insurance, and personal property tax costs, depending on the terms of the agreement.

Financial leases, on the other hand, are long-term contracts in which the farm operator obtains use rights for most if not all of the useful life of the asset and is responsible for all maintenance and insurance costs. The financial lease is similar to a 100 percent credit-financed purchase, except the lessor retains ownership of the asset. Commercial leasing companies, equipment manufacturers, and financial institutions all may provide financial leasing of assets used in agricultural production. Farm machinery is the asset most commonly rented under financial leases, but leasing of dairy cattle also attracted attention in the early 1980s.

Leasing machinery offers farm operators advantages similar to those of renting farmland. First, the farmer is able to acquire use of the asset without making a sizable outlay of (internal) equity capital as a down payment. A second advantage of machinery leasing relates to the treatment of lease payments as a deductible expense for Federal income tax purposes. By deducting the entire lease payment as an expense, rather than just interest and allowable depreciation, farmers may reduce their income tax liabilities and increase their cash income. Under certain circumstances investment tax credits may be "passed through" from the lessor to the lessee, providing additional advantages.

The third advantage of long-term leasing over debt-financed purchases is that the cost of capital remains fixed over the life of the leasing agreement. This may be particularly important during periods of rising or fluctuating market interest rates, when the use of variable-rate loans to

finance asset purchases would expose farmers to considerable financial risk. If a purchase option is specified in the initial lease agreement, then the farmer has also obtained a hedge against rising asset costs. The combination of reduced leverage, improved liquidity, and stable capital costs offered by machinery leasing makes it an effective strategy for managing financial risk in agriculture.

Leasing also holds disadvantages for farm operators. Since leasing typically involves new machinery, lease payments may exceed carrying costs of financing the purchase of older machines. This is particularly true for seasonal equipment. Also, any residual value of the asset, which may be considerable, belongs to the lessor. The income tax advantages of leasing must also be weighed against those associated with ownership (Davenport, *et. al.*). Purchasers of farm equipment may deduct interest and accelerated depreciation and claim investment tax credits for Federal income tax purposes. The farm operator's income tax exposure, and thus the value of the tax-shielding features of ownership (particularly the investment tax credit), would weigh heavily in the decision to buy or lease. Generally speaking, the higher the farmer's marginal tax rate, the higher the cost of debt financing, or the lower the salvage value of the asset under consideration, the more attractive leasing will be.

Custom Harvesting and Other Hired Services

Farm operators can also obtain the use of some resources through the hiring of custom services such as crop harvesting, trucking, or fertilizer or herbicide application. Custom hiring is particularly attractive for operators of smaller farms or those in need of highly specialized or intensive machinery services of limited duration. Under custom service arrangements, both machinery and operator labor are hired to perform a particular task at a specified time. Operators generally hire custom crop services at rates based on a set per acre charge, although custom harvesting and hauling rates generally include a base price per acre plus extra charges for above-average yields and excess mileage to storage or market.

The extent to which custom field services are used varies by both crop and region. For example, recent survey data indicate that the percentage of the corn crop custom harvested varies from 8 percent in Illinois and Indiana to as high as 48 percent on irrigated land in Texas. Oats, on the other hand, is a secondary crop enterprise on many farms, and a very high proportion of the Corn Belt oats acreage is custom harvested. Overall, custom harvesting of cash grains is most extensive in the Plains states, (for wheat), and in Arizona and California.

Hiring custom field services offers farm operators several potential advantages. It allows machinery services to be obtained when they are needed and the precise amount required. Cash costs are frequently much lower for custom services than for machinery purchase or long term financial leasing, and use of custom services can thus improve the farm firm's cash flow and conserve liquidity.

The chief disadvantages of custom field services relate to the farm operator's loss of direct control over when and how field operations will be

performed. Particularly in the case of operations for which timeliness is critical, such as harvesting small grains, farmers may find themselves competing with a number of others for the services of a limited number of custom operators at a critical point in the season. Use of custom services may thus increase farm operators' business risk even as it reduces their financial risk.

SUMMARY AND RESEARCH IMPLICATIONS

The early 1980s saw a substantial shift in the economic and financial environment surrounding the operation of the farm firm. Major financial variables appear to be moving toward new equilibrium levels, but at the same time this equilibrium is becoming much more unstable than in earlier times. These changes have markedly increased the financial risk facing U.S. farmers.

Adjustment in Financial and Ownership Structure

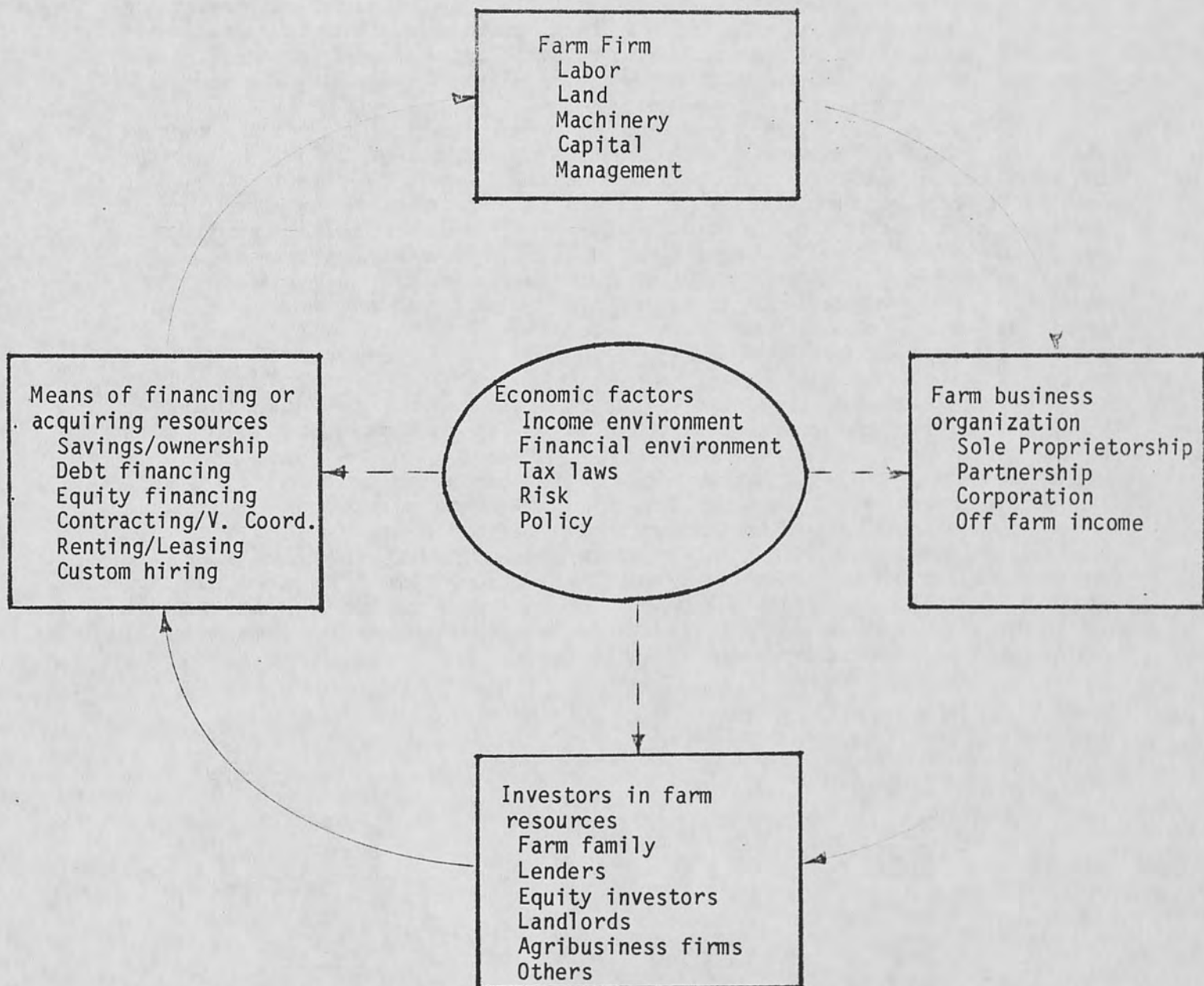
In response to these changes, the U.S. farm sector appears to be slowly adjusting toward a new organizational and financial structure to deal with the new environment. Figure 3 schematically pictures this adjustment process. Key economic and financial factors are shown at the center, and the farm firm is represented at the top. Three types of adjustments are occurring: (a) adjustments in the organizational form of the farm business, (b) adjustments in the entities making investments or providing capital to farming, and (c) adjustments in the means farmers are using to finance or otherwise acquire resources. These adjustments are interrelated in a complex (and not well understood) manner, as suggested by the circularity shown in figure 3.

Generally, the adjustment is away from the traditional sole proprietorship, savings financed ownership structure that has been traditional to U.S. family farming. There has been a marked decline in the sole proprietorship business form, particularly for commercial farms; these are being replaced by partnership arrangements and family-held corporations. There has also been a great increase in the diversification and liquidity provided by off-farm income. At the same time investors outside the farm family are becoming more important, often accompanied by nontraditional arrangements to share equity, risk, and management in the farm. Debt financing and leverage are declining as the principal means to finance or otherwise acquire the resources necessary for the farm production process, while leasing and outside equity financing are growing in importance. As a general statement, these changes appear to represent the slow but steady emergence of a more "industrial" type of business organization and financial structure in the U.S. farm sector.

Questions and Research Implications

Many of the assertions in this paper are presented as hypotheses to be investigated in future research. This approach is due partly to the preliminary nature of the work, but mostly to limitations of the present data

Figure 3--Circularity of Means of Acquiring Resources,
Farm Business Organization and Investment in
Agriculture



and the lack of a basic theory of finance, organization, and risk bearing in agriculture.

While U.S. farmers are gradually converting their businesses from sole proprietorships to family corporations, the causes for this adjustment are many and varied and evidence of its relation to financial structure is mostly circumstantial. Unfortunately many changes in the financial environment facing farmers--including high real interest rates, falling asset values, and increased volatility in credit markets--have become much more pronounced since the 1982 Census of Agriculture provided data on organizational forms. Little statistical evidence is now available to show conclusively that recent changes in the financial environment have resulted in increased changes in the form of business organization, or that changes in financial structure are associated with changes in the form of business organization. Nevertheless, the preceding discussion and Figure 3 suggest some likely hypotheses.

Data limitations present barriers to a quick appraisal of the present situation. Present balance sheet statistics do not categorize equity capital by internal and external sources (Simunek and Evans). Available data sets provide no cross-classification of balance sheet statistics and the form of business organization in the farm sector. Information on the magnitude of equipment leases and the proportion of funds provided by outside equity financing are now lacking. USDA's farm sector income and balance sheet statistics do not reflect the services or obligations associated with financial leases (Penson and Duncan, p. 88). Both data and research are needed to reduce such limitations.

A final need is for risk research, particularly to understand the management of financial risk as broadly defined in this paper. To date, most of the theoretical foundation and empirical risk research has been concerned with short-term business (income) risk. References to managing financial risks are found in the general business management literature, but little application of this theory to farming businesses has been made. As a result, the suggestions about financial risk management found in this paper are conjectural and await further conceptualization, empirical testing and modeling. Methodology in this area is rapidly evolving, but at the same time is in its infancy; an incredibly complex and challenging research area is being identified in the process.

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