The Michigan Farm Credit Panel: A History of Capital Accumulation
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The Michigan Farm Credit Panel:

A History of Capital Accumulation

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THE MICHIGAN FARM CREDIT PANEL was established on January 1, 1961 to provide a continuing source of information on the use of credit and the financial conditions of Michigan farmers. The farmers in the Panel were selected from the MSU Mail-In Farm Account and Family Living Project on the basis of their willingness to provide credit and other financial information.

This report is the fourth in a series presenting results from the Michigan Farm Credit Panel. Earlier reports dealt with loans to farmers, their credit experience in purchasing land, and income and expense flows on farms.[2]

The purpose of this report is to present a history of the capital accumulation processes on these farms. It describes how these farmers became established

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[2] Wirth, M. E. and J. R. Brake (1961). The Michigan farm credit panel: loans to farmers. Mich. Agr. Expt. Sta. Quart. Bul. 45: 461-469.
Cotner, M. L., M. E. Wirth and J. R. Brake (1961). The Michigan farm credit panel: experience in purchasing land. Mich. Agr. Expt. Sta. Quart. Bul. 45: 634-645.
Wirth, M. E. and J. R. Brake (1961). The Michigan farm credit panel: cash flows and use of credit. Mich. Agr. Expt. Sta. Res. Rep. 8.

in farming and how much capital they owned and controlled at the time they started. The report includes information on the means these farmers used to increase their capital resource base over time. Finally, we present a picture of the capital situation as it was in 1961 when the information was gathered.

Information for this report was obtained by interviewing 110 farmers during the summer of 1961.[3] On the average, this sample of farmers tended to be younger than commercial Michigan farmers. They also tended to have a slightly larger than average farm. Dairying was the predominant enterprise.

The interviews served to supplement the monthly mail-in information obtained on income, expenses and credit. The survey questions concerned when they started farming, the resources they had when they started, how they got the capital to start farming, investments they had made since starting, the value of their assets at the time of the interview, and other related items. Because the information presented in this report, in some cases, covers a period of over 20 years, it is subject to some memory bias. We feel, however, that the results are useful in illustrating the process of capital accumulation and in indicating problems and relationships of a general nature.

Another point to keep in mind concerns the focus of this study. Selecting a group of farmers who *were* farming in 1961 and asking how they came to their present position is somewhat different than selecting a group at a point in time and following their progress thereafter. For one thing, this study has nothing to say about drop-outs or factors affecting drop-outs from farming. For another thing, these farmers who were interviewed in 1961 had not all started farming at the same time. Some of them started prior to 1930 while others had started as recently as the 1950's.

STAGES IN FARM CAPITAL GROWTH

In general, the organizational purpose of any firm, whether it is a farm, manufacturing firm, a service firm or any other, is to produce an income. But in order to produce an income, it is necessary for the farm or firm to control a quantity of resources or capital. While the value of the capital necessary for a specific type of business venture may be large or small relative to other types, each will require some amount of capital to produce a satisfactory income stream. Farming generally requires a larger capital base to produce a given income stream than many other types of business. For that reason, the process of capital accumulation in farming is of great importance.

A prospective farmer will generally pass through several stages in acquiring and building his farm capital. Garoian and Haseley characterize these stages as: (a) establishment, (b) expansion, and (c) consolidation.[4]

In the establishment stage, the farmer decides whether to farm or to go into some other occupation. Here, alternative earnings possibilities are important. If he chooses to farm, he will need sufficient capital to start on a large enough farm to produce a satisfactory income stream. One crucial aspect of that choice is whether he has or can obtain control of the resources he will need to start farming. Any given farm operator may obtain the use of capital by one or more of several means: inheritance or other family help, renting, credit, or savings from income. Of course, inheritance or family help in getting started may also be a prime reason for deciding to farm.

Once the decision to farm is made, he must decide what type of farming and scale of operations he will undertake. At this time, long-range objectives are established and the general policies to be followed in the farm business are set.

Exactly where the establishment stage ends is difficult to pinpoint. Where it ends or how long it takes to move through this stage is related to the decisions being made and the characteristics of the farm unit rather than to any particular time interval. One farmer may pass through the decisions of the establishment stage in a short period of time — perhaps a year or less. Another may spend many years deciding whether to start farming, obtaining equity capital to start, deciding which enterprises to emphasize, and actually beginning.

After the farmer is established, he enters into the expansion stage. Emphasis shifts to competitive efficiency, expanding sales and reducing unit costs. The productive capacity of the farm increases, often by the addition of more acreage — either owned or rented — more livestock, and increased investment in machinery, equipment and facilities. Increased profits become a major objective. At this point there is often a substantial need for capital to expand the business. Part of this need is met by credit, but a large part comes from earnings which are reinvested in the business. Even so, sometimes the growth and expansion of the farm business are restricted because there is simply not enough capital available from earnings of the business to take advantage of profitable opportunities.

The expansion stage can also be viewed as one in which net worth is increased very rapidly. During

[3] Earlier reports were based on fewer panel members because certain key data were not available for the particular purposes of those reports.

[4] Garoian, Leon and Arnold F. Haseley (1963). The board of directors in agricultural marketing business. Coop. Ext. Service. Oregon St. Univ., Corvallis. pp. 90-92.

this stage inventories are increased and equipment and livestock numbers are added to the business. These increases are likely to demand heavy use of short-intermediate term credit. This, in turn, will require a rapid rate of forced savings as debts are repaid. As a result, net worth will increase relatively fast.

After achieving some amount of growth, increased efficiency in operations, and a satisfactory level of income, a farmer typically moves into the third stage in which he consolidates his gains. Emphasis is inclined to shift toward maintaining and stabilizing rather than increasing income. It becomes more important to the farmer to maintain his position year after year rather than to rapidly increase his size of business. While it may still be necessary to continue growth in order to maintain a satisfactory income, security is more the goal than growth. This stage is also characterized by the farmer increasing his equity in the business as debts are repaid.

Again, it is difficult to define the exact point where stage II ends and stage III begins. The change is not abrupt. But gradually the farmer begins to exhibit the characteristics of the consolidation stage: fewer management headaches, less worry about the survival of the business, and less strain in meeting debt commitments to name only a few. As we conceive the stages, the consolidation stage should not necessarily be associated with older farmers who are approaching retirement. This disinvestment or withdrawal of older farmers could well be considered a fourth stage.

Many factors affect the decision to start farming and the capital accumulation process. Motivations, personal preferences, economic conditions, technological conditions, the point in the life cycle at which a family begins to farm and many others could be named. And of course, the conditions which affect one group starting at a given point in time may differ from the conditions that influence another group of farmers starting at a different time.

Because of these differences in conditions and the differences in the ages of the farmers in this study, we have divided panel members into four groups depending upon when they started farming. The grouping attempted to take into consideration in particular the economic, technological and life cycle circumstances of these farmers. The divisions are listed in Table 1. Group I started farming before the start of World War II. Most of these farmers either experienced the depression of the 30's or began farming soon after the depression. These farmers started when animals were still a major source of power on farms. Group II started during or immediately after the war when agricultural prices were generally favorable and when the shift to mechanical power was being completed. Group III started from 1949 to 1954 — a period when agricultural prices were generally declining except for the Korean conflict. By the time this group started, farm technology was changing rapidly. Group IV started most recently in a period of continued low agricultural product prices, increasing land values and generally rapid technological change.

Table 1. Years Started Farming and Percentage of Farmers by Starting Group.

Group	Started within years	Average year started	Percent in group
I	1916-1940	1934	27
II	1941-1948	1945	36
III	1949-1954	1951	22
IV	1955-1959	1957	15
Total	1916-1959	1945	100

THE ESTABLISHMENT STAGE

Most farmers were raised on a farm. Only 9 percent of the operators were not raised on a farm. And of those, half had wives who were raised on a farm. So actually, 95 percent of the families had some kind of previous tie with farming before starting farming themselves. Of the wives, 65 percent had been raised on a farm. So while most farm operators married farm girls, about 1 of 3 wives had nonfarm backgrounds. There were few differences among the four groups in this respect. Each group had at least one farmer who did not have a farm background. Yet each group contained primarily farmers with a farm background. Evidently previous experience on a farm is of great importance in deciding to farm.

Working on the family farm was an important means of getting capital to start farming. Each farmer was asked how he accumulated the owned capital that he used to start farming. The responses are shown in Table 2. Fifty-seven percent used working on the family farm as a means of acquiring starting capital. Data were not available to indicate to what extent this help included other than wages. Undoubtedly, there were cases where this start on the

Table 2. Means of Obtaining Equity Capital to Start Farming by Starting Group (a).

Group	Worked on family farm	Hired farm worker	Non-farm job	Gift or inheritance	No answer
		- - - Percent - - -			
I	70	13	33	13	7
II	45	15	35	15	8
III	62	4	46	4	—
IV	56	—	44	18	—
Total	57	10	38	13	5

(a) Some operators listed more than one means of obtaining equity capital; therefore, percentages do not add to 100.

family farm included an opportunity to start building a herd of livestock and accumulate some machinery as well as an opportunity to save from wages and gain experience. A few operators from each group got their start from inheritance or by taking over the family farm after retirement or death of the operator.

Nonfarm jobs were the second most used means of obtaining funds to farm. This means was used by 38 percent of the operators, and it appears to have been important to each of the four groups. No information was obtained on the kinds of nonfarm jobs held.

Working as a hired hand on a farm was apparently less important for groups III and IV than for the first two groups. Of course, this trend toward fewer farmers getting started by working as hired hands is evident from other studies as well.

The importance of help from family and relatives was evident in terms of value. Table 3 summarizes the estimated dollar value of help from family and relatives. The values in the table undoubtedly underestimate the financial help received for the sample as a whole since complete information was not available from all the respondents. These averages include gifts of land or property, family credit in excess of conventional arrangements, or the amount by which a purchase price from a relative was below the market price of the real estate. About 35 percent of the panel farmers received an average of nearly $5,300 in family assistance in getting established. The data indicate that the percentage who received family help has declined. But we probably should *not* conclude that a smaller proportion of farmers is starting with family assistance since the sample size in each group is relatively small. In fact, with the larger capital base needed for farming today, an increased need for family help would seem more plausible.

Table 3. Number Receiving and Average Value of Financial Assistance from Family in Getting Started Farming (a).

Group	Percent receiving assistance	Average value of assistance for those receiving assistance
I	53	4,841
II	35	4,164
III	25	5,094
IV	19	13,337
Total	35	5,290

(a) Figures are taken from the questionnaire **only** where family help was apparent. Hence all family financial help is probably not included. Figures include gifts of property, the net difference in sales of property at prices below market value, and net amounts of credit from family members in excess of usual institutional limits.

Resources With Which Panel Farmers Started

The size of farm on which panel members started farming and the tenure arrangements are shown in Table 4. In each group about half the panel members rented real estate in whole or in part. For the total group, 42 percent started farming as full renters.

Table 4. Size of Farm in Acres and Tenure at Time of Starting Farming by Starting Group (a).

	Full Owners		Part Owners		Renters		All
Group	Percent	Avg. acreage	Percent	Avg. acreage	Percent	Avg. acreage	Avg. acreage
I	57	133	—	—	43	183	155
II	50	124	12	197	38	137	138
III	50	139	8	184	42	239	184
IV	50	203	—	—	50	243	223
Total	52	141	6	193	42	191	165

(a) Chi square analysis comparing starting farm size for owners and renters was significant at the 1 percent level.

For the group as a whole, renters started farming in control of larger real estate holdings than did owners.[5] Apparently some farmers considered it advantageous to increase the assets under their control by renting land. But this may also have slowed down farm development in some instances by introducing uncertainties concerning future farm operations. The choice was whether capital could be used more effectively by purchasing land or by investing in livestock and machinery.

Real estate ownership was an objective of these farmers. As mentioned earlier, one of the characteristics of the establishment stage is the setting of long-term objectives. While we have no way of knowing the detailed goals of these farmers, their actions over time may suggest some of their goals. Comparing the tenure status of these farmers at the time they started farming and in 1961 suggests that real estate ownership was an important objective for them. By 1961, most of those farmers who started as full renters had acquired ownership of real estate although, as would be expected, those starting most recently had made the least headway toward this end as shown in Table 5. However, many of these

Table 5. Tenure of Sample Farmers When They Started Farming and in 1961 by Starting Group.

	When Started				1961			
Group	Full owners	Part owners	Full renters	Total	Full owners	Part owners	Full renters	Total
			- - - Percent - - -					
I	57	—	43	100	67	33	—	100
II	50	12	38	100	60	35	5	100
III	50	8	42	100	54	42	4	100
IV	50	—	50	100	37	25	38	100
Total	52	6	42	100	57	35	8	100

[5] Chi square analysis of owners and renters related to farm size was significant at the 1 percent level.

farmers continued to rent additional acreage so that the number of part owners increased over time more than did the number of full owners.

Asset ownership at the time of starting to farm has been higher for each succeeding group. Table 6 shows that the farmers who started prior to 1941 averaged about $6,200 of assets when they started. The second group averaged about $12,500 of assets when they started. The third group began with over $17,000 of assets. And the group starting most recently began farming with over $20,000 of assets. This increase in asset ownership of starting farmers is even more evident when we look at the average value of real estate for those who started as owners. The first group had about $5,800 invested in real estate for each real estate owner while the group starting most recently had over $17,000 invested in real estate per real estate owner.

Table 6. Average Net Worth Statements at the Time of Starting Farming by Starting Group (a).

Item	Starting Group I	II	III	IV	Total
Farm real estate	$ 3,315	$ 5,233	$ 7,271	$ 8,656	$ 5,652
Livestock	952	2,036	1,991	3,671	1,968
Machinery-equipment	601	1,846	3,124	2,783	1,922
Feed-supplies	541	1,249	1,356	1,320	1,090
Total farm assets	5,409	10,364	13,742	16,430	10,632
Cash on hand	300	1,162	866	1,591	925
Other non-farm assets	520	954	2,511	2,132	1,346
Total non-farm assets	820	2,116	3,377	3,723	2,271
Total all assets	6,229	12,480	17,119	20,153	12,903
Real estate debt	1,297	3,079	4,125	6,031	3,251
Non-real estate debt	89	733	1,799	4,528	1,342
Total debts	1,386	3,812	5,924	10,559	4,593
Net worth	4,843	8,668	11,195	9,594	8,310
Debt-asset ratio	.22	.31	.35	.52	.36

(a) Average farm real estate for those **who owned** real estate was $5,851, $8,372, $12,464, $17,312 and $9,715, respectively, for the five columns in the table. Average real estate debt for those **who owned** real estate was $2,260, $4,926, $7,071, $12,062, and $5,587, respectively, for the five columns in the table.

The most important reason for the increase in beginning assets is increasing capital needs which are particularly affected by increasing farm real estate prices. Numbers of livestock per farm and machinery investment per farm have increased tremendously since the 1930's. Similarly the average size of farm has increased in Michigan by 40 percent from 1935 to 1961. And from 1935 to 1961, the average value per acre for land and buildings has increased in Michigan from about $43 per acre to about $196 per acre.[6]

Group IV farmers' beginning debts, both real estate and non-real estate were far higher than those for the other three groups. Group IV farmers' real estate debts averaged nearly five times as much as beginning real estate debts of group I. Non-real estate debts of group IV were about 50 times as large as those of group I, the oldest group in point of time farmed. Group IV began farming with about seven times as much total debt as group I. Yet group IV's average beginning net worth was only about double that of group I.

Non-real estate debt has become larger for the beginning farmer in recent years. Looking at the debts at the time these farmers started, two trends are noticeable. First is the trend toward larger debt at the time of starting for those who started more recently as mentioned above. Second is the trend for non-real estate debt to become relatively more important in the overall debt picture. Non-real estate debt was only 6 percent of the total debt for farmers who started prior to World War II (group I). But for those farmers who started after 1954 (group IV), non-real estate debt amounted to over 42 percent of total debt.

Unlike the more established farmers in the first three groups, group IV farmers evidently could not utilize "make-do", used, or other low cost of acquisition machinery to meet their needs. Apparently they felt they had to keep up with changing technology by direct immediate purchases to a greater extent than those in other groups. This may have been an important reason why this group started with a higher proportion of full renters than other groups. Data from other studies also show that requirements for non-real estate capital, and hence, non-real estate credit have increased substantially over the past several decades. But one of the big problems that this creates is the difficulty of meeting the relatively rapid repayment of non-real estate credit compared to longer term real estate credit.

Starting debt to value ratio for farm real estate was larger for each succeeding group. The average value of real estate for *those owning* real estate at time of starting and the debt on that real estate also shows differences among groups. While average real estate values increased from about $5,800 for the first group of panel members to over $17,000 for the group starting most recently, real estate debt increased even more. The first group borrowed 39 percent of the value of their real estate in getting started. Groups II and III borrowed 59 percent and 57 percent respectively, of the value of their starting real estate. But group IV borrowed 70 percent of the value of their owned real estate.[7]

[6] Michigan Agricultural Statistics (May 1964). Mich. Dept. Agr. Lansing. pp. 9 and 48.

[7] This high debt to asset ratio on real estate was **not** a result of one or two observations with unusually large debts. In fact, 62 percent of the farmers in group IV started farming with **total** debts greater than 50 percent of **total** asset values.

This latter figure comes close to or exceeds some loan ratio limits under conventional financing. If this is a trend for farmers getting established, it suggests that conventional financing may not meet the needs of starting farmers in the not too distant future. Or, purchase by land contract will become increasingly important as a means for starting farmers to become established.[8]

Credit and renting were the most used means of acquiring control of additional capital in the establishment stage. Table 7 shows that 73 percent of these farmers used credit when starting to farm. While most of those using credit utilized institutional sources, about 2 in 7 obtained credit from relatives. The figures in the table also suggest that a higher proportion of those farmers who started in the 1950's used credit than of the groups starting prior to 1949. Nearly half of the farmers rented in land as a means of getting control of more capital. About 16 percent received some capital at time of starting by gifts and inheritances.

EXPANSION AND CONSOLIDATION STAGES

Up to this point the discussion has primarily centered on getting established. Next, let's turn to the expansion stage to see how capital was obtained to enlarge and improve the farm business.

Credit was used as a means of obtaining capital for expansion by virtually all farmers. Table 7 shows that 95 percent used credit after starting. All farmers in groups III and IV used credit after starting. Renting additional land was again the second most used means of expansion in capital base with nearly 3 in 5 farmers using this means. More received gifts and inheritances after starting than at the time of start. And of course, while gifts and inheritances may be helpful in individual cases, their timing is not necessarily sensitive to the operator's time of greatest need. As might be expected, this source was relatively more important for the older farmers since more years of their life cycle (and later years) are included in the study interval.

Off-farm work was more important as a source of capital after starting farming than at the time of start. While only 13 percent of these farmers had income from off-farm work at the time they were starting farming, 46 percent obtained income from this source at some time after becoming established. About twice as many farmers received income from off-farm work from the operator working off the farm as from the wife working off-farm.

The variety of means of acquiring the use of capital is evident from the table. While credit was most important in terms of the number using it, renting, family help and off-farm income also were used by large numbers of farmers to obtain or to add capital to the business. We should remember, too, that all farmers added capital to the business in the form of savings from their farm earnings.

In order to look at some of the aspects of the expansion and consolidation stages of growth, it is useful to compare the farm situations at the start of 1961 with the situation at the time they started. By the time the farm interviews were obtained in 1961, substantial changes had taken place on the

[8] For further information on this point, see the bulletin by Cotner, Wirth, and Brake, cited in footnote 2.

Table 7. Sources of Capital Used to Start Farming and After Starting Farming by Starting Group (a).

When used	Group	Sources of Capital: Credit: From relatives	Credit: From others	Credit: Total credit	Renting	Gift or Inheritance	Off-farm work: Operator	Off-farm work: Wife	Off-farm work: Total off-farm	Total obtaining some capital from relatives
		(Percent using each source)								
When Starting	I	17	47	63	47	17	—	3	3	30
	II	22	48	62	50	22	8	2	10	35
	III	8	88	88	50	8	25	—	25	17
	IV	44	62	94	50	12	6	13	19	56
	Total	21	58	73	49	16	9	4	13	33
After Starting	I	23	83	87	50	43	40	20	43	57
	II	18	90	95	60	22	38	20	50	38
	III	8	100	100	67	12	38	12	46	17
	IV	38	88	100	56	12	25	19	44	50
	Total	20	90	95	58	25	36	18	46	40
At Some Time	I	30	87	90	60	57	40	20	43	70
	II	32	95	100	62	40	38	20	50	58
	III	17	100	100	75	17	42	12	50	29
	IV	56	88	100	56	25	25	25	50	75
	Total	32	93	97	64	37	37	19	48	57

(a) Not including operator's equity capital at time of starting.

farms of panel members. We should keep in mind, however, that the four groups had not had the same amount of time for growth. On the average, group I had been farming about 26 years; group II, 15 years; group III, 9 years; and group IV, only 3 years. Hence, we should not expect the groups to be comparable in terms of growth because each was at a different point in its business and family life cycle in 1961. Just the same, there are some things we can learn about the life cycle of the farm business from their situation in 1961.

Each group increased its size of farm between the time it started and 1961. From Table 8, we see that a large part of the increase in farm size came from purchasing additional land. In fact, purchases of additional land were large enough that total acreage under the control of these farmers increased even though rented acreage decreased for each group. Interestingly enough, group IV began farming with the largest owned, rented and total acreage of any group. But by 1961, this group had not had enough time to expand its owned acreage as much as the other groups. Owned acreage for the four groups was quite closely related to the years in farming. Two factors could help to explain this. First, those who had been farming the shortest time had not accumulated enough financial capacity to invest more in real estate by 1961. As some of their short-term obligations are retired and when their present real estate debt is reduced, they probably will increase their investments in real estate. Second, in the few years since group III and particularly group IV began farming, there may have been few opportunities to buy adjacent farm land. In future years, such opportunities will arise, and we would expect many of those who started to farm most recently to add to their owned acreage.

Table 8. Average Size of Farm in Acres for Year Started and for 1961 by Starting Group.

Group	Year Started			1961		
	Owned	Rented	Total	Owned	Rented	Total
			(Acres)			
I	76	79	155	175	46	221
II	70	68	138	165	65	230
III	56	128	184	152	53	205
IV	89	134	223	124	118	242
Total	71	94	165	159	64	223

The value of owned real estate in 1961 was accumulated by several means as shown in Table 9. The original cost of each group's 1961 owned real estate was the largest single component of current value. Undepreciated value of investments in buildings and improvements was the next largest contributor to the current value of real estate, and this item was related to the starting group. As might be expected,

Table 9. Components of Change in the Value of Real Estate Since Purchase to Jan. 1, 1961 by Starting Group (a).

Item	Starting Group				
	I	II	III	IV	Total
Cost of 1961 owned real estate	$10,520	$15,655	$19,352	$11,866	$14,510
Average credit used in purchasing (b)	(7,872)	(12,673)	(15,041)	(11,219)	(11,669)
Gifts & inheritances of real estate	2,718	1,855	938	1,688	1,866
Book value of improvements and buildings added since purchase of real estate	9,267	8,624	6,783	1,747	7,397
Average credit used on this investment	(3,037)	(5,032)	(4,979)	(570)	(4,046)
Capital appreciation on present real estate	8,786	8,093	3,328	637	6,157
Value of owned real estate in 1961	31,291	34,227	30,401	15,938	29,930

(a) Present real estate should not be confused with beginning real estate. A number of panel members sold part or all of the farms on which they started and purchased different farms. For example, some of the present real estate of starting group I could have been purchased in the 1950's.

(b) Average credit use refers to the amount of credit used at one time or another in purchasing the real estate. It does **not** mean that the amount shown was outstanding all at the same time. Later additions of real estate to a farm unit may be financed completely or nearly completely on credit by using previously acquired real estate as additional security.

those starting most recently had the lowest value investment in buildings and improvements. The increase in market value of real estate (capital appreciation) also stood out as an important component of present value. It, too, was closely related to starting groups. Gifts and inheritances of real estate, while they may be important for particular individuals, were relatively unimportant for the group as a whole.

Net worth in 1961 was quite closely related to time of starting farming. Total assets of starting groups I-III were about the same in 1961 as shown in Table 10, but total assets for group IV were only two-thirds as much. On the other hand, debt was inversely re-

Table 10. Average Net Worth Statements, Jan. 1, 1961, by Starting Groups (a).

Item	Starting Group				
	I	II	III	IV	Total
Farm real estate	$31,291	$34,227	$30,401	$15,938	$29,931
Livestock	8,352	9,154	9,720	7,880	8,874
Machinery-equipment	8,036	9,337	9,580	7,005	8,696
Feed-supplies	3,571	3,840	5,284	3,278	4,000
Total farm assets	51,250	56,558	54,985	34,101	51,501
Cash on hand	5,144	5,808	2,820	2,610	4,510
Other non-farm assets	5,092	4,782	6,480	3,495	5,050
Total non-farm assets	10,236	10,590	9,300	6,105	9,560
Total assets	61,486	67,148	64,285	40,206	61,061
Real estate debt	5,761	10,360	14,334	9,488	9,846
Non-real estate debt	4,183	8,060	6,886	9,412	6,943
Total debts	9,944	18,420	21,220	18,900	16,789
Net worth	51,542	48,728	43,065	21,306	44,272
Debt-asset ratio	.16	.27	.33	.47	.27

(a) Average farm real estate for those **who owned** real estate was $31,291, $36,028, $31,273, $25,500 and $32,598, respectively, for the five columns in the table. Average real estate debt for those **who owned** real estate was $5,761, $10,904, $14,957, $15,181 and $10,723 respectively, for the five columns in the table.

lated to the time in farming. As a result, debt as a percentage of total assets was 16 percent, 27 percent and 33 percent for groups I-III respectively. The fourth group, with but three years of farming behind them, had a relatively high debt-asset ratio of 47 percent.

It is often the case that in the expansion stage of growth, the farmer must commit a large proportion of his income to the payment of debts. Group IV exhibits a high proportion of non-real estate debts which represent an important claim against the income of the next few years. With this fairly large debt commitment and a high debt to asset ratio, group IV may well be in a "belt tightening" situation with respect to further expansion for a few years ahead.

Another interesting aspect of these net worth statements is the relative importance of non-real estate debt. As we pointed out above, the groups starting more recently had a larger amount of non-real estate debt at the time they started. However, by 1961 all four groups had a relatively high proportion of their total debt in the form of non-real estate commitments. Since non-real estate debt is used typically for operating expenses, livestock purchases and machinery and equipment investment, this high short term debt may be related to the rapid rate of technological advance and to the need for all groups to strive for higher producing livestock and up-to-date equipment.

A comparison of the net worth position of group IV with the other three groups in 1961 is of particular interest. While group IV started with a higher net worth than all other groups, by the start of 1961, it had less than half as much net worth as any other group. The reason for this seems to be that by 1961, group IV simply had not had enough time to get through the expansion stage. They were undergoing stresses of expansion as shown by the high debt-asset ratio, high short-term credit commitments, and low asset position relative to the other groups. At the same time, the other three groups more nearly exhibit the characteristics of the consolidation stage. Their debt-asset ratio is in the range of a sixth to a third; short-term debt load is smaller; and total assets have apparently stabilized at about $65,000.

Capital appreciation was an important part of the increase in net worth for some farmers. Of course, the amount of capital appreciation was directly related to the time period when they started as seen in Table 11. Group I had realized an average real estate capital appreciation of nearly $10,000 by 1960; for group II, it was about $9,000; and for group III, it was about $4,000. Group IV with only three years in farming had an average real estate capital appreciation of nearly $900. For both groups I and II, real estate capital appreciation contributed over one-fifth of the change in net worth. It was about 12 percent of the change in net worth of group III and about 7 percent for group IV.

Table 11. Components of Change in Net Worth by Starting Group.

Source of change in net worth	Starting Group I	II	III	IV	Total
Estimated real estate capital appreciation (a)	$ 9,824	$ 9,256	$ 4,002	$ 873	$ 7,046
Gifts, inheritances, etc. (non-real estate)	1,281	1,322	2,615	1,450	1,612
Gifts, inheritances, etc. (real estate)	2,718	1,855	938	1,688	1,866
Fire losses, livestock deaths, crop losses, etc.	(-)1,287	(-)816	(-)622	(-)166	(-)808
Other (savings, natural increase of livestock, etc.)	34,163	28,412	24,937	7,867	26,234
Total change in net worth	$46,699	$40,029	$31,870	$11,712	$35,950
Average years in farming	26	15	9	3	15
Average change in net worth per year	$ 1,796	$ 2,669	$ 3,541	$ 3,904	$ 2,397

(a) These figures include increases in real estate values as well as realized gain on earlier owned real estate which was sold. The estimate was based on the financial history given in the questionnaire. To the extent that respondents underestimated or overestimated market values on their property, the capital appreciation and net worth are similarly underestimated or overestimated.

Capital gains such as gifts and inheritances, and capital losses such as major livestock death losses or losses from fire were relatively unimportant for the sample as a whole. For the group which started first, the gains and losses about offset each other. For later starting groups, there was a small net capital gain.

The average change in net worth per year fits in well with the stages of growth we have used to describe the farm business. Group IV which is still in the expansionary stage has achieved the largest average increase in net worth — nearly $4,000 per year — for each year of farming. This is probably due at least in part to the high rate of forced savings associated with a large short-term debt. Group III which seems to exhibit characteristics of the consolidation stage has averaged about $3,500 increase in net worth per year. The other two groups who have been in the consolidation stage somewhat longer have averaged somewhat less per year increase in net worth.

Is there a typical life cycle of the farmer's business? There were many factors that influenced these farms which we were unable to measure or describe. But from the information available we can piece together a sketch of how the farm business grows.

Our results have suggested that, in deciding to farm, a farm background is of great importance. Second, some beginning equity is necessary before the farmer can actually get started, and this equity comes primarily from working on the family farm, or to a lesser extent, in an off-farm job. Some farmers get starting equity from gifts or inheritance but the

number is fairly small, although in value terms this help can be substantial.

Once the decision to farm is made, the farmer must become established with sufficient resources to "stick". To obtain these extra starting resources, credit was used by about 3 of 4 farmers. Renting extra land was another important means of acquiring control of capital. For about 1 of 3 farmers, extra resources were obtained from relatives through credit or gifts and inheritances.

Once established, the farmer moves into the expansion stage of growth. He attempts to increase his resource base — both real estate and non-real estate. To do so requires in nearly every case that he use credit. A large proportion also uses renting of extra land and nearly half obtain some capital from off-farm work. During this stage of expansion, the farmer's debt-asset ratio is high, indicating a somewhat insecure credit position. Short-term debt commitments are likely to be large relative to other debts, and the pressure to increase net worth, particularly through debt repayment, is extreme. As a result, the farmer is likely to make large increases in the first few years in his net worth position but he is also likely to own fewer assets than well established farmers (though he may control as many, or more, total assets by renting in).

Establishment and expansion may be closely intertwined. The establishment stage may include the acquisition of sufficient capital to become established in control of a relatively large bundle of resources. Indeed, there is evidence that those farmers starting most recently are becoming established in control of larger farms than did those who started earlier. This development suggests that those farmers starting most recently will have control of larger farm units at *all* stages in their life cycle than those of earlier starters. But the data of this study are not sufficient to shed light on that question.

After some number of years (perhaps 5 to 10) in the expansion stage, the farmer moves into the consolidation-of-gains stage. The transition of stages may be difficult to pinpoint exactly; but in the consolidation stage, debt commitments will be relatively less awesome, the debt-asset ratio will be substantially more favorable, and asset ownership is likely to be on a scale consistent with the resources needed in a "going concern" farming operation. Additional credit for farm enlargement, modernization or equipment may still be necessary from time to time, but the debt position will be more secure than in the expansion stage. While few of the farms will achieve a debt free situation after a number of years in the consolidation stage, many of the farmers will achieve full ownership and will no longer rent in land.

How is this typical life cycle affected by changes in technology, economic conditions, etc.? Again, we cannot be definitive about these factors, but there are some things that can be said. For one thing new technology, especially of a capital intensive type, will tend to require a larger capital investment to start as shown by group IV compared with the other groups. Also, new technology in the form of machinery, equipment and facilities will necessitate continuing investments by those farmers who are in the consolidation stage as they attempt to "keep up".

Certainly economic circumstances will affect the success of the farm business. And in looking at the typical life cycle, probably the most critical point is the expansion stage. In this expansion stage — particularly the early part — the farmer is probably most susceptible to adverse (or favorable) changes in economic conditions. Adverse prices or weather conditions could be sufficient to destroy the firm at this stage. Conversely, extremely favorable economic conditions at this stage can make a farmer look like a national champion farmer.

While adverse economic conditions also affect the farmer in the consolidation stage of growth, his position is more secure and he is much more able to "roll with the punch".

IMPLICATIONS

The purpose of this report was to present a sketch of the capital accumulation process on panel farms. The results are illustrative of the means which all farmers use, though perhaps to a greater or lesser degree, in building the resource base of their particular farm.

The importance of credit to the capital acquisition and capital accumulation process on farms cannot be emphasized too strongly. Of the total sample, 97 percent used credit of some sort at some time in their farm business. Credit from relatives was used by at least 27 percent of panel members, but the institutional sources were used even more. With such importance in the capital acquisition and accumulation process, it is exceedingly important that continuing attention be given to the terms and availability of credit to insure that credit needs of farmers are being met as satisfactorily as is economically feasible.

The figures also re-emphasized the trend toward the need for a larger resource base when starting to farm than in the past. This was true not only with respect to the value of real estate and the increasing size of farm at the start but also for other assets. The question then arises as to whether in the future

[9] See also Fred L. Garlock, "Our Younger Farmers — Their Status in Agriculture," **Agricultural Finance Review,** Farm Production Economics Division, ERS, USDA, August 1964, pp. 45-51.

conventional credit arrangements will permit a starting farmer to obtain enough assets to begin, or more importantly, to expand to a farm of sufficient size once started. The net worth statement in Table 10 for the fourth group suggests that the owned capital base of this group may be low because of their relatively high debt-asset ratio. Remember, too, that this fourth group, while starting with the highest asset position of all the starting groups, also started with the highest debt-asset ratio.

The findings suggested that rental of real estate is an important alternative for obtaining control of capital without the high investment of ownership. In fact, renters were able to start on larger farms than were owners. Certainly the rental route should be considered by a young man with a limited net worth as a means of getting control of a larger capital base than he could otherwise.

Off-farm work by the operator or wife was also an important means of obtaining capital *after* starting farming. Nearly half of the farmers or their wives worked off-farm at some time after becoming established.

The results indicated that working on the family farm was also important to the decision to farm as well as to obtaining a capital base to start. Over half of the panel members indicated they obtained a major share of the equity capital they used to start farming by working on the family farm. After becoming established on a farm, almost half of the panel farmers received help from the family in the form of (usually very favorable terms of) credit, gifts or inheritances. Undoubtedly, without this family help, many of the panel farmers could not have become established in farming or at least would have been less well established.

Finally, the data emphasized the critical nature of the expansion stage in growth. Group IV with three years in farming was quite representative of some of the problems of expansion. Their debt commitments and their debt-asset ratio were rather high. Asset ownership and net worth were relatively low. Yet it is typical of this expansion stage that there is great pressure to increase net worth, particularly from debt repayment, at a rapid rate. In view of these, it is not surprising that this stage in the farm business is often referred to as the "belt tightening" stage.

This publication is part of a new series called **Research Reports.** The publications are aimed at audiences such as farmers, home owners, industry people, etc. They will be designated by sub-groupings under the following audience classifications: (1) Farm Science, (2) Home and Family Living, (3) Business, (4) Natural Resources, (5) Development and Public Affairs and (6) Recreation and Tourism.

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