NO. 522. SEPTEMBER 1969 AGRICULTURAL EXTENSION SERVICE, UNIVERSITY OF MINNESOTA

Minnesota AGRICULTURAL ECONOMIST

Measuring and Evaluating Farm Growth

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Shrinking profit margins, the increased scale of operation necessary to benefit from technological advancements, and the desire for improved levels of family living are a few of the factors pressuring Minnesota farmers to expand their operating units. These pressures have intensified and are expected to continue in the near future.

The need to enlarge is clear. But there is a real danger that farmers and others serving agriculture may overlook a crucial element when selecting and implementing strategies to achieve enlargement. **Specifically, growth rate is not solely a prerogative of the farm operator; resulting economic and financial sanctions imposed by a growth strategy may go beyond those the operator initially takes into consideration.**

Although it is evident that farm units must maintain a certain growth level if operators are to achieve the goals they have set for themselves, it is not so clear what a certain level means or even what constitutes farm growth.

This article attempts to clarify the need for a careful consideration of the attributes by which we measure and evaluate farm growth. And it demonstrates that, although farm managers may be free to establish objectives and goals in accordance with their own value judgments, they cannot ignore the underlying economic forces within commercial agriculture. Over and above their personal objectives, they must recognize that the survival of their farm businesses demands attention to economic considerations when they select and implement growth strategies.

A forthcoming article will consider growth strategies in detail. It also will report more fully on a study underway to evaluate the effectiveness of various financial strategies in achieving specific goals.

WHAT IS FARM GROWTH?

Growth suggests an increase or expansion in some attribute (variable) over time. Growth rate refers to the speed at which the magnitude of this variable changes. Let us consider some attributes whose periodic measurement may provide a meaningful way of gaging the growth of a farm business.

Size of Operation

Perhaps the growth indicator that most readily comes to mind is **acreage farmed.** However, there is not complete agreement as to whether this measure should reflect all acres operated (controlled) or just those owned by the operator. Moreover, there are other measures of physical size that may serve equally well; e.g., **number of livestock units, all assets managed,** or **total resources owned.**

But, whereas each of the above provides some measure of growth in productive capacity, **gross sales** may even more correctly indicate the level of production actually attained. In any event, growth in farm size is a common goal among farm operators.

Economic Benefits

Another broad class of growth indicators centers around economic benefits. Even when farm operators' primary goals are not economically oriented, they generally do not completely ignore the profit motive. Rather, certain minimum levels of profit performance become constraints within which goals are sought.

Thus, in terms of economic benefits, **profit** is a likely indicator for measuring progress, although it is by no means the only yardstick. But the concept of profits is not well understood, and its various meanings continue to be confusing.

In the accounting sense, profit is the difference between periodic revenues and expenses. As such, it involves the allocation of certain acquisition costs and capital investment expenditures to a series of subsequent production periods in a somewhat arbitrary fashion. The concept of opportunity costs causes the term profits to take on a somewhat different meaning. From a financial viewpoint, net economic benefits may be partitioned into returns to the investment, ownership, and entrepreneurial aspects of the business enterprise. The contribution each makes to total operator benefit varies with the financial strategy undertaken. The strategy may influence the magnitude of total benefits as well.

Another type of economic benefit is the level of **family living** the farm business can support. Family consumption goals are closely associated with profit motives, but they are not the same. The former places heavy emphasis on current benefits in that income is withdrawn immediately for nonbusiness uses. Disinvestment through refinancing procedures, sale of assets, or funding via depreciation expenses can temporarily provide family living withdrawals. But extended maintenance of such withdrawals must be supported by equally high profit levels.

Ownership Base

Although increases in firm assets provide a useful measure of owned resources, net worth more correctly reflects the book value of the business and consequently the changes taking place in the ownership base. Net worth is **not** unrelated to profits and, therefore, can be considered a measure of economic benefits. However, growth in the ownership base also requires a favorable attitude toward deferred family spending and may stem from completely different goals or objectives.

Rapid growth in net worth demands that a high proportion of earnings be reinvested in the farm business. While profit goals can benefit from such an internal financing strategy, it may be wholly incompatible with an objective of a high family living level. Therefore, in the search for an appropriate strategy, we **must** take into consideration the goals and objectives of the firm.

To own a farm **debt free** has been the lifelong goal of many farmers. Striving to reduce outstanding debt and acquire a larger share of full ownership places emphasis on the absolute reduction of liabilities rather than on debt-asset ratios.

Obviously, goals of resource ownership, estate building, and/or a clear title to the farm do not preclude growth in economic benefits. But they do not promote them either. The point is that strat-

Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Roland H. Abraham, Director of Agricultural Extension Service, University of Minnesota, St. Paul, Minnesota 55101.

egies to attain such goals should be carefully considered in terms of their effect on the economic progress of the business.

Measurement and Evaluation

Farmers usually have more than one objective. And the degree of attainment can be expressed in a variety of ways, depending upon the hierarchy of goals.

Farm growth can be defined as **the progress made toward the goals and objectives set forth by the owner-operator of the farm unit.** Although this definition seems to be acceptable, it fails to establish a common denominator or criterion for measuring progress. Furthermore, it does not provide a standard means for evaluating farm growth. Selecting a single variable that can perform this dual role is difficult. Consequently, several attributes may have to be monitored simultaneously. And, although each operator is free to select his own growth indicators, it is crucial that they be consistent with goal identification.

The Time Value Concept

We are also led to conclude that growth should be evaluated in relation to time. For it **does** matter when goals are attained. It appears to follow that it is desirable to incorporate a time value into the evaluation of farm growth.

It seems meaningful to discount growth on the basis of the time interval required to bring it about. Greater importance would then be placed on early progress as opposed to later advancements. This is precisely the notion embodied in the discounted present value method often used in the business community to evaluate alternative investment opportunities. Obviously, this method is profit oriented and reemphasizes the earlier claim that economic considerations are difficult to avoid in any rational technique to measure and evaluate growth.

STRATEGIES FOR FARM GROWTH

By and large, most means for attaining growth can be reduced to financial strategies, which are longrun plans divulging the primary sources of funds to be employed by the firm and the uses to which these funds are to be put.

The vast array of financial strategies generally can be reduced to these types:

- Debt (credit) financing
- Equity financing
- Internal financing
- Direct financing (leasing or hiring of resources).

Ownership Versus Control

From a purely operational point of view, farm operators primarily are interested in being able to control the productive power of resources. Productivity is not inherent in ownership. It is dependent upon the effectiveness to which resources are combined through management. Being free to combine them in an effective manner requires only the control of their **use.** Ownership merely establishes, at least in part, how benefits will be distributed; i.e., how profits will be divided and how payment for the right to use them will be allocated.

If ownership is to constitute any real asset growth, acquisitions must be financed from profits generated and retained in the business. This requirement does not preclude the use of credit; however, such funding can be only temporary and must eventually be replaced with ownership funds. Likewise, proprietary funds from outside —off-farm earnings, outside investment, and/or inheritance — can be used to acquire resources. But we must not misinterpret such asset growth as a reflection of the farm business' ability to support such expansion or even its ability to generate profits.

Control through ownership may provide more freedom to select production plans and make operating decisions. But this freedom does not guarantee the efficient organization of the resources involved. **Internal financing** strategies to acquire ownership depend upon earnings being retained in the business. Such acquisitions are merely asset transfers and, in an accounting sense, involve neither expense nor debt obligations. Note, however, that such internal funding demands that the "cash account" be able to support the transaction.

Retaining profits always has been a major means of financing farm business growth. The accelerated rate of expansion now taking place has outstripped many farmers' ability to fund such growth internally and is exerting extreme pressure on credit, the traditional outside source of financing.

External Funding

The use of **credit financing** to acquire ownership of resources entails the obligation of a future payment schedule for both the principal involved and a fee (interest) for use of the funds. These payments must come from future earnings if ownership growth actually is to take place. Refinancing or disinvestment to meet these obligations is not growth.

Acquisition through credit financing involves no increase in ownership holdings, even though the financial structure is altered: The increase in assets is exactly offset by added liabilities. It does involve the establishment of future contingencies. And, in fact, **the terms of the debt obligation virtually lock in a minimum level of profit performance and rate of growth that the business must maintain if it is to stay financially healthy.**

This aspect of credit financing is not always recognized as one of the performance constraints imposed by debt strategies. It points up the need for careful consideration of the terms of such future contingencies. Profitability is not the only consideration; liquidity is equally important. In fact, a prime concern in comparing alternative strategies is determining which affords the most suitable pattern of cash flows.

Because of possible incompatibilities between repayment schedules (cash flows) and profit performance, the use of **equity financing** is gaining acceptance among farm operators. Actually, they have been employing this strategy for years. The share-crop land tenure arrangement is essentially a form of permanent funding. However, the general use of equity financing on a broad farm basis (through issuance of stock) has not been widely used. There currently is increased interest in this avenue for securing funds.

Although equity financing avoids fixed charges (principal and interest payments), there is a cost to the original owner: He must now share profits with others. Top producers often can generate operating profits that exceed the going rate of return of capital and should take advantage of financial leverage whenever possible.

Control Without Ownership

Control of resources through hiring them is not new. Renting of land has long been used, and the leasing of equipment, buildings, and other resources appears to be gaining popularity. This funding strategy is **direct** and is somewhat of a cross between equity and debt financing. Although it lacks the permanency of control afforded by ownership (equity), there are no acquisition payments from future earnings. The contractual arrangement can be perpetuated but does involve a fixed charge (financial obligation), which is more akin to credit financing than to distribution of profits.

In the final analysis, considering economic benefits appears to be necessary, at least within the selection of the growth (financial) strategy. For, although we are interested in choosing a strategy that will best achieve our goals, we are not interested in it at all costs. Progress seldom is free; an economic consideration would compare these costs in view of the benefits.

A STUDY OF FARM GROWTH

In nonfarm business, where management and ownership often are divorced, the primary objective of management is to **maximize the present value of the future earnings of the ownership group.**

This goal is strictly economic and considers both the cash flow (dividends) that owners receive and the growth in value of their original investment (net worth). These economic benefits are discounted to reflect the time value of these annual and terminal flows. The discount rate usually represents an opportunity cost or in some manner reflects stockholders' preference for current consumption.

A study of individual farms in the Minnesota Southeast and Southwest Farm Management Associations employed this concept, along with economic and noneconomic variables to measure and evaluate farm growth over an 11-year period. Forty-three farms were ranked (high to low) according to the progress attained, as indicated by changes in growth attributes. The accompanying table contains the rankings for six commonly used indicators as well as the discounted present value of ownership benefits, as expressed by the level of annual family (cash) withdrawals and the change in net worth over the period.

The farms are listed in order of rank, based on the present value concept. Their rank as measured by each of the other growth variables also is shown under the respective headings. This arrangement provides an easy comparison between growth rate as derived by traditional measures and as derived by the time value assessment. It also affords a rough indication of the correlation in results obtained through the use of various growth attributes.

While not conclusive, the results indicate that a choice can affect the economic evaluation and the implications to be drawn from attempts to measure growth on individual farms. Three different discount rates (7, 8, and 10 percent) were tested under the present value method. Only negligible differences resulted. The figures shown are for the 8 percent rate. The study is continuing and will include an attempt to evaluate growth strategies.

Study findings to date point up some interesting relationships. Generally, attributes that reflect changes in physical size or volume of operations do not provide an economic evaluation that corresponds well to either the profit generating ability of the firm or its change in market value. This finding substantiates the previously expressed supposition that noneconomic goals, even when attained, do not assure growth in economic terms.

Among ownership goals (net worth or acreage owned) and goals described as economically oriented (average net returns, for example), there is an obvious lack of assurance that the attainment of one provides for progress in the other. Correspondence between average earnings and growth in net worth is fairly high on the lower end of the rankings, but correlation is lost when higher rates of economic progress are attained.

Finally, the discounted present value of the returns to the owner-operator, which provides some measure of ability to support current family withdrawals, profit generating ability, and growth in residual values, ranks the farms somewhat differently than either of the other economically oriented attributes. Consequently, while growth in net worth or current profit may be viewed as a goal for those farms ranking high in each of these respective categories, their attainment (as indicated by their high rankings) does not necessarily mean that real economic gains were achieved when the time value concept is incorporated into the evaluation technique.

These findings support the concern expressed at the outset of this discussion: **Strategies for achieving business goals must include economic considerations.** The evidence is strong that economic progress is not highly correlated with growth in noneconomic areas. Therefore, in selecting growth strategies, farm operators should consciously and explicitly provide for this contingency over and above their personal goals. ■

Ranking of farms by growth level as measured and evaluated by various attributes

Farm number	Ranking as measured by change in various growth attributes						
	Present value of earnings	Average net returns	Net worth	Acreage operated	Acreage owned	Gross sales	Assets managed
22	1	1	1	7	7	7	14
31	2	4	5	12	8	14	8
39	3	12	2	20	10	10	17
25	4	14	6	3	1	4	2
36	5	24	35	39	5	40	29
42	6	31	8	13	23	5	9
41	7	39	7	40	2	41	13
26	8	6	15	11	24	21	6
40	9	36	3	10	22	3	10
28	10	38	9	4	9	11	4
15	11	28	19	32	34	22	28
17	12	5	4	33	17	29	16
35	13	41	37	38	29	39	30
16	14	25	24	6	21	9	7
2	15	10	12	17	12	12	24
43	16	8	10	2	13	1	3
32	17	9	18	23	11	15	12
6	18	2	20	8	14	13	11
7	19	42	16	27	20	26	19
34	20	20	14	19	15	16	18
13	21	40	13	31	42	33	31
24	22	11	22	18	4	6	20
19	23	13	29	14	32	23	33
4	24	43	27	1	3	25	1
21	25	18	11	36	35	36	32
11	26	33	17	21	25	30	27
18	27	17	21	34	28	18	35
33	28	23	30	5	6	2	5
20	29	37	36	35	36	35	38
14	30	15	33	16	26	34	21
23	31	3	28	41	16	42	40
8	32	9	40	28	31	27	36
38	33	22	23	22	18	17	15
30	34	7	39	9	33	38	23
12	35	34	26	42	19	8	26
27	36	35	25	15	41	20	25
9	37	29	32	29	38	28	39
5	38	26	38	26	39	27	37
1	39	21	31	24	30	24	22
29	40	32	34	37	40	37	42
37	41	16	43	43	43	43	43
10	42	27	41	46	37	29	34
3	43	30	42	25	27	26	41

Minnesota AGRICULTURAL ECONOMIST

Prepared by the Agricultural Extension Service and the Department of Agricultural Economics.

Views expressed herein are those of the authors but not necessarily those of the sponsoring institutions.

IN PERSPECTIVE

Growth of Minnesota Farms

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The table below clearly indicates that Minnesota farms have grown substantially in almost every growth category during the past few years. Although the data were derived solely from farms in the Southeast and Southwest Farm Management Associations, they do indicate growth patterns that have taken place throughout the state.

Average farm size (acreage operated) increased 54 percent during the 13-year period (1956-68). While rented acreages have increased, ownership has been the major means for gaining control of land resources.

Total farm-firm assets almost doubled during the period. This expansion has been financed through both debt obligations and retained earnings (note the liabilities and net worth accounts). The average equity-to-debt ratio dropped from 3.2:1 in 1956-58 to 1.6:1 in 1966-68.

In relative terms, liabilities **increased** more than threefold, while owners **reduced** their relative business investments by 14 percent. In absolute levels, the debt obligations for an average farm unit increased $29,413, while $25,555 in profits were plowed back into the business.

Total net returns to capital and labor increased substantially. Low revenues in 1963 due to economic and climatic conditions explain a major portion of the somewhat lower returns in the 1961-63 period. Similarly, unusually favorable circumstances in both 1966 and 1968 tend to overstate the general profit level that currently can be expected.

On the average, farms during this period were able to generate a 12.7 percent return on all assets. Average operating revenues increased $1,834 per year, while average operating expenses increased $1,233. These figures amount to an average increase in operating profits of $601 per year or a 10.9 percent return to the average additional annual invest of $5,497.

Apparently, the average cost of capital decreased from 10.5 to 8.4 percent based on the actual interest paid and the levels of debt outstanding. While interest rates have **not** decreased generally, this change in average costs probably can be explained by the use of more long term credit (land mortgages, for example). A detailed assessment of the data was not made, but the increase in acreage owned and the reduction in equity-to-debt ratios support this hypothesis.

In any case, as long as the cost of capital is below the productive power of the resources it can purchase, a farm operator can increase his profits by employing such resources. And he will profit by employing fixed-return capital rather than by using equity financing (financial leverage). The expansion in debt obligations and the reduction in the equity ratio indicate that many farmers did just that.

However, we **cannot** conclude that credit financing was the best strategy for supporting farm business expansion during this period. Other studies of individual farms indicate that control of resources through renting and leasing, particularly cash renting of land, has been the most successful strategy for many better than average farmers.

The pressure for further expansion is creating serious problems for farm operators. Financial strategies for supporting this growth will become increasingly important in the near future. ■

Changes in growth variables on farms in Southeast and Southwest Minnesota Farm Management Associations, 1956-68

	Average for all farms keeping complete records			
Growth variable	1956-58	1961-63	1966-68	Average annual increase
Total acreage operated	243	270	374	10.0
Total acreage owned	132	147	226	7.2
Total acreage rented	111	123	148	2.8
Total farm receipts	$28,433	$35,069	$51,280	$1,834
Total operating expenses	$20,419	$26,378	$36,438	$1,233
Total operating profits	$ 8,014	$ 8,691	$14,842	$ 601
Interest expense	$ 1,472	$ 2,531	$ 3,601	$ 212
Net returns to operator	$ 6,542	$ 6,160	$11,241	$ 470
Family living withdrawals	$ 3,685	$ 5,110	$ 7,160	$ 347
Total assets	$58,442	$76,175	$113,410	$5,497
Total liabilities	$13,892	$26,475	$ 43,305	$2,941
Net worth	$44,550	$49,700	$ 70,105	$2,556
Equity-to-debt ratio	3.2:1	1.9:1	1.6:1	—.16:1
Equity ratio	.76	.65	.62	— .014
Return to assets, percent	13.7	11.4	13.1	— .06
Return to net worth, percent	14.7	12.4	16.0	.13

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Cooperative Agricultural Extension Work
Acts of May 8 and June 30, 1914

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