



CALCULATING "ADDITIONAL FUNDS NEEDED" (A.F.N.)

Economic volatility in the agribusiness industry over the past decade has, in my opinion, comprised a mixed-bag of hardships and blessings. Organizational restructuring within the industry provides ample evidence of the hardships imposed. As I drive through the rural areas of eastern Washington, for example, I find only scant remnants of an agribusiness industry which existed in the early 1980s. Most notable is the change in ownership within the farm supply sector. Dealerships, product labels, company names and even business locations have changed as dissolutions, mergers, acquisitions and consolidations have all served to alter that which is most visible about the industry. One could easily argue that this restructuring of business, this loss of local employment and this increase in industry concentration have all served poorly the long-term interests of agriculture. A closer look suggests that, despite these changes, agriculture and rural communities are still being well-served, albeit differently. Productive resources are still available. Commodities are still being produced, transported, processed and marketed, but the agribusiness infrastructure is different.

Although not as visible to the casual observer, some blessings have also emerged from the decade of the 1980s. Many firms are larger. However, they are also more operationally diverse and more efficient. It is also interesting to note that those agribusiness firms surviving are no longer complacent about their market position and long-range future. A decade of economic volatility has purged the industry of any sense of long-term permanence. I no longer need to convince managers that they must plan for the future if they expect to be a part of it. Management now recognizes that budgeting and financial forecasting are prerequisites to short- and long-term survival. Agribusiness

cooperative boards of directors, for example, were sometimes reluctant to ask management for financial forecasts. Today, directors insist that such forecasts be prepared and that an opportunity to review and approve budgets annually. Unfortunately, while many agribusiness firms now are convinced of the need for financial forecasting, not all such firms are familiar with the way to accomplishing it. Too often the act of budgeting and financial forecasting entails little more than a simple extrapolation of a historical data base. This simple process fails to recognize the interdependencies of cash flows and also fails to accommodate the critical element of calculating additional funds needed (AFN). As a result, firms soon discover that working capital shortages arise and plans for capital expansion lack the funds required for their completion.

My objective here is to review the correct process of financial forecasting for agribusiness managers. In particular, I shall address the differences between those funds which are generated spontaneously with future increases in sales, as separate from those funds which must be generated external to budgeted sales. Only in this manner can management calculate AFN and thereby make those debt/equity adjustments required if the firm is going to achieve its forecasts.

THE SALES-TO-ASSETS RELATIONSHIP

Managers generally understand that sales cannot be achieved in the absence of supporting assets. In particular, they are sensitive to the fact that prior investments in "current assets" are required to fuel any growth in sales. However, it is also true that managers are less sensitive to fixed asset requirements. If a firm is at, or approaching, full capacity production, this oversight can prove critical.

For most businesses, the preferred source of expansion capital is retained earnings. But if the

forecasted growth is rapid, or if earnings retained are limited, even the most profitable agribusiness firm will have to seek external capital; i.e., increases in debt or equity. At this point, it becomes very important to prepare or calculate reasonably accurate estimates of forecasted capital requirements. Under normal conditions, an agribusiness firm only infrequently would look for substantive increases in its long-term debt and/or equity. The timing of debt acquisitions or the issuance of long-term securities is particularly important under conditions of economic volatility. Consider the plight of those agribusiness firms now struggling under fixed rate long-term loans initiated in the early 1980s when interest rates had peaked at record levels. Because investors are interested in “future” cash flows, firms lacking financial forecasts are ill-prepared to attract equity capital.

THE SALES FORECAST; THE FIRST STEP

Preparing a sales forecast is the critical first step. In many regards, the sales forecast comprises the driving force of all planning activity and AFN calculations. Because each agribusiness firm confronts a uniquely different set of market and supply/demand conditions, it's difficult to generalize regarding the ways such a forecast is prepared. I will later inject data from a hypothetical agribusiness firm to provide some reader guidance. First, I will point out that almost all viable sales forecasts address the following basic issues:

1. Since most agribusiness firms are multi-product or multi-service entities, each division within the firm must first be viewed separately, and their individual sales potentials assimilated into a total demand forecast. As historical and future sales for each division are plotted and projected, management must pay close attention to preexisting product-service interdependencies. For example, forecasting substantive increases in future liquid fertilizer sales cannot be completed separately from the firm's willingness to expand its inventory of applicators because

the demand for each is probably interdependent.

2. The next critical step in sales forecasting includes assessing market share. You must appraise your firm's current and future share of current or potential markets. You need to consider factors such as current productive capacity, competitor's capacity and new products you or your competitors are considering. Your firm's pricing strategies relative to that of competitors also becomes an important element in market share analysis. Advertising campaigns, promotional discounts, credit terms and product differentiation may also alter your projected market share. Regardless, every manager must recognize that the act of forecasting future sales does directly reference market share, whether considered explicitly or not.
3. Too often, agribusiness firms developing sales forecasts often focus on the expected future demand for products or services. Equal focus must rest on the supply side; i.e., your firm's future ability to acquire supplies or raw products in a timely manner and at a competitive price. Order backlogs and/or intermittent supplies can rapidly destroy the credibility of well-prepared sales forecasts.
4. Finally, remember that a sales forecast is actually an “expected value of a probability distribution” of possible levels of sales. Because any sales forecast is subject to a greater or lesser degree of uncertainty, for sound financial planning we often are just as interested in this degree of uncertainty (sales variance) as we are in a single expected value of sales.

ILLUSTRATIVE AGRIBUSINESS FIRM

To illustrate the procedure, I have calculated the AFN for Agrigrow, a hypothetical agribusiness firm. (See page 3.)

Agrigrow generated a 4% profit on sales during 1991 and distributed 40% of 1991 net income to its stockholders as dividends. Let's further assume that during 1991 Agrigrow operated its

fixed assets at full capacity and retained no underutilized stocks of current assets. If Agrigrow is going to attain its 1992 sales forecast of \$750,000, what will its 1992 pro forma balance sheet look like and how much additional funding will be required during 1992? AFN must, be calculated for the forecasted sales period.

AFN COMPUTATIONAL STEPS

While several methods for developing pro forma financial statements, I will use the “percentage of sales” method. This method provides a simple and quite practical means for forecasting financial variables. The method rests on two basic assumptions. First, it assumes that most agribusiness balance sheets are linked directly to sales (i.e., over time, sales impact balance sheet components). Second, it assumes that the current complement of assets effectively serves the current level of sales (i.e., there are no underutilized assets remaining in the firm's inventory).

The first step in the percentage of sales forecast is to identify and separate those balance sheet items expected to vary directly with sales. For example, since Agrigrow was operating in 1991 at full physical capacity, one would expect that selected asset items would have to increase to attain the 1992 sales forecast. Any increase in assets employed by Agrigrow will have to be accompanied by an increase in liabilities and/or equity; i.e., those increases in assets must be financed by some source. In this regard, we would expect some financing will be “generated spontaneously;” i.e., some sources of funds such as accounts payable and accruals will rise spontaneously with sales. While retained earnings will also increase, they will not respond in direct proportion to sales. And finally, there is no reason to expect notes payable, mortgage debt, or common stock to rise spontaneously with sales because higher sales do not “automatically” trigger increases in these items.

Balance Sheet – December 31, 1991 – Agrigrow Enterprises, Inc.

	<u>Assets</u>		<u>Liabilities</u>
Cash	\$10,000	Accounts Payable	\$40,000
Receivables	85,000	Notes Payable	10,000
Inventories	<u>100,000</u>	Accrued Wages/Taxes/Interest	<u>25,000</u>
Total Current Assets	\$195,000	Total Current Liabilities	\$75,000
Fixed Assets (Net)	\$150,000	Long-Term Mortgage Debt	\$72,000
		<u>Equity</u>	
Total Assets	<u>\$345,000</u>	Common Stock	\$150,000
		Retained Earnings	<u>\$48,000</u>
		Total Liabilities & Equity	\$345,000

Summary Income Statement – December 31, 1991 –Agrigrow Enterprises, Inc.

1991 Sales	\$500,000	
1991 Net Income	20,000	(4% of Sales)
1991 Dividends Paid	8,000	(40% of Net Income)
1991 Sales Forecast	\$750,000	(Based on new product introductions and strong recent growth in market)

Next, one must express those 1991 Balance Sheet items which vary directly with sales as a percentage of 1991 sales. Items such as notes payable which do not automatically vary with sales are designated "not applicable," in Column 1 of the following table. You then multiply these percentages by the projected 1992 \$750,000 sales to obtain the projected amounts as of 12/31/92, in Column 2. Retained earnings for 12/31/92 is obtained by adding to retained earnings for 1991 those generated in 1992, (see footnote b). Summing the 1992 asset accounts shows total projected assets of \$518,000 while summing the projected liabilities and equity items shows \$396,000 in available funds. This funds shortfall of \$122,000 is designated as AFN.

Having calculated AFN, we must now determine whether these additional funds are to be raised by additional bank borrowings and/or by issuing securities. (Note that for simplicity we have assumed that cash flows generated by depreciation are used to replace worn-out fixed assets.)

SOURCES OF AFN

Up to this point, we have assumed that notes payable, mortgage debt and common stock have remained unchanged from 1991 levels (see footnote a). If we are to generate \$122,000 in AFN, we must use one, or a combination of these funds sources, to make up the shortfall.

Agrigrow Enterprises Pro Forma Balance Sheet December 31, 1991

Item	(1) 12/31/91 Balance Sheet Items Expressed as % of 1991 Sales of \$500,000	(2) Pro Forma Balance Sheet 12/31/92 Based on 1992 Projected Sales (\$750,000 x Column 1)
Cash	2.0%	\$15,000
Receivables	17.0	128,000
Inventories	<u>20.0</u>	<u>150,000</u>
TOTAL CURRENT ASSETS	39.0%	\$293,000
Fixed Assets (net)	<u>30.0</u>	<u>225,000</u>
TOTAL ASSETS	<u>69.0%</u>	<u>\$518,000</u>
Accounts Payable	8.0%	60,000
Notes Payable	NA	10,000 ^a
Accrued Wages/Taxes	<u>5.0</u>	<u>38,000</u>
TOTAL CURRENT LIABILITIES	NA	\$108,000
Mortgage Debt	NA	72,000 ^a
Common Stock	NA	150,000 ^a
Retained Earnings	<u>NA</u>	<u>66,000^b</u>
Funds Available		\$396,000
Additional Funds Needed (AFN)	---	122,000 ^c
TOTAL LIABILITIES & EQUITY	---	<u>\$518,000</u>

^a Initially set at 1991 level, but later financing decisions might change this level.

^b Balance in 1991 retained earnings (\$48,000) plus 1992 projected addition to retained earnings (\$75,000 sales x 4% = \$30,000; \$30,000 net income – 40% for dividends paid = \$18,000) i.e., \$48,000 + 18,000 = \$66,000.

^c Residual calculation of \$518,000 projected assets less \$396,000 in projected funds available = \$122,000 AFN.

Ordinarily, agribusiness firms would choose among funds sources on the basis of relative costs, subject to certain constraints. For example, let's assume that Agrigrow has a loan covenant in its mortgage agreement restricting the firm from increasing its total debt beyond 50% of total assets. Yet, another covenant requires that Agrigrow maintain a current ratio of 2.5 or greater. Given these restrictions, Agrigrow would evaluate alternative sources of AFN in the following manner.

As calculated earlier, Agrigrow requires \$122,000 in AFN for 1992. Because of simple

financial constraints imposed on the firm by its lenders, new additions to debt are limited to \$79,000 and only \$9,000 of that can be short-term debt. It must now raise \$43,000 from the sale of additional common stock if 1992 AFN requirements are to be met.

PROJECTED FINANCIAL STATEMENT

Based largely on the pro forma computations, AFN calculations and the financial restrictions noted, Agrigrow can now prepare projected financial statements for 1992. They would appear as shown on page 7:

1. Restriction on additional total debt:

$$\begin{aligned} \text{Maximum debt permitted} &\leq 0.5 (\text{Total Assets}) \\ &\leq 0.5 (\$518,000) = \$259,000 \end{aligned}$$

Total debt already projected for 12/31/91:

Current Liabilities	\$108,000
Mortgage Debt	<u>+72,000</u>
	\$180,000

$$\text{Maximum additional debt permitted} = \$259,000 - 180,000 = \$79,000$$

2. Restriction on additional current liabilities (current Ratio ≥ 2.5):

Maximum current liabilities = Projected current assets $\div 2.5$	$= \$293,000 \div 2.5 = \$117,000$
Less current liabilities already projected for 1992 =	<u>-108,000</u>
Maximum additional current liabilities	\$ 9,000

3. Common equity requirements:

Total AFN	\$122,000
Maximum Additional Debt Permitted	<u>- 79,000</u>
Common equity required	\$ 43,000

AFN CALCULATION SHORTCUT

The most common method to calculate AFN involves constructing pro forma financial statements as described above. Under certain conditions, however, you can use a shortcut method to calculate AFN. While pro forma financial statements are not generated, the following formula-generated AFN highlights the relationship between sales growth and financial requirements.

$$\left(\begin{array}{c} \text{Additional} \\ \text{Funds Needed} \end{array} \right) = \left(\begin{array}{c} \text{Required Increase} \\ \text{in Sales} \end{array} \right) - \left(\begin{array}{c} \text{Spontaneous Increase} \\ \text{in Liabilities} \end{array} \right) - \left(\begin{array}{c} \text{Increase in} \\ \text{Retained Earnings} \end{array} \right)$$

AFN = $(A/S)\Delta S - (L/S)\Delta S - MS_1(1-d)$, where:

AFN = additional funds needed

A/S = assets which must increase if sales are to increase, expressed as a percentage of sales (69% for Agrigrow).

L/S = liabilities that increase spontaneously with sales, expressed as a percentage of sales (13% for Agrigrow)

S_1 = total sales projected for next year; i.e., the year for which AFN is being calculated (\$750,000 for Agrigrow)

ΔS = change in sales from most recent year to next year, ($S_1 - S_0 =$ \$250,000 for Agrigrow)

M = profit margin or rate of profits per \$1 of sales (4% for Agrigrow)

d = percentage of earnings paid out in dividends; note that $1 - d$ is the percentage of earnings retained (d = 40% for Agrigrow)

Therefore: AFN = $.69(\$250,000) - .13(\$250,000) - .04(\$750,000)(1 - 4) = \$172,500 - \$32,000 - \$18,000 = \$122,000$

Arrived at quickly in this manner it can be shown that for Agrigrow to increase its 1992 sales by \$250,000, this agribusiness firm must increase its assets by \$172,500. This \$172,500 in new assets must be financed in some manner. Of the total amount, \$32,000 will come from a spontaneous increase in liabilities and an additional \$18,000 will result from retained earnings from 1992 operations. The remaining \$122,000 must be generated from external sources. Based on Agrigrow's financial constraints described earlier, \$9,000 of AFN will come from additions to short-term debt (notes payable), \$70,000 will result from an increase in mortgage debt and the remaining \$43,000 will be generated from the sale of common stock.

SUMMARY

Managers of modern agribusiness firms no longer need to be convinced of the need to undertake some form of future financial planning. The practice of preparing sales forecasts and future operations budgets has become well-established. Unfortunately, many agribusiness firms still fail to employ a fully integrated program of financial planning. Sales forecasts rest too often on incomplete projections of historical sales data alone. Furthermore, those projections too often fail to adequately consider the capital investments in assets required to attain those forecasted levels of sales. And further, the financial planning process often fails to distinguish between funds generated spontaneously by sales vs. those which must be generated externally. Finally, the process does not identify those sources of external funds which would best serve the needs of the firm and/or adhere to pre-existing financial constraints.

This paper addresses the deficiencies noted above and provides agribusiness managers with a simple and rational means for calculating "additional funds needed."

**PROJECTED FINANCIAL STATEMENTS
AGRIGROW, 1992**

I. Projected Balance Sheet, 12/31/92

Cash	\$15,000	Accts. Pay.	\$60,000
Accounts Receivables	128,000	Notes Payable	19,000
Inventories	<u>150,000</u>	Accruals	<u>38,000</u>
TOTAL CURRENT ASSETS	\$293,000	TOTAL CURRENT LIABILITIES	\$117,000
Fixed Assets (Net)	<u>225,000</u>	Mortgage Debt	142,000
		Common Stock	193,000
		Retained Earnings	66,000
		Total Equity	\$259,000
TOTAL ASSETS	<u>\$518,000</u>	TOTAL LIABILITIES & EQUITY	<u>\$518,000</u>

II. Projected Income Statement, 1992

Sales	\$750,000
Total Costs	<u>700,000</u>
Net Increase Before Taxes	50,000
Taxes (40%)	<u>20,000</u>
Int. Income After Taxes	30,000
Dividends (40% of N.I.)	<u>12,000</u>
Addition to Retained Earnings	<u>\$18,000</u>

III. Projected Changes in Financial Position, 1992

Sources of Funds:

Net Income	\$30,000
Increase in Accounts Payable	20,000
Increase in Accruals	13,000
TOTAL SOURCE OF FUNDS	\$63,000

Uses of Funds:

Increase in Accounts Receivable	\$43,000
Increase in Inventories	50,000
Increase in Net Fixed Assets	<u>75,000</u>
TOTAL USES OF FUNDS	\$168,000

Net Funds from Operations: (\$105,000)

Financing Activities:

Increase in Notes Payable	\$9,000
Increase in Mortgage Debt	70,000
Sale of Common Stock	43,000
Net Funds From Financing	\$122,000
Less: Dividends .	<u>-12,000</u>
Increase in Cash	<u>-5,000</u>

NET FUNDS FOR OPERATIONS **\$105,000**

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