

Capital Management: An Overview of What a Manager Needs to Know and Do When Managing Capital Resources

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Managing capital is a difficult task because it is a dynamic process involving numerous variables. Decisions made in the short-run can have a significant impact on the long-run financial operations of a business. Also there are multiple objectives that can be achieved as one manages capital. Maximization of returns to assets is one such objective. Other objectives can include minimization of the variability of returns, avoidance of bankruptcy, and minimizing the costs and risks of financing business operations.

Achieving the goals or objectives that have been mentioned here is difficult because the goals tend to be interrelated and in many cases competing. For example, efforts to maintain cash flows in the short-run can inhibit a firm's ability to generate profits in the long-run. Also attempts to stabilize returns can come at the expense of profits in both the short-run and the long-run. These trade-offs between goals make it difficult to manage because one has to understand the financial operations of a business and then make judgements as to whether it is more advantageous to, say, increase returns or reduce financial risks by borrowing less money or allowing investors to contribute capital to a business venture.

In this paper we will consider some key capital management issues and hopefully give the reader some ideas of how they can become a better manager of capital. In the first section of this paper we will examine some financial measures that are used in capital management decisions. We will then turn our attention to an analytical technique that is used to evaluate the profitability of investment alternatives. In the final section of the paper we will consider some options for controlling the costs and risks of financing business activities.

FINANCIAL PERFORMANCE MEASURES AND THEIR USE IN MANAGING CAPITAL

In order to successfully manage financial resources, one has to be able to understand some basic financial concepts and interpret some key financial measures that indicate such things as whether a business is: profitable; servicing its debts, able to withstand losses, and effectively utilizing assets. This section will identify some of these key measures and then offer some explanation of how one can use these measures to assess five different aspects of a business's financial: profitability; financial efficiency; liquidity; solvency; and repayment capacity.

PROFITABILITY

A central objective of a business is generating profits using the limited capital resources available at a given point in time. Businesses are continually assessing their profitability and trying to determine if they are doing as well as they could be in terms of generating profits. Two measures that reflect the profitability of a business are rate of return on assets and rate of return on equity.

Rate of Return on Assets (ROROA) This ratio reflects the earnings that are generated per each dollar of asset. The annual yield one receives on a dollar deposited in a savings account is an example of a ROROA. This ratio is computed as follows.

$$\frac{\text{Net Farm Income} \quad \quad \quad \text{Interest} \quad \quad \quad \text{Unpaid Labor \&} \\ \text{From Operations} \quad + \quad \text{Expense} \quad \quad - \quad \text{Management}}{\text{Average Total Farm Assets}}$$

A high ROROA is preferred to a low one because the profitability of a business typically increases as ROROA rises. Thus a high ROROA is generally a sign of good management while a low ROROA is a possible indication of sub-par management.

At a minimum, the ROROA needs to be higher than the interest rate paid on debt if a business is to be able to use credit profitably. If a business interest rate on debt is greater than the ROROA, the business might want to consider its use of credit.

Rate of Return on Equity (ROROE) This ratio, which is computed using the following formula, is a measure of the profit that a business earns per each dollar of equity (net worth) that is invested in the business.

$$\frac{\text{Net Farm Income} \quad \quad \quad \text{Unpaid Labor \&} \\ \text{From Operations} \quad - \quad \text{Management}}{\text{Average Equity (Net Worth)}}$$

High values for ROROE are an indication of profitability and good management. Alternatively low values for this ratio are generally signs of poor management.

At a minimum one would expect the ROROE to be greater than zero. A ROROE equal to the rate of inflation is desirable because this is a sign that a business is at least keeping up with inflation. In the best cases a business will have an ROROE that equals or exceeds the ROROA.

FINANCIAL EFFICIENCY

A business's profitability is very much determined by its financial efficiency. Firms that are able to achieve high levels of efficiency tend to be the most profitable while inefficient firms typically suffer losses and go out of business over time.

By definition, a firm is said to be efficient when it is able to produce maximum income per dollar of expenditure or expense. There are generally two ways a farm business achieves efficiency.

One is to adopt operating procedures that result in minimum costs per unit of output. The other is to maximize production or output per dollar invested in assets.

Two financial ratios are computed to monitor the financial efficiencies of businesses. One of these ratios, net profit margin, indicates how successful a business is in controlling production costs. The other ratio, called the turnover ratio, reflects how effectively a business is using its assets to generate output. These two ratios are very useful in determining a business's overall financial efficiency.

Net Profit Margin This ratio is a measure of how much of a return to assets a business is able to generate per dollar of total farm income. The higher the value of this ratio the greater the likelihood that there will be profits. This ratio is computed as follows.

$$\frac{\text{Net Farm Income From Operations} + \text{Interest Expense} - \text{Unpaid Labor \& Management}}{\text{Total Farm Income}}$$

Low net profit margins can result when there is a little difference between the selling price and the per unit cost of production. Thus low net profit margins can be a sign that the cost of production is too high and/or the selling price for output is too low.

Asset Turnover Ratio This ratio is a measure of how much total income a business is able to generate per dollar of asset. In a sense this ratio is a productivity measure because it indicates how much output (income) a business is able to produce from its assets.

High values for this ratio are desirable because the likelihood of generating profits rises as turnover increases. Thus businesses that are most productive will typically have the highest turnover.

The turnover ratio is computed as follows.

$$\frac{\text{Total Farm Income}}{\text{Average Total Assets}}$$

LIQUIDITY

In order to stay in business, a firm has to be able to pay its obligations as they come due even when profits are low to non-existent and cash flows are tight. To do this a firm has to maintain some reserves that can be used to cover cash flow deficits in the short-run. These reserves can either be cash or they can be a line of credit. The availability of credit hinges in part on whether a firm has the ability to come up with some cash within a year. This ability to come up with cash quickly is known as liquidity. A firm is said to be "liquid" if it has the ability to raise the cash that is needed to pay all financial obligations coming due.

Two financial measures reflect the liquidity positions of a business. One measure is a ratio

known as the current ratio. The other measure, known as working capital, is an absolute measure of a business's liquidity.

Current Ratio This measure of liquidity reflects how many current assets are available per dollar of current liability. At a minimum one wants this ratio to be equal to 1. A value of 1.25 or greater is desirable for this ratio.

The following is the formula that is used to compute the current ratio.

$$\frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Working Capital This financial measure indicates how easy it would be for a business to come up with the cash that is needed to cover all of the debts and liabilities due within a year. The more working capital a business has the greater its ability to pay its obligations. Thus it is desirable to have positive quantities of working capital.

Working capital is computed as follows.

$$\text{Current Assets} - \text{Current Liabilities}$$

SOLVENCY

Solvency relates to the ability of a business or firm to pay-off all of its financial obligations. By definition a business is solvent when it has enough money from the sale of assets to pay all its debts and liabilities. The survival and continuity of a business depends whether it is able to stay solvent. As a business increases its assets relative to debt it becomes more solvent and more likely to survive over time. Conversely a business's existence becomes increasingly less certain as the business becomes less certain.

Debt to Asset This ratio is a commonly used measure of solvency that reflects how much debt (liability) a business has per dollar of asset. High values for this ratio, which is computed using the formula presented below, are an indication a business is an aggressive user of debt and approaching insolvency.

Lenders look at this ratio when they are evaluating the credit worthiness of borrowers. Whenever the debt to asset ratio rises above .70, lenders tend to be hesitant to approve additional credit to a borrower. Thus a farm business should attempt to keep this ratio from rising much above .70.

$$\frac{\text{Total Liabilities (Debt)}}{\text{Total Assets}}$$

REPAYMENT CAPACITY

The availability of credit for a firm depends on how much cash flow the business can generate and how much of the cash flow is available for servicing debt. As more cash is available for

servicing debt, more credit is available. Conversely credit resources diminish as cash flows become tight.

All businesses should monitor their credit activities and have an idea of how much credit they can afford to borrow. Businesses can do this by monitoring their repayment capacity and coverage margin.

Capital Replacement and Term Debt Repayment Capacity (CRTDRC) This financial measure indicates how much cash flow is available for purchasing capital assets and/or servicing the principal that is due on term debts like machinery loans or real estate mortgages. The higher the value of this variable, the lower the likelihood a business will experience cash flow problems or, at worst, go bankrupt.

This financial measure is computed as follows.

$$\begin{array}{rcccc} \text{Net Farm Income} & + & \text{Depreciation} & + & \text{Capital-} & \text{Unpaid Labor} \\ \text{From Operations} & & & & \text{Sales} & \text{Management} \end{array}$$

Coverage Margin This variable reflects the difference that exists between a business' available funds and those funds that are needed to cover term debt repayment obligations and capital purchases. When this variable is positive it is a signal a business is staying current on its financial commitments. Alternatively, a negative value for this variable is a signal that a business is not able to pay debts as they are coming due.

Coverage margin is computed using the following equation.

$$\begin{array}{rcc} \text{CRTDRC} & - & \text{Capital-} & \text{Term Debt} \\ & & \text{Purchases} & \text{Principal Payments Due} \end{array}$$

ASSESSING THE PROFITABILITY OF INVESTMENT OPTIONS

The profitability of a business depends on how successful the manager is in selecting investments. It is critical that a manager correctly evaluate the profitability of potential investments or else the profitability of a business can be sub-par for a long period of time if poor decisions are made by the manager.

The profitability of an investment is determined by both the level of returns generated by the investment and how quickly the returns are generated. The timing of investment returns is important because potential returns from alternative investments are lost as one has to wait to receive returns from a given investment. This key point is illustrated in the following example.

Assume that a person will receive \$1000 in two years versus one. This year delay in the receipt of the \$1000 causes the person in question to lose the interest that could have been earned if the \$1000 had been in an interest bearing account that was yielding at an annual rate of, say, 7%.

The person's loss in this case would be \$70 (7% of \$1000) from getting the \$1000 one year later. This loss, which economists refer to as an opportunity cost, should be considered anytime one is evaluating the profitability of investments that yield returns over time.

Net Present Value (NPV) analysis is a capital budgeting methodology that accounts for the opportunity costs of capital. With this analytical method, all of the cash flows associated with an investment are "adjusted" to account for the fact that a dollar received in, say, a year is of less value than a dollar received immediately. The term for this process of adjusting the cash flows of investments is discounting.

Table 1 is an illustration of how a NPV analysis would be conducted for any investment. In this case \$24,000 is paid out in year 0 for an investment. The cash returns from this investment are \$5000 per year in years 1 through 5 and an additional \$3000 in year 5 that represents the salvage value of the investment.

The values contained in the third column of Table 1 are discount factors that correspond to an 8% opportunity cost of capital. These values reflect the amount of money a person would accept immediately and be indifferent to receiving \$1 sometime in the next five years. In this case \$1 received one year from now has a present value of \$0.9259 while a dollar to be received two years from now has a present value of \$0.8573.

The present values printed in the far right hand side column of Table 1 are the products of the cash flows and discount factors presented in each row of the table. The present value of -\$24,000 reported for year 0 is the cost of the investment and the value of \$1996.30 reported for year 5 is the present value of the investment's \$3000 salvage value. The other five values are the present values of the cash flows that will be yielded by the investment in years 1 through 5.

The NPV for the example investment is -\$2040.70. This value represents the sum of all the present values reported in the right hand column of Table 1. The negative value for this particular case is an indication that the investment in question is not as desirable as an alternative investment yielding a return of 8% per annum. Thus in this case the example investment would not be undertaken because it does not perform as well as the alternative investment.

Persons unfamiliar with NPV analysis typically have trouble understanding that one's choice of an opportunity cost for capital is an implicit statement of one's profit objective. A positive NPV is an indication that an investment is achieving a profit objective and yielding a return that exceeds the specified opportunity cost of capital. Conversely, a negative NPV is a sign that an investment will not yield a return that is as high as the opportunity cost of capital.

A NPV analysis can also be performed to determine if it is less costly (more profitable) to, say, lease a car versus borrow money and buy the car outright. An example of this type of NPV analysis is presented in Table 2.

For the leasing example a person can lease a car, valued at \$25,000, by putting \$2,500 down (10% of the value) and then making five annual lease payments of \$5573.03 at the beginning of each year. Rather than leasing the car, a person could finance the car purchase with a loan that

has the following terms: 10% down, \$22,500 borrowed at 9% interest for five years with equal annual payments of \$5784.66 per year due at the end of each year. Offhand it would seem that financing the car purchase is more costly because the annual loan payments are roughly \$200 greater than the required lease payments. However the NPVs in Table 2 show that this is not the case.

The NPV for the purchase option is approximately -\$24,500 while the NPV for the leasing option is roughly -\$25,700. These values indicate that it is less costly for a person to finance the car purchase versus lease the car. The reason that the costs of leasing are higher is that the lease payments have to be made sooner than the loan payments. This more rapid payment requirement prevents a person from earning a return of 10%, which in this case is the opportunity cost of capital. The total interest earnings that would be lost in this case if the leasing option were chosen is almost \$1200. Rather than incur a loss, a person would be wise to purchase the car and finance it with a loan.

NPV analysis is a very valuable capital management technique that accounts for the opportunity costs that are experienced on capital over time. This analytical technique should be used any time one is considering investment opportunities that involve flows of cash over time, otherwise there is a chance one could inadvertently make investment decisions that are not as profitable as possible.

CONTROLLING THE COSTS AND RISKS OF FINANCING THE FARM BUSINESS

Traditionally farmers have financed their farm businesses largely with loans obtained from commercial lenders. For many, this financing method has worked but in some cases heavy reliance on debt has resulted in financial stresses or, at the extreme, bankruptcy. To avoid these negative outcomes of using large amounts of debt to finance farm businesses, farmers need to consider some alternatives that will reduce the costs and risks of financing businesses. Three such alternatives are discussed here.

BLENDING LOANS TO CONTROL INTEREST RATE RISKS

One of the decisions farmers must make when they are negotiating loans is whether they want a fixed or variable interest rate loan. The certainty of a fixed interest rate loan is attractive but so is the lower interest rate that is always available with a variable rate plan. The problem is deciding whether it is advantageous to forego the lower interest rate on a variable rate loan in order to have a guaranteed interest rate for as long as thirty years.

Choosing a fixed interest loan is a hedging activity, of sorts, much like forward pricing milk, corn, or other agricultural commodities. Locking the interest rate protects one from higher interest expenses but the protection comes at the cost of a higher initial interest rate. This higher rate is what compensates lenders and investors for assuming the risks that borrowers are unwilling to assume themselves. The risk in question is the chance that interest rates will rise and bankers or investors will not be able to cash in on this interest rate change because they have agreed to keep interest rates constant.

Some farmers would like the protection of a fixed rate loan but they are unwilling to use these loans because they are too expensive. Rather than putting all of their loans on a variable rate these farmers have the option of splitting their financing between variable rate and fixed rate loans. This strategy has some appeal because it helps farmers keep their financing costs low (low interest on variable rate loans) while building some stability into their repayment requirements on loans (constant payment on fixed rate loan)

Table 3 illustrates how a hypothetical borrower's loan payments would vary depending on how the financing was split between fixed and variable rate loans. For this case it is assumed the borrower is putting together a 20 year mortgage using a variable rate loan with an interest rate of 8.1 percent and a fixed rate mortgage with an interest rate of 9.95%.

The information in Table 4 shows that if the hypothetical farm borrower was willing to move from 100 percent fixed rate financing (0 percent variable rate) to a blended loan with 25 percent variable rate financing, the interest rate on the loan would drop from 9.95% to 9.49% and the payment per \$100 would decline by \$.36 (\$11.71 - \$11.35). These cost savings come at the expense of a fixed payment but the data in the table show that the potential change in the payment would only be \$.19 for each 1 percent change in interest rates. This trade-off between the level and the stability of the payment is occurs each time a dollar of variable rate financing is substituted for a dollar of fixed rate financing.

Deciding whether to take a variable or fixed rate loan does not have to be an all or nothing deal. Borrowers have the option of mixing or blending the two loan payments in order to get the interest rate and payment protection they desire. Borrowers should be aware of this when they are asking lenders to put together financial packages that are affordable and still offer protections against interest rates variability.

SUBORDINATED DEBT

One of the problems with debt financing is that interest payment requirements remain the same regardless of a farm business's earnings. In low income years farm businesses can suffer very serious cash flow strains and financial stresses as they use their scarce cash resources to pay principal and interest payments on debts. Rather than subject themselves to these financial risks, farmers can use an alternative source of credit, referred to here as subordinated debt.

The distinguishing characteristic of subordinated debt is that the interest charge for this credit varies in relation to the profitability of the business. Under this arrangement, the interest charges will decline in years when earnings are low and they will rise in years when earnings are relatively high. The benefits of subordinated debt is that it reduces the chances that a borrower will experience cash flow troubles when earnings are low. The trade-off for receiving this downside protection is paying higher interest payments in years when earnings are at relatively high levels.

Table 4 contains information that illustrates how one might structure the interest changes for a financing plan involving subordinated debt. In this particular example, the interest rate charged

on the outstanding loan balance depends on the rate of return on assets (ROROA) the farm business is able to generate. The maximum interest rate the borrower could pay is 15% and the minimum potential interest rate is 0%. This arrangement gives the borrower "cheap" credit when ROROA is low but it also gives the lender an opportunity to earn some relatively high returns on an investment when the borrower is generating a high ROROA.

The key to putting together a deal involving subordinated debt is finding an investor who is willing to accept the risk that the returns on the loan could be low when the profitability of the borrower is relatively low. It may be difficult to find these investors but it could be worth the effort given that subordinated debt gives a borrower some protection against bankruptcy and financial stress.

EQUITY CAPITAL

In terms of cost and risk, equity capital is preferable to debt, as a financing source because there are no repayment requirements associated with equity capital financing. From a borrower's perspective, this elimination of principal and interest payments is a major benefit because it reduces the need for the farm business to generate cash flows in the short-run.

In order to gain access to equity capital, farmers are going to have to share in the ownership of their farm businesses. For example a farmer might supply 70 percent of a farm business's equity and an investor could supply the other 30 percent of the equity. In this situation the farmer would have a claim on 70 percent of the farm business's earnings, and the remaining 30 percent of the profits would go to the investor. Similarly 70 percent of the farm's assets and debts would belong to the farmer and the remaining assets and debts would be the investor's.

The information in Table 5 shows what can happen if a farm business owner decides to allow an investor to buy an interest in the farm business. In this case the farmer can operate a farm with \$1,000,000 in assets and use the returns from these assets to retire the principal and interest on \$600,000 of debt. The alternative for this farmer is to only incur \$400,000 of total debts and finance the balance of the operation with \$200,000 of equity capital received from an investor. This latter arrangement results in the farmer owning 67 percent of the farm business.

The ROROE values presented in the table indicated that the variability of the farm business's earnings will be greatest when no investor equity is used to finance the farm. When no investor capital is used the ROROE ranges 10 percentage points (14% to 4%); but when investor capital is used the ROROE ranges 6.68 percentage points from a high of 12.34% to a low of 5.66%. The narrower the spread for the ROROE's reported for the investor capital option is evidence that a farm business's financial risks diminish as equity capital replaces debt.

The debt to profit values present in Table 5 are further evidence that using equity capital instead of debt can reduce a farm business's financial risks. Notice that in all the scenarios presented for this example, a greater percentage of profits need to be committed to servicing debts when the farmer elects to maintain 100 percent ownership of the business. This information is important because it means a farm business will have less discretionary income and margin for error when it elects to use debt versus equity as a source of financing.

The information in the table is evidence that a business's financial stability can be improved when equity capital from an investor is used to replace debt capital. This stability is desirable but it comes at the cost of control. As one lets other parties invest capital in a business, one has to share in the management and operation of the business. Not everyone will be willing to give up this control of a business. Thus there will be some farmers who decide to forego the risk reductions that come with equity financing because they are not willing to give up total control of the businesses.

CONCLUSION

More and more farm business managers are realizing that capital management is the most difficult and most important task they perform. These managers understand that they have to be knowledgeable of financial operations and able to diagnose problems before they become so serious that they jeopardize a farm business's survival. This paper has hopefully given the reader some ideas of how managers can use various financial measures to assess the financial performance of farm businesses.

This paper has also considered how managers should go about analyzing the profit potential of various investment options using a capital budgeting method known as net profit value analysis. This method of analyzing investment options should be used by managers to insure that they account for the opportunity cost of capital. If this is not done managers run the risk of allocating capital resources to investments that yield less than maximum returns.

This paper has also made some suggestions of how managers can control both the cost and risks of financing their farm businesses. Reducing financing costs and minimizing cash flow requirements on debts both increase the financial viability of farm businesses. The financing options presented in this paper all improve the financial feasibility of businesses and thus should be of interest and use to all farm business managers who are willing to try new things that will improve the financial operations of their farm business.

TABLE 1: EXAMPLE NET PRESENT VALUE ANALYSIS

<u>Year</u>	<u>Cash Flow</u>	<u>Discount Factor (8%)</u>	<u>Present Value</u>
0	-24,000	1.0000	-24,000
1	5,000	0.9259	4,629.50
2	5,000	0.8573	4,286.50
3	5,000	0.7938	3,969.00
4	5,000	0.7350	3,675.00
5	5,000	0.6806	3,403.00
5	3,000	0.6806	<u>1,996.30</u>
			-2,040.70

TABLE 2: EXAMPLE NPV ANALYSIS OF LEASING VERSUS BUYING**Leasing Analysis**

<u>Year</u>	<u>Cash Flow</u>	<u>Discount Factor (10%)</u>	<u>Present Value</u>
0	-2,500.00	1.0000	-2,500.00
0	-5,573.03	1.0000	-5,573.03
1	-5,573.03	0.9091	-5,066.44
2	-5,573.03	0.8265	-4,605.90
3	-5,573.03	0.7513	-4,187.23
4	-5,573.03	0.6813	<u>-3,806.61</u>
			-25,739.21

Purchase Analysis

<u>Year</u>	<u>Cash Flow</u>	<u>Discount Factor (10%)</u>	<u>Present Value</u>
0	-2,500.00	1.0000	-2,500.00
1	-5784.66	0.9091	-5,258.83
2	-5784.66	0.8265	-4,780.81
3	-5784.66	0.7513	-4346.23
4	-5784.66	0.6813	-3951.16
5	-5784.66	0.6209	<u>-3592.00</u>
			-24,429.03

TABLE 3: POSSIBLE INTEREST RATES AND REPAYMENT REQUIREMENTS ON VARIOUS 20 YEAR MORTGAGE PACKAGES WHEN THE VARIABLE RATE 8.10% AND THE FIXED RATE IS 9.95%

Percent Variable Rate Financing Rate	Blended Interest per \$100 loaned	Annual Payment given a change a of 1 % in interest rate	Change in payment of payment
0	9.95%	\$11.71	0
25	9.49%	\$11.35	.19
50	9.03%	\$10.99	.39
75	8.57%	\$10.63	.57
100	8.10%	\$10.26	.77

TABLE 4: INTEREST RATE SCHEDULE FOR FINANCING PLAN INVOLVING SUBORDINATED DEBT

<u>ROROA</u>	<u>INTEREST CHARGE</u>
2.0% or less	0%
Greater than 2.00% but not greater than 6%	ROROA less 2.0%
Greater than 6% but not greater than 12%	ROROA less 1.5%
Greater than 12 % but not greater than 16%	ROROA less 1.0%
Greater than 16%	15%

TABLE 5: EXAMPLE ILLUSTRATING HOW THE FINANCIAL PERFORMANCE OF A BUSINESS IS AFFECTED BY EQUITY CONTRIBUTIONS OF INVESTORS

	Scenario		
	1	2	3
	ROROA = 11%	ROROA = 9%	ROROA = 7%
	Interest = 9%	Interest = 9%	Interest = 9%
No Investor Equity			
Farmer Ownership	100%	100%	100%
Debt to Asset	.60	.60	.60
ROROE	14%	9%	4%
Profit	56,000	36,000	16,000
Annual Debt Payment	65,725	65,725	65,725
Debt to Profit	1.17	1.83	4.11
Investor Equity			
Farmer Ownership	67%	67%	67%
Debt to Asset	.40	.40	.40
ROROE	12.34%	9%	5.66%
Profit	74,040	54,000	33,960
Annual Debt Payment	43,816	43,816	43,816
Debt to Profit	.59	.81	1.29