Determining Risk Exposure

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Understanding exposure to risk is fundamental to farm business success. This implies an understanding of risk sources, tradeoffs and management strategies. Management decisions and outcome success are dependent upon correct action selection. Understanding risk exposure will allow managers to meet their risk management goals by taking correct action.

The two basic questions every farm business manager must answer to effectively manage risk are: 1) What is the risk bearing *capacity* of my farm? and, 2) What is my *willingness* to assume risk? The answers to these questions, and the process followed to answer them, will determine the correct risk exposure.

Risk Bearing Capacity

The capacity to bear risk primarily depends upon whether or not the farm operation can withstand financial losses without being forced into solvency or liquidation. Financial risks are largely determined by production and market risks. If farm production declines, and/or if prices drop, profit decreases and losses occur. These losses must be covered or absorbed out of equity capital or net worth.

Financial losses are also influenced by the capital structure of the farm, i.e. the mix of debt and equity. High debt farms, or those with a high proportion of debt relative to equity or total assets, are especially vulnerable because losses can be magnified and financial risks increased. Consequently, the debt to asset ratio is one important measure of determining the risk capacity of any farm operation.

Another important measure of risk bearing capacity is loan repayment capacity. Lenders want to be repaid in cash and have little interest in repossessing the collateral securing a loan. Ability to repay is the final determination of any credit decision. A cash flow analysis can indicate the ability of the farm to repay by showing the timing of cash flows through the farm business.

Two repayment capacity measures recommended by the Farm Financial Standards Task Force, are 1) the Term Debt and Capital Lease Coverage Ratio, and 2) the Capital Replacement and Term Debt Repayment Margin.

Willingness to Assume Risk

The willingness to assume risk primarily depends upon individual attitudes, objectives and financial resources. Given both the individual's objectives and financial situation, a farmer's attitude about risk may vary depending on the probabilities and size of the potential gains and losses. However, some farmers are willing to assume the

probability of large financial loss with little apparent stress, while others with the same financial resource experience high stress and sleepless nights. These differences are due to personal preferences and individual objectives. Generally, farmers have a greater willingness to accept risk than their farm has ability to bear risk.

Measures of individual willingness to assume risk are more subjective than measures of farm risk-bearing capacity. One measure of willingness to assume risk is the certainty equivalent (CE). CE is defined as the amount of money for certain that makes the farmer indifferent between a guaranteed amount for certain and the expected risky amount from accepting the risk. Farmers with high CE are less willing to accept risk than farmers with low CE for the same risk.

Another method of determining willingness to accept risk is to compare the CE with the expected monetary value (EMV) from accepting the risk. The expected monetary value is the probability-weighted sum of the possible monetary outcomes. The EMV minus the CE is called the risk premium. Obtaining data on the certainty equivalent and calculating the risk premium is a relatively simple method of determining a farmer's risk attitude considering the probabilities and sizes of gains and losses.

Because risk attitudes change over time, and with different financial positions, alternative probabilities and sizes of losses and gains, it is difficult to predict how individual farmers will respond over time. However, understanding the variables that cause risk attitudes to change are beneficial in helping design management strategies. Insurance agents who understand risk concepts are in a better position to identify which insurance products best meet any particular farmer's risk management needs.

Desired Risk Exposure

There is a trade-off between risk and return. If producers knew future yields and input and commodity prices with certainty, rents and returns would be bid up or down until costs equaled returns. All of the factors of production (land, labor, capital and management) would earn a competitive return. However, in this world of certainty there would be no losses or profits.

In the real world of making risky decisions, individual farmers must base production decisions on expectations rather than certainty. The factors of production are bid up or down until costs equal "expected" returns. Actual outcomes that are higher than expected are called profits and outcomes lower than expectations are losses. The desired level of risk exposure, or optimal choice, for the farm producer is to balance potential for profit against the risk of loss. Generally, the risk of loss is greater than the potential for profit.

Farm producers operate in a world of tremendous and increasing uncertainty. Information and tools that reduce this uncertainty are essential to survival. Crop insurance agents are in an opportunistic position because they are one of the few individuals/consultants that sit down one-on-one with producers and help them answer the important questions posed above. Lenders and extension agents are other individuals who are influential in the economic life of farm producers. For any of these

professionals to be effective, it is important to be knowledgeable regarding risk concepts.

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