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Risk and Risk Management

What Is Risk?

Every business and every person faces risks each day, but what is risk? People have different attitudes about risk. Some will wager a week's pay at a casino, while others will hide their money under a mattress. A person's aversion to risk is a key factor in the extent to which they will try to manage their risks. In general terms, people often think of risk as the chance of something bad happening. "Bad" and "chance" are two key elements of risk. In financial terms, risk is the possibility of financial loss.

"Bad" is the first element, and it refers to an event or outcome that is adverse, such as a crop failure. "Bad" is also relative—losing more money is worse than losing less money.

"Chance" is the second element. Risk involves uncertainty that an adverse event will occur. If something "bad" is absolutely, positively, guaranteed to happen, there is no risk because uncertainty isn't present. For example, there is no risk associated with jumping out of an airplane without a parachute. You will perish, guaranteed. It's stupid, but not "risky." Jump out of the plane with a parachute, and you'll probably live, but there's a chance you won't. Thus, most people consider sky-diving risky and jumping out of the plane without the parachute suicide. This example is extreme, but it is important to note that risk management will not help the individual intent on jumping without a chute. In business terms, a business must be economically viable and the individual must be willing to use risk management for risk management to be effective.

> *Risk management, in a business context, is about reducing the cost of risk, which includes the cost of managing risk. No business is risk-free, and risk management won't eliminate all risks. Risk management is about 3 R's: returns, risks, and ruin.*

What Is Risk Management?

Risk management, in a business context, is about reducing the cost of risk, which includes the cost of managing risk. Business, including farming, is about making profits or gains. Farmers need money to make a living for themselves and their families. To make a living, farmers must take risks, investing $200,000 or more worth of seed, fertilizer, and herbicides and hoping for rain but not too much rain. Farming is risky; one doesn't know what the outcome will be when the crop is planted (the "chance" element), as all or a portion of the crop could be lost (the "bad" element). Because farmers take this risk, we have a plentiful food supply.

The first key concept of risk management can be expressed by the old saying, "nothing ventured, nothing gained." Risk management involves asking the question, ***"Is the risk appropriate for the return?"*** Is the farmer venturing too much for too little gain, i.e., will the farmer make enough profit to reasonably justify the risk? The word "reasonable" is key. Across America, there are thousands and thousands of people who spend money believing they will win the lottery. The chances of winning a lottery are usually remote; hence, it is not reasonable to assume you will win the lottery.

Usually, people want a higher return on their investment in exchange for taking a greater risk. Simply put, they **"don't want to risk a lot for a little."** Banks, for example, charge higher interest rates to customers who they believe are less likely to pay back a loan. A simple example of this concept follows.

Suppose you were to bet money on the outcome of a coin flip. You pay a dollar to play. If it's heads, you win $1.10. If it's tails, you get nothing. Want to play this game? Probably not. If you could play this game a hundred times, on average you'd end up at the end of the game with $0.45. Why risk a dollar for a 50-50 chance to come out 10 cents ahead or a dollar behind?

Let's change the game a little. Heads, you get $2, tails you get nothing. Many people might play this game with a friend just for the fun of it. The chances of winning or losing are 50-50, but the effect of losing is not much. Risks are low as the outcome— even if one loses—is only to lose a dollar. Further, chances are that if you play it many times, you'll come out even. After all, you know that with a coin there's a 50-50 chance of winning or losing, and you know how much you could win or lose. Simply put, you ***"know the chances of the possible outcomes."***

Suppose the game paid $3 if you win. Would you be more likely to play? Probably so. The odds are the same, but the payoff is more: the same risk as before but a higher expected return. If you had a chance to choose between the $2 game and the $3 game, you'd choose the $3 game.

Now, suppose it's a bet for $3 million. You pay a million to maybe win $3 million. Most people wouldn't take this bet, even though the chances are exactly the same of winning or losing as with a dollar. It's still a 50-50 chance, but losing would be much worse. Again, simply put, most people ***"don't risk more than they can afford to lose."*** In other words, they try to avoid ruin. These are the introductory guiding principles of risk management (see box).

1-Minute Risk Management

What

The effective risk manager assures financial solvency against the consequences of risk at the lowest possible cost.

How

Understanding financial statements provides the foundation on which a sound risk management plan can be devised and appropriate risk management tools employed.

Guiding Rules

- Don't risk more than you can afford to lose.
- Don't risk a lot for a little.
- Understand the likelihood and severity of possible losses.

Source: Mehr and Hedges, *Risk Management in the Business Environment*, Irwin Press, 1963.

Don't Risk a Lot for a Little

The more risk you take, the greater the reward you should expect. It doesn't make sense, for example, to play the coin-flipping game mentioned earlier if at the end of the game you've paid a dollar to net 55 cents. Are there any risk-free investments? Yes. U.S. Treasury bills are generally considered "risk-free." The U.S. Government is unlikely to default on its bills. If you buy a T-bill, you can be as absolutely certain as anyone can be that you will be paid exactly what you are owed. The dollar may not be worth as much, but you will get paid. A T-bill is about as risk-free an investment as you can find. In January 2000, a T-bill paid about a 5-percent return.

Corporate bonds aren't quite as safe, as some companies go bankrupt. If they do, however, whatever assets are left go to pay creditors, such as the bondholders, first. Bonds are debt – you are loaning the company money. You are not an owner of the company. If you're going to invest and you can buy a T-bill with a 5-percent return, what would make you buy a corporate bond that may or may not pay you back? Probably a higher rate of return. For taking a greater risk, you should want a higher return.

What about stocks? Over the past 60 years or so, stocks have returned roughly 10 percent per year. Some companies have gone bankrupt; others have grown tremendously. If a company goes bank-

rupt, bondholders get paid first from whatever money is left. Thus, there's a greater chance that stockholders will get nothing. Therefore, an investor should expect to make more money investing in a company's stock than in its bonds, because there is more risk for stockholders. Again, if you can obtain a 5-percent return with no risk (T-bill), would it be financially wise to invest in a stock that would only make a 4-percent return? No—why incur a higher chance of losing your money to make less than you could get with no risk? This is a key concept of risk management. In order to justify making a higher risk investment, one should expect a higher return on the investment. The more risk, the higher the chance of a loss, so the potential gains from other similar investments need to be high enough to make up for the losers.

How do the returns from farming fit into this? Averaged over all farmers, farming yields a return on equity of 2 to 3 percent. Like any average, some farmers earn much more while others earn much less. Many farmers earn less on their equity than they could make by investing in a risk-free T-bill.

Planting a crop is an investment decision. Any business person, including a farmer, should continually ask if they could use their assets to make money some other way, if financial gain is important to them. When the returns don't justify the risk, enrolling in the Conservation Reserve Program (CRP) or cash renting their land are ways farmers can earn a less risky return on their assets.

Don't Risk More Than You Can Afford To Lose

Few people think it wise for retirees to invest their life's savings in an internet stock. If they lose, there is no opportunity to make back the loss. Few people have much patience with those who encourage senior citizens to gamble the money saved for their golden years. Thus, many legitimate investment advisors encourage their retired clients to hold "safe" investments, such as T-bills and bonds.

Yet, the casinos, horse tracks, day-trading establishments, and even Chambers of Commerce have customers and members who will gamble more than they can afford to lose. Who hasn't seen movies of the gambler who loses, but just needs that last "score" to get even. It never seems to work out for this person. No matter how good the odds, sometimes bad stuff still happens.

No one should invest more than they can afford to lose, unless they want a drastic change in their lifestyle, because sometimes they'll lose. ***Ruin is the result of losing more than you can afford.*** Unfortunately, to support a family by farming, some farmers must face the possibility of ruin each year. Crop insurance helps reduce the chance of ruin by reducing the maximum amount of money they can lose. Still, in today's economic climate, ruin is a real issue for farmers.

Know the Odds

A coin toss is a 50-50 proposition. A roll of a die is a 1-in-6 event. What are the chances that this year will bring a drought? And, if it does, how much revenue will be lost? No one knows precisely, but estimates can be made based on historical data, and these estimates can be invaluable in making an investment decision. RMA has developed and is developing tools to help farmers estimate the chances of profit or loss. The odds may be in a farmer's favor, but sometimes they still lose. That is why avoiding ruin is important—it allows a farmer to keep farming. A loss doesn't put them out of business.

It is very important to realize that the odds of making a profit or of ruin change every year, and a losing year can make the odds of either much worse the next year. "Losing years" must be paid for by borrowing or by using equity built up in good years. The greater the debt or the less equity a farmer has, the harder it will be for the farmer to pay the bills if another loss occurs. Thus, it is very

important that farmers understand their true financial situation, including not only preparing cash flow projections, but also preparing a balance sheet and income statement. One can have a positive cash flow and still lose money.

Putting It All Together

A good set of financial statements is critical and is a prerequisite for risk management. Financial statements describe the assets and liabilities, sources of financial risk, and the profit or loss of the business. For risk management to be effective, the business must have a reasonable expectation of making a profit (assuming financial returns are important).

Risk management cannot make a business that is fundamentally not profitable, profitable. With financial statements, a farmer can then apply these guiding principles to assess his or her risks in the context of other financial investments. Then, a farmer can analyze various risk management strategies to help bring the expected financial returns in line with the risks. Done well, risk management can help protect a farmer's hard-earned money from the risks associated with farming.

Conclusions

RMA's mission is to encourage farmers to proactively manage their risks. Farming is risky, more so than many other businesses. For taking these risks—and feeding the world—some farmers earn a good return on their investment. Others do not. By practicing risk management, farmers can gain greater control over their risks, financial returns, and solvency. (For more information, see *About the Risk Management Agency* (PA-1667-02) or visit us online at www.rma.usda.gov).

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