



## How Much Debt Can a Farm Carry?

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January 4, 2019

*farmdoc daily* (9): 3

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Recommended citation format: Langemeier, M. "How Much Debt Can a Farm Carry?" *farmdoc daily* (9): 3, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, January 4, 2019.

Permalink: <https://farmdocdaily.illinois.edu/2019/01/how-much-debt-can-a-farm-carry.html>

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### Introduction

A recent article by Schnitkey ([farmdoc daily, December 18, 2018](#)) documents the percentage of Illinois FBFM grain farms by debt-to-asset category for the last decade. The percentage of farms with a debt-to-asset ratio of 0.50 or higher was the same in 2017 as it was 2007, the start of the ethanol boom. In light of this, it is natural to think about how much debt a particular farm can carry. Although this question is too general for a specific response, some guidelines can be provided for certain debts where repayment terms are known. Important factors to be considered when estimating the amount of debt that can be repaid and the amount of debt that a farm is comfortable with include current liquidity and solvency positions, repayment capacity, length of repayment period and interest rate, stability of income, skill and experience of each operator, age and health of operators, and an operator's risk aversion level.

A case farm in west central Indiana is used to illustrate liquidity, solvency, and repayment capacity in the discussion below. This case farm utilizes a corn/soybean rotation and operates 3000 acres, 750 of which is owned.

### Current Liquidity and Solvency Positions

Farms with solid liquidity and solvency positions have more flexibility regarding increases in debt levels. A farm with a solid liquidity position has sufficient current assets to cover current liabilities as well as a potential increase in current liabilities. A farm with a solid solvency position has sufficient current and noncurrent assets to cover current debt obligations as well as potential increases in debt levels.

The case farm had a current ratio of 5.30 and a solvency ratio of 0.142 at the end of 2018. In general, a current ratio above 2.0 and a solvency ratio below 0.30 are indicative of strong financial positions. Thus, the case farm has strong liquidity and solvency positions.

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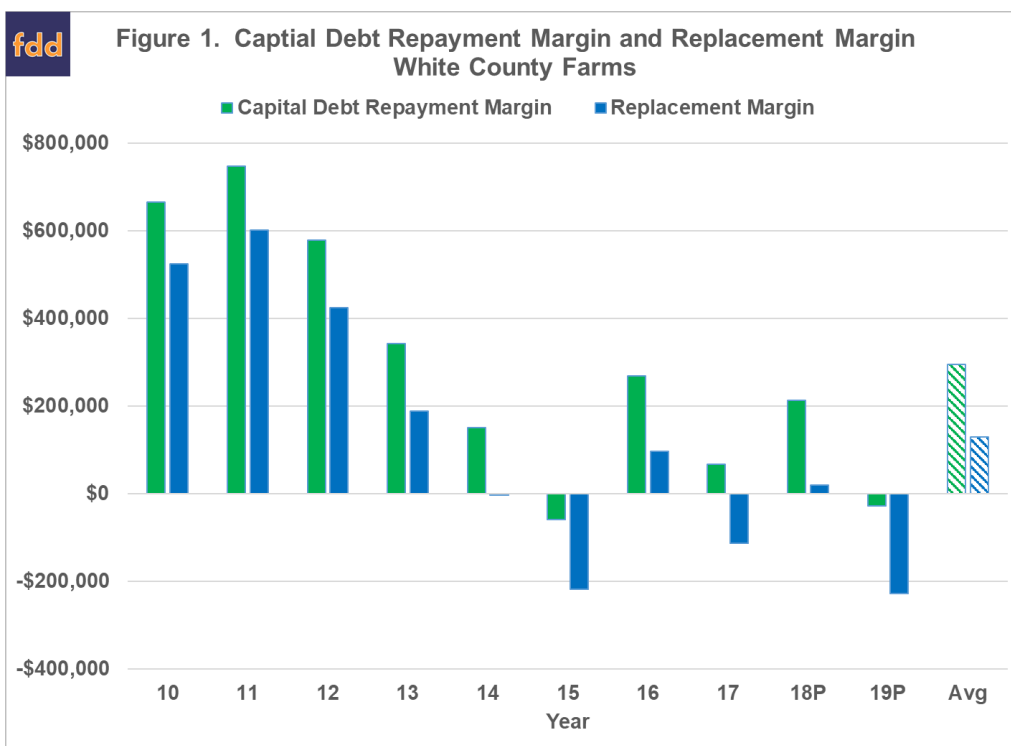
## Repayment Capacity

Repayment capacity measures include capital debt repayment capacity, capital debt repayment margin, and replacement margin. Capital debt repayment capacity and capital debt repayment margin address a farm's ability to repay operating loans and to cover the current portion of principal and interest due on noncurrent loans such as a machinery, building, or land loan. The replacement margin enables borrowers and lenders to evaluate whether a farm has sufficient funds to repay term debt and replace assets. For a farm to grow, it is essential that the replacement margin be large enough to repay term debt, replace assets, and purchase new assets. For this to occur, the long-run average replacement margin has to be positive. Langemeier (*farmdoc daily*, September 20, 2018) further discusses the relationship between repayment capacity and farm growth potential.

Repayment capacity projections for the case farm in 2019 can be found in Table 1. The projections of accrual net farm income use trend yields and futures prices for next fall adjusted for basis. It appears that the case farm is going to have difficulty repaying loans in 2019. Given this situation, the case farm needs to be cautious when making asset purchase decisions, particularly those requiring additional noncurrent debt.

<i>Capital Debt Repayment Capacity and Margin, and Replacement Margin</i>		
Accrual Net Farm Income	1	-\$63,843
Off-Farm Income	2	0
Income and Self-Employment Taxes	3	0
Interest Expense on Term Debt	4	58,636
Depreciation	5	172,728
Family Living Expenses	6	90,000
<b>Capital Debt Repayment Capacity {(1+2-3+4+5)-6}</b>	7	<b>\$77,521</b>
Principal on Term Debts and Capital Leases	8	47,895
Unpaid Operating Debt from Prior Period	9	0
<b>Capital Debt Repayment Margin {7 - (4+8+9)}</b>	10	<b>-\$29,010</b>
Cash Used for Capital Replacement	11	198,637
<b>Replacement Margin {10-11}</b>	12	<b>-\$227,647</b>
<i>Term Debt and Capital Lease Coverage Ratio {7 / (4+8+9)}</i>	13	<b>72.8%</b>
<i>Replacement Margin Coverage Ratio {7 / (4+8+9+11)}</i>	14	<b>25.4%</b>

Figure 1 illustrates the capital debt repayment margin and replacement margin for the case farm since 2010. Though both of these measures appear to be relatively low in 2019, the ten-year averages are positive indicating the case farm has been able to repay debt, replace assets, and expand during the last ten years.



### Length of Repayment Period and Interest Rate

The longer the repayment period and the lower the rate of interest, the greater the debt that can be carried by any level of funds available for loan repayment. It is important to compare the life of an asset to the length of the loan used to help finance the asset. If the loan length is substantially less than the life of the asset, repayment capacity diminishes. The case farm has a ten-year note on machinery and a thirty-year note on land. These loan lengths make it easier for the case farm to repay noncurrent loans.

### Stability of Income

Income risk varies widely between farms and enterprises. Price, weather, and disease all impact risk levels. When heavy debt loads are necessary, a farm should reduce risks as much as possible. The greater the weather or price risk for the farm's enterprises, the more conservative the amount of loans should be. Where crop and livestock insurance can be used to reduce risk, its use should be considered. Also, the greater the risk, the greater the importance of doing things right. When everything is done well and on time, prospects for success are greatly improved, and risk is reduced.

### Effect of Skill and Experience

The value of each operator's skill and experience is important. Superior performance resulting from excellent management may be the most important factor influencing debt carrying capacity. Superior management will cause income prospects to improve and reduce the possibility of losses.

### Age and Health of Operators

These factors are, of course, relative ones. Younger, more ambitious operators, who also have the advantage of good health, can expect to meet relatively heavy debt repayment demands compared to anyone lacking in health and vigor. Young operators are often relatively more interested in expansion. When an operation is aggressively expanding, it is imperative to gauge the impact of this expansion on the farm's liquidity, solvency, and repayment capacity positions.

### Risk Aversion

Debt is one of the largest sources of risk (i.e., volatility of income). For this reason, among others of course, operators that are averse to risk tend to have lower debt-to-asset ratios. These lower debt-to-

asset ratios often reduce the rate of expansion. However, they also may reduce the probability of large losses and the anxiety often associated with high debt levels.

### **Concluding Comments**

There are numerous factors impacting a farm's debt holding capacity. It is important to remember that financial leverage or debt directly impacts a farm's growth rate through its effect on expected returns and risk ([farmdoc daily, May 4, 2018](#)). As long as a farm's return on assets is larger than the interest rate on borrowed funds, financial leverage will increase the return on equity and the sustainable growth rate. However, financial leverage also increases risk. For this reason, farmer's need to weigh the benefits (in the form of higher returns and farm growth) and the costs (in the form of higher interest costs and increased risk) of financial leverage or debt.

### **References**

Langemeier, M. "[Measuring Repayment Capacity and Farm Growth Potential.](#)" *farmdoc daily* (8):175, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, September 20, 2018.

Langemeier, M. and M. Boehlje. "[What is My Sustainable Growth Rate?.](#)" *farmdoc daily* (8):81, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, May 4, 2018.

Schnitkey, G. "[Incidence of High Debt-to-Asset Ratios Grow Over Time.](#)" *farmdoc daily* (8):231, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, December 18, 2018.