Review VI – Debt Decisions

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Initial Income Statement

Item	Per Acre	Acres	Total
Revenue	748	1,280	957,440
Cash COGS	524	1,280	670,720
Depreciation			75,430
Gross Profit			Q1
Interest			95,000
Net Income			Q2

Initial Balance Sheet

Item	Subtotal	Total	Item	Subtotal	Total
Cash		26,747	Debt		
Machinery	502,867		Real Estate	1,084,388	
Acc. Depr.	191,089	311,778	Equipment	377,150	1,461,538
Land & Buildings		3,037,294	Equity		Q3
Total Assets		3,375,819	Total Ownership		33,75,819

Original Statement Questions

1. The Gross Profit for the original firm size is
   a. 113,788
   b. 211,290
   c. 228,562
   d. None of the above
2. The Net Income for the original firm size is
   a. 104,074
   b. 116,920
   c. 121,567
   d. None of the above
3. The interest rate on the original debt structure is
   a. 6.0 %
   b. 6.5 %
   c. 7.0 %
   d. None of the above

Purchase Characteristics

- To set up the rest of the problem, we want to assume that the farmer can buy an additional 40 acres at \$ 2,063 / acre.
- We will assume that the farmer will use \$ 20,060 of cash for the purchase (around 24 %).
- This use of cash will provide a lower interest rate than the general market rate – 7 %.

Pro Forma Income Statements

Item	Amount
Revenue	Q4
Cash COGS	Q5
Depreciation	75,430
Gross Profit	Q6
Interest	?
Net Income	?

Pro Forma Income Statement Questions – 1

4. The Revenue after the purchase will be
   a. 864,470
   b. 1,106,320
   c. 987,360
   d. None of the above.
5. The Cash Cost of Goods Sold will be
   a. 691,680
   b. 727,784
   c. 675,390
   d. None of the above
6. The Gross Profit for the firm will be
   a. 414,640
   b. 136,722
   c. 220,250
   d. None of the above

Pro Forma Income Statement Questions – 2

7. Suppose that the interest rate on the new debt issued to purchase the land is 7 %, the interest expense after the purchase will be
   a. 99,061
   b. 103,231
   c. 99,373
   d. None of the above
8. At this interest rate, the profit after the land is acquired is
   a. 121,189
   b. 120,877
   c. 99,387
   d. None of the above

Pro Forma Income Statement Questions – 2

9. Is borrowing to acquire the additional farmland a good idea?
    a. It increases net income, but may introduce additional risk because the increases the debt-to-asset ratio.
    b. It results in lower net income.
    c. It allows the farmer to spread equipment expense over a larger land base.
    d. a and c above.

Ratio Analysis of Additional Debt – 1

10. The rate of return on assets for the original income statement/balance sheet combination is
    a. 6.37 %
    b. 6.26 %
    c. 6.76 %
    d. None of the above.
11. The marginal return on an additional dollar invested in the original assets (operating margin) given an interest rate of 6.5 % is
    a. 0.25 % – thus taking out additional debt is a good idea
    b. 0.25 % – thus taking out additional debt is a bad idea
    c. -0.24 % – thus taking out additional debt is a bad idea
    d. None of the above.

DuPont Analysis of Debt – 1

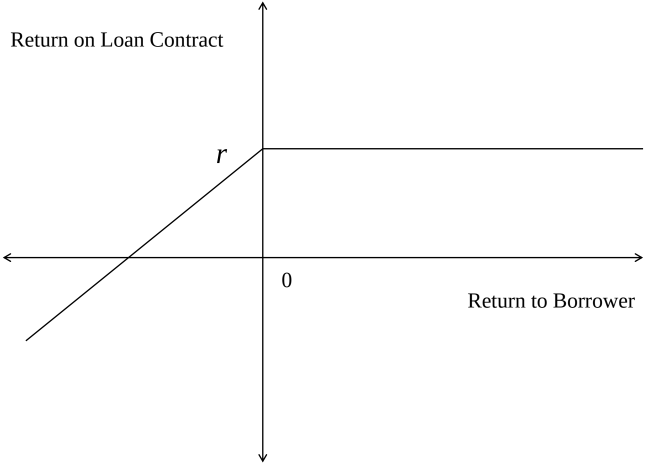
- For the next 5 questions, assume that rate of return on assets is 0.079, the variance of the rate of return on assets is 0.00523, the cost of capital (interest rate) is 0.055, and the initial debt-to-asset position is 0.45.

12. The expected rate of return on asset for this farmer is
    a. 5.425 %
    b. 9.864 %
    c. 7.230 %
    d. None of the above.
13. The marginal rate of return on borrowing is
    a. 1.25 %
    b. 3.75 %
    c. 2.40 %

DuPont Analysis of Debt – 2

14. The variance of the rate of return on equity is
    a. 0.00523
    b. 0.01729
    c. 0.02934
    d. None of the above.

DuPont Analysis of Debt – 3



DuPont Analysis of Debt – 4

15. What is the z-score (how many standard deviations) for a loss in equity?
    a. 0.25
    b. 0.75
    c. 1.25
    d. None of the above
16. What rate of return on assets would be required to drive the firm to bankruptcy?
    a. -0.5253
    b. -0.4253
    c. 0.7500
    d. None of the above.

DuPont Analysis of Debt – 4

17. What is the z-score (how many standard deviations) before the firm becomes bankrupt?
    a. 1.459
    b. 2.354
    c. 4.595
    d. None of the above.
18. The debt-payoff figure presented above resembles
    a. Buying a call option
    b. Buying a put option
    c. Selling a call option
    d. Selling a put option

General Credit

19. The three legged stool of credit is
    a. Profitability, solvency and liquidity
    b. Inflation, profitability, and land values
    c. The Federal Reserve System, the Farm Credit System, and Commerical Banks
    d. None of the above.
20. One difficulty in the agricultural sector involves the prevalence of farmland on the balance sheet. Since a significant portion of the returns in are from the appreciation in farmland
    a. Borrowing to buy farmland could result in increased profitability, but reduced liquidity.
    b. Borrowing to buy farmland could result in decreases profitability, but increased liquidty.
    c. Bankers do not like to lend for farmland because these gains decrease long-run solvency.
    d. None of the above.