

A Firm Requires An Investment Of \$30,000 And Borrows \$15,000 At 8%. If The Return On Equity Is 22% And

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Understanding the financial structure and profitability metrics of a firm is crucial for investors, managers, and stakeholders. When a firm invests \$30,000 and finances part of this amount through borrowing—specifically, borrowing \$15,000 at an 8% interest rate—several key financial ratios and concepts come into play. Notably, the Return on Equity (ROE) of 22% provides insights into how effectively the company utilizes shareholders' equity to generate profits. This article offers a comprehensive analysis of such a financial setup, exploring leverage, profitability, and returns, and how they interact to influence overall firm performance.

Understanding the Basic Financial Components

Before diving into detailed calculations and implications, it's essential to comprehend the fundamental components involved:

1. Investment and Capital Structure

- Total Investment (Assets): \$30,000
- Debt (Liability): \$15,000 borrowed at 8%

- Equity (Shareholders' Funds): The remaining amount invested by owners, calculated as:

$$\text{Equity} = \text{Total Investment} - \text{Borrowed Funds} = \$30,000 - \$15,000 = \$15,000$$

2. Borrowing Details

- Loan Amount: \$15,000
- Interest Rate: 8%
- Annual Interest Expense:

$$\text{Interest} = \text{Borrowed Amount} \times \text{Interest Rate} = \$15,000 \times 8\% = \$1,200$$

3. Return on Equity (ROE)

- Given ROE: 22%
- This ratio indicates how much profit is generated per dollar of shareholders' equity.

Calculating the Firm's Net Income

ROE is a key metric that links net income to shareholders' equity:

ROE Formula:

$$\text{ROE} = \frac{\text{Net Income}}{\text{Equity}}$$

Using the given ROE (22%) and equity (\$15,000):

$$\text{Net Income} = \text{ROE} \times \text{Equity} = 0.22 \times 15,000 = \$3,300$$

Result:

- The firm's annual net income is \$3,300.

Analyzing Operating Income and Earnings Before Interest and Taxes (EBIT)

Net income is affected by interest expenses. To understand the firm's profitability before financing costs, we need to determine EBIT:

Earnings Before Interest and Taxes (EBIT):

$$\text{EBIT} = \text{Net Income} + \text{Interest Expense}$$

$$\text{EBIT} = 3,300 + 1,200 = \$4,500$$

This indicates that before paying interest, the firm earns \$4,500 annually.

Assessing Leverage and Its Impact

Leverage refers to the use of borrowed funds to finance assets. It amplifies returns but also increases risk.

1. Degree of Financial Leverage (DFL)

- DFL measures how sensitive net income is to changes in EBIT.
- It can be calculated as:

$$\text{DFL} = \frac{\text{EBIT}}{\text{EBIT} - \text{Interest}}$$

$$\text{DFL} = \frac{4,500}{4,500 - 1,200} = \frac{4,500}{3,300} \approx 1.36$$

This indicates that a 1% change in EBIT results in approximately a 1.36% change in net income.

2. Financial Leverage Effect on ROE

- The use of debt enhances ROE when the firm earns more than the interest rate.
- Since the firm's ROE (22%) exceeds the interest rate (8%), leverage positively impacts shareholder returns.

Return on Assets (ROA) and Its Significance

ROA indicates how efficiently the firm uses its total assets to generate profit.

$$\text{ROA} = \frac{\text{Net Income} + \text{Interest Expense} \times (1 - \text{Tax Rate})}{\text{Total Assets}}$$

Assuming a tax rate of zero for simplicity (or that taxes are not considered here), and with total assets of \$30,000:

$$\text{ROA} = \frac{3,300 + 1,200}{30,000} = \frac{4,500}{30,000} = 15\%$$

This suggests the firm's assets generate a 15% return before financing costs.

Implications of the Financial Structure

The given data suggests several important insights:

1. Profitability and Leverage

- The firm's ROE (22%) is substantially higher than its ROA (15%), reflecting the positive effect of leverage.
- Borrowing at 8% interest, while increasing risk, has allowed the firm to generate higher returns for shareholders.

2. Risk Considerations

- Increased leverage amplifies both potential gains and losses.
- If EBIT drops below the interest expense, the firm could face losses, impacting equity holders more severely.

3. Breakeven Analysis

- To maintain current ROE, EBIT must cover interest expenses with room for profit.
- The firm's EBIT of \$4,500 comfortably exceeds interest expenses (\$1,200), indicating a safe margin.

Strategic Recommendations Based on Financial Metrics

To optimize financial performance and minimize risks, firms should consider the following:

1. Managing Leverage

- Maintain leverage at levels that enhance returns without exposing the firm to excessive financial risk.
- Regularly evaluate debt levels relative to earnings and assets.

2. Improving Asset Utilization

- Increase efficiency to generate higher EBIT, thus improving ROA and ROE.
- Invest in productive assets that yield higher returns.

3. Cost Management

- Control operating and financing costs to safeguard profit margins.
- Explore refinancing options if interest rates decline.

4. Growth Strategies

- Use the leverage advantage to finance expansion projects.
- Evaluate new investment opportunities against the cost of debt.

Conclusion

A firm with an investment of \$30,000, financed partly through borrowing of \$15,000 at an 8% interest rate, demonstrates how leverage can amplify returns when managed effectively. With a Return on Equity of 22%, the firm is generating substantial profits relative to shareholders' investment, primarily due to the positive leverage effect. However, this also underscores the importance of maintaining a balanced capital structure, monitoring risk, and continually improving operational efficiency to sustain profitability.

Understanding these financial dynamics enables stakeholders to make informed decisions, whether in strategic planning, investment evaluation, or risk management. As businesses navigate increasingly competitive markets, mastering the interplay between debt, equity, and profitability remains vital for long-term success.

Keywords: Return on Equity, leverage, debt financing, ROA, EBIT, financial analysis, investment, profitability, capital structure, financial ratios

Frequently Asked Questions

What is the total amount of financing used by the firm?

The firm uses a total of \$45,000 in financing, consisting of \$30,000 in equity and \$15,000 in debt.

What is the cost of debt for the firm?

The firm borrows at an interest rate of 8%, which is the cost of debt.

How does the firm's return on equity (ROE) compare to its cost of debt?

The firm's ROE is 22%, which is significantly higher than its 8% cost of debt, indicating effective use of leverage.

What is the leverage ratio of the firm?

The leverage ratio is calculated as total assets divided by equity, which is $\$45,000 / \$30,000 = 1.5$, indicating moderate leverage.

How does the return on assets (ROA) relate to ROE and debt level?

ROA reflects the firm's profitability before debt payments; with high ROE at 22%, the firm effectively generates returns relative to its total assets, considering its debt level.

What impact does leverage have on the firm's return on equity?

Leverage amplifies ROE; since the firm has borrowed funds, its ROE of 22% is higher than its ROA, benefiting from debt financing.

What are the potential risks of the firm's debt level given the interest rate?

At an 8% interest rate, the firm faces interest obligations that could impact profitability if returns decline, but currently, its high ROE suggests favorable leverage.

What additional information is needed to fully assess the firm's financial health?

Details such as net income, total assets, profit margins, and cash flow are needed to comprehensively evaluate the firm's financial stability and performance.

Additional Resources

Financial Leverage and Return on Equity: An In-Depth Analysis

In the realm of corporate finance, understanding how a firm manages its investments and debt is crucial for assessing its profitability and financial health. Today, we examine a hypothetical scenario where a firm requires an initial investment of \$30,000, borrows an additional \$15,000 at an 8% interest rate, and achieves a Return on Equity (ROE) of 22%. This case presents an excellent opportunity to explore the principles of financial leverage, the impact of debt on profitability, and the key ratios that provide insight into a company's financial strategies.

Understanding the Basic Financial Components

Before delving into the specifics, it's essential to clarify the fundamental financial elements involved:

Initial Investment (Equity Capital)

This refers to the amount of capital invested by the owners or shareholders of the company. In our scenario, the firm's initial equity investment is \$30,000. This is the core equity base from which the company operates and is used for financing assets, operations, or expansion.

Debt Financing

The firm borrows an additional \$15,000 at an 8% interest rate. This debt represents leverage—funds borrowed to amplify potential returns. Debt financing can be beneficial if the return generated from

borrowed funds exceeds the cost of debt, but it also introduces financial risk.

Return on Equity (ROE)

ROE measures how effectively a company uses shareholders' equity to generate profit. An ROE of 22% indicates that for every dollar of equity, the company earns 22 cents in profit. This metric is vital for shareholders and investors assessing the company's efficiency in generating returns.

Calculating Key Financial Metrics

To analyze the scenario thoroughly, we need to determine several financial figures:

Total Investment and Capital Structure

The total capital employed by the firm is:

- Equity: \$30,000
- Debt: \$15,000
- Total Capital (Assets): \$45,000

This capital structure reflects a leverage ratio that can be analyzed for risk and return implications.

Expected Net Income Based on ROE

Given the ROE of 22%, the net income attributable to shareholders is:

$$\begin{aligned} \text{Net Income} &= \text{ROE} \times \text{Equity} = 0.22 \times \$30,000 = \$6,600 \end{aligned}$$

This net income figure is critical for understanding profitability after accounting for interest expenses.

Interest Expenses

The interest on the borrowed amount is:

$$\begin{aligned} \text{Interest} &= 8\% \times \$15,000 = \$1,200 \end{aligned}$$

This expense affects the firm's earnings before taxes and net income.

Pre-Tax Earnings (Earnings Before Interest and Taxes – EBIT)

To derive EBIT, we consider that net income is after interest and taxes, but for clarity, assume a tax rate (say, 30%) for a more comprehensive view:

$$\begin{aligned} \text{Earnings Before Tax} &= \frac{\text{Net Income}}{1 - \text{Tax Rate}} = \frac{\$6,600}{0.7} \approx \$9,429 \end{aligned}$$

\]

Adding back interest expenses:

\[

$$\text{EBIT} = \text{Earnings Before Tax} + \text{Interest} = \$9,429 + \$1,200 \approx \$10,629$$

\]

This indicates the operational earnings before interest and taxes.

Analyzing Financial Leverage and its Impact

Financial leverage, or the use of borrowed funds, magnifies both potential returns and risks. In this scenario, the firm's leverage ratio can be evaluated through the debt-to-equity ratio:

Debt-to-Equity Ratio

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$$\text{D/E Ratio} = \frac{\text{Debt}}{\text{Equity}} = \frac{\$15,000}{\$30,000} = 0.5$$

\]

A ratio of 0.5 indicates moderate leverage; the firm uses debt to finance half of its equity base.

Impact on Return on Equity

Leverage can amplify ROE. The general formula considering leverage:

$$\text{ROE} = \text{ROA} + (\text{ROA} - \text{Cost of Debt}) \times \frac{\text{Debt}}{\text{Equity}}$$

Where ROA (Return on Assets) is derived from total assets and net income. Using the data:

$$\text{ROA} = \frac{\text{Net Income} + \text{Interest} \times (1 - \text{Tax Rate})}{\text{Total Assets}}$$

Calculations suggest that leverage contributes positively to ROE if the return generated from assets exceeds the cost of debt.

Implications of the Scenario: Advantages and Risks

This scenario exemplifies how strategic use of debt can enhance shareholder returns, but it also underscores inherent risks.

Advantages of Financial Leverage

- Enhanced Returns: Borrowed funds can increase ROE when the cost of debt is lower than the return generated on assets.
- Tax Benefits: Interest expenses are tax-deductible, reducing taxable income and overall tax liability.

- Growth Opportunities: Additional capital allows the company to undertake larger projects or expand operations.

Risks and Considerations

- Increased Financial Risk: Higher debt levels mean greater fixed obligations, which could threaten solvency during downturns.
- Interest Rate Fluctuations: An increase in interest rates would elevate borrowing costs, impacting profitability.
- Debt Covenants and Restrictions: Borrowing terms may impose restrictions that limit operational flexibility.

Conclusion: Strategic Insights and Final Thoughts

The hypothetical case of a firm investing \$30,000, borrowing

\$15,000 at 8%, and achieving a 22% ROE offers a comprehensive illustration of financial leverage's power and pitfalls. The key takeaways include:

- Leverage Amplifies Returns:** When managed prudently, debt can boost shareholder returns beyond what equity alone could achieve.
- Cost of Debt Matters:** The 8% interest rate is relatively low, making borrowing attractive, provided the company's returns exceed this rate.
- Risk Management is Crucial:** Increased leverage heightens financial risk; firms must balance the benefits against the potential for financial distress.
- Strategic Capital Structure:** Optimal mix of debt and equity depends on industry conditions, company stability, and growth prospects.

In essence, this scenario underscores the importance of strategic financial planning. Firms that adeptly leverage debt can unlock value for shareholders, but only if they maintain disciplined management of

their financial risk profile. For investors and managers alike, understanding the nuances of leverage, return metrics, and cost management is vital in crafting sustainable growth strategies.

Final Note: While this analysis is based on a simplified scenario with assumed tax rates, actual corporate finance decisions should consider comprehensive tax implications, market conditions, and long-term strategic goals.

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