Value Highlights™

Electronic Newsletter for Company Principals and Trusted Business Advisors

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Financial Leverage & WACC:

How Small, Overleveraged Businesses Can Inflate the Value of the Firm with an Abnormally Low Weighted Average Cost of Capital

Leverage is a powerful tool for a company's management to potentially maximize shareholder return and boost financial performance. When cash is not readily available to invest in positive net present value projects, a firm may use leverage to achieve its objective of investing in positive net present value projects which should serve to increase long-term shareholder value. In addition, the use of leverage in the capital structure serves to lower the company's weighted average cost of capital, which may expand the realm of projects in which the firm may invest (presuming the mandate is that the company invests in projects whose internal rate of return exceeds the cost of capital or hurdle rate).

However, leverage is a double-edged sword. As the amount of leverage in the capital structure of a company increases, the financial risk of the firm also increases. As leverage requires repayment (whereas there is no guaranteed return on equity or obligation to provide dividends), a firm must have adequate cash flow and coverage to service its debt obligations. The use of leverage in the capital structure also presents some challenges for the business appraiser who may be attempting to determine the value of the company and if wealth has been created or destroyed as a result of management's decisions. Highly levered firms may have an artificially depressed weighted average cost of capita that boosts the value of the company but which may not adequately reflect the risk profile of the firm's leverage.

The valuation of the Company may be conducted using either an equity model or an invested capital model. An invested capital model capitalizes an income stream to the entire firm—both debt and equity holders. With an invested capital model, the capitalization rate or discount rate is developed using a company's weighted average cost of capital—which incorporates the firm's use of debt and equity in the capital structure. Using the weighted average cost of capital with the free cash flow to invested capital income stream yields a value for the total capitalization of the company—including both debt and equity. WACC is calculated using the following formula:

Weighted Average Cost of Capital= $W_d k_d (1-T) + W_e k_e$
where:
W_d=weight of debt in the capital structure
k_d=cost of debt capital
T=effective tax rate for the company
W_e=weight of equity capital in the capital structure
k_e=cost of equity capital

As the formula above indicates, the weighted average cost of capital illustrates the relative proportion of debt and equity capital supplied by investors at the respective required rates of return. Typically, the cost of debt capital is readily available based upon a company's outstanding interest bearing debt. Since interest expense is tax deductible, the formula tax effects the cost of debt at the company's effective tax rate, which is also usually readily available information.

The company's cost of equity capital may be estimated using models such as the Capital Asset Pricing Model (CAPM) or a build-up method that applies premia to the risk free rate to account for additional risk associated with the market in general and the additional risk inherent and specific to the company itself. The CAPM model is generally more appropriate for publicly-traded companies, as data relating to the beta of a company (correlation between changes in price of stock and changes in the market index) is required to estimate the required rate of return. Since shares in privately-held companies are not actively traded on a free and open market, the beta associated with these companies is unavailable to be used in the CAPM model. Therefore, for privately-held companies, the required rate of return on equity is usually estimated using a build-up method.

The weights used in calculating the WACC are also generally readily available for publicly-traded companies. The market value of equity capital for a public company is merely the market capitalization. The market value of debt capital is the value of the company's publicly-traded debt or the book value of debt (if there are no publicly-traded debt instruments). For privately-held companies, however, the market value of equity is not readily known or quoted on an exchange. Typically, the business appraisal process is intended to estimate this value. Therefore, computer programs using the WACC formula must estimate the appropriate market weights for debt and equity capital based on the other inputs that are known or estimated. The computer program may require many iterations before the appropriate weights are determined. This then leads to the calculation of the privately-held company's estimated weighted average cost of capital.

Consider the following simple scenario. RLH Industries, Inc. has a total debt ratio of 50%. The debt carries an interest rate of 7%, and the company's tax rate is 40%. The business appraiser who is valuing the business estimates the company's cost of equity capital at 28%. The company's net cash flow to invested capital is projected to be roughly $1.0 million. Without using the computer programs, the following table would provide the estimated WACC based on a 50%-50% debt and equity weighting.

RLH Industries **Weighted Average Cost of Capital**	
Rate on Debt	7.0%
Long-term debt weighting	50%
Tax Rate	40.0%
Debt component of WACC	2.1%
Cost of equity	28.0%
Equity weighting	50%
Equity component of WACC	14.0%
Target WACC	**16.1%**

Using a single period capitalization method and the above WACC as the appropriate capitalization rate (0% long-term growth assumption), the business appraiser arrives at the following value estimate (prior to any discounts for marketability, etc.)

RLH Industries **Value Indication (Single Period Capitalization Method)**		
Net Cash Flow to Invested Capital	$	1,000,000
WACC		16.1%
Value Indication (rounded)	$	6,211,000

Now, presuming that the company increased its debt weighting to 80%. The company's net cash flow to invested capital falls to $950,000 as a result of increased debt service. The business appraiser increased the cost of equity capital estimate to 33% to reflect the increased risk associated with the additional leverage in the capital structure of the firm. As a result, the new WACC is developed in the following table.

RLH Industries **Weighted Average Cost of Capital**	
Rate on Debt	7.0%
Long-term debt weighting	80%
Tax Rate	40.0%
Debt component of WACC	3.4%
Cost of equity	33.0%
Equity weighting	20%
Equity component of WACC	6.6%
Target WACC	**10.0%**

Using the same single period capitalization method and the above WACC, the business appraiser arrives at the following value estimate.

RLH Industries **Value Indication (Single Period Capitalization Method)**		
Net Cash Flow to Invested Capital	$	950,000
WACC		10.0%
Value Indication (rounded)	$	9,538,000

This produces an astonishingly higher value estimate than using the previously developed WACC due to the favourable impact the additional leverage has on boosting the financial performance of the firm and its ability to invest in revenue and profit generating projects with a positive net present value. In this case, the company was still financially sound and able to service its debt obligations without any problems and with adequate coverage. However, there are circumstances where a company increases its leverage, for good or bad reasons, to the detriment of its long-term financial health. It is up to the appraiser to be cognizant of when increased financial leverage may have a negative long-term impact upon the company and its ability to meet forecasts, generate cash flow, have adequate coverage to service its debt obligations, etc.

Should the company's increased leverage result in inadequate coverage or the risk of default, the business appraiser may reconcile this by taking one of several actions.

- First, the business appraiser could increase the cost of equity capital component (required return on equity) significantly in order to increase the overall weighted average cost of capital. This may necessitate a significant increase in the required return on equity to such a level as this may be an unreasonable assumption.

- Second, the business appraiser could choose to use an industry weighted average cost of capital (should that be higher than the company's) with or without an adjustment to reflect greater financial risk.

- Third, the business appraiser could use the company's prior weighted average cost of capital and adjust this higher to reflect a financial risk premium or a risk of financial distress premium.

- Fourth, the business appraiser could apply a discount for financial risk or financial distress to the value estimate arrived using the income approach subsequent to the application of a discount for lack of marketability and/or a discount for lack of control.

- Finally, the business appraiser could use the abnormally low weighted average cost of capital in determining the value of the business and simply place less emphasis (or none at all) on the income approach when developing a final value synthesis.

Case Study

RLH Industries, Inc. was founded in 1960 by David Cannon to produce plastic packaging products for corporate clients. The company thrived during the late 1960s and early 1970s as a result of three large corporate clients that each generated over $500,000 in revenues per year for the company. These three large clients were in the toy industry, the food industry, and the health care industry. The profits generated from

these three clients alone enabled the company to pay down its debt and allowed David to take substantial distributions.

By the early 1980s, however, these clients had begun to divide their business amongst RLH and other suppliers, leaving a large gap in RLH Industries's revenues. In 1982, David died suddenly. His will left the company divided between ten of his family members. His nephew, Philip, who had been with the company over ten years as the senior vice president of marketing and finance was his chosen successor as chief executive officer of the firm.

As the company struggled to replace the revenues it had lost from the three major clients, profitability declined substantially, prompting the company to engage in deficit spending to maintain operations and seek to expand the business. As no major customers began to emerge, RLH Industries, Inc. expanded its product lines. The additional products were typically produced in volume and carried a much lower profit margin. This expansion enabled the company to break-even during the late 1980s and early 1990s. The company's debt had increased to over $4 million as compared to total assets of $5 million and revenues of $7 million.

However, the passage of the North American Free Trade Agreement (NAFTA) prompted many producers to move operations to Mexico where non-unionized workers were abundant, productivity was higher, and wages were substantially lower. This enabled many competitors to obtain a competitive advantage over those producers in the United States who still sought to compete on the basis of "American Made" and higher quality. In reality, the consumers were not willing to pay more for products made in the USA, particularly if the quality of the products was not materially different than those produced in low wage countries such as Mexico.

RLH Industries, Inc., the largest employer in its county, chose to remain in the United States and employ its relatively stable workforce. In an effort to remain competitive, RLH Industries, Inc. cut prices to match those of products from low wage countries and increased production volume, in an attempt to compensate for further compressed profit margins by selling greater quantities. Realizing that the company needed guidance beyond the level of which he was capable, Philip hired Jimbo Jones, a former plastics executive at a $50 million firm who had lost his job when he opposed moving the company's operations to Mexico. Philip, resigned to overseeing the company as the chairman of the board, ceded operational control and the role of CEO to Jimbo who embarked on an ambitious program of wooing clients from his former employer. Jimbo also convinced the board to borrow an additional $1 million to invest in refurbished equipment necessary to increase the output of the factory and increase the efficiency of production.

The company was again operating at a deficit, given the increased costs of servicing the firm's growing debt burden. By the end of 2007, RLH Industries, Inc.'s debt had increased to $9 million as compared to assets of only $6 million. Revenues were $10 million. Net cash flow to invested capital was $500,000. With the company

floundering under its own weight, Jimbo pursued a lead on a new plastic material that was expected to revolutionize the industry. Jimbo put a great deal of faith in this product and began producing products using the new material. This produced further losses as the material failed to live up to expectations.

Frustrated and sensing pending doom, Philip engaged a business appraiser to conduct a valuation of the firm for contemplation of a potential sale or liquidation. In conducting the valuation, the business appraiser concluded the following:

- RLH Industries, Inc. had experienced sizeable losses, resulting in a $3 million equity loss on the most recent fiscal year-end balance sheet. The business appraiser, however, was not totally surprised by this as many closely held and family controlled companies have negative book values as a result of managing earnings for tax purposes, etc.

- Competition in the plastics industry had intensified following passage of NAFTA and the movement of jobs to low wage countries. For companies that chose to remain in the United States, there had been significant downward pressure on prices and profit margins.

- Productivity at RLH Industries, Inc. was significantly lower than that of the industry as a whole.

- Net cash flow to invested capital, on an adjusted basis, at $500,000 was sub-par as compared to the industry, when looked at as a percentage of revenues.

- Net cash flow to equity (adjusted) was virtually $0. Any deficit spending was financed using additional debt in the form of notes to Philip and other shareholders.

- Growth expectations for revenues and net cash flow to invested capital were 4% annually, in line with that of the industry as a whole.

- Given the financial position, RLH Industries, Inc. would not likely be able to meet the balloon payments on its debt and lease agreements, which totaled over $2.5 million, due in July of the coming fiscal year.

- The average interest rate on the long-term debt was 10%.

- A search of several transaction databases indicated that the average price to sales multiple of companies in the plastic packaging industry that had been acquired was 1.25 with a median of 1.15 and a standard deviation of 0.25.

- The marginal tax rate is 20%.

Given the Company's expected performance over the foreseeable future, the business appraiser believes that the single period capitalization method and the direct market data method are appropriate for use in developing an indication of value. Using a build-up method, the business appraiser computes the company's cost of equity capital at 32%. In this calculation, the business appraiser applied a 10% specific company risk premium using a factor analysis developed by Highland Global, LLC. Based on this, the company's average interest on its debt of 10% and net cash flow to invested capital of $500,000, the business appraiser determines that the weighted average cost of capital is roughly 9.3%. With a 4% long-term sustainable growth rate, the capitalization rate is 5.3% or a capitalization multiple of 19.0. This produces an indication of value for the firm of roughly $9.5 million on an enterprise basis. Removing the long-term debt produces an indication of value of the company's equity of $500,000. Applying a lack of marketability discount of 30% based on an analysis of various factors, the fair market value estimate of the firm's equity is $350,000.

Under the direct market data method, the business appraiser elects to apply a price to sales multiple of 0.95, below both the average and the median. This lower multiple is based on the specific risk characteristics of the firm. Adjusting for differences in working capital, the value estimate arrived under the direct market data method is $9.565 million on an enterprise basis. Removing the long-term debt from the value conclusion produces an indication of the equity value of $565,000. No discounts for lack of control or marketability are deemed necessary.

Weighting the two methods equally, the business appraiser arrives at a fair market value of the firm's equity of $458,000.

When assessing the prospects that the firm may have a higher value to the shareholders if liquidated, the business appraiser decides that the value of the firm is higher as a going concern given that the firm's fixed assets with a market value of $3.5 million (based on an appraisal of the equipment conducted by a qualified appraiser) would likely not secure a high enough price in an orderly liquidation to satisfy the firm's $9 million in total debt.

However, the business appraiser is not fully convinced by the value conclusion arrived through his analysis. Particularly disturbing is the abnormally low weighted average cost of capital for RLH Industries, Inc. of 9.3% as compared to an industry wide weighted average cost of capital of 14.0%. The business appraiser concludes that this is due to the substantial leverage used in the capital structure of the company, which helps to reduce the weighted average cost of capital and, thus, increase the value of the firm. If the firm were well managed, experienced stable profitability as measured by net income, and maintained ample interest coverage, this high proportion of debt in the capital structure would be a skillful technique to increase return on equity and maximize return for the shareholders.

In this case, RLH Industries, Inc. is obviously facing financial distress which would tend to increase the risk profile of the firm and reduce the overall value. Though

the cost of equity capital was increased through the specific company risk premium to account for the risk factors of the company, the debt levels minimized this impact when calculating the weighted average cost of capital. In retrospect, the business appraiser realized that some adjustment must be made to the firm's cost of capital to reflect the financial distress of the firm or allow this perverse relationship between the company's debt levels and weighted average cost of capital to skew the value estimate of the firm.

To correct this situation, the business appraiser must increase the weighted average cost of capital for the firm used in calculating the value estimate under the single period capitalization method. Increasing the cost of equity capital would be an intuitively logical way of raising the weighted average cost of capital. In this case, however, the cost of equity capital contributes very little to the overall weighted average cost of capital (less than a 6% weighting); therefore, increasing the cost of equity capital even to 100% would have virtually no impact upon the weighted average cost of capital.

In light of this, the business appraiser decides to use the industry weighted average cost of capital of 14% for valuation purposes of RLH Industries, Inc. Based on a 14% weighted average cost of capital and a 4% growth rate, the capitalization rate is 10% with a capitalization multiple of 10.0. Using the same $500,000 net cash flow to invested capital, this produces a value indication on an enterprise basis of $5 million. Removing the long-term debt, the business appraiser arrives at an implied equity value of -$4 million. The business appraiser believes that this makes more sense given the pending financial distress of the company, its lower productivity, and its relative uncompetitive position in the market.

Based on this, the business appraiser confronts the quandary that this is a company that does not have any value left in it. It is obvious that the company is currently insolvent and could reasonably file for bankruptcy protection while it reorganizes. Even in a liquidation, some of the creditors would likely stand to lose a great deal of money. Even if an orderly liquidation enabled the company to obtain a market value of $6 million for all of its assets (the current book value), there would still be a $3 million shortfall in its ability to pay its total debt. This is a unique situation for a business appraiser, but one that may occur when a company faces certain financial distress and is engaged in an industry that is not financially viable or attractive any longer.

As a post script, the business appraiser presented the findings to Philip. In an effort to help, the business appraiser separately recommended ways to begin improving the financial health of the firm, including improving productivity, reducing unprofitable product lines, etc. Philip received the business appraiser's findings warmly and attempted to implement measures to save RLH Industries, Inc. After firing Jimbo Jones and resuming control of the company, Philip began cutting costs and making efforts to improve productivity. Though his efforts were a welcome change, they proved to be too little too late. In July of that year, less than six months later, RLH Industries, Inc. closed its doors, filed for Chapter 7 bankruptcy, and began liquidating the firm.

Conclusion

The case study above clearly illustrates the dangers of excessively high levels of leverage in the capital structure of a company and how this creates challenges when valuing the business. To be sure, leverage is an extremely useful and effective resource when used judiciously. However, excessive levels of leverage can artificially depress the firm's weighted average cost of capital and inflate the value of the firm, ceteris paribus. A skilled business appraiser will use reasoned and informed judgment in dealing with this situation and selection the best manner in which to adjust the value of the firm to reflect potentially increased risks of financial distress.