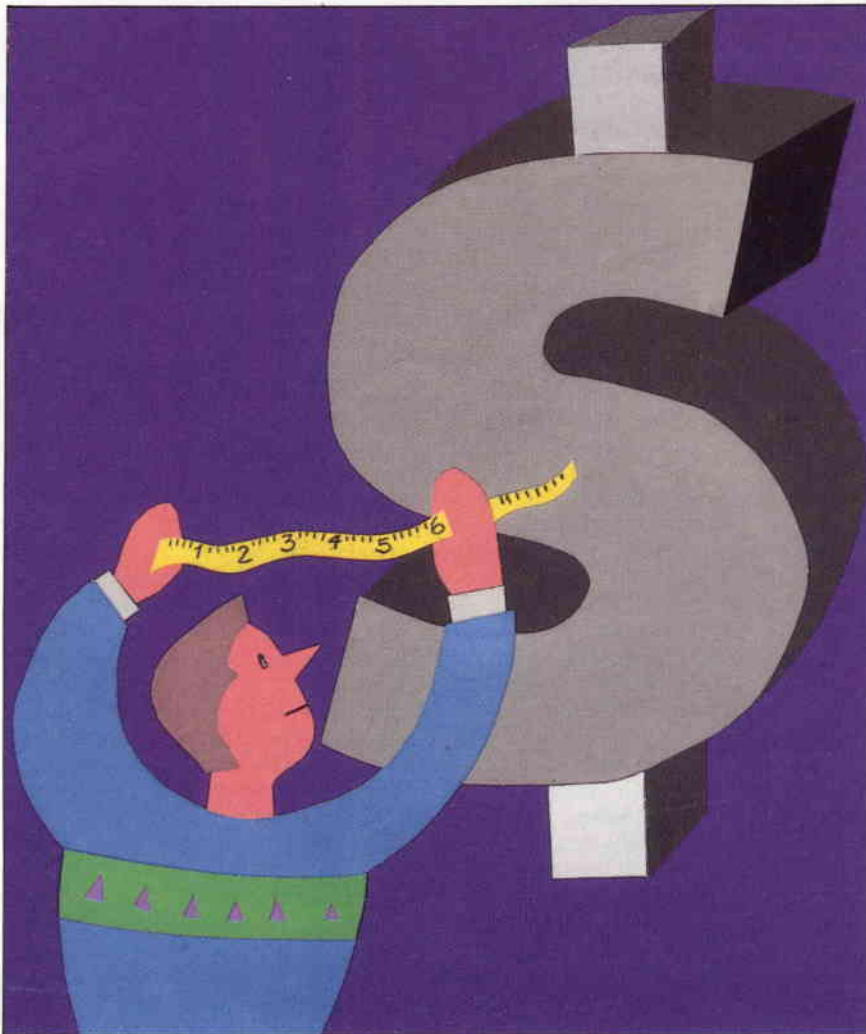




## MEASURING FINANCIAL RISK

### THE DIFFERENCE BETWEEN "PROFIT" AND "AVAILABLE PROFIT" IN THE CLOSELY HELD CONSTRUCTION COMPANY



**E**arly detection of financial weakness is important in any business, but in none more so than construction, a volatile, highly complex industry that is characterized by an inordinate number of business failures. The sooner an owner can discover a problem, the sooner he can take corrective action. The trouble is, many of the factors that lead to the financial insolvency of a construction company occur years before the actual failure and are not recognized for what they are.

A recently completed four-year research project has demonstrated the usefulness of a new method of determining financial health in the closely held construction company, a method that, if properly calculated, can reveal "red flags" years earlier than other methods. Using data from several years of business operations, you and your accountant can put this simple formula to work and determine if your financial condition is improving or deteriorating, and to what degree.

#### THE NEW APPROACH

A formula was needed that could provide:

1. A warning of any changes in the performance of closely held construction companies.
2. A combination of ratios that crosses categories of standard ratios, reducing or eliminating the impact of different accounting methods.
3. An accurate measurement of the

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performance of closely held construction companies that is easy to use, not too complicated, or labor intensive.

Both financial and organizational performance must be taken into consideration in an overall company evaluation.

Organizational performance is the ability of the company to produce its work at a profit. It is described by the firm's gross profit margin. Financial performance is the ability of the company to remain in business by utilizing its sources of funds. Sources of funds are used to acquire assets, a financial consideration, and the efficient use of those assets is a measure of operational performance; therefore, an overall company evaluation must address both.

### **FINANCIAL AND OPERATIONAL PERFORMANCE**

There is a significant difference between operational performance and financial performance. Operational performance (gross profit) relies primarily on the organization's skills, systems, and quality of people. These are supported and funded by the capital structure of the company, but function the same if the funding is borrowed or earned. Thus, they are not directly affected by the capital structure.

However, poor financial performance will affect good operational performance if working capital decreases for any reason, such as owners taking too much money out of the company or over investment in assets. Working capital is a financial consideration and often a function of available credit. If it decreases dramatically the work slows down, because when capital is in short supply, the subcontractors and suppliers are not paid in a timely manner and do not perform as well. If accounts payable are extended as a method of financing (slow pay), it has the same effect: the work is slowed. Poor working capital or extending accounts payable is usually a result

risk-free source of funds in the closely held company. Other sources are forms of financing which affect risk.

Financial performance (net profit), however, depends on operational performance because it is a source of funding. Net profit is the operational performance of the organization adjusted by the fixed and variable general and administrative (G&A) costs, including the executive, accounting, marketing and human relations functions, and the cost of capital.

### **GROWTH, DEBT AND FINANCIAL RISK**

An immediate by-product of growth is usually a decrease in working capital, which is generally overcome by increasing debt. Internal financing of firms that grow too rapidly is usually absorbed by asset expansion to support the growth, leaving no funds available for term loan repayment. Loan liquidation can occur only if profits remain constant and collection time does not lag during growth, otherwise repayment occurs via re-financing.

The major non-bank liabilities that increase with growth are accounts payable and accruals. During growth, most closely held construction companies use a form of internal financing by extending the payment of accounts payable and minimizing accruals. This is often in combination with bank borrowing and tends to mask the real increase in debt and corresponding increase in financial risk.

### **RISK IN THE CONSTRUCTION BUSINESS**

A fundamental principal underlying financial risk in the construction business is that an increase in sales causes a need for increased working capital and fixed assets. The increased assets are funded partially by debt and partially by retained earnings. If a firm grows modestly, sources of funds equal uses of funds. When sales grow faster than a sustainable growth rate, asset expansion exceeds the normal growth of internal funding sources. A financial shortfall occurs, demanding increased external financing.

For a closely held construction company to grow in a balanced way, it should not exceed its sustainable growth rate or it may lose its ability to finance itself. Therefore its equity base must grow proportionally with sales, or debt will increase too rapidly, causing credit difficulties. Shrinking profit margins have the same effect on the capital structure of a firm, because less profit means less internal funding is available and more external financing is required just to maintain the balance. This balance can be measured by the debt to equity ratio or, in broader terms, by the total liabilities to total assets ratio. When the balance changes, one or more financial ratios will change as the financial condition of the enterprise shifts. If outside debt goes up with no corresponding increase in assets, losses are indicated and the firm is at greater risk.

Even profitable growth can increase financial risk. Although every dollar of sales adds a few cents to profits, growth also requires significant new investment in receivables, inventories, and fixed assets. These need to be financed, internally or externally. In the closely held company, financing is limited to profits, bank borrowing, or extending accounts payable unless the owner(s) is willing to add personal money to the capitalization of the company.

Internal financing in the manner described above, and outside financing in the form of borrowing, are reflected in the total liabilities to total assets ratio. As debt increases disproportionately to assets, the portion of the enterprise financed by the contractor and the portion financed by others gets out of balance. The question is thus: is the financing sufficient in the long run, giving the company the ability to pay it back, or is the financing just the down payment on a much larger obligation taken on by the company unintentionally? To answer this question and other financial measurement concerns, a new method of measurement is required.

### **A NEW WAY TO MEASURE RISK**

The financial risk of the closely held construction company will change as annual sales (turnover) change unless the relationship of profit margin, assets, liabilities, and debt remain the same. Measuring the changes in these relationships, using performance, efficiency, and debt ratios, provides a measurement of change in financial risk. The appropriate ratios must be selected. The efficiency ratio of sales to total assets can be misleading when used to interpret a construction company's financial risk. If assets are reduced and sales remain the same, the company's turnover or efficiency ratio (S/A) goes up, or gets better. However, when the assets that a company has to support its bank and bonding credit are reduced, the company is at greater financial risk. The same relationship exists when liabilities increase in the total liabilities to total assets ratio of a company over what the ratio was during successful or profitable years. A company may continue to be profitable when its liabilities increase relative to its assets, but its financial risk increases.

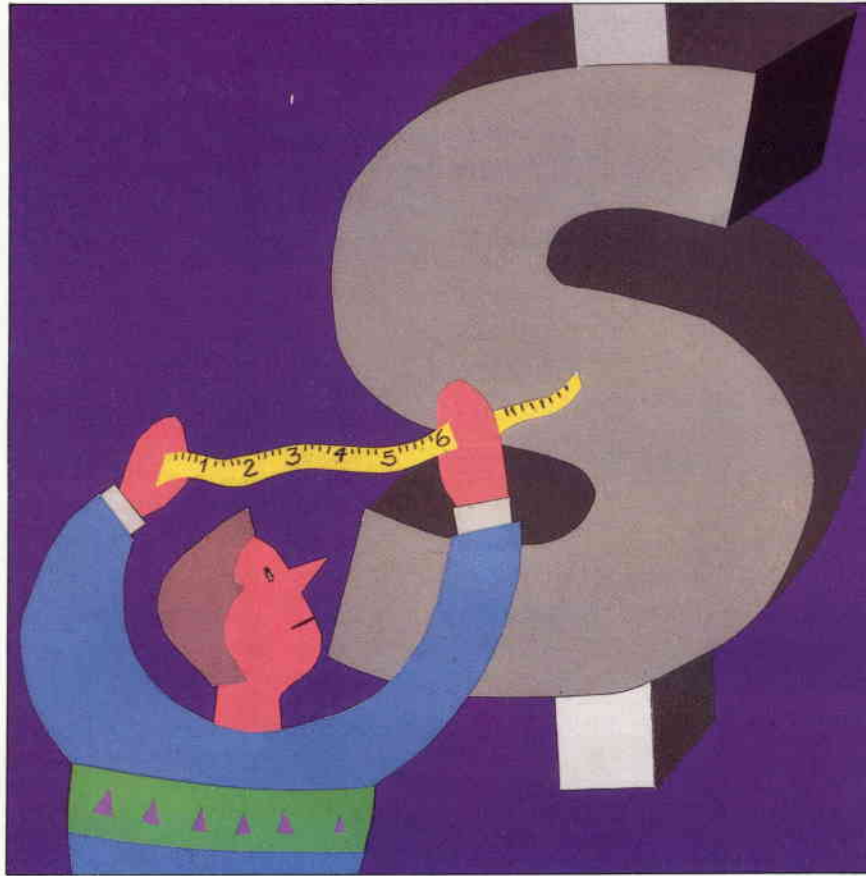
By combining the efficiency or turnover ratio of a company with its debt structure, it can be determined if they are in balance. The outside financing that

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a closely held construction company will be able to obtain is limited by debt and performance ratios set by banks and bonding companies, which effectively form industry credit granting standards. A company with too much debt can find itself cut off by its lenders, which can cause immediate failure if an alternate source of financing cannot be arranged

keeping methods and treatment of work in progress suggest that gross ratios rather than ratios found internally should be used. The significant standard financial ratio categories are turnover, profit, and debt ratios. Ratios are selected from these categories that are least affected by internal bookkeeping methods. These are explained below.

liabilities (all debt) is used instead of long-term bank debt, because the latter can be too easily reduced temporarily at year's end by the extension of accounts payable or the substitution of short-term borrowing. This ratio is applied here as a measure of the firm's ability to sustain itself over the long term. This is a broad ratio that ignores most internal manipulations or differences in bookkeeping methods because it captures all liabilities; and equity is not easily manipulated.



**AVAILABLE PROFIT**

The term "profit" seems to imply that a firm can use the funds generated by profits for whatever purpose it chooses. This is not the case, however, because it takes money to run the business. A portion of profits is required for the next year's operations, for replacement of assets not covered by inflation, and for obsolescence and productivity improvements to remain competitive in an ever-changing industry. Some of the profits earned are needed just to deal with the timing of receipts and retirement of liabilities. The balance of liabilities to assets is a measure of long-term liquidity of the firm, and a certain portion of profits is needed to replenish assets and retire liabilities in the near term to maintain the balance. The replenishment will vary, depending on the liabilities to asset ratio unique to each company, which is simply the financial makeup of the company or its financial foundation. The amount of funds generated by profits that will remain more or less permanently within the financial structure of the company can be measured to determine the "available profit."

Available profit is the portion of profits that can be taken out of the company or applied to the expansion of the business without materially affecting the financial foundation of the firm in its existing operations. The measurement of available profit (AP) is accomplished by reducing the total profits by the proportional amount of liabilities in the liability to asset ratio or the total liabilities divided by total liabilities plus assets. The formula is:

$$AP = (1 - NP/S - (10 (TL/(TL + TA)) (NP/S)))$$

NP/S is Profit/Sales  
 TL is Total Liabilities  
 TA is Total Assets

rapidly. A combination of performance, efficiency, and debt ratios can be used to determine if a company is approaching that point. Debt to equity and liabilities to assets combined with the performance indicator of net profit margin can gauge the direction in which the firm is heading.

**THE NEW FORMULA**

Changes in one financial ratio inevitably change other ratios. The interdependence of various ratios can be traced and used to develop a financial measurement formula. Several variables must be considered. The problems of different book-

**Sales to assets.** The turnover ratio is a measure of the relative efficiency with which the firm utilizes its resources to generate output. The ratio is a composite of receivables management, inventory management, fixed asset management, and liquidity management.

**Net profit to sales.** The net profit margin is a measure of operational and financial performance. While both the sales to assets and net profit margin are affected by the external marketplace, they largely capture internal management efficiency.

**Total liabilities to equity.** This is a debt ratio that tests long-term liquidity. This ratio is similar to debt-to-equity, but total

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One minus net profit to sales is used to deal with companies with negative profit (loss) to create a positive number in this element of the formula. Sales to total assets and total liabilities to assets is generally a number greater than one. Therefore, the decimal place for the profit element is moved one place to the right to create an appropriate relationship with the other elements in the formula.

The measurement of financial risk includes the earning power of a company. The earning power ratio is profit margin times sales to asset ratio. When "available profit" is substituted in the above, a different earning power, referred to as the real earning power (REP) of the company, can be determined by multiplying the available profit by the asset turnover ratio of sales to assets (S/A). The formula is:

$$REP = (AP) (S/TA)$$

AP is Available Profit

S/TA is Sales/Total Assets

The debt structure must be considered when determining the overall financial risk of a company. Combining the firm's debt ratio of total liabilities to equity with real earnings power represents the financial risk, the "risk factor" of the company at the present time. The financial well-being or risk of the company is determined using the company's own financial performance, turnover rate, and debt structure. The formula is:

$$R = \frac{(1 - NP/S - (10 (TL/(TL + TA)) (NP/S))) (S/TA) (TL/E)}$$

R = AVAILABLE PROFIT X REAL EARNING POWER X DEBT STRUCTURE

R is Risk Factor

TL/E is Total Liability/Equity

### WHY THE FORMULA WORKS

The risk factor formula answers three questions:

1. Is the construction company's performance adequate considering its capital structure?
2. Is the company's earning power providing enough funds to maintain its assets to liabilities balance?
3. Is there adequate equity in the company's capital/debt structure to deliver

the capital or credit necessary to underwrite operations and ensure against unforeseen losses?

### CONCEPTS BEHIND THE FORMULA

A construction enterprise does not have the luxury to withdraw from its operations all of the profit that it earns in any given year because some is required to run the business. The portion that must remain in the business to maintain the company's assets to liability balance will vary between individual firms, but is approximated by subtracting from net profit margin the proportion that liabilities represent in the liabilities to assets ratio. Simply put, if a firm's liabilities to assets ratio is 1 to 3, one third of the profits must remain in the operation to support ongoing business. If more than that is taken out of the company or used for other than normal business activity, other funds will have to replace those taken. For the closely held company, that inevitably means borrowing. Borrowing increases liabilities with a resultant change in the liabilities to assets ratio. The amount of investment in the company held by outsiders goes up while the investment of the owners of the company goes down. The company is at greater financial risk because it is less self-sustaining. There is definitely a difference between net profit and available net profit.

The real earnings power of a closely held construction company is an extension of the standard earning power ratio. A company's earning power can be calculated by multiplying its net profit margin by its turnover ratio of sales to assets. The turnover ratio is a measure of the relative efficiency with which a firm uses its resources to generate outcome (funds). All of the profit margin is not available to apply to earning power in the short run. When available net profit is used in the earning power formula the closely held construction company's "real earnings power" is calculated.

Real earnings power combined with the company's capital structure determines its financial well-being. If there is too much debt in the capital structure, outsiders are too heavily invested in the company compared to equity holders. When this happens, reserves may be limited or non-existent because there is a real cost of debt, and few business people substitute debt if internal funding is available. The debt to equity ratio describes the amount of debt in the

capital structure of the company and a measure of the prudence of the debt management of the firm. However, the total liabilities of the company represent what it owes to others, or its "total debt."

A measurement of the financial risk or relative financial strength of a closely held construction company is achieved by combining, in a logical manner, its real earnings power with its ratio of total debt to equity, represented by total liabilities to equity. The financial risk factor formula utilizes net profit margin, total liabilities to total assets, the turnover ratio, and total liabilities to equity in calculating the financial risk of a closely held construction company. The formula combines measurements of performance (NP/S), long term liquidity (TL/TA), resource utilization efficiency (S/A), and debt management (TL/E).

### SUMMARY

The financial risk factor formula gives a numerical and accurate measurement of financial risk and provides an accurate measurement of financial strength or weakness, which can provide early warning of financial distress and reduce the failure rate in the U.S. construction industry.

□ The financial risk factor formula provides an easy to use, accurate financial risk and relative financial strength measurement tool for the closely held construction company.

□ A multi-year trend evaluation, using the financial risk factor scores of a closely held construction company, provides a quick and accurate trend of financial performance and financial risk.

□ The risk factor formula can be used as a self-evaluation tool for closely held construction companies or as an external tool for credit grantors.

Better control of financial risk can help reduce the number of construction company failures. A reduction in the extremely high failure rate in the U.S. construction industry would lead to a reduction in the cost of construction of the built environment, which would have a positive effect on industrial and social progress.

—By Thomas C. Schleifer, Ph.D., Scottsdale, Ariz. The author of "A Contractor's Survival Guide," Dr. Schleifer has been a general contractor and currently works as a management consultant to the construction industry, helping troubled construction firms return to profitability.