

Financial Software Guide

www.intacct.com/FinancialAccounting

Download The Free 2014 Financial Software Guide & Know Your Options.



Business and Tax Formulas, Ratios, Etc.

[Small Business Taxes & Management™](#)--Copyright 2006-2013, A/N Group, Inc.

We've compiled a number of formulas, ratios, etc. used in business, tax and accounting. We'll be adding to the list on a regular basis. Feel free to e-mail us at question@smbiz.com with any suggestions.

Contents

[Back-End Ratio](#)--Mortgage credit ratio.

[Front-End Ratio](#)--Mortgage credit ratio.

[Housing Affordability Index--Price to Income Ratio.](#)

[Housing Affordability Index--Price to Rent Ratio.](#)

[Breakeven Holding Period for Long-Term Capital Gains](#)--Should you hold investment to get long-term capital gain rate?

[Social Security Tax Threshold](#)--Will you pay tax on social security payments?

[Grossup](#)--Calculating the gross to get to an after-tax amount.

[Months' Supply](#)--How long will it take to bring rental space to equilibrium?

[Wilcox's Gambler's-Ruin Formula](#)--Computing the liquidation value of a company in trouble.

[Altman Z-Score](#)--A relatively painless way to compute the likelihood a company will fail.

[Taxable Amount of Repayment of Loans to S Corporation](#)--Loan repayments to shareholders can create taxable income.

[Cash-on-Cash Return](#)--Quick way to analyze an investment.

[Cap Rate \(Capitalization Rate\)](#)--Analysis tool for real estate.

[Sales per Square Foot](#)--Retail analysis tool.

[Vendor Discounts for Early Payment](#)

[Days Inventory Outstanding](#)

[Taxable Yield Equivalent of Qualified Dividend](#)

[Debt Service Coverage Ratio--DSCR](#)

[Returns to Sales Ratio](#)

Back-End Ratio

Used by mortgage lenders and other creditors to determine the percentage of a person's income that is used to pay debts. The formula is:

$$\text{Back-End Ratio} = \text{Monthly Debt Payments} / \text{Monthly Income}$$

Example: Fred's monthly income is \$6,000; his monthly debt payments (service) is \$2,400. His back-end ratio is 0.4 or 40%.

Notes:

Monthly debt payments include credit-card payments, auto loans, child support, house payments (mortgage principal, interest, taxes, and insurance), etc. Most lenders look for a back-end ratio of 36% or less, but higher ratios may be accepted if other credit factors are offsetting.

Front-End Ratio

Used by mortgage lenders and other creditors to determine the percentage of a person's income that is used to pay debts. The formula is:

$$\text{Front-End Ratio} = \text{Monthly Housing Expenses} / \text{Monthly Income}$$

Example: Sue's monthly housing costs total \$1,800; her monthly income is \$6,000. Her front-end ratio is 0.3 or 30%.

Notes:

Housing costs include mortgage principal, interest, real estate taxes and insurance (often called PITI). The threshold front-end ratio most lenders look for is about 30% (0.30). The higher the ratio, the riskier the loan from a creditor's standpoint.

Housing Affordability Index--Price to Income Ratio

While housing prices may fall or increase, they tend to hover around a certain price-to-income ratio. And while the ratio varies by market, the price-to-income ratio usually averages between 1.5 in areas with generally cheaper housing and 2.5 in areas with costly housing such as New York City and Los Angeles. A chart of the ratio would show house prices in Cleveland tracking the 15-year average of 1.5 during the housing boom. A similar chart of the ratio in Miami would show the ratio at almost 4 near the peak of the market and 2005-06 and well above the 15-year average of 2. The ratio is:

$$\text{Price-to-Income Ratio} = \text{Median Home Price} / \text{Annual Household Income}$$

Example--The annual household income in an area is \$150,000 and median home price is \$450,000. The price-to-income ratio would be 3, high for almost any market, and would indicate an overheated market.

Housing Affordability Index--Price to Rent Ratio

Housing prices tend to hover around a certain price-to-rent ratio because many individuals have a choice between renting and buying. The national average is 14.85, that is, a house that rents for \$20,000 annually should cost about \$297,000. The ratio varies by market, but many markets are close to the national average. During the housing peak the ratio hit 30 in Miami compared to the long-term average there of closer to 12. The ratio is:

$$\text{Price-to-Rent Ratio} = \text{Median Home Price} / \text{Annual Rent}$$

Example-- The annual rent in an area is \$20,000 and median home price is \$600,000. The price-to-rent ratio would be 30, high for any market, and would indicate an overheated market.

Breakeven Holding Period for Long-Term Capital Gains

Hold a stock for 11 months and your gain is short-term; hold it for even one day more than a year and your gain is long-term and taxed at 0% (if you're in the 10% or 15% bracket), 15% (if you're in the 25, 28, 33, or 35% brackets), or 20% (if you're in the 39.6% bracket). How much of your gain can you lose and come out even by holding for the extra time?

You can figure your breakeven by using this formula:

$$BE = G1(1-TR)/(1-CGR)$$

Where:

BE = Breakeven gain
 G1 = Current gain
 TR = Marginal tax rate
 CGR = Capital gain tax rate

Example: Fred has a \$20,000 gain in Madison Inc. If he holds the stock another 15 days the gain would be long-term. Fred's marginal tax rate is 33%; the rate on long-term capital gains is 15%. Plugging into the formula:

$$BE = 20,000(1-.33)/(1-.15) = 20,000(.67)/.85 = \$15,764.71$$

If Fred sells the stock today, his after tax gain will be \$13,400 (\$20,000 gain less taxes at 33%). If he holds the stock for the required one-year plus period and his gain at that time is more than \$15,764.71 he'll end up with a larger net gain; if the stock drops below that, he would have been better off not to wait.

Unfortunately, the mechanics are slightly more complicated. If you're liable for the 3.8% tax on net investment income (taxable income thresholds of \$250,000 for married filing joint; \$200,000 for single and head of household; \$150,000 for married, separate) you may have to add as much as 3.8% to both your regular tax rate and the capital gains rate. Thus, in the example above, the .33 would have to be replaced by .368 and the .15 replaced by .188. Even if you're above the threshold, the tax may not apply, or may not fully apply because of deductions. Chances are high that the bulk, if not all, of the tax will apply, so the best approach may be to add the 3.8% to the regular rates. In any event, the difference is small, on the order of \$100 for every \$10,000 of gain.

As always, investment considerations are paramount, but the formula does help quantify the risk. The closer you are to the one-year threshold and the less volatile the stock, the more sense it makes to take that risk.

Social Security Tax Threshold

A portion of social security benefits is taxable to individuals whose modified adjusted gross income exceeds a threshold. You can determine if a taxpayer is taxable on his or her social security benefits by plugging into the formula:

$$AGI + TE + (1/2*SSI) - TH$$

Where:

AGI = Adjusted Gross Income

TE = Tax exempt income (line 8b of Form 1040)

SSI = Social Security Income

TH = Threshold amount \$25,000 or \$32,000, see Notes, below

If the result, sometimes called provisional income, is greater than zero, a portion of the benefits are taxable.

Example: Sue and Fred have AGI of \$27,000, \$2,500 in tax exempt income (municipal bonds), and social security benefits of \$12,000. Plugging into the formula:

$$27,000 + 2,500 + (1/2 * 12,000) - 32,000 = 3,500$$

Thus, a portion of their social security benefits are taxable.

Notes:

- The \$32,000 applies to married couples filing jointly.
- For single individuals, heads of household, and married individuals filing separately who live apart from their spouse for the entire year, the threshold is \$25,000.
- If provisional income is between \$32,000 and \$44,000 (\$25,000 and \$34,000 for single, etc.), one-half of the lesser of the difference between the provisional amount and the threshold or one-half of the social security benefits are taxable.
- If provisional income exceeds \$44,000 (\$34,000), 85% of the social security benefits in excess of the second threshold are subject to tax.

Grossup

It's not unusual for a company to agree to pay the tax on an employee's taxable fringe benefit, bonus, etc. or to pay some other charge that has to be included in the price. For example, Madison Inc. has agreed to pay Fred, an employee, a bonus of \$20,000 after taxes. That means Madison will have to write a check for something more than \$20,000 and withhold taxes on the gross (higher) amount so that Fred's check is \$20,000. You could do this by trail and error, but you can set up a simple algebraic formula.

$$G = N / (1 - TR)$$

Where:

G = Gross amount

N = Net amount

TR = Tax rate

The tax rate should include all amounts to be withheld--federal, state, FICA, etc. at the recipient's marginal tax rate.

Example: Madison will pay Fred \$20,000 after taxes. Fred's in the 33% bracket for federal purposes; 10% for state and 1.45% for social security (Medicare only). Adding all three together gives a tax rate of 44.45%. Plugging into the formula:

$$G = 20,000 / (1 - .4445) = 20,000 / .5555 = \$36,003.60$$

Caution. This won't work cleanly if the payment will take you through a tax bracket. There can be other factors that will create inaccuracies. For example, if the recipient becomes subject to the alternative minimum tax, etc.

Months' Supply

Real estate investors and developers are interested in knowing the number of months' supply of apartments, office space, etc. on the market. The problem is that the amount of space is always changing--existing space is being leased, new space is becoming vacant. Fortunately, the formula isn't that complex. Moreover, it can be useful for other business and investment analysis.

Months' Supply = Vacant Space/Net Absorption or

MS = VS/NA

Where:

VS = total amount of vacant space

NA = space leased during the month less space going vacant

Notes.

- Since net absorption is often an annual number, divide by 12 to get a monthly rate.
- There can be significant monthly fluctuations; it's better to annualize the numbers.
- Include in the space going vacant any new construction coming to market.

Example: In the Madison, NY market there's 30,000 square feet of vacant space. Space is being leased up at the rate of 15,000 square feet per month, but space is becoming vacant at the rate of 6,000 square feet per month and 4,000 square feet of new construction is coming onto the market.

MS = 30,000/(15,000 - 6,000 - 4,000) = 30,000/5,000 = 6 Months's Supply

If the denominator is negative, (more space is coming onto the market than is being leased) the result is meaningless.

Wilcox's Gambler's-Ruin Formula

This model can be used to estimate the liquidation value of a company. It's likely to be significantly less than the book value because of the "fire sale" nature. Most current assets are valued at 70% of their balance sheet values; fixed and other assets at 50% of book value. Real estate should generally be valued separately.

Cash plus marketable securities at market value
 + Inventory, accounts receivable, prepaid expenses, at 70% of book value
 + Fixed and other assets at 50% of book value
 - Current liabilities
 - Long-term liabilities
 = Liquidation Value

Example: Madison Inc. has assets with the following book values:

Cash on hand = \$26,000
 Accounts receivable = \$80,000
 Inventory = \$20,000
 Prepaid insurance = \$5,000
 Equipment, office furniture, and trucks = \$150,000
 Accounts payable and accrued expenses = \$40,000
 Long-term liabilities = \$60,000

Here's the computation:

Cash		\$26,000
Accounts receivable	\$80,000 x .7	56,000
Inventory	\$20,000 x .7	14,000
Prepaid insurance	\$5,000 x .7	3,500
Equipment, etc.	\$150,000 X .5	75,000
Accounts payable and accruals		-40,000
Long-term liabilities		<u>-60,000</u>
Liquidation Value		\$74,500

The liquidation value of \$74,500 is considerably less than the company's net book value of \$181,000.

Notes.

The formula shouldn't be applied to a company in good financial shape unless there's some sort of a risk on the horizon. For example, assume Madison's financials are as shown above. The company has substantial working capital, good current and quick ratios, etc. Moreover, the company's profit margins are strong and sales are rising. If you're looking at the creditworthiness of the company the formula has little value. A creditor should be looking at the company's cash flow. On the other hand, there may be an outside risk, for example, the company may be in danger of losing a critical patent, that could warrant using the formula.

Altman Z-Score

The Altman Z-Score is a formula that can be used as a forecaster of bankruptcy of a business. The model has held up very well over the years and uses 7 pieces of financial information arranged in 5 ratios that are weighted to produce a number. The simplicity, ease of computation, and availability of raw data in addition to its accuracy make it particularly attractive. While you can use it to check on the creditworthiness of customers, it can be used on potential acquisition targets and as an additional measure in determining the health of your business. Here's the formula:

$$Z = 1.2X + 1.4Y + 3.3Z + 0.6A + 0.999B$$

Where:

- X = working capital/total assets
- Y = retained earnings/total assets
- Z = earnings before income taxes/total assets
- A = market value of equity/book value of debt
- B = sales/total assets

Z score	Probability of Failure
1.8 or less	Very High
1.81-2.99	Not Sure
3.0 or higher	Unlikely

You can tell by the weighting of the formula that earnings before interest and taxes (EBIT) divided by total assets is the most important factor (it's weight is 3.3). The greater a company's earnings, the larger that factor will be. The second most important factor is retained earnings. It's weight is 1.4.

The formula above is the general formula developed by Edward Altman. It works very well on publicly held manufacturing companies. The formula has been modified slightly for nonpublic companies and an additional variation is designed for use with nonmanufacturing companies.

Nonpublic Companies

$$Z = 0.717X + 0.847Y + 3.107Z + 0.42A + 0.998B$$

Where:

X = working capital/total assets
 Y = retained earnings/total assets
 Z = earnings before income taxes/total assets
 A = book value of equity/book value of debt
 B = sales/total assets

Z score	Probability of Failure
1.23 or less	Very High
1.23-2.90	Not Sure
2.9 or higher	Unlikely

Notice the change in the coefficients and the replacement of book value of equity for market value of equity. But while the coefficients have changed, their relative importance remains the same.

Nonmanufacturing Companies

$$Z = 6.56X + 3.26Y + 6.72Z + 1.05A$$

Where:

X = working capital/total assets
 Y = retained earnings/total assets
 Z = earnings before income taxes/total assets
 A = market value of equity/book value of debt

Z score	Probability of Failure
1.0 or less	Very High
1.1-2.6	Not Sure
2.6 or higher	Unlikely

The Z-score formula for nonmanufacturing companies eliminates the last factor, sales divided by total assets.

Example: Madison Inc. is a nonpublic manufacturing company with the following information:

working capital = \$600,000
 total assets = \$3,000,000
 retained earnings = \$585,000
 earnings before income taxes = \$225,000
 book value of equity = \$600,000
 book value of debt = \$2,400,000
 sales = \$6,500,000

We're using the formula:

$$Z = 0.717X + 0.847Y + 3.107Z + 0.42A + 0.998B$$

Here:

X = \$600,000/\$3,000,000 = 0.2
 Y = \$585,000/\$3,000,000 = 0.195
 Z = \$225,000/\$3,000,000 = 0.075
 A = \$600,000/\$2,400,000 = 0.25
 B = \$6,500,000/\$3,000,000 = 2.166

$$Z = (0.717 * 0.2) + (0.847 * 0.195) + (3.107 * 0.075) + (0.42 * 0.25) + (0.998 * 2.166)$$

The result is 2.809, slightly higher than the 2.6 threshold for an unlikely chance of bankruptcy.

Because even the nonpublicly held formula was not specifically designed for small businesses, simply plugging into the formula and comparing the result with the score table is not the final answer. However, the results can still be useful. First, they provide a relative measure--if the score is less than 1.0, you should be concerned; if more than 3.0, not very concerned. The middle ground is likely to provide little guidance. Second, you can use the formula on your own or other businesses to watch trends. If the number is going up, financial strength is improving; going down and it's

getting worse. Third, you can use the formula to gauge relative strength of customers or others. For example, if you have 10 customers and the Z-scores are generally clustered near 3.0 with one at 1.2, consider dropping that customer or at least monitoring him closely and/or cutting back on his credit line.

Taxable Amount of Repayment of Loans to S Corporation

You can take losses up to your basis in an S corporation. Once your stock basis is exhausted by losses and distributions, additional losses go to reduce any loan basis. There's a trap. Repayment of loans (in whole or part) that have been reduced by losses can create taxable income. The formula is:

$$\text{Gain} = P \times (1 - \text{DB}/\text{FA})$$

Where:

P = Principal Payment

DB = Basis of Debt

FA = Face Amount of Debt

Example: Fred has a signed note from Madison Inc. for \$75,000. Losses have reduced the basis of the note to \$30,000. In 2008 Madison repays Fred \$15,000 of the note. The gain would be:

$$\begin{aligned} \text{Gain} &= \$15,000 \times (1 - \$30,000/\$75,000) \\ \text{Gain} &= \$15,000 \times (1 - .4) \\ \text{Gain} &= \$9,000 \end{aligned}$$

Thus, only \$9,000 of the \$15,000 principal payment constitutes gain.

If the note was held for more than a year, the gain should be long-term. If less than a year or the debt is open account, the gain would be ordinary income. There is some controversy about this issue. In some cases it has been held that no gain is reportable until basis is recovered. We suggest you check with a tax professional for your particular situation.

Cash-on-Cash Return

This is a quick, albeit not very accurate, way to compute a return on your investment. The computation is simply the annual cash flow from the property, equipment, etc. divided by your invested cash.

$$\text{Cash-on-Cash Return} = \text{Before-Tax Cash Flow}/\text{Invested Cash}$$

Example: Fred is considering purchasing a rental property. He believes he has to put \$200,000 down and spend about \$50,000 of his own cash to fix up the property. Annual rental income less expenses and debt service (loan payments) is projected to be about \$30,000. His cash-on-cash return would be 12% (\$30,000/\$250,000).

The cash-on-cash return calculation is often used in real estate as an initial filter. If the property doesn't pass a predetermined hurdle rate, some investors won't go further. This approach has merit for risky properties where current income and cash flow is more important than appreciation (which is difficult to project), but fails to take into account additional, future investments, increasing (or decreasing) rents and expenses, vacancies, and appreciation or depreciation in property value. The calculation can also be misleading if your cash investment in the property is very small.

Cap Rate (Capitalization Rate)

The capitalization rate, or more commonly just cap rate, is a quick computation of the rate of return or a way of calculating how quickly the cost of an investment will be recovered through cash flows from the investment. The formula is:

$$\text{Cap Rate} = \text{Net Operating Income} / \text{Investment}$$

Example: Fred is thinking about buying a small office building. The net operating income is \$65,000 and the seller is asking \$520,000. The cap rate is 12.5%. The period to recover your investment would be the reciprocal of the cap rate, or, in this case, 1/.125 or 8.

Alternatively, knowing the Cap Rate of equivalent properties (e.g. other office buildings in the area) and the cash flow from the property, you can arrive at a value for the property. You just need to use some algebra on the formula:

$$\text{Property Value} = \text{Net Operating Income} / \text{Cap Rate}$$

Example: Office buildings in the area are selling for a 9% Cap Rate. The property Fred is looking at has an net operating income of \$180,000. The property should be valued at \$2,000,000 (\$180,000/0.09).

Net operating income is gross income from the property less operating expenses. Operating expenses consist of utilities, real estate taxes, management fees, maintenance, etc. They do not include depreciation or debt service. Sometimes, a reserve for repairs is deducted. If the property is fully rented, but normally there are vacancies, an adjustment should be made to operating income to take into account potential vacancy losses.

Don't confuse the Cap Rate with the internal rate of return. The Cap Rate does not take into account the income and expense stream in later years (which could be significantly different), or the residual value of the property, that is, what you'd get when selling the property say 10 years from the valuation date. That helps make the Cap Rate generally a conservative measure of value. The Cap Rate should be used as a quick valuation guide or to compare properties, not to make a final decision.

Sales per Square Foot

For a retailer rent can be a substantial portion of your selling expenses. The idea is to maximize the sales per square foot of space. The formula here is simple:

$$\text{Sales per Square Foot} = \text{Annual Sales in Dollars} / \text{Square Feet of Retail Space}$$

What's a good number? It depends. The average sales per square foot in malls is about \$350. A store in an enclosed mall in or near a major city might do much better. If you're in a strip center in a rural area, expect less. And what you're selling will affect the number--jewelry will be much higher. If you want to see how you're doing compared to other stores, check with your trade association. But be careful. Your particular situation may be very different than the average retailer. Where the formula really helps is year-to-year (and shorter period) comparisons for the same store and analysis of multiple stores. For example, sales per square foot at the store in Madison are the lowest of your 14 stores. That suggests determining the reason for the lower sales and correcting the problem. If the results are low enough closing the store should be considered along with other factors. The formula can also be used for distributors and for service businesses.

Vendor Discounts for Early Payment

It's not unusual for vendors to offer a discount for early payment of an invoice. For example, a typical offer is 2/10 net 30. That means you'll get a 2-percent discount if you pay the invoice within 10 days; if you don't take the offer the full amount is due in 30 days. As the customer, the question is, should you take the discount? As a vendor, the question is,

should you offer a discount?

The first step is, unfortunately, a review of the math. The good news is that it's not complicated. The formula is:

$$\text{Effective interest rate} = \text{discount \%} / (100 - \text{discount \%}) \times 360 / (\text{FT} - \text{DP})$$

Where:

FT = the full term allowed for payment in days
 DP = the discount period allowed for payment in days
 discount = the offered discount as a percent

Example: Madison Inc. is going to pay an invoice with terms of 2/10, net 30. Plugging into the formula:

$$\begin{aligned} \text{Effective interest rate} &= 2 / (100 - 2) \times 360 / (30 - 10) \\ &= 2 / 98 \times 360 / 20 \\ &= 36.7 \end{aligned}$$

Thus, taking the discount is equivalent to earning almost 37% a year on your money. That sounds high, but it makes sense when you look at the details. You're getting a 2-percent discount, but that saving is spread over just 20 days, the difference between the regular due date and the discount period. Had the terms been 2/10, net 60, that same 2-percent discount would have been spread over 50 days (60 less 10) and the effective interest rate on an annual basis would be about 15%. For more information go to our article [Vendor Discounts for Early Payment](#).

Days Inventory Outstanding

Days inventory outstanding (DIO) is known by a number of other names including days to sell inventory, days of inventory, etc. The concept is fairly simple, but important. You want to measure the amount of inventory based on sales. A period-to-period comparison of inventory levels without adjusting for sales ignores a key factor, the change in sales. DIO solves the problem by introducing the level of sales by using the cost-of-goods (the same basis for measuring inventory). The formula is:

$$\text{DIO} = (\text{average inventory} / \text{COGS}) \times \text{days in period}$$

Example: Madison's inventory at the beginning of the year was \$100,000; at the end of the year it was \$140,000 for an average inventory of \$120,000. Cost of goods sold (COGS) for the year was \$660,000. Using the formula:

$$\begin{aligned} \text{DIO} &= (\$120,000 / \$660,000) \times 365 \\ &= 0.181818 \times 365 \\ &= 66.36 \text{ days} \end{aligned}$$

Thus, there's about 66 days of inventory on hand, on average, during the year. Whether that's a too much, too little, or just the right amount depends on a number of variables. Too much inventory ties up too much capital; too little means you could be missing sales or having to place rush orders. The first step is a period-to-period comparison. In this case, compare the 66 days to the number of days for the prior year. If the number is available, and it's comparable, you could compare your number to an industry average. Other points:

- Other, shorter, time periods may provide better data. Modify the formula appropriately. For quarterly comparisons, average inventory using beginning and end of quarter data, COGS for the quarter, and multiply by the number for the quarter, and multiply by the number of days in the quarter.
- Consider analyzing the data by product line. For example, an appliance retailer might analyze by washers,

dryers, TVs, etc.

- Don't blindly accept the result. Has there been a shift in product sales, a sharp increase or decrease in COGS, is there an unusual amount of slow-moving items, etc. that could skew the results?

Taxable Yield Equivalent of Qualified Dividend

Yields on many fixed income investments such as low-risk bonds, CDs, etc. have been low for several years. One option is to buy dividend-paying stocks or mutual funds. (Talk to your investment advisor about risks.) Qualified dividends are taxed at 0% for taxpayers in the 10% and 15% brackets; at 15% for those in the 25%, 28%, 33%, and 35% brackets; and 20% for taxpayers in the 39.6% bracket. There's an additional 3.8% net investment income tax on taxpayers with AGI above \$200,000 (\$250,000, married filing joint). For example, \$1,000 of interest on a CD would net married taxpayers in the 28% bracket \$720 (28% tax rate); a \$1,000 dividend would net them \$850 (15% tax rate).

The idea is to find the equivalent yield of fully taxable interest to a partially taxable dividend. Here's the formula:

$$I = D (1-TD) / (1-TN)$$

Where:

I = Interest Rate

D = Dividend Yield

TD = Tax Rate on Dividends

TN = Tax Rate on Ordinary Income

To find the necessary dividend yield to equate to a taxable yield use this formula:

$$D = I (1-TN) / (1-TD)$$

Example--Madison Inc. pays a dividend with a yield of 3.2%. Fred is in the 25% tax bracket so a dividend will be taxed at 15%. Plugging into the formula (use all decimals):

$$I = 0.032 (1-0.15) / (1-0.25) = .03627 \text{ or } 3.6\%$$

Fred would have to get 3.6% on a fully taxable yield to equal a 3.2% yield on Madison stock. Not a huge difference, but significant, particularly in a low-interest rate environment.

If Fred were in the 39.6% bracket he'd pay tax on the dividend at 20% and be subject to the 3.8% tax on net investment income. Thus, the tax rate on a dividend would be 23.8%; on interest income 43.4%. In this case he'd need a yield of 4.3% to equal the 3.2 dividend yield.

Debt Service Coverage Ratio (DSCR)

If you're looking for a loan, this is probably the most critical metric, particularly for commercial real estate loans. Basically, the lender wants to know if after the cash expenses of the business or property there's enough left to cover interest and principal payments on the loan. The formula is:

$$DSCR = NOI / DS$$

Where:

DSCR = Debt Service Coverage Ratio

NOI=Net Operating Income
DS=Debt Service

Net operating income is gross income less operating expenses. That does not include depreciation, amortization, or debt service. For real estate, operating expenses consist of utilities, real estate taxes, management fees, maintenance, etc. Often a reserve for repairs as well as a deemed vacancy loss is deducted. Debt service consists of interest and principal repayments.

Example: Fred is purchasing an office building. The gross income from the property is currently \$600,000 per year and the operating expenses total \$125,000. The space is currently fully leased but the lender uses a 20% vacancy rate. That reduces the income to \$480,000. Subtracting the operating expenses of \$125,000 from the \$480,000 yields net operating income of \$355,000. Debt service totals \$300,200 per year. The debt service coverage ratio is \$355,000/\$300,200 or 1.18. That could be on the low end for most commercial banks, but still be acceptable for many. The number indicates the income from the property, after adding a vacancy factor, would be able to pay the debt service, with a safety factor of 18%.

This ratio isn't the only metric or factor the lender will use in considering the loan. The quality of the tenants, length of leases, overall market trend, etc. will come into play. You should also be aware that this is one of the measures lenders often require a borrower to be in compliance with. For example, the loan covenant may require you to maintain a DSCR of no less than 1.05 to 1.

Returns to Sales Ratio

Virtually any business that makes or sells a product has returns. Could be it wasn't what the customer wanted, a defective product, etc. or it could be more sinister such as an employee or customer returning stolen merchandise. A certain percentage of returns are inevitable. But if the ratio of returns to sales is increasing or much higher than the industry, you want to investigate and take action. Here's the formula:

$$\text{Returns to Sales} = R/S$$

Where:

R = Dollar amount of returns per period
S = Total sales per period (before returns)

The ratio should remain fairly constant, unless you're attempting to reduce your returns or there's a change in your product mix. If the ratio is increasing, you want to determine why. You may also be able to compare your returns to industry averages if comparisons are available.

If your sales include both product and services, you may want to use just the sales of product for the denominator. That will depend on your business.

You may be able to use a similar approach for services. For example, you service heating systems. Instead of returns, the metric might be followup service calls and instead of sales in dollars, the measure might be total service calls.