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Do Smaller Companies Warrant a Higher Discount Rate for Risk?

The "Size Effect" Debate

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One of the critical issues facing business appraisers today is the so-called "small stock" issue. That is, should the discount or capitalization rate used to value the smaller private held company be higher based on its smaller size? Should a smaller company's earnings or cash flow be discounted or capitalized at a higher rate (which results in a lower value) just because the company is small (as measured by earnings, assets, market value, or whatever)? Should larger public company multiples be adjusted downward for comparison with smaller private companies based on size differences alone? This article will outline the current debate in the industry and will explore some possible resolutions to this issue.

The size debate has very real implications to the valuation of companies for purchase or sale, estate planning, divorce, minority shareholder litigation, ESOPs, and other purposes. In some locales (as well as in some pending Tax Court cases) the IRS is beginning to challenge business valuations where a size impact is taken into account. While it is almost universally accepted in the valuation field that small companies are generally riskier, recent attacks are forcing the profession to respond.

Illustration of the Risk Premium

Most business appraisers use some form of the Capital Asset Pricing Model (CAPM) to develop a discount or capitalization rate. Appraisers may use a CAPM formula that incorporates a measure called "beta,"¹ or al-

ternatively, a build-up method whereby a discount or capitalization rate is developed by use of various components. Under the use of the build-up method, an appraiser first determines a risk-free rate (usually utilizing rates of risk-free government securities) that represents the return from a total riskless investment. Since a company's stock is more risky than a riskless investment, this then necessitates the addition of various equity risk premiums depending on the perceived risk of an investment in the common stock of the subject company, over and above a risk-free rate. A simplified example is shown in Table 1.

Assuming the Company's annual income or cash flow stream to be capitalized is \$1,000,000, the estimated value of the Company (before minority or marketability considerations) is calculated as $\$1,000,000 \div 10\% = \$10,000,000$. The equity risk premium represents the amount necessary to add to the risk-free rate to recognize the fact that returns on common equity are not risk-free and buyers should be compensated for bearing that additional risk by earning a higher return.

Ibbotson and PricewaterhouseCoopers each author studies that have stratified the equity risk premium by firm size, finding a direct relationship between firm size and return (discussed in more detail below). In general, these studies show that smaller companies are more risky and investors therefore require a greater return, on average, over longer periods of time for bearing this risk. Mathematically speaking, this equates to a higher equity risk premium and lower value for the smaller company. This is the crux of the size premium argument.

Table 1
Example of the Build-Up Method

Risk-Free Rate	6.0%
Equity Risk Premium	7.0%
Specific Company Risk Premium	2.0%
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Discount Rate	15.0%
Less: Growth Rate	(5.0%)
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Capitalization Rate	10.0%

Traditional Thinking

It has long been observed in the finance field that there exists a so-called “small stock” effect. This refers to the observation that over long periods of time, small public company stocks have been shown to have significantly higher average annual rates of total returns than have larger public companies. The size issue has been one of the most disputed findings of corporate finance since being identified by Banz in 1981.² Also, Fama and French published a study that calls into doubt the ability of CAPM to forecast expected rates of return due to inaccuracies in the consideration of company size.³ Finally, there are at least two published studies that demonstrate a clear risk premium based on company size.

Grabowski and King Studies. A study⁴ by Roger Grabowski, ASA, and David King, CFA, finds a clear and strong statistical relationship between company size and rates of return. In short, the study finds that the smaller the public company (note that public companies are used since rates of return are not observable in private company shares), the higher the average rate of return required annually by investors. In their first published study, encompassing the period from 1963 to 1996, they separated stocks into 25 distinct groupings by size and found this relationship regardless of whether size is defined by annual sales revenues, number of employees, book value of shareholders’ equity, or other measures.

According to the study, the smallest public companies (with average revenues of \$47 million (much larger than many of the typical privately held companies)) had an average annual return (between dividends and capital appreciation) of 13.6% above the returns on U.S. Treasury bonds (i.e., 13.6% higher than a risk-free U.S. Treasury bond investment). This is in contrast to the largest public companies (with average revenues of \$4.86 billion) that had an average annual return of 5.9% above the returns on U.S. Treasury bonds. In other words, on average, investors required an additional return of 7.7% (13.6% equity risk premium for small companies, less 5.9% for large companies) annually to invest in the stocks of small companies. This is referred to as the small stock premium and illustrates the “small stock effect.”

Ibbotson Associates Data. Another highly respected resource, the *SBB* Yearbook, prepared annually by Ibbotson Associates, finds similar clear indications that smaller companies require much higher average annual rates of return. Ibbotson data differs in various respects, most notably in how it defines size (in terms of a public company’s market value of its shares outstanding) and in the measurement period used.

The Case Made Against the Size Effect

Despite this evidence of a size premium, there have been challenges made to this traditional thinking since its dis-

covery. These challenges are along the following lines:

■ **Excess Returns Occur in Only a Few Trading Days.** Early 1980s research shows that all of the excess return for small publicly traded stocks occurs in the first few trading days in January, and is not a generalized phenomena over the entire year.

■ **Research Alleged to Be Flawed.** The excess returns of small stocks may really be related to high transaction costs and poor liquidity, factors that were not appropriately considered in prior research demonstrating the small stock effect. Additionally, allegations have been made that there are problems in the public company stock data used by Ibbotson, including a “delisting” bias, that when corrected for, causes the small stock effect to disappear.

■ **No Demonstrated Ability to Earn Excess Returns in Reality.** Investment professionals have not shown any evidence that investing in small common stocks over long periods of time has actually yielded an excess return.

■ **Recent Years Fail to Exhibit a Small Stock Effect.** From the 1980s through the 1990s, small stocks have actually returned less, on average, than large stocks. If the small stock effect existed the reverse would be true.

Other Arguments. Others have suggested that the small or specific company risk is irrelevant in the context of CAPM. This is because CAPM assumes all investors are well diversified and that specific company risk (called “non-systematic” risk in the language of CAPM) is eliminated by holding a diversified portfolio. The investor is only left with “systematic,” or general market risk.

Complicating the small stock issue further is a study recently published in *Business Valuation Review* that claims to contradict the small stock effect noted in the Ibbotson data, PricewaterhouseCoopers research and other studies.⁵ Many business appraisers define rates of return by looking at long-term averages from those studies, although another option would be to use the so-called compound (or geometric) rate of return. This recent study maintains that if compound annual rates of return of public companies are used, the small stock effect goes away completely and there is no discernable difference in returns based on company size. This study was only recently published, so whether or not there are flaws in its methodology or logic that would render its findings invalid will need to be followed closely, particularly since it is almost sure to be cited in future valuation challenges by the government. The general question of whether or not to use average or compound rates of return to develop a company’s discount rate has been long-debated and still has its advocates in both camps periodically publishing new articles favoring one or the other.

Legal Precedent Challenging the Size Premium

In *Estate of Jung v. Commissioner*,⁶ the Tax Court addressed the issue of whether an incremental risk premium is applicable due solely to a company's size. The *Jung* Court ultimately held that a company's discount rate does not warrant an incremental risk premium due solely to its size. The *Jung* Court reached its decision despite a statement to the contrary by the IRS in its own internal training manuals. The Court sided with the IRS experts' position that companies are risky because they are in risky industries, not because of their size. The Court noted that the taxpayer's expert presented no evidence on why the size of the corporation affects the appropriateness of a minority discount (or an incremental risk premium).

The careful business appraiser should come away from the *Jung* case with the lesson that courts want to see a specific analysis of the risks of a company, not just a showing that the company is smaller and therefore demands a size premium as a result. Although, as a general proposition, smaller companies are riskier than larger companies, it is safer to agree with the *Jung* court that a specific analysis of the particular risk of a company must be examined in each valuation situation. A size premium does not automatically apply in every case. Each privately held company should be analyzed to determine if a size premium is appropriate in its particular case. There can be unusual circumstances where a small company has risk characteristics that make it far less risky than the average company, warranting the use of a very low equity risk premium. One possible example of this is a private water utility (monopoly situation, very low risk, near-guarantee of payments). The use of a size premium without consideration of the risk of the specific company may subject the appraisal to challenge and rejection on down the road.

Data Now Allows for Analysis Other Than Based on Size

Grabowski and King, via the PricewaterhouseCoopers study, have recently broadened the way they measure public company rates of return that go beyond mere size. In the 1999 version of their study, rates of return are also calculated based on the five-year average operating profit margins of the public companies, as well as the covariance (a measure of its variability) of the operating profit margin, and a measure of return on equity.

Interestingly, the study shows a clear relationship between these measures and rate of return. In particular, the higher the five-year average operating profit margin of the average public company, the lower the rate of return on its stock, and vice versa. In other words, companies with higher average operating profit margins (separate and apart from their size) may be seen as less risky by investors than companies with thin operating profit margins. Of great interest is the statistical underpinning for this finding, which showed the five-year average operating profit margin to explain a

substantial 76% of the variation observed in the rate of return of a public company's stock. Thus, a valuator can now see how measures other than size might affect a company's rate of return.

Two Main Reasons for a Size Premium

As a general proposition, a size premium is usually appropriate. The support for the size premium falls into two main categories: first, a time horizon viewpoint, and second, a common sense viewpoint. Following is a discussion of why each explanation suggests that valuers should not abandon the additional risk premium associated with size.

Time Horizon Analysis. It is general knowledge that publicly traded common stock returns exhibit wide degrees of volatility from one year to the next. Therefore, in the context of shorter time horizons, it is quite possible that returns for small or large stocks might differ, and in some years, even show negative returns. For example, a valuator is preparing a discounted cash flow valuation forecast for five years, then capitalizing the final year cash flow into perpetuity based on a capitalization rate (a cap rate is simply a discount rate minus the long term annual growth rate).

To compute the present values of each year's cash flows, a discount rate must be developed that takes into account risk. The valuator decides to use a shorter-term measure of the discount rate, basing it on the small stock rate of return for a five-year period. It is entirely possible that a five-year period could be cherry-picked from rate of return data that shows an average rate of return even below the risk-free rate, or in some cases, a negative return. From a rational point of view, it certainly does not make sense that prudent investors would require a return less than the risk-free rate on a longer-term series of inherently more risky cash flows. Rational investors would always sell the stock and buy risk-free treasuries where they could earn a higher return with no risk.

Therein lies the problem of using a short-term time horizon (such as recent years, where no small stock effect is alleged to exist) to discount a longer-term income stream. In any particular short-term period, any variety of return patterns might be observed due to the inherent volatility of stock market returns in general, whether for small or large stocks. A significant portion of the value in the discounted cash flow model comes from the terminal year value. That terminal year value is based on a perpetuity assumption, i.e., that earnings or cash flows continue indefinitely into the future, growing at the annual growth rate. If the terminal value drives a significant portion of the total value, should the valuator use short-term oscillations in returns as the basis for discounting longer-term earnings or cash flows? Of course not. Even if the investor only intends to hold the security for three or five years, rational investors pricing the security in the market are certainly taking this longer term cash flow into account since it drives so much of a stock's total

return. Thus, even the investor with a shorter-term time horizon is forced by market forces to consider the long term.

Michael Annin, CFA, and Dominic Falaschetti, CFA, of Ibbotson Associates, have also examined the attack against assigning an additional small company equity risk premium.⁷ They found there is a short-term phenomena of small company stocks under-performing large company stocks in 10 of the 20 years during the 1977 to 1996 time frame. However, they found that this is not true in any longer-term time frame that might be selected. Regardless of any rolling 20-year time frame from 1926 to 1996, in no single period have average 20-year small company stocks had average returns equal to or less than those of large companies. In all but a few periods, the stocks of small public companies have actually realized returns that are substantially in excess of those of large companies. These findings support the earlier comments that a longer-term time horizon is appropriate.

While the foregoing analysis might seem convincing, this study data is based on average annual public company rates of return. As noted previously, a recent study suggests that using a compound rate of return eliminates the small stock premium even if the measurement period is long-term in nature.

Common Sense Analysis. To this point, this article has only dealt with the “numbers” of academic studies. It is also important to consider the common sense aspect of the issue and forget momentarily the academic theory and studies. Is it reasonable to expect small companies to be more risky than large ones? There can certainly be cases where a particular small company has a unique aspect that reduces its risk beyond what is normally seen. It is the job of the valuator to spot these situations and take them into account in making adjustments to the discount rate. However, most smaller companies have very real aspects of risk that are not present (or at least not to the same degree) in larger companies. Regardless of whether CAPM, the build-up method or some other mathematical proxy for risk does or does not capture this risk, it is very real indeed for the buyer. This includes key person risks, customer and supplier concentrations, a tenuous dependence on less certain bank financing, a nondiversified product line, poor financial information and information systems to track the business, and a whole host of other risks. Does the small three-store retail chain in one locality have the same risk as Wal-Mart? Un-

less there is something extremely unusual about the chain, the answer is a resounding “no.” Yet the view of the opponents of a small company equity risk premium, if taken to its logical extension, would make no such distinction.

Conclusion

The current challenge to traditional thinking about a small stock premium is a very real and potentially troublesome issue. The challenge comes from bright and articulate people and has already been incorporated into some court cases, providing further ammunition for the IRS. Failing to consider the additional risk associated with most smaller companies, however, is to fail to acknowledge reality. Measured properly, small company stocks have proven to be more risky over a long period of time than have larger company stocks. This makes sense due to the various advantages that larger companies have over smaller companies. Investors looking to purchase a riskier company will require a greater return on investment to compensate for that risk. There are numerous other risks affecting a particular company, yet the use of a size premium is one way to quantify the risk associated with smaller companies. However, business appraisers must focus on what drives the risk in each specific company valuation and articulate it, rather than falling into the complacency of relying on the small stock issue alone. ♦

END NOTES

- ¹ Beta is a measure of risk based on a stock's variance with the overall market, and is incorporated in the Capital Asset Pricing Model. This measure will not be explored in this article, but is discussed at length in Chapter 17 of the *CCH Business Valuation Guide*.
- ² R.F. Banz, “The Relation Between Return and Market Value of Common Stocks,” *Journal of Financial Economics* (1981, vol. 9) 3-18.
- ³ Kenneth French and Eugene Fama, “Common Risk Factors in the Returns on Stocks and Bonds,” *Journal of Financial Economics* (January 1993).
- ⁴ The study was later published and sold in subsequent updates by their employer, PricewaterhouseCoopers.
- ⁵ Brian Becker, Ph.D., and Ian Gray, “Does a Small Firm Effect Exist When Using the CAPM? Not Since 1980 and Not When Using Geometric Means of Historical Returns,” *Business Valuation Review* (September 1999) 104-111. *Business Valuation Review* is a publication of the Business Valuation Committee of the American Society of Appraisers.
- ⁶ *Estate of Jung*, 101 TC 412, Dec. 49,387 (1993).
- ⁷ Michael Annin and Dominic Falaschetti, “Is There Still a Size Premium?” *CPA Expert* (Winter 1998).