Company-Specific Risk—A Different Paradigm: A New Benchmark

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Abstract

Even though, according to traditional financial theory, public markets do not price company-specific risk, it does not mean that it does not exist or is not quantifiable for public comparables. In all instances, the company-specific risk premium for publicly traded companies is greater than 0%—yet appraisers start their benchmark analysis at 0% to determine an appropriate company-specific risk premium for privately held companies. Is this a flaw in our collective thinking?

Introduction

Whether using a build-up approach or some version of the Capital Asset Pricing Model (CAPM), business valuation analysts compare and contrast their subject company to publicly traded benchmarks. We do this to select appropriate betas (CAPM), industry premiums (build-up approach), equity risk premiums, and size premiums for our subject company.

Why have we not fully extended this comparison to determine the appropriate company-specific risk premium for privately held firms? Before we answer this question, we point out that some appraisers may argue that we appropriately (but rather subjectively) compare the subject company to publicly traded comparables. For example, we start with a benchmark of 0% and depending on the specifics of the subject company (in comparison to publicly traded comparables) we either add or subtract points to determine the appropriate premium or discount.

The Issue

Why do we start with 0% and work our way up or down when valuing privately held companies? Is it because, according to traditional financial theory, this premium is diversifiable and, therefore, not rewarded by the public markets? The short answer is yes. However, we do not believe that this is an acceptable answer.

Even though according to traditional financial theory, public markets do not reward this risk, it does not mean that it does not exist or is not quantifiable for public comparables. In all instances, the company-specific risk premium for publicly traded companies is greater than 0%—yet appraisers start their benchmark analysis at 0% to determine an appropriate company-specific risk premium for privately held companies. Is this a flaw in our collective thinking?

Moreover, there has been research of late that contradicts traditional financial theory. Total risk, which by definition incorporates company-specific risk, may indeed matter to the valuation of publicly traded stocks.[1]

Possible explanations of this "phenomenon" may be that investors hold undiversified portfolios. A study by Barber and Odean (2000) found that the mean household's portfolio contained only 4.3 stocks, with a total value of $47,334, and the median household only had 2.61 stocks worth $16,210. Benartzi and Thaler (2001) found that employees held a disproportionate amount of company stock in their pension plans. Falkenstein (1996) found that even mutual funds held a substantial degree of idiosyncratic (company-specific) risk. Huberman (2001) found evidence that investors may be prone to investing in familiar stocks and often ignore the principles of portfolio diversification.[2] Additionally, many small publicly traded companies have large undiversified shareholders.[3]

Purpose

The purpose of this article is to highlight a potential alternative approach to determine company-specific risk premiums for privately held companies and to generate some debate on the subject.[4]

Background

Total risk incorporates both systematic (market) and unsystematic (idiosyncratic or company-specific) risk. We are all familiar with versions of the CAPM to calculate the cost of equity for a privately held company, one of which is below:

$$\begin{aligned}&\textit{Cost of Equity}\\&\quad = \textit{Risk}-\textit{free rate}\\&\qquad + \textit{Beta}^{*}(\textit{Equity Risk Premium})\\&\qquad + \textit{Size Premium}\\&\qquad + \textit{Company}-\textit{Specific Risk Premium}\end{aligned}$$

We are also familiar with the Build-Up Approach:

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[1] Source: Amit Goyal and Pedro Santa-Clara, "Idiosyncratic Risk Matters!" (Anderson Graduate School of Management, University of California, Los Angeles. November 2001). The authors found that idiosyncratic risk represents a large fraction of total risk, and it drives most of the stock price variation through time.

[2] Ibid.

[3] Rene Stulz, "Survey—Mastering Risk: 1. Diminishing the Threats to Shareholder Wealth," *Financial Times,* London (April 25, 2000).

[4] We recognize this will be a controversial topic.

$$\begin{aligned}\text{Cost of Equity} &= \text{Risk}-\text{free rate} \\ &\quad + \text{Equity Risk Premium} \\ &\quad + \text{Industry Premium} \\ &\quad + \text{Size Premium} \\ &\quad + \text{Company}-\text{Specific Risk Premium}\end{aligned}$$

We know that a security's beta, a measure of systematic risk, can be determined by using linear regression analysis. By regressing the returns of an individual security (dependent variable) against the returns of a market index (independent variable) one can determine the slope of the relationship, or the beta.[5] After appraisers calculate beta for guideline companies, we then determine the appropriate beta for our subject company.

A regression also provides many other valuable statistical outputs, such as the coefficient of determination, also known as R^2, or the "goodness/closeness of fit," and R, also known as the correlation coefficient. R^2 measures this goodness of fit as a percentage of total variation in the dependent variable described by the best-fit regression line. For example, if R^2 equaled one, then all variation in the dependent variable would be explained by the independent variable. In other words, all observations would lie along the regression line. The correlation coefficient, *R,* measures the degree of linear association between two variables.

Hypothetical Example

Comparable's cost of equity (according to traditional financial theory)

Let's look at a hypothetical example and then compare it to actual practice. Assume that we regress an individual security against a market index and calculate a beta equal to 0.95. Assume also that the R^2 for this regression is 20% or, equivalently, the correlation coefficient is equal to approximately 0.45 ($0.20^{.5}$).

If this security is a publicly traded security with a market capitalization of between approximately $1.4 million and $262.7 million, its cost of equity equals:[6]

$$\begin{aligned}\text{Cost of Equity} &= \text{Risk}-\text{free rate} \\ &\quad + \text{Beta}^{*}(\text{Equity Risk Premium}) \\ &\quad + \text{Size premium}\end{aligned}$$

$$\text{Cost of Equity} = 5\% + (0.95)^{*}(7.2\%) + 6.41\%$$

$$\text{Cost of Equity} = 18.25\%$$

Our subject company, which we are comparing to the publicly traded stock above, has a market capitalization of less than $262.7 million and faces more company-specific risk than the comparable.

We often hear the story that private company appraisals must consider company-specific risk because the business owners are likely to have the substantial bulk of their worth tied up in the business. As a result, neither a current owner nor a likely buyer would have a diversified portfolio to shed the unsystematic risk of the closely held business.

Another compelling reason to include company-specific risk in our appraisals is the glaring inability of most (any?) investment advisors to construct a variance-minimizing portfolio that includes a closely held company. This inability stems directly from a lack of any meaningful way to measure the correlation between a closely held company and other investment alternatives. Lacking this ability significantly frustrates all attempts to match the closely held company with investments that are indirectly correlated.

Under either explanation, we know that 18.25% is not an appropriate cost of capital for our subject company since company-specific risk will not (cannot?) be diversified away.

Comparable's total cost of equity

The cost of equity calculation above does not incorporate a company-specific risk premium even though we know that this public company, like all public companies, exhibits this risk. The following analysis incorporates this risk.

We can calculate total risk or *Total Beta*[7] for this publicly traded stock in the following manner:[8]

$$\text{Total Beta} = \text{Market Beta}/R$$

$$\text{Total Beta} = 0.95/0.45 = 2.11$$

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[5] We recognize that CAPM, as well as the selection of the size premium, is a controversial topic. However, if you accept CAPM (or the Build-Up Approach) as alternatives to calculate the cost of equity, you should accept the merits of this article. Our purpose in this article is to discuss a potential new approach to calculate company-specific risk premiums, not to argue over the merits and/or the inputs into the CAPM and other issues.

[6] In this equation, the *Risk-free rate* is assumed equal to 5%. The source of *Equity Risk Premium* is the *SBBI Valuation Edition 2005 Yearbook* (Chicago: Ibbotson Associates), where the long horizon expected equity risk premium (historical) is defined as large company stock total returns minus long-term government bond income returns. The source of *Size premium* is the *SBBI Valuation Edition 2005 Yearbook,* decile 10.

[7] Please see information related to total beta on Professor Aswath Damodaran's website at http://pages.stern.nyu.edu/~adamodar. Note: This total beta concept was the catalyst behind this article.

[8] This is equivalent to the following equation: *Total Beta = Standard deviation of stock* (*SDs*)/*Standard deviation of market* (*SDm*). The proof is shown as *Beta* = Covariance (*s,m*)/variance (*m*) = {Cov(*s,m*)/(*SDs*)(*SDm*)}**SDs*/*SDm* = *R***SDs*/*SDm*. *Total Beta = Beta*/*R* = *SDs*/*SDm*. Note: Standard deviation is the appropriate measurement of risk for an individual security as the only asset in a portfolio.

Thus, the Total Cost of Equity for this publicly traded security equals:[9]

$$\begin{aligned}\textit{Total Cost of Equity} &= \textit{Risk}-\textit{free rate} \\ &\quad + \textit{Total Beta}^{*}(\textit{Equity Risk Premium})\end{aligned}$$

$$\textit{Total Cost of Equity} = 5\% + 2.11^{*}7.2\%$$

$$\textit{Total Cost of Equity} = 20.19\%$$

Even though the publicly traded comparable will not be priced under an expectation of a required rate of return equal to 20.19%,[10] this result provides us with very valuable information because privately held firms are priced under this total risk/total return metric, also now known as total beta. Thus, it appears to us that 20.19% is the appropriate benchmark to use to help determine our subject company's idiosyncratic risk premium and its total cost of equity capital, as shown below.

A New Reference Point?

$$\begin{aligned}&\textit{Total Cost of Equity}(\textit{for publicly traded comparable}) \\ &= \textit{Risk}-\textit{free rate} \\ &\quad + \textit{Beta}^{*}(\textit{Equity Risk Premium}) \\ &\quad + \textit{Size Premium} \\ &\quad + \textit{Company}-\textit{Specific Risk Premium}\end{aligned}$$

Solving for the company-specific risk premium we have:[11]

$$\begin{aligned}20.19\% &= 5\% + 0.95^{*}(7.2\%) + 6.41\% \\ &\quad + \textit{Company}-\textit{Specific Risk Premium}\end{aligned}$$

$$\begin{aligned}20.19\% &= 18.25\% \\ &\quad + \textit{Company}-\textit{Specific Risk Premium}\end{aligned}$$

Thus, the comparable *Company-Specific Risk Premium* equals 1.94%.

Should we not use this as our benchmark, instead of 0%? We believe that we have presented a good argument that it should be used, especially considering the fact that we actually have a specific company for comparison.[12]

Reiterating, just because traditional financial theory claims that a public company is not valued by incorporating company-specific risk (total risk), this theory does not mean that we should exclude this reference point to value privately held companies. After all, privately held firms seem to be universally valued under a total risk/total return (total beta) perspective. We, therefore, should reference this risk (as shown above and below), rather than inappropriately referencing 0%.

Using this premise, we can look at public filings and other industry sources to compare our subject company to the comparables on any number of fronts, including (but not limited to) access to capital; diversification of customers, vendors, sales region, product lines; key-man dependence; and pending or threatening litigation.

We all know that company-specific risk is just that—company-specific and not related to any other company's specific risk, per se. In this analysis, we have merely adjusted the reference point to assist in the determination of the subject company's specific risk premium.

Let's say that after a thorough review, we add 2 percentage points to the publicly traded comparable's company-specific risk premium and calculate the subject company's risk premium equal to 3.94% (1.94% + 2%). Thus, our subject company's cost of equity equals:[13]

$$\begin{aligned}&\textit{Cost of Equity} \\ &= \textit{Risk}-\textit{free rate} + \textit{Beta}^{*}(\textit{Equity Risk Premium}) \\ &\quad + \textit{Size Premium} \\ &\quad + \textit{Company}-\textit{Specific Risk Premium}\end{aligned}$$

$$\begin{aligned}\textit{Cost of Equity} &= 5\% + (0.95)^{*}(7.2\%) + 6.41\% \\ &\quad + 3.94\%\end{aligned}$$

$$\textit{Cost of Equity} = 22.19\%$$

We recognize the implications of our conclusions. We have assigned a cost of equity equal to 1.94% greater than we would have otherwise—not an immaterial adjustment. Thus under the income approach, we also will value the subject company lower than we would have otherwise.

While this conclusion does not develop a "magic formula" to price company-specific risk, it does appropriately adjust the benchmark to something greater than 0% and allows for a more specific comparison between comparables and our subject companies. This technique, therefore, may be useful in reducing the amount of subjectivity in specific risk estimation.

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[9] Keep in mind that the market (according to traditional financial theory) will not value the publicly traded security under such expectations since a portion of the total risk, the unsystematic risk, can be diversified away.

[10] According to traditional financial theory.

[11] By definition, we know that the total cost of equity is composed of all components of the cost of equity, including the size premium and the company-specific risk premium.

[12] While we all have made adjustments in the past, have we really analyzed the differences in detail between each comparable company and our subject company, or have we made adjustments in a broad manner, grouping the comparables together and then making adjustments? If you do not consider any companies as appropriate guidelines, the appraiser must still perform some analysis (whether in this analysis or the more traditional analysis) in quantifying company-specific risk. At least in this method an appraiser could retrieve a firm's 10-K and review relative risk factors to compare and contrast differences in the respective companies.

[13] Assuming we use the comparable's beta.

Table 1
Kidney Dialysis Centers (SIC 8092): Regression Analysis Comparables vs. S&P 500

Ticker	Beta	R^2 (in %)	R	*t* Statistic[1]	Statistically Significant?[2]	Market Capitalization (in $Billions)[3]
RCI	0.20	1.64	.13	0.97	No	3.10
DVA	0.73	5.31	.23	1.79	Yes	4.60
FMS	1.21	21.36	.46	3.93	Yes	7.79
DCAI	3.24	17.75	.42	3.51	Yes	0.16

Source: Yahoo!Finance. Betas are estimated over a five-year measurement period using a monthly interval period and the S&P 500 as the market index.
Note: SIC = Standard Industrial Classification; RCI = Renal Care Group; DVA = Davita, Inc.; FMS = Fresenius Medical Care AG; DCAI = Dialysis Corporation of America.
[1] *Beta/standard error. Note: a larger t statistic value, all else being equal, represents a more significant relationship.*
[2] *t statistic greater than 1.67 (90% confidence level).*
[3] *As of 26 May 2005. Source: Yahoo!Finance.*

Table 2
Kidney Dialysis Centers (SIC 8092) Total Cost of Equity: Risk-Free Rate = 4.61%[1] Equity Risk Premium = 7.20%

	DVA	FMS	DCAI
Market Beta	0.73	1.21	3.24
R	.23	.46	.42
Total Beta	3.17	2.63	7.71
Total Cost of Equity (in %)	27.43	23.55	60.12

Note: SIC = Standard Industrial Classification; DVA = Davita, Inc.; FMS = Fresenius Medical Care AG ; DCAI = Dialysis Corporation of America.
[1] *20-year constant maturity treasury as of 29 April 2005.*

Table 3
Kidney Dialysis Centers (SIC 8092): Company-Specific Risk Risk-Free Rate = 4.61% Equity Risk Premium = 7.20%

	Total Cost of Equity (in %)	Market Beta	Small Company Premium (in %)[1]	Company-Specific Risk (in %)[2]
DVA	27.43	0.73	0.75	16.81
FMS	23.55	1.21	0.60	9.63
DCAI	60.12	3.24	4.54	27.64

Note: SIC = Standard Industrial Classification; DVA = Davita, Inc.; FMS = Fresenius Medical Care AG ; DCAI = Dialysis Corporation of America.
[1] *Source: SBBI Valuation Edition 2005 Yearbook (Chicago: Ibbotson Associates).*
[2] *Company-specific risk premium = Total cost of equity − risk-free rate − beta*equity risk premium − small company premium.*

Now, we will look at a real-world example in the healthcare industry, specifically kidney dialysis centers. It will be interesting to see what conclusions result from performing actual linear regressions as this theory could break down in actual practice.

A Real-World (Kind of) Example

Our subject company, a dialysis center (Standard Industrial Classification 8092), had less than $15 million in net patient revenues and earnings before interest, taxes, depreciation and amortization of slightly less than $2 million for its latest twelve months.

We located four U.S. publicly traded companies in this industry: Renal Care Group (Ticker: RCI), Davita, Inc. (Ticker: DVA), Fresenius Medical Care AG (Ticker: FMS) and Dialysis Corporation of America (Ticker: DCAI).[14] Next, we regressed the returns of each against the returns of the market.

Please see results of our linear regression for these companies against the S&P 500 (the market index)[15] in Table 1.

Notably, the resulting R^2s range from 1.64% (little descriptive power) to 21.36%. Moreover, one of the four linear regressions did not result in a statistically significant result at the 90% confidence level. We, therefore, discarded RCI from further analysis. The market betas for the three remaining companies, DVA, FMS, and DCAI, were 0.73, 1.21, and 3.24, respectively, representing a significant dispersion.

In Table 2, we calculate the Total Cost of Equity (using the total beta approach) equal to 27.43%, 23.55%, and 60.12%, respectively, for DVA, FMS, and DCAI.

[14] We recognize that these companies are significantly larger than our subject company. However, the purpose of this example is to show how this new benchmark is created, not whether we should be benchmarking these companies.

[15] We calculated betas by using a measurement period of five years and a monthly measurement interval.

Table 4
Furniture Companies (SIC 2512): Regression Analysis Comparables vs. S&P 500

Comparable	Beta	R^2 (in %)	R	*t* Statistic[1]	Statistically Significant?[2]	Market Capitalization (in $Millions)[3]
Bassett Furniture	0.89	17.18	.41	7.17	Yes	225.03
La-Z Boy	0.94	26.98	.52	9.57	Yes	713.63
Rowe Companies	0.28	0.42	.06	1.02	No	54.50
Flexsteel	0.00	0.00	.00	0.00	No	93.25

Source: Yahoo!Finance. Betas are estimated over a five-year measurement period using a weekly interval period and the S&P 500 as the market index. (Note: the prior example in Table 1 used a monthly measurement interval.) Calculation of beta using different parameters would naturally result in different results.
Note: SIC = Standard Industrial Classification.
[1] *Beta/standard error. Note: a larger t statistic value, all else being equal, represents a more significant relationship.*
[2] *t statistic is greater than 1.67 (90% confidence level).*
[3] *As of 6 June 2005. Source: Yahoo!Finance.*

Table 3 shows the calculations of the company-specific risk for each company. As one can see, DVA and DCAI's company-specific risks provide little, if any, value for the valuation of privately held firms. These premiums are outside the range of premiums that most appraisers have typically used[16] (up to 15%) and are simply too large to form any meaningful opinions or to use as reference points. However, the company-specific risk premium for FMS may provide guidance for privately held companies since it falls within our expected range.

For DVA and DCAI, this theory broke down somewhere in an attempt to put it into practice. What went wrong? For DVA, we believe the very small R^2 contributed to the lack of practical application.[17] For DCAI, we believe the high beta compounded the adverse effect of a coefficient of determination that only explained 17.75% of the variation.[18] It also may be possible that we should not automatically classify the "error term" with company-specific risk. Could the "error" term represent something else altogether?

A Second Real-World (Kind of) Example

From the previous example, we know what kind of stock does not lend itself well to this type of benchmark analysis: low R^2 (a high error term) and/or a very high beta. Thus, our goal with this example is to show the results for another industry, possibly a less volatile industry where the CAPM provides more explanatory power.

Therefore, we selected the furniture industry (Standard Industrial Classification 2512) and used four "comparables" consisting of Bassett Furniture, La-Z-Boy, Rowe Companies, and Flexsteel to value a subject company whose value is certainly in the 10th decile (market capitalization less than $262.7 million). Please see Table 4 for a statistical summary of these stocks regressed against the S&P 500. Only two of the four companies resulted in a statistically significant beta. Thus, we did not complete the analysis for either Rowe Companies or Flexsteel.

Tables 5 and 6 show the total cost of equity and company-specific risk premium calculations for Bassett Furniture and La-Z-Boy. We calculated the company-specific risk premiums of Bassett Furniture and La-Z-Boy equal to 4.67% and 3.90%, respectively—percentages well within the current paradigm. Thus, we now can use both of these benchmarks (rather than 0%) to compare one company to the other and to our subject company to appropriately determine its company-specific risk premium.

Conclusion

Given the characteristics described above (nonextreme betas, high R^2), business appraisers may be able to use and defend this alternative approach to estimate subject company idiosyncratic risk premiums.[19] If applicable, the benefits of such an approach reside in the quantitative approach to the calculation and the ability to specifically compare the comparables with each other and with the subject company—rather than just starting from 0%, an arbitrary and incorrect reference point.

[16] Excluding company-specific risk for venture-capital like investments.
[17] This, obviously, can be construed as an indictment against the CAPM model as much as this alternative approach. It may also lend support to the critique of traditional financial theory that purports that idiosyncratic risk is not factored into the price of a security.
[18] Note that most betas have an R^2 less than 0.3, and many have an R^2 of 0.05 or less. Source: *SBBI Valuation Edition 2005 Yearbook,* 110: "What can we infer from this data? *There may be other company- or industry-specific factors that drive security prices*. While the CAPM includes one factor in determining expected returns, it does not disallow the existence of others" (emphasis added).
[19] According to the *SBBI Valuation Edition 2005 Yearbook,* 110, stocks have exhibited R^2 from essentially 0% to 61%.

Table 5
Furniture Companies (SIC 2512) Total Cost of Equity: Risk-Free Rate = 4.49%[1] Equity Risk Premium = 7.20%[2]

	BSET	LZB
Market Beta	0.89	0.94
R	0.41	0.52
Total Beta	2.17	1.81
Total Cost of Equity (in %)	20.11	17.52

Note: SIC = Standard Industrial Classification; BSET = Bassett Furniture; LZB = La-Z-Boy. The Capital Asset Pricing Model did not result in a statistically significant coefficient (beta) for Rowe Companies or Flexsteel. Therefore, we determined it was not appropriate to continue analysis for these two comparables.
[1] *20-year constant maturity treasury as of 27 May 2005.*
[2] *SBBI Valuation Edition 2005 Yearbook (Chicago: Ibbotson Associates).*

Table 6
Furniture Companies (SIC 2512): Company-Specific Risk Risk-Free Rate = 4.49%[1] Equity Risk Premium = 7.20%[2]

	Total Cost of Equity (in %)	Market Beta	Small Company Premium (in %)[1]	Company-Specific Risk (in %)[2]
BSET	20.11	0.89	4.54	4.67
LZB	17.52	0.94	2.36	3.90

Note: SIC = Standard Industrial Classification; BSET = Bassett Furniture; LZB = La-Z-Boy.
[1] *Source: SBBI Valuation Edition 2005 Yearbook (Chicago: Ibbotson Associates).*
[2] *Company-specific risk premium = Total cost of equity − risk-free rate − beta*equity risk premium − small company premium.*

Perhaps the most important point is this: publicly traded stocks, including the largest companies in the world such as Exxon Mobil and General Electric, exhibit company-specific risk greater than 0%. Thus, is it not counterintuitive to use 0% as our benchmark for privately held companies when we know that closely held companies are valued under a total risk/total return, or total beta, metric?[20]

Given the increase in the "benchmark" under this alternative approach, the natural by-product of such a conclusion is that business appraisers have historically overvalued privately held firms when using the income approach to valuation, all else being equal.[21] We fully recognize that this is a controversial conclusion, and answers to the following questions (or other questions) may shed additional light on the merits of this conclusion.

Future Debate

How do we account for the fact that one industry (nonextreme betas, high R^2), or set of comparables, may lend itself to this alternative approach to valuation and another industry (high betas, low R^2) may not? For that matter, regardless of what your opinions are on this article, should appraisers be generally aware of how well CAPM describes stock price returns in a particular industry of choice? It certainly could not hurt.

Could it be that relatively small companies in riskier industries, such as high technology, are so risky that any "company-specific" risk is just subsumed in the risk of the industry, contrary to the definition of "company-specific" risk? Do high beta stocks exhibit such "market" risk because company-specific risk is being priced in, contrary to traditional financial theory? Is company-specific risk rewarded in some industries and not in others? Or could it be that, relative to these small-capitalized guideline technology companies, any "company-specific" risk premium for our subject companies is immaterial?

If this analysis has merit, have we also therefore systematically underestimated expected cash flows and/or growth for our subject companies to arrive at approximately the same valuation metrics?

How does behavioral finance affect this issue? In other words, we all know that at times, and in different markets or industries, speculation creeps into public stock valuation. Speculation increases volatility and risk. But has the increased volatility of publicly traded stock returns in any way increased the risk of your subject company's cash flows? Probably not.

We, obviously, do not have answers to these questions. As one can see, the main purpose of this article is to generate some debate and to question the use of the standard benchmark of 0% for company-specific risk.

References

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[20] The argument to use this type of analysis is strengthened if publicly traded stocks are priced, at least partially, by total risk.
[21] This is particularly true if idiosyncratic risk is priced in publicly traded securities.

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