

# The Total Beta Debate: A Real-World Analysis

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*This article is a response to Larry Kasper's most recent article, "Total Beta: A Capital Market Analysis with Empirical Evidence," that appears on pages 212–226 in this issue of the Business Valuation Review.*

## Introduction

While we have addressed most of Mr. Kasper's theoretical points before,<sup>1</sup> we will respond again to his most recent article, "Total Beta: A Capital Market Analysis with Empirical Evidence" to eliminate any misconceptions. In order to see why Mr. Kasper's critique is mostly flawed and uses poor reasoning, we will succinctly illustrate by example the unsystematic risk issue/debate beyond the abstract and sometimes obtuse formulations that, unfortunately, have become status quo when debating Mr. Kasper.

## Practical Illustration of the Unsystematic Risk/ Total Beta Issue

Let's assume that we have two otherwise identical owner-operator restaurants. They each have an FMV of \$1 million prior to news of rerouting of a busy thoroughfare. The rerouting plan will either be Plan A or Plan B. Larry's GoodEats will be unaffected by the reroute. However, Pete's GoodEats' FMV will either be impacted in a very positive or a very negative manner, depending on where the road is ultimately built. The impact could go either way; experts place it at fifty-fifty odds as to where, A or B, the road will be built. The zoning commission will decide the fate of Pete's GoodEats in six months. The fair market value (FMV) of Pete's GoodEats after the decision will be as follows:

If Plan A is approved: FMV = \$250,000	If Plan B is approved: FMV = \$1,750,000
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<sup>1</sup>See the 45 footnotes in Mr. Kasper's current article.

So, prior to the rerouting news, both restaurants had an FMV of \$1 million. Subsequent to the news of the rerouting and prior to the decision of A or B, the probability weighted values of the restaurants are as follows:

Pete's GoodEats:

	Probability	Value	FMV
Plan A Scenario	.50	\$250,000	\$125,000
Plan B Scenario	.50	\$1,750,000	\$875,000
Expected Value			\$1,000,000

Larry's GoodEats:

	Probability	Value	FMV
Plan A Scenario	.50	\$1,000,000	\$500,000
Plan B Scenario	.50	\$1,000,000	\$500,000
Expected Value			\$1,000,000

According to beta and the capital asset pricing model (CAPM), the value of Pete's GoodEats will be unaffected by the news of the potential rerouting. In other words, the value allegedly is still \$1 million. Why? The potential rerouting is unsystematic risk. Unsystematic risk is not priced in CAPM world. Mr. Kasper's critiques literally say that immediately after the extremely volatile news (for only Pete's GoodEats), the FMV of Pete's GoodEats is still equal to Larry's GoodEats. Of course in the real world of small business businesses and imperfectly diversified owners, this is not the case; market participants for small owner-operator businesses are risk averse and would, of course, discount the expected value of Pete's GoodEats very dramatically.<sup>2</sup>

<sup>2</sup>(Mr. Kasper's) CAPM model assumes that buyers and sellers of owner-operator businesses are, or can easily be, fully diversified. Based on typical diversification principles, this would equate to having an auction between market participants with a net worth that equals or exceeds \$30 million.

Do Mr. Kasper's views make any sense for a potential investor in Pete's GoodEats, considering that investors are risk averse? Would you still buy Pete's GoodEats for \$1 million, the day after the news was announced? We wouldn't.

Total beta (TB) is designed for the market for small, privately held companies where unsystematic risk is priced. On the other hand, CAPM makes assumptions, which, as the previous illustration shows, are not reliable for the pricing of small, privately held businesses.

If one needs more formal evidence that real-world entrepreneurs, contrary to (Mr. Kasper's) CAPM, are driven by unsystematic risk, we employ the research found in two recent papers that specifically address this issue. Both of these papers conclude that the entrepreneur is substantially (unsystematic) risk averse.

In *Entrepreneurial Finance and Non-Diversifiable Risk*, the paper states the following:

"Entrepreneurial investment opportunities are often illiquid and non-tradable. Entrepreneurs cannot completely diversify away project-specific risks for reasons such as incentives and information asymmetry. Therefore, the standard law-of-one-price based valuation/capital structure paradigm in corporate finance cannot be directly applied to entrepreneurial finance. In addition to compensation for systematic risks, the entrepreneur also demands a sizable premium for bearing idiosyncratic risks, which increase with his risk aversion, his equilibrium inside ownership, and the project's idiosyncratic variance."<sup>3</sup>

In the *Investment, Idiosyncratic Risk, and Ownership* paper, the authors state:

"High-powered incentives may induce higher managerial effort, but they also expose managers to idiosyncratic risk. If managers are risk averse, they might underinvest when firm-specific uncertainty increases, leading to suboptimal investment decisions from the perspective of well-diversified shareholders. We empirically document that, when idiosyncratic risk rises, firm investment falls, and more so when managers own a larger fraction of the firm."<sup>4</sup>

Now, we turn to Mr. Kasper's theoretical or philosophical criticisms.

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<sup>3</sup>Hui Chen and Jianjun Mio, "Entrepreneurial Finance and Non-Diversifiable Risk," accessed at [econ.as.nyu.edu/docs/IO/9299/083w-chen.pdf](http://econ.as.nyu.edu/docs/IO/9299/083w-chen.pdf), December 8, 2008. National Bureau of Economic Research (NBER) Working Paper No. 14848.

<sup>4</sup>Vasia Panousi and Dimitris Papanikolaou, "Investment, Idiosyncratic Risk, and Ownership," accessed at <http://www.federalreserve.gov/pubs/feds/2011/201154/201154abs.html>, December 2, 2011. Paper provided by Board of Governors of the Federal Reserve System (U.S.) in its series HYPERLINK "<http://ideas.repec.org/s/fip/fedgfe.html>" Finance and Economics Discussion Series with number 2011-54.

## Response to Mr. Kasper

Mr. Kasper makes six main points in his article titled, "Total Beta: A Capital Market Analysis with Empirical Evidence". The authors, speaking for total beta (TB) advocates, will address each alleged concern:

- *Use of TB as proposed by some authors is not consistent with capital market theory (CMT) and the resulting capital asset pricing model (CAPM).*
  - We agree. CAPM's assumptions do not hold in the real-world markets for small, privately held businesses. Please see the above example as to why.
- *TB does not remove the correlation with the market, and it implies that any company, public or private, is 100% correlated with the market.*
  - TB does not make this assumption (it is, of course, unrealistic that any company has 100% correlation with the market). Contrary to this, TB assumes that the (completely undiversified) investor prices his or her actual risk in the same proportion that diversified investors price their undiversifiable risk. Mr. Kasper has focused repeatedly on this point and has not really addressed the alternative real, implied assumption (the same proportional risk pricing) that may apply in the case of valuing small, private companies.
- *Buyers of privately held companies, whether diversified or not, do not set prices.*
  - The prices of small, privately held businesses are set by both buyers and sellers, of course. However, *both* the "marginal" (aka "price" setting) buyer *and* the marginal seller of small, privately held businesses are, contrary to modern *portfolio* theory (MPT), not fully diversified.
- *Total beta proponents have made the unreasonable assumption that the seller and the buyer pool have similar (lack of) diversification levels.*
  - Again, see the restaurant example above to see intuitively that the required level of diversification/net worth (\$30 million) required for CAPM/MPT to hold is a false and dangerous assumption for the valuation of privately held companies. Anecdotally, our own experiences and interviews with other appraisers valuing small, privately held businesses for divorce cases (where the diversification of potential sellers is known) indicate that the vast majority of potential sellers have net

worth equal to or less than two times the value of the business, which is dramatically less than the 30× rule-of-thumb diversification assumed in MPT/CAPM.

- Therefore, consistent with a general lack of complete diversification among both sellers and buyers of small, privately held businesses, incorporating unsystematic risk, in fact, values privately held businesses according to “risk and return”—contrary to Mr. Kasper’s thoughts on the topic. Again, we just have to see the restaurant example above to see how we need to accurately define all relevant “risks.”

Mr. Kasper’s new, “empirical support” allegedly proving who sets prices is hard to follow and indirect. He even admits it proves nothing.

- Sellers set *asking* prices based on a multitude of factors. Some of those factors presumably are an estimate of FMV plus a premium based on some uncertainty of that estimate plus an additional psychological/negotiation premium so the buyer can feel good about negotiating a discount to the asking price. This, of course, has nothing to do with who sets the price or, more importantly, whether unsystematic risk matters and is priced.
- Importantly, the data shown by Mr. Kasper are perfectly consistent with the observation that both buyers and sellers of privately held companies are not fully diversified. His new “empirical” analysis, therefore, proves nothing and is disconnected to whether FMV (as opposed to *asking price differences*) is set by buyers or sellers. Further, since both buyers *and* sellers are not well diversified, his seller-side negotiating analysis is irrelevant.

- If you want to look at empirical data, simply look at the undisputable fact that the multiples are much lower for small, privately held businesses, and the implied and estimated returns are far greater than publicly traded equity historical returns. Most people attribute most of this difference to the fact that sellers and buyers of small, privately held businesses, unlike easily diversifiable publicly traded stocks, are not fully diversified and therefore incur far greater risk.<sup>5</sup>

<sup>5</sup>See Bob Dohmeyer, Rod Burkert, and Peter Butler, “The Implied Private Company Pricing Line 2.0,” *Business Valuation Update* 19(9), Pages 1-10, (September 2013). Here, the authors empirically estimate that the actual returns for small, privately held businesses are much higher and inconsistent with (Mr. Kasper’s) MPT theory of pricing and consistent with the unsystematic risk premium.

- *TB empirical evidence does not support using it to estimate ex-ante returns.*
  - Since investments in publicly traded equity securities are easily diversifiable (anyone can buy a few shares in each of 30 different public companies with substantial unsystematic/diversifiable risk and by so doing eliminate that risk), unsystematic risk is not rewarded/priced in public security markets, regardless if they have institutional following or not.<sup>6</sup> Therefore, publicly traded stock prices or returns (ex-ante or ex-post) will not be useful in terms of testing TB.

Considering he is such an advocate of CAPM and MPT, it seems rather contradictory for Mr. Kasper to allegedly use “empirical evidence” to refute TB. Mr. Kasper suggests that returns on publicly traded stocks are correlated with larger levels of diversifiable risks. He cites the small stock return as evidence. Here, Mr. Kasper is confusing correlation with causation—small stock premia are widely believed to be based on lower liquidity and/or the intertemporal flaw of the CAPM.<sup>7</sup> Size and correlated unsystematic risk merely correlate with these factors. None of the following, the CAPM, the Fama French three factor model, or any common version of the arbitrage pricing theory (APT) model, includes unsystematic variance as a pricing factor.

What about empirical research? Richard Roll and Stephen A. Ross wrote “An Empirical Investigation of the Arbitrage Pricing Theory” in the *Journal of Finance* in December 1980. In this study, they found that company-specific risk (variance of return) was not priced in stock returns when measured together with (3 to 4) systematic risk factors. Indeed, they admitted that the APT model would have to be rejected if individual stock variance (“own” standard deviation) of stock returns did cause higher returns, in that it would violate the efficient market hypothesis on which the APT is based.<sup>8</sup>

<sup>6</sup>Please refer to any corporate finance textbook.

<sup>7</sup>For example, Campbell and Vuolteenaho have an excellent analysis of the phenomenon in their paper “Bad Beta, Good Beta”: John Y. Campbell and Tuomo Vuolteenaho, The National Bureau of Economic Research NBER Working Paper No. 9509, issued in February 2003 NBER Program(s): AP. <sup>8</sup>Moreover, the most commonly accepted cost of equity (COE) model in academia is the Fama French three factor model. This model is based on extensive research that found that stock returns are best correlated with three factors. One of the factors is the size of the company. Even though company-specific risk (CSR) is highly correlated with stock returns, they do not include CSR as a factor. This is because with the inclusion of more than one factor in a statistical model, a variable such as CSR loses its predictive power—correlation does not prove causation. CSR “covaries” with other factors, and some other factors correlate better than CSR, so it’s excluded from the model, similar to the Ross and Roll study conclusion.

- *TB implies more risk and higher returns than investors receive in privately held companies.*
  - Mr. Kasper complains that a total beta of 4.0, for instance, is too high to use for a privately held company, except for possibly a start-up venture. We admit public company total betas of 4.0, or more, are somewhat rare, unless, as shown, the company operates in one of the high-tech industries. More importantly, however, we estimate that the total beta for a typical privately held business is approximately 3.0, which is perfectly consistent with (typical) required returns of 17%–20%. Assuming TB jumped from 3.00 to 3.50 implies an increase in the range to 21–24.<sup>9</sup>

### Conclusion

As our example shows, contrary to the theoretical MPT, unsystematic risk matters greatly. Appraisers need

to understand that TB is a model—just like the build-up method (BUM) is a model, which qualitatively captures CSR. Having said that, all total beta proponents recognize that the technique is not “perfect.” We readily admit that there are some comparison issues between public and private companies, and, thus, subjectivity is still present.

We also acknowledge that the marginal sellers and investors may be partially diversified,<sup>10</sup> and, therefore, some of the observable premium correlation for small, privately held businesses shown herein may be related to other factors, such as reduced liquidity. Mr. Kasper consistently has critiqued TB on very narrow, theoretically abstract grounds without acknowledging, in practical terms, that the assumptions behind TB are quite reasonable. Namely, *in the market for small, privately held businesses, investors and sellers are undiversified and price their actual risk proportionately the same as the diversified investors price their actual risk per CAPM.*

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<sup>9</sup>We acknowledge that the marginal investors and sellers may be partially diversified, and therefore some of the observable premium correlation may be related to other factors, such as reduced liquidity. See article cited in footnote 5. Cost of equity = risk-free rate + TB × ERP. Lower end of range = 3% + 3 × 6% = 21%; upper-end of range = 3% + 3.5 × 6% = 24%.

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<sup>10</sup>Dr. Aswath Damodaran, 26th Annual Valuation Roundtable of San Francisco, April 20, 2012, Berkeley, California.