



# MANAGING VOLATILITY

## IN PRIVATE AND PUBLIC EQUITY

**UC San Diego**  
RADY SCHOOL OF MANAGEMENT  
The Brandes Center

By Bob Schmidt

## Executive Summary

- Volatility has been correlated with measures of risk such as maximum drawdowns and permanent loss of capital. As such, reducing volatility may enhance absolute and risk-adjusted returns.
- Risk-conscious investors may seek to avoid high volatility assets they can't diversify.
- But many institutional investors haven't tried to manage volatility; instead, they have turned to assets promising high returns such as private equity and private credit. Such investors should be cautious.

*"Price volatility is not synonymous with risk."*

That's often a mantra among value investors.

But Dan Rasmussen, Founder of [Verdad Advisors](#), said, "Volatility is actually the best metric for risk that we have. It's correlated with—or is perhaps even the best predictor of—both drawdowns and permanent loss of capital."

Rasmussen made his comments during a presentation to The Brandes Center Advisory Board.

He added that higher volatility hasn't necessarily predicted higher returns—but it has predicted higher volatility. And that relationship can be crucial to effectively managing volatility to enhance returns.



**Dan Rasmussen**

Before starting [Verdad Advisors](#), Dan worked at Bain Capital Private Equity and Bridgewater Associates.

He is the Chairman of the Investment Committee for Plymouth Rock Companies, is a member of the investment committee of the Trustees of Donations of the Episcopal Church, is the New York Times bestselling author of *American Uprising: The Untold Story of America's Largest Slave Revolt*.

In 2017, Dan was named to the Forbes 30 under 30 list.

Rasmussen and his team looked at the relationship between volatility and max drawdowns among various asset classes in roughly two “halves” between 1990 and 2023. See Exhibit 1.

To evaluate any potential link between volatility and permanent loss of capital, Rasmussen’s team looked at default rates on US corporate bonds (rated AA to CCC) between 1988 and 2022.

Rasmussen added that “volatility drag” can be detrimental to long-term returns. “Losses increase with the square of your volatility,” he said. “If your portfolio loses 10%, but goes back up 10%, you’ve really lost 1%. This becomes even greater with larger drawdowns. Lose 30% and gain 30% and you’ve lost 9% round trip, and so on.”

As shown in Exhibit 2 on page 4, lower-rated bonds were more correlated with higher default rates and thus, a greater likelihood of a permanent loss of capital.

**Exhibit 1 | High Volatility Has Been Correlated with High Max Drawdowns**

	1990 to 2005		2005 to 2023	
	Volatility	Worst Drawdown	Volatility	Worst Drawdown
<b>Oil</b>	37.1%	-63.8%	34.3%	-88.8%
<b>S&amp;P 500</b>	14.5%	-44.7%	15.2%	-50.9%
<b>Gold</b>	12.6%	-51.3%	17.0%	-42.0%
<b>High Yield Bonds</b>	5.9%	-12.5%	8.3%	-28.8%
<b>10-Year US Treasuries</b>	4.3%	-4.6%	4.7%	-17.1%

Source: Verdad Advisors, 1990 to 2023

## Exhibit 2 | Lower-Rated US Corp. Bonds Have Been More Correlated with Higher Defaults

Rating	Avg. Return	Default Rate	Return Volatility
AA	5.6%	0.0%	5.2%
A	5.9%	0.1%	5.7%
BBB	6.4%	0.1%	6.2%
BB	7.8%	0.8%	6.8%
B	6.8%	3.1%	8.6%
CCC	6.1%	9.3%	13.7%

Source: Verdad Advisors, 1998 to 2022

Looking at Exhibit 2, Rasmussen noted the average return topped out at 7.8% for BB-rated bonds. Lower-rated, or higher-risk, bonds in the B and CCC range actually had lower returns than the higher-rated issues. He added, “The Capital Asset Pricing Model (CAPM) shows volatility is related to returns, but that’s not always true.”

Brandes Center Advisory Board member Barclay Douglas asked why any bond investor would “fish” in the single-B and triple-C ponds but answered his own question a moment later: “Unless those sectors give issue selectors a greater chance of outperformance.”

Rasmussen agreed, citing the range of returns across bond sectors. “Return dispersion is higher with higher volatility asset classes,” he said. “So, yes, it gives you greater opportunity for outperformance through issue selection.” Of course, the chance for loss is also greater.

Rasmussen maintained this counterintuitive dynamic between risk and return applies not just to bonds, but to other asset classes such as stocks. “If you look at all the months where the S&P 500 had a 20%, 15% or 10% volatility, there was no difference in the average returns,” he noted.

Summing up this portion of his presentation, Rasmussen said, “If we want to maximize total returns and avoid permanent loss of capital, it's actually a worthwhile exercise to attempt to reduce volatility and to be wary of high volatility assets that we don't—or can't—diversify.”

Given that, how should investors manage their equity portfolios?

Rasmussen suggested:

- Increase the number of holdings in a portfolio
- Manage or dampen volatility by decreasing exposure when volatility is high. When the VIX Index goes up, for example, short-term returns tend to go down and vice versa

To support his view, Rasmussen cited research by Dr. Alan Moreira and Dr. Tyler Muir. [1]

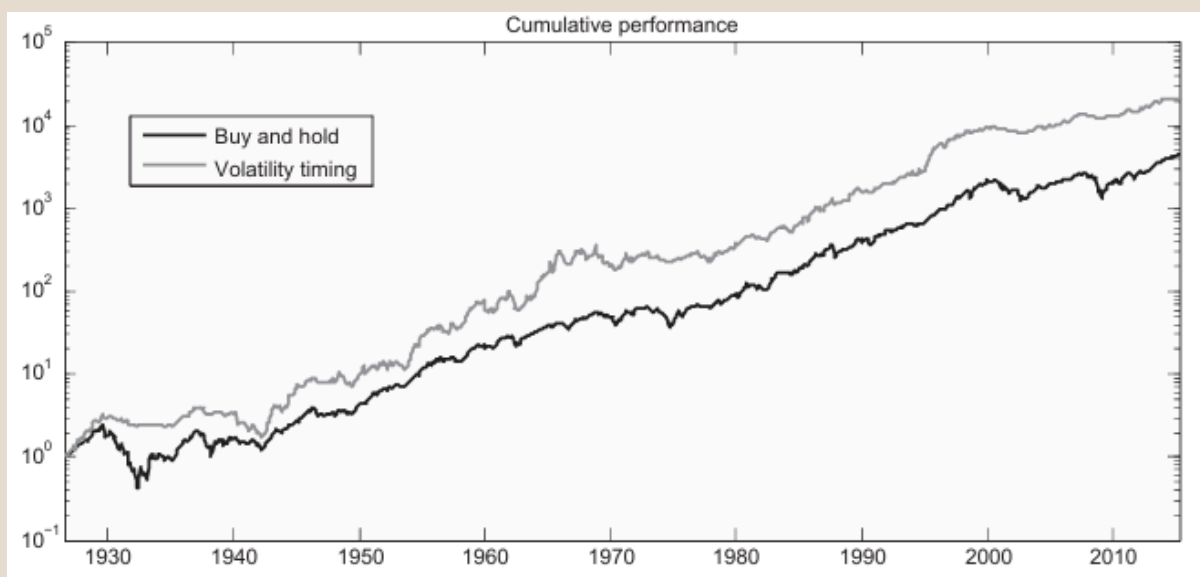
In their research paper “Volatility-Managed Portfolios,” published in *The Journal of Finance* in 2017, the academic duo wrote, “We construct portfolios that scale monthly returns by the inverse of their previous month's realized variance, decreasing risk exposure when variance was recently high and vice versa.”

Moreira and Muir used monthly returns for U.S. stocks from Dr. Ken French's website (between 1926 and 2015) to build and back-test their hypothesis.

They note their strategy delivered “an overall 25% increase in the buy-and-hold Sharpe ratio.”

Exhibit 3 illustrates the outperformance of their “volatility timing” portfolio relative to the broader market.

**Exhibit 3** | A Managed-Volatility Portfolio Outperformed the US Market from 1926 to 2015



Source: Moreira and Muir, “Volatility-Managed Portfolios.” Published August 2017.

But what about adding other assets to an equity portfolio to dampen volatility?

Rasmussen said, generally, CAPM “holds along asset classes. But if you go outside of equities to lower volatility, you will lower returns, as well.”

He added that, in addition to managing volatility, understanding correlations is critical. While correlations between stocks and bonds have risen recently, investors can enhance risk-adjusted returns by “blending returns with different correlations.”

“A static view of volatility and correlations can be a problem as these relationships change over time,” he said. But similar to his approach with volatility, Rasmussen contends if correlations are rising, you should reduce your exposure to the correlated asset classes.

“Predicting returns for different asset classes and different factors is really, really hard,” Rasmussen said. “But volatility and correlations are actually quite nicely predictable.”

For example, he summarized his research that shows, “If you take last month’s volatility, you can predict next month’s realized volatility with about a 41% R-squared. It’s not rocket science; you’re just saying that volatility is auto-correlated. And the same is true with correlations.”

He added that by taking both volatility and correlation into account, “you can meaningfully improve both risk and return.”

## Public and Private Markets

While managing volatility offers a path toward better risk-adjusted returns vs. a buy-and-hold strategy, Rasmussen said most institutional investors have tried to lower risk by increasing exposure to private asset classes. That approach stems from a belief that private equity, for example, offers lower volatility and better results vs. public equities based on quarterly returns.

“But I would argue that’s not an apples-to-apples comparison,” Rasmussen said. “That’s more like comparing the change in book value of the S&P 500 to the change of valuation marks. There is volatility smoothing that’s happening in private markets.”

He argued that to better assess private and public equity, “We need to get a sense of what the underlying exposures of private equity are.” To do that, Rasmussen took every public company that has more than 25% ownership by a private equity or venture capital firm. He said, “These are generally the most successful PE or venture deals that then went public—but where the PE firm still owns a very large stake.”

Using this approach, Rasmussen found 150 such companies in the S&P 500. Then he looked at their underlying factor exposures. Exhibit 4 on page 7 summarizes his findings.

Each cell in Exhibit 4 represents a standard deviation of -3 to +3 relative to a market-cap weighted market average.

For example, for the “size” factor, the PE/VC-owned firms are more than 2 standard deviations smaller than the market-cap weighted average. “Private equity and VC firms are providing a huge dose of the small size factor,” he said.

**Exhibit 4 | PE/VC Owned Firms’ Factor Exposures vs. S&P 500 Index**

Factor Exposure	25% PE/VC Owned	S&P 500 Index
Value	(0.22)	(0.05)
Size	(2.15)	0.50
Earnings Volatility	0.75	(0.03)
Profitability	(1.08)	(0.08)
Growth	0.11	(0.08)
Leverage	0.75	0.18
Quality	0.18	(0.12)
Investment	(0.38)	(0.11)
Volatility	1.20	0.02
Momentum	(0.73)	(0.06)
Trading Activity	0.12	0.49
<b>Estimated Ann. Volatility</b>	<b>15%</b>	<b>10%</b>

Source: Verdad Advisors, as of 5/20/2024

Exhibit 4 also shows the PE/VC firms are (or tend to have):

- More volatile earnings
- Lower profitability
- More expensive (given the lower score on the “value” factor)
- More leverage

And Rasmussen annualized volatility based on the next month’s estimate, so we see the PE/VC-owned firms are much more volatile “if you account for it in a correct way” vs. public markets.

The one area where these PE/VC firms scored better than the S&P 500 was “quality,” which Rasmussen measured as return on assets. “Other than that,” Rasmussen noted, “this is a toxic brew of factor exposures.” Rasmussen also noted that returns for PE firms have shown higher dispersion. “We should intuit that PE probably has higher volatility, too.

“The way you get higher dispersion is with higher volatility. We analyzed why PE is so much more disperse than a public equity portfolio. We simulated a 200-stock portfolio and a 20-stock micro-cap portfolio. The latter resembled the range of PE managers’ returns.”

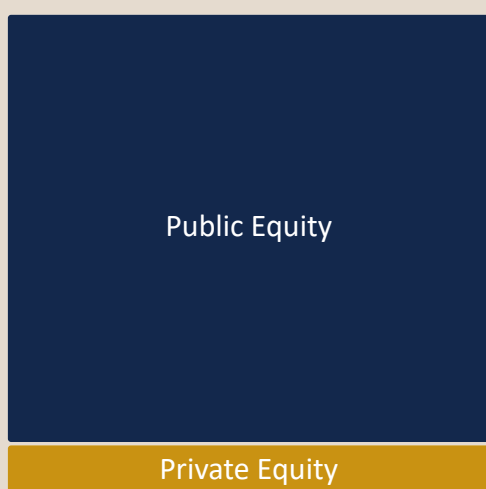
He said private equity managers will show dispersion vs. mutual funds and say, “This is clearly evidence that we’re good stock pickers and you’re going to make more money choosing the top quartile manager.

“But what they’re doing is taking on a lot more idiosyncratic risk.” He added that you could duplicate PE’s volatility, returns and return dispersion with a portfolio of public equities.

“And the same argument is true for private credit, as well.”

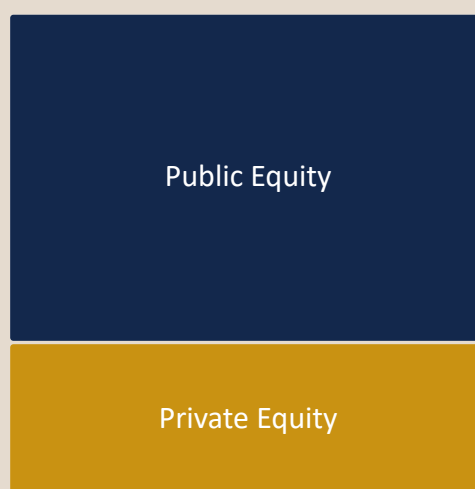
Despite private assets’ risk profiles, many institutional investors have an outsized allocation. See Exhibits 5 and 6.

**Exhibit 5 | PE Share of Global Equity**



Source: World Federation of Stock Exchanges, 2023 and McKinsey, March 2024

**Exhibit 6 | PE Share of Endowment Equity Allocation**



Source: Cambridge Associates, 2023



In an email Rasmussen sent to subscribers about a week before his presentation to The Brandes Center Advisory Board, he wrote:

“According to the [World Federation of Stock Exchanges](#), there is \$107 trillion in public equity market capitalization globally. Private equity assets under management today stand at \$13 trillion, according to data from [McKinsey](#). A market cap-weighted approach suggests a 0.1x ratio of privates to publics. For a 60/40 investor, a roughly 5% weight in private equity would get you to benchmark, whereas, for a 100% equity investor, a 10% weight would be required.”

Yet, according to data from Cambridge Associates, many endowments have allocated roughly one-third of their total equity exposure to private equity. Rasmussen notes university endowments “have leaned even more heavily into private equity.”

In 2020, the Yale Investments Office reported: “In 1989, nearly three quarters of the Endowment was committed to U.S. stocks, bonds, and cash. Today, domestic marketable securities account for less than one-tenth of the portfolio, while foreign equity, private equity, absolute return strategies, and real assets represent over nine-tenths of the Endowment.” [Read more here.](#)

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## Board Discussion

Barclay Douglas asked, “Warren Buffett has frequently said the stock market would be better off if we only opened it once a year.

In that case, what would happen to volatility metrics?”

Rasmussen replied, “You need a high frequency of price movements in order to measure volatility effectively. I tend to like daily pricing because it gives you a lot of information—and it allows you to be very liquid and move things around fast.”

Board member Brian Bruce asked, “If you were the CIO of a pension plan, would you own any private credit now?”

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*“Of course, when you introduce bonds, commodities and other assets, you’re presuming either that the investor can lever the portfolio, or that investor is willing to accept some return reduction as compensation for that significant reduction in volatility. Otherwise, a 100 percent equity portfolio has a certain intuition.”*

--Dan Rasmussen

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Rasmussen said the higher yields on private credit come with more than comparable risks. “Private credits are a horrible mistake. And I think it's going to bite people sooner rather than later.” He added that default rates may be understated due to amendments. “Cambridge Associates, to their credit, did a wonderful job pointing this out. Look at material amendments to the credit agreements. If you add those to the defaults, then your level of defaults for private credit look equivalent to single B or triple C-rated publicly traded bonds.”

Brandes Center Research Consultant Nelly Hope-Bell asked about transparency of data for private equity and private credit.

Rasmussen agreed and added, “It’s particularly acute in private credit because the asset class has grown so much over the last 10 years. Generally, we look at companies that have to report publicly, either because they issue public debt, even though they’re private, or they are private equity-owned, but have gone public.

“We pull a lot of data from that general sample for understanding private markets. It’s a bit of a skewed sample toward bigger, more successful, private equity-backed companies, but it does provide insights about what’s going on in private markets. And,” he added, “the conclusions are not as positive as the ones you hear in marketing presentations.”

Advisory Board member Dylan Turner, CFA, asked, “Dan, you’ve established that you wouldn’t own much private equity or private credit, so what does a diversified portfolio look like for you?”

“I like liquid public markets,” he said. “I’m probably more biased toward developed markets, as I’m a little skeptical of emerging, but a globally diversified equity portfolio mixed with an appropriate amount of corporate credit, even Treasuries—and also some commodities.

“You have to be careful because the expected return on commodities is 0, and the volatility is high. So they’re useful as a diversifying asset, but only very carefully. Layering in commodities can help because they are so negatively correlated with fixed income.

“Of course, when you introduce bonds, commodities and other assets, you’re presuming either that the investor can lever the portfolio, or that the investor is willing to accept some return reduction as compensation for that significant reduction in volatility. Otherwise, a 100 percent equity portfolio has a certain intuition.”

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[1] Moreira, Alan and Muir, Tyler, Volatility-Managed Portfolios (October 25, 2016). Journal of Finance, Forthcoming, Available at: <https://ssrn.com/abstract=2659431> or <http://dx.doi.org/10.2139/ssrn.2659431>

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