



Arvore Partners

Improving the Efficient Frontier of Mixed Asset Portfolios with LMM PE in Positive Stock/Bond Correlation Regimes

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EXECUTIVE SUMMARY:

In an environment characterized by economic uncertainty, lower mid-market private equity consolidation (LMM PE) presents allocators with an alternative with strong alpha generating capabilities (it's an under-financialized strategy targeting companies with enterprise values of up to ~\$250 million, with annual deal volume in the hundreds of billions, an addressable market in the trillions, an ability to acquire earnings for <7X, and scope for material operational improvements) combined with a capacity to expand the efficient frontier in positive stock bond correlation regimes.

COMPARING LMM PE TO TRADITIONAL PE:

To effectively evaluate lower mid-market private equity (LMM PE) in an evergreen structure it's important to understand how they differ from traditional closed-ended mid-market and larger PE investments. While both approaches share a potential for strong returns - often targeting 20%+ IRRs - their specific financial behaviours diverge materially. This stems from structural differences in liquidity, risk management, and value creation.

Evergreen LMM PE excels in delivering yield alongside equity upside, enabling shorter contractual investment durations, higher distributions to paid-in capital (DPI) via lower entry multiples (e.g., 6x), and diminished dependence on aggressive terminal multiple expansion for performance, making it more resilient to market volatility and valuation swings.

In contrast, traditional buy-and-hold PE relies heavily on long-term equity optionality, often involving higher leverage, extended holds (~10+ years), and a J-curve effect that locks up capital in unrealized "paper" gains until a single terminal exit, introducing gating risks where assets are marked to market at one point, amplifying sensitivity to timing, macroeconomic shifts, and terminal valuations (e.g., requiring a favourable exit window).

These differences position evergreen LMM PE as a more flexible, investor-friendly PE option with enhanced liquidity for capital recycling and reduced duration risk, allowing for continuous portfolio adjustments and de-risking market timing windows, whereas traditional PE's rigidity can exacerbate exposure to economic downturns and limit adaptability, ultimately favoring LMM approaches for allocators seeking balanced, all-weather PE performance in uncertain environments.

THE ROLE OF LMM PE IN MIXED ASSET INSTITUTIONAL PORTFOLIOS:

Lower mid-market private equity represents one of the most durable and structurally diversifying alternative asset classes available to institutional allocators. Lower mid-market private equity produces return patterns that differ meaningfully from traditional assets such as public equities and fixed income. This section evaluates lower mid-market private equity's contribution to institutional portfolios in positive stock bond correlation regimes (a particular example are stagflationary/inflationary environments – where inflation is above trend, growth slows, and stock-bond correlations turn positive).

It must be noted that the possibility of an extended inversion in the negative stock bond correlation relied on in portfolio construction cannot be underestimated given that historically this relationship has more often been positive than not, even outside periods of elevated inflation or stagflation:



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Chart 1: Stock Bond Correlations Disaggregated by Inflation Rate

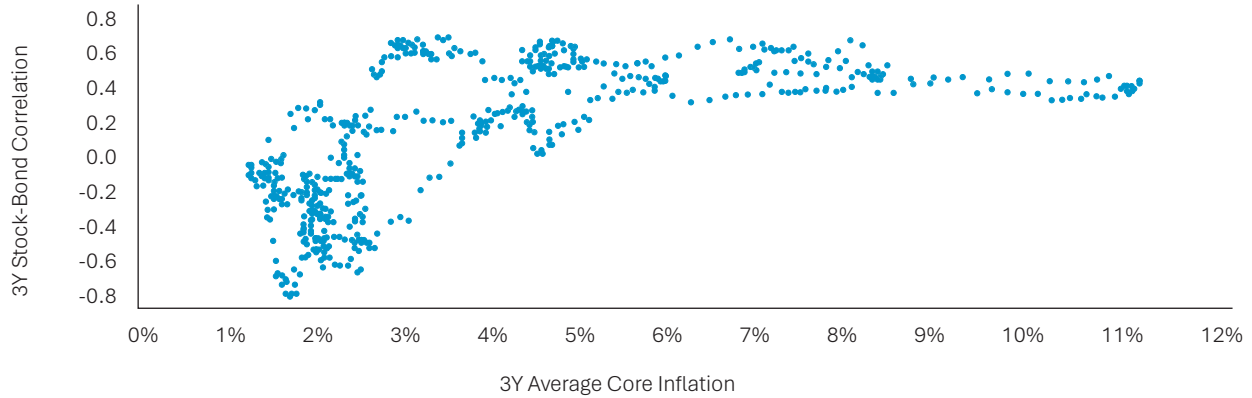
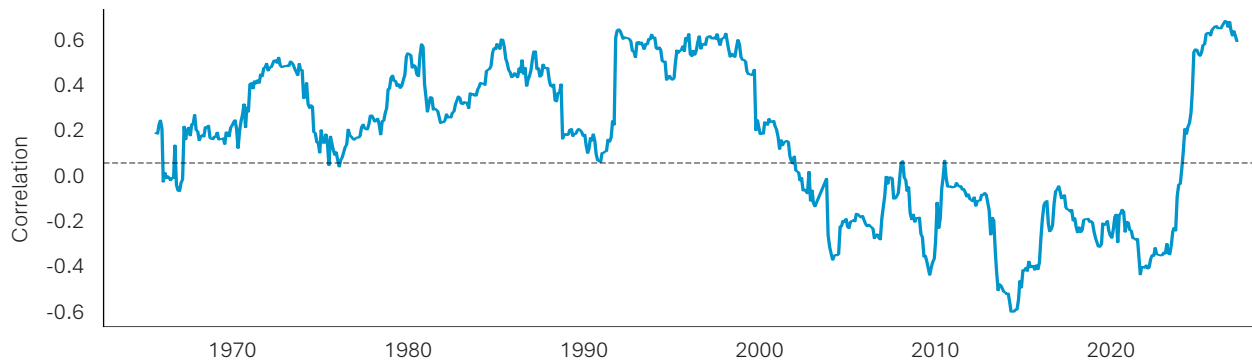


Chart 2: Rolling 36 Month Correlation: S&P 500 vs. US 10Y Treasuries



Notes: SP 500 v 10-year Treasuries, GS10/*TNX pre-2002, IEF post 2002

Impact of a 10% LMM Addition: An assumed 55% equity / 35% bond / 10% lower mid-market private equity portfolio was created for evaluation under the positive stock/bond correlation scenario. A 5% risk-free rate is used to reflect the higher nominal rates more typical in the inflationary or stagflationary episodes in which stock and bonds tend to positively correlate.

Table 1: Effect on 60/40 of 10% LMM Addition

		10% LMM PE	0% LMM PE
Stagflation	Return	5.38%	3.88%
	Volatility	13.61%	12.34%
	Sharpe	0.028	-0.091

The elevated risk-free rate suppresses Sharpe ratios across all asset mixes, however, lower mid-market private equity's higher returns mitigate the slightly increased portfolio risk to prevent deeper underperformance.

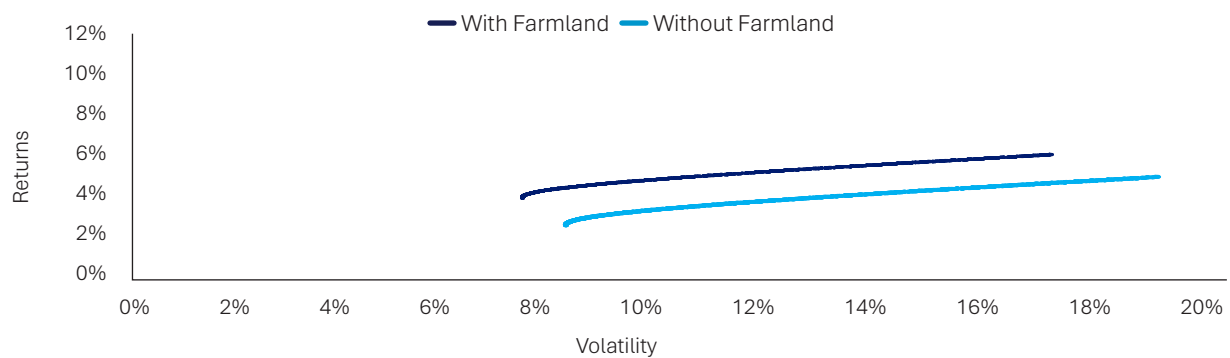
Positive Correlation Scenario Results: Stagflation combines the most adverse features of the economic cycle: persistent inflation, declining real growth, and a tendency to tightening monetary policy. In such periods, the traditional diversification between equities and bonds disappears. Stock-bond correlations rise into positive territory, eliminating the defensive contribution of fixed income and exposing multi-asset portfolios to simultaneous losses.

In this environment and in environments of positive stock bond correlation generally, lower mid-market private equity's characteristics become disproportionately valuable. Most importantly, lower mid-market private equity provides elevated returns, offset its correlations to both equities and bonds at the precise moment stock/bond returns underperform and correlation turns positive.

Table 2: Correlation, Return and Volatility Assumptions

Correlation	Stocks	Bonds	Farmland		Return	Volatility
Stocks	1.000	-	-	Stocks	5.0%	19.0%
Bonds	0.400	1.000	-	Bonds	2.5%	8.0%
LMM PE	0.750	0.350	1.000	LMM PE	17.5%	22.5%

Chart 3: Stock, Bond & LMM Efficient Frontier



When lower mid-market private equity is incorporated, the frontier shifts outward, even under elevated inflation and weakened bond hedging, demonstrating lower mid-market private equity's ability to improve efficiency despite poor macro conditions.

Confidence Levels: We also ran an analysis of the potential range of Sharpe ratio changes considering that return, correlation and volatility are more likely to operate as ranges over time rather than the single point estimates used to produce the efficient frontier curves.

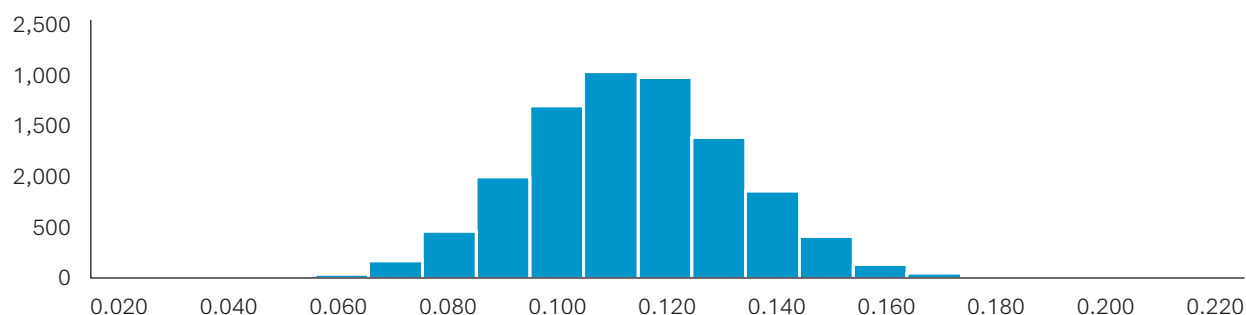
Table 3: Return, Volatility, Correlation Range Assumptions:

	Correlation	Min	Max	Mean	SD
Bonds/LMM PE		0.20	0.50	0.35	0.10
Bonds/Stocks		0.20	0.60	0.40	0.10
LMM PE/Stocks		0.60	0.90	0.75	0.10
	Return	Min	Max	Mean	SD
Stocks		3.0%	7.0%	5.0%	1.0%
Bonds		0.0%	5.0%	2.5%	1.0%
LMM PE		10.0%	25.0%	17.5%	2.0%
	Volatility	Min	Max	Mean	SD
Stocks		16.0%	22.0%	19.0%	1.0%
Bonds		6.0%	10.0%	8.0%	1.0%
LMM PE		17.5%	27.5%	22.5%	2.0%

Based on the ranges of correlation, return and volatility values, assuming normal distributions with the standard deviations shown, we ran a Monte Carlo simulation sampling those ranges for 10,000 iterations. This provides a useful distribution of Sharpe ratio improvements with the attendant confidence levels.

		Percentile Distribution	
		Percentile	Value
Mean	0.1189		
Number of Trials	10000	0%	0.054
Standard error	0.0002	5%	0.088
		10%	0.094
Minimum	0.054	15%	0.099
Maximum	0.191	20%	0.103
Median	0.119	25%	0.106
Range	0.137	30%	0.108
		35%	0.111
Standard Deviation	0.020	40%	0.114
Variance	0.000	45%	0.116
		50%	0.119
Skewness	0.09	55%	0.121
Kurtosis	2.97	60%	0.124
		65%	0.126
		70%	0.129
		75%	0.132
		80%	0.135
		85%	0.139
		90%	0.145
		95%	0.152
		100%	0.191

Chart 4: Sharpe Ratio Increase Distribution Histogram



CONCLUSION:

Lower mid-market private equity represents a useful combination of stability and growth potential, driven by operational value creation, access to fragmented markets, and enhanced by a strong value proposition in the form of mean-reverting inefficiencies. In positive stock/bond correlation regimes (particularly stagflation), lower mid-market private equity systematically strengthens portfolio efficiency. It restores some diversification when equities and bonds fail simultaneously, but more directly acting as an asset with return enhancement. These attributes underscore why lower mid-market private equity is best viewed as a strategic allocation. Given the increasing likelihood of macro volatility and the possibility of an extended breakdown in the negative stock bond correlation, lower mid-market private equity provides allocators with a durable and essential all-weather component of long-term portfolio construction.



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