RISE OF PRIVATE EQUITY EVERGREENS

Moving from IRRs to Time-Weighted Returns

July 2025

Executive Summary

Rise of Evergreen Vehicles. Evergreen, permanent capital, or semi-liquid funds in private assets have proliferated in recent years, increasingly to target the private wealth, retail, and family office channels. As of Q4 2024, there was close to $400bn of AuM in U.S. based vehicles[1] alone. The vast majority of this capital has flowed into private credit (non-listed Business Development Companies), and non-listed REITs (80%+ combined). Private Equity represents just 15% of the AuM, with infrastructure below 2%. However, most large private equity and infrastructure asset managers and financial institutions are ramping up efforts to bring new evergreen products to market, suggesting more growth in AuM ahead.

Private Equity Evergreens. There are 3 types of private equity evergreen strategies in the market: (1) Multi-strategy funds that allocate to LP-led Secondaries (~50%), with remainder to LP primaries, direct/co-investments, and GP-led Secondaries (Hamilton Lane, Pantheon). (2) Pure Play funds (Ares, Partners Group, Neuberger Berman). (3) In-house multi-strategy funds that direct investments across internal investment products and asset classes (KKR, Blackstone). In addition, all 3 types maintain an allocation to more liquid securities (up to 20%) to facilitate the 'semi-liquid' component of the fund, the limited redemptions.

Comparison with Drawdown Funds. Most institutional investors access private equity through drawdown funds, committing capital and managing cash flow and liquidity risk. Conversely, evergreen funds offer monthly subscription to a fund at the prevailing Net Asset Value (NAV), providing immediate exposure to a variety of private equity assets, as described above. This makes the evergreen fund look a lot more like a mutual fund, with time-weighted returns and monthly updated NAVs. However, the assets underlying the evergreen fund are still very much illiquid. Minority stakes in private companies, acquired LP secondary stakes, and LP primaries are not exactly liquid. Liquidity is facilitated by the vehicle, rather than being an attribute of the underlying assets.

How To Measure Performance - **IRR vs TWR.** Evergreen funds report monthly time-weighted returns based on changes in NAV. Drawdown fund IRR or TVPI quartiles, typically used to compare the performance of drawdown funds, are not suitable for evergreen funds. To benchmark evergreen funds, one needs a time series of monthly private equities returns. **The privateMetrics indices can be used to assess performance, calculate alpha, and compare risk metrics with evergreen funds.** We look at two long standing private equity evergreen funds – Partners Group Global Value SICAV and Pantheon Ventures AMG Pantheon fund – and evaluate their performance against the flagship private2000 indices. Most evergreen funds compare their performance to a listed equities benchmark, such as MSCI World. However, listed and private equities are distinct markets with different dynamics (see: here).

[1] Morgan Stanley

Data and Tools

We utilise the privateMetrics® database to obtain monthly index prices and time series of returns for the private2000 VW indices (see the index factsheet here). This is achieved by using the privateMetrics Excel Add-In tool (see here on how to use the add-in in Excel), which allows one to pull the data directly into Excel for further analysis. We then extract risk data, include volatility metrics, Sharpe ratios and maximum drawdowns for the flagship private2000 index.

We examined the monthly returns and risk metrics of 10 private-equity-focused evergreen funds in the market today. Two funds with longer track records were evaluated in more detail, benchmarked against the private2000 index. With timeseries of monthly returns for the private2000 indices and evergreen funds, annual and annualised since inception returns can be compared. Likewise, volatilities and Sharpe ratios can be computed. We can use the Direct Alpha tool to compute the alpha of the evergreen fund. When combined with the Custom Benchmarking tool, an index can be created that reflects the strategy of any evergreen fund by geography, sector, etc. (see the custom benchmark docs here)

Types of Private Equity Evergreen Funds

There are three broad types of private equity evergreen funds:

(1) Multi-strategy evergreens

- These funds build exposure to private equity primarily through LP-led Secondaries, typically representing 50%+ of total assets, with co-investments or directs accounting for a large portion of remaining. Primary fund investments are a small portion of the asset mix as evergreen funds try to limit the liquidity and cash flow risk associated with drawdown funds. Acquired LP Secondary interests are usually beyond the investment period, thus have limited capital commitments remaining.
- Managers in this segment often have an expertise in LP-led Secondaries. Examples of players in this segment are Hamilton Lane, Pantheon Ventures, Coller Capital, and JP Morgan. Co-investments are originated from their large pool of fund relationships in other lines of business (primaries and secondaries).
- **Returns** or changes in monthly NAV are driven by changes in valuations of underlying portfolio companies, and so-called “NAV-Squeezing”: the impact of buying LP-led Secondary interests at a discount to NAV and then immediately writing up the value to the valuation held by the underlying GP.

(2) Pure Play Evergreens

- In contrast to the multi-strategy funds, these funds pursue a focused strategy. On one end, direct/co-investment funds invest the majority of assets (70%+) in underlying private equities directly, in either control deals or as co-investment partners in larger transactions. GP-led transactions can also be part of the asset

mix. LP-led Secondaries and primary investments are either not pursued or represent a small portion of the asset mix. On the other end, a pure play on private equity LP-led secondaries (Ares APMF).

- Managers in the direct/co-investment segment have a direct investment background or previously offered drawdown co-investment funds to institutional investors. Players in this segment include Partners Group, Neuberger Berman, and Blackrock.
- **Returns** for the direct strategy will be driven predominantly by the valuations of the underlying portfolio companies. For secondaries players, the NAV lift from secondary purchases plus NAV growth will drive returns.

(3) In-House Evergreens

- These funds have been launched by large private asset managers and invest the capital across various funds and asset classes of that particular manager. The asset mix will largely depend on the strategies of the underlying manager
- KKR's K-Prime invests across its various private equity strategies, including buyout, mid-market, growth equity, core, while maintaining a liquidity sleeve. Blackstone has a similar mix heavily weighted to buyouts
- Returns will be driven by the performance of the underlying portfolio companies, and valuation practices.

From IRRs to Time-Weighted Returns

The private equity industry has made extensive use of the IRR metric. Most marketing and returns presentations focus on IRRs of fund managers. Quartile rankings and fund manager benchmarks still rely on this figure for performance evaluation, despite its ability to mislead.[2] Much has been written about the problems with IRRs, so we will not pile on. However inappropriate it may be to compare drawdown funds solely on this measure, it is certainly the case that IRRs reported by drawdown funds cannot be compared with the time-weighted returns of evergreen funds. We show a simple example in Table 1.

Assuming a 12% time-weighted return over 5 years, an initial investment of $100 into an evergreen fund would be worth $176.2 by the end of 5 years. The annual return path can vary from 12%, but the end result is the same. For drawdown funds that use IRRs, a 12% IRR can be achieved in a myriad of ways, with results that are very different to those with evergreens. Quick realisations from either early sales or dividend recaps can deliver a 12% IRR. The assumption that early realisations will be re-invested at the same 12% IRR is one of the flaws with IRRs. A drawdown fund is comprised of many investments with investment and realisation patterns like those in Table 1. Conversely, while evergreen funds' NAV will benefit from early and profitable realisations, future NAV growth will depend on how those proceeds are re-invested. Distributions are recycled into new

[2] Tyranny of IRR L. Phalippou, 2025

investments and unlike IRRs, time-weighted returns do not assume the reinvestment rate is the same as the prior realised rate of return.

TABLE 1: TIME WEIGHTED EVERGREEN RETURNS VS DRAWDOWN IRR

	TWR	Drawdown Fund IRR			
Date	Evergreen	Dividend Recap	Multiple Investments	Late Drawdown	Early Drawdown
1/1/2025	-100.0	-100	-50		-100
31/3/2025	102.9	+102.8			
1/1/2026	112.0				
1/1/2027	125.4		62.7		
1/1/2028	140.5		-50		+141
1/1/2029	157.4			-100	
31/12/2029	+176.2		62.7	+112	
IRR	**12.0%**	**12.0%**	**12.0%**	**12.0%**	**12.0%**
TVPI	**1.76x**	**1.03x**	**1.25x**	**1.12x**	**1.41x**

Calculations by SIPA

Benchmarking Evergreens

We can benchmark the performance of evergreen funds by utilising the monthly time series index data from privateMetrics®. The flagship private2000 indices have monthly pricing dating back to June 2013 allowing one to compare performance from that date.

PGGV

The Partners Group Global Value SICAV ("PGGV") is one of the longest standing evergreen vehicles, formed in 2009. For comparison, we will evaluate PGGV returns from June 2013 until April 2025. Figure 1 outlines the annualised total returns since 2013 for the private2000 value weighted indices (in USD), a portfolio comprised of an 80% weight to the private2000 VW index and 20% to US 10-year bonds ("80/20 portfolio"), and the Partners Group Global SICAV[3].

The private2000 VW USD variant generated a 13.3% annualised return for the ~12-year period. Introducing a 20% weight in government bonds reduced this annualised return to 11.3%. In comparison, the PGGV generated a 13.3% CAGR[4]. Relative to the 80/20 portfolio, PGGV generated an incremental 200bps of return per year. The index returns are gross of fees, so it is more accurate to compare gross PGGV returns against index returns.

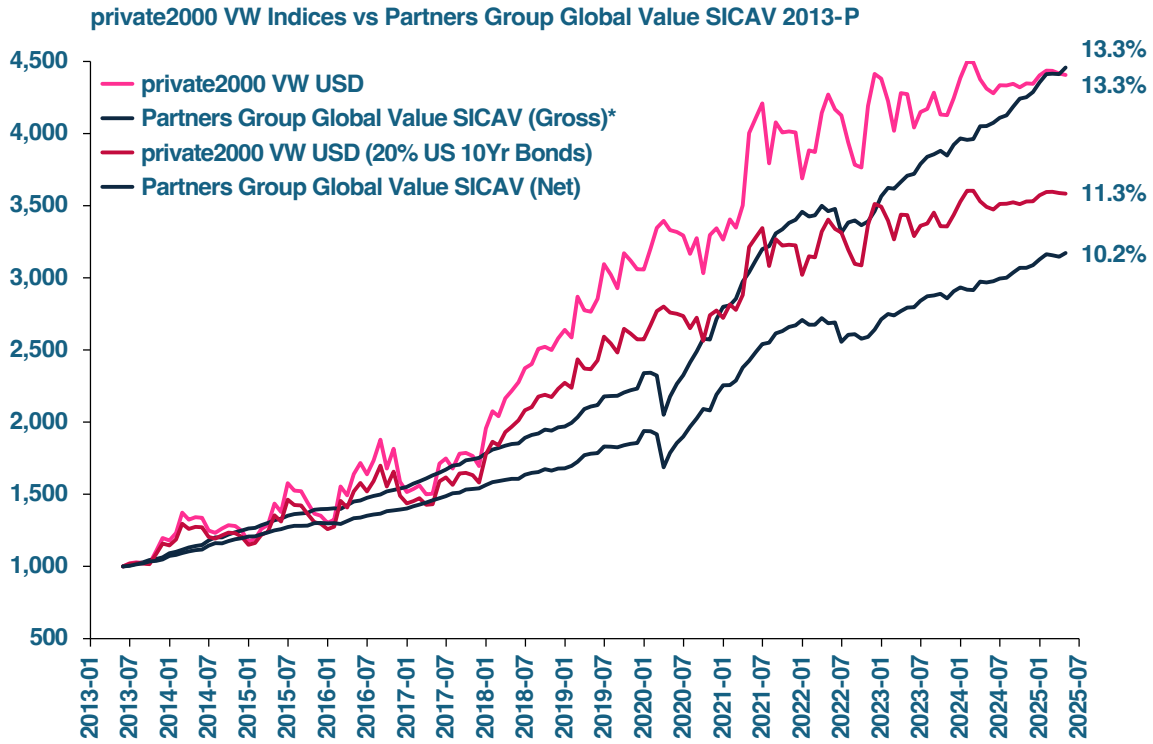
[3] Partners Group Global Value SICAV

[4] Reported net returns were 10.2%. SIPA estimated gross returns.

Evergreen funds maintain an allocation to liquid securities (up to 20%) so comparing returns to a 100% weight in the private2000 may not reflect the risk. The 80/20 portfolio attempts to correct for this.

Unlike drawdown funds, evergreen fund investors are not all "Day 1" investors. Since inception returns tell a story of long-term performance, but investors buying in at NAV today are paying fair value for all the prior growth in the portfolio companies, and NAV uplifts.

FIGURE 1: PRIVATE2000 VW INDICES VS PARTNERS GROUP GLOBAL VALUE SICAV RETURNS



Source: privateMetrics, Partners Group. Partners Group Global SICAV Net returns provided by Partners Group. Gross returns estimated by SIPA, based on fee disclosures in offering documents.

Partners Group Global Value SICAV engages in more direct investments and co-investments than other evergreen vehicles in the market. Direct equity investments represented 68% of assets, with primary and secondary funds accounting for 16% each. Thus, markups from LP Secondary purchases have less impact on returns (less "NAV Squeezing" impact). This is an important consideration when comparing returns across evergreens. This is particularly true during the last 3-4 years when private equity returns have been weak. Funds buying LP Secondary stakes have shown higher returns in these years given the boost from writing up NAV after acquiring LP secondaries at discounts.

While longer term annualised returns are instructive of performance, evergreen investors are interested in annual return and consistency as they will not benefit from the growth in NAV achieved prior to their investment. Table 2 provides returns of the PGGV, the private2000, and the 80/20 portfolio.

Table 2 details the relative out/under performance by year against the two benchmarks. Figure 2 makes this more explicit, showing the out/under performance of the PGGV against the 80/20 portfolio.

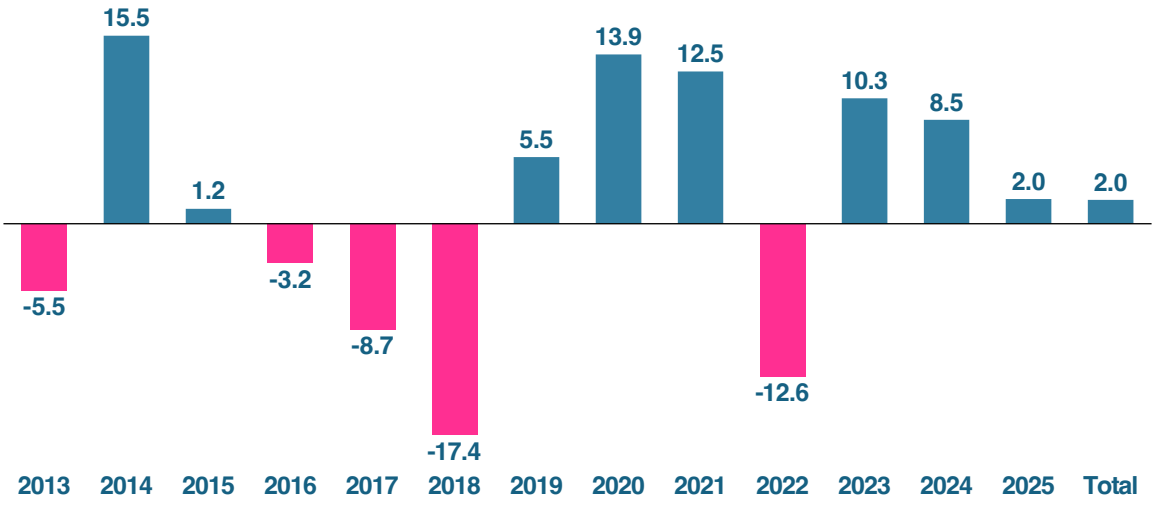
Since 2019, PGGV has performed quite well, exceeding the private equities benchmark in all years but 2022. In the 2013-2018 period, the fund lagged the strong returns in private equities. Notably, the fund has not had a down year since its inception (2009).

TABLE 2: PRIVATE2000 VW USD INDEX VS PARTNERS GROUP GLOBAL VALUE SICAV ANNUAL RETURNS

Total Returns	Partners Group Global Value SICAV	Private2000 VW USD	Private2000 VW USD w/ 20% Bonds	Vs private2000 VW USD	Vs private2000 VW USD w/ 20% Bonds
Inception	13.26%	13.25%	11.30%	0.01%	1.96%
2025 ytd	2.37%	0.06%	0.34%	2.31%	2.03%
2024	9.76%	0.45%	1.22%	9.31%	8.54%
2023	11.29%	0.08%	0.98%	11.21%	10.31%
2022	3.08%	18.75%	15.66%	-15.67%	-12.58%
2021	23.52%	12.99%	10.99%	10.53%	12.53%
2020	19.68%	6.78%	5.75%	12.90%	13.93%
2019	18.71%	15.86%	13.23%	2.85%	5.48%
2018	10.53%	34.89%	27.92%	-24.36%	-17.39%
2017	14.90%	29.04%	23.64%	-14.14%	-8.74%
2016	10.98%	16.47%	14.20%	-5.49%	-3.22%
2015	10.65%	10.85%	9.43%	-0.20%	1.22%
2014	15.80%	-0.45%	0.34%	16.25%	15.46%
2013 Jun-Dec	9.10%	17.97%	14.61%	-8.87%	-5.51%

Source: privateMetrics, Partners Group. PGGV Returns presented are Gross. Adjustments made to PGGV reported net returns by SIPA. 2025 ytd = to April 30, 2025.

FIGURE 2: PARTNERS GROUP GLOBAL VALUE SICAV VS 80/20 PORTFOLIO OVER/UNDER PERFORMANCE %



Source: privateMetrics, Partners Group. Calculations by SIPA. 2025 ytd = to April 30, 2025.

As Figure 1 indicates, the returns for the PGGV Fund appeared much smoother than those for the private2000 indices. Table 3 outlines the volatility metrics for each, including the minimum and maximum monthly returns. Annualised volatility since June 2013 was just 5.25%, well below the private2000 volatility of 17.83% for the same period. Even the 80/20 portfolio has an annualised volatility of 14.23%. As expected, the Sharpe ratio was very high at 1.17.

TABLE 3: RISK METRICS PGGV, PRIVATE2000, AND 80/20 PORTFOLIO

	Partners Group Global Value SICAV	Private2000 VW USD	Private2000 VW USD w/20% Bonds
Annualised Volatility	5.25%	17.83%	14.23%
Sharpe Ratio	1.17	0.68	0.81
Worst Month	-11.90%	-12.58%	-10.03%
Best Month	7.20%	17.38%	13.94%
# of Down Months	21 (of 143)	70 (of 143)	67 (of 143)

Source: privateMetrics, Partners Group. SIPA Calculations.

AMG Pantheon

Much like Partners Group, Pantheon Ventures has been a major player in the evergreen space. Pantheon's private equity evergreen offering dates back to 2015. Since its inception in October 2015, the AGM Pantheon fund has compounded at an annualised rate of approximately 15%[5].

[5] Reported net returns were 12%. SIPA estimated gross returns.

This compares to 12.4% for a 100% allocation to the private2000VW USD index for the same period. The 80/20 portfolio compounded at 10.6% for the same time period. The AMG Pantheon vehicle has performed well, exceeding the 80/20 portfolio by 440bps compounded annually, and 260bps vs the private2000 VW USD index. Figure 3 shows the annualised returns since inceptions.

Pantheon's strategy differs from Partners Group's Global Value SICAV in that it has a higher allocation to LP Secondaries. According to its latest factsheet[6], secondaries accounted for 54% of assets, followed by co-investments (35%) and LP primaries (11%). The secondaries allocation includes GP-led secondaries.

Table 4 provides the annual returns of AMG Pantheon and the relevant privateMetrics benchmarks. The fund has experienced sizeable outperformance in recent years, especially 2023 and 2024. Achieving 17%[7] gross returns in a very challenged return environment is impressive. The larger exposure to secondaries helps in this environment as NAV writeups from secondary purchases offer a source of return when the market is weak.

We can leverage privateMetrics® to create a custom benchmark that better matches the geographic and sector allocations made by the fund. From the April factsheet of the AMG Pantheon fund, we observe that the fund has a 61% allocation to North America, 34% to Europe, and the largest 3 sector allocations are Information Technology (26%), Healthcare (19%), and Industrials (14%). Further, we observe that mature buyouts account for 81% of the strategy focus (Growth 8%). Using the privateMetrics Excel add-in tool and the custom benchmark feature, one can build an index reflecting these allocations. We have built a custom index from the flagship private2000 by matching the geography, sector, and lifecycle choices made by the fund manager.

The custom benchmark can be built to start on the same date as the inception of the fund, allowing a direct comparison. The custom benchmark generated a 9.9% compounded annual return since October 1, 2015. This compares to the gross and net compounded returns of 15% and 12% for AMG Pantheon, respectively.

Figure 4 shows this custom benchmark alongside the gross and net returns of AMG Pantheon.

Volatility for AMG Pantheon was low, with an annualised volatility measuring just 5.94%, leading to a Sharpe ratio exceeding 2. Volatility metrics are unreasonably low and do not reflect the risk of investing in leveraged private equities. This is in part the result of stale or smooth valuations that fail to capture dynamic changes in the private equities market.

The worst monthly return was -3.9% vs -10% for the 80/20 portfolio. Table 5 provides some key risk metrics for AMG Pantheon, the private2000 VW index, and the 80/20 portfolio.

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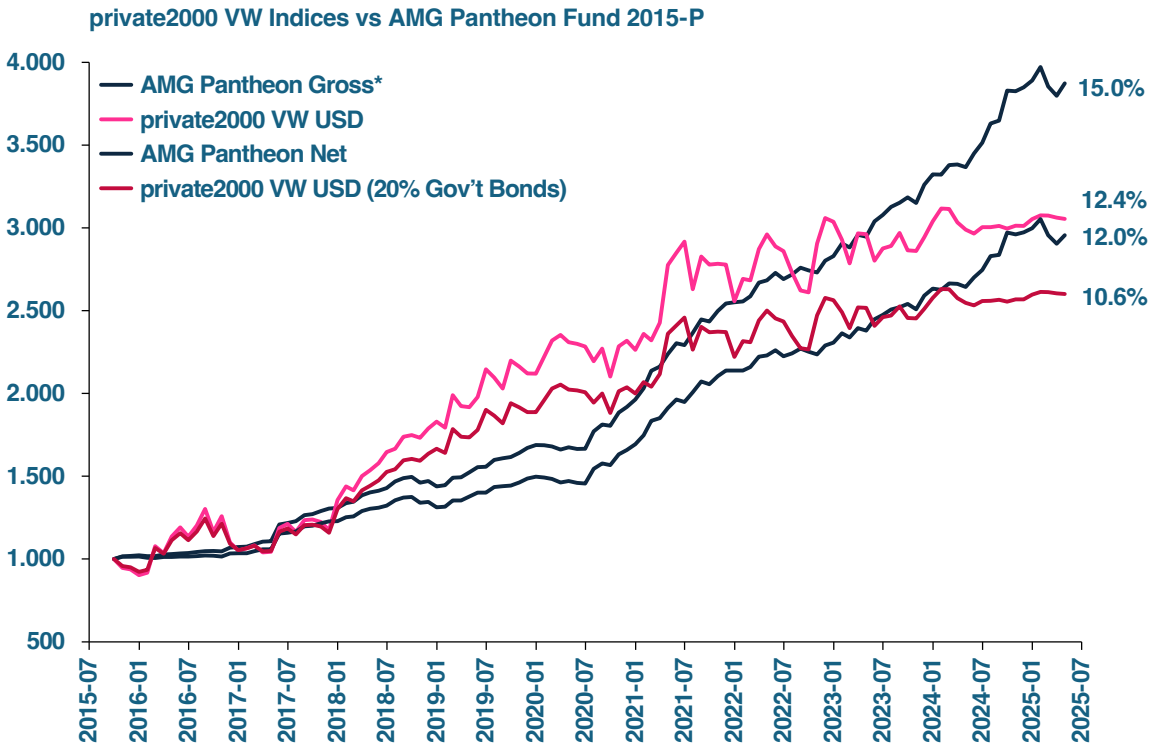
[6] AMG Pantheon April 2025 Factsheet

[7] Reported net returns were 14.2% and 13.8% for 2023 & 2024. SIPA estimated gross returns.

FIGURE 3: PRIVATE2000 VW INDICES VS AMG PANTHEON ANNUALISED RETURNS



Source: privateMetrics, Pantheon Ventures. AMG Pantheon Net returns provided by Pantheon. Gross returns estimated by SIPA, based on fee disclosures in offering documents.

TABLE 4: PRIVATE2000 VW USD INDEX VS AMG PANTHEON ANNUAL RETURNS

Total Returns	AMG Pantheon	Private2000 VW USD	Private2000 VW USD w/20% Bonds	Vs private2000 VW USD	Vs private2000 VW USD w/20% Bonds
Inception	15.03%	12.36%	10.60%	2.67%	4.43%
2025 ytd	-0.46%	0.06%	0.34%	-0.52%	-0.80%
2024	17.06%	0.45%	1.22%	16.61%	15.84%
2023	17.44%	0.08%	0.98%	17.36%	16.46%
2022	10.94%	18.75%	15.66%	-7.81%	-4.72%
2021	29.90%	12.99%	10.99%	16.91%	18.91%
2020	16.34%	6.78%	5.75%	9.56%	10.59%
2019	17.36%	15.86%	13.23%	1.50%	4.13%
2018	9.90%	34.89%	27.92%	-24.99%	-18.02%
2017	22.07%	29.04%	23.64%	-6.97%	-1.57%
2016	4.89%	16.47%	14.20%	-11.58%	-9.31%
2015 Oct-Dec	2.20%	-9.76%	-7.75%	11.96%	9.95%

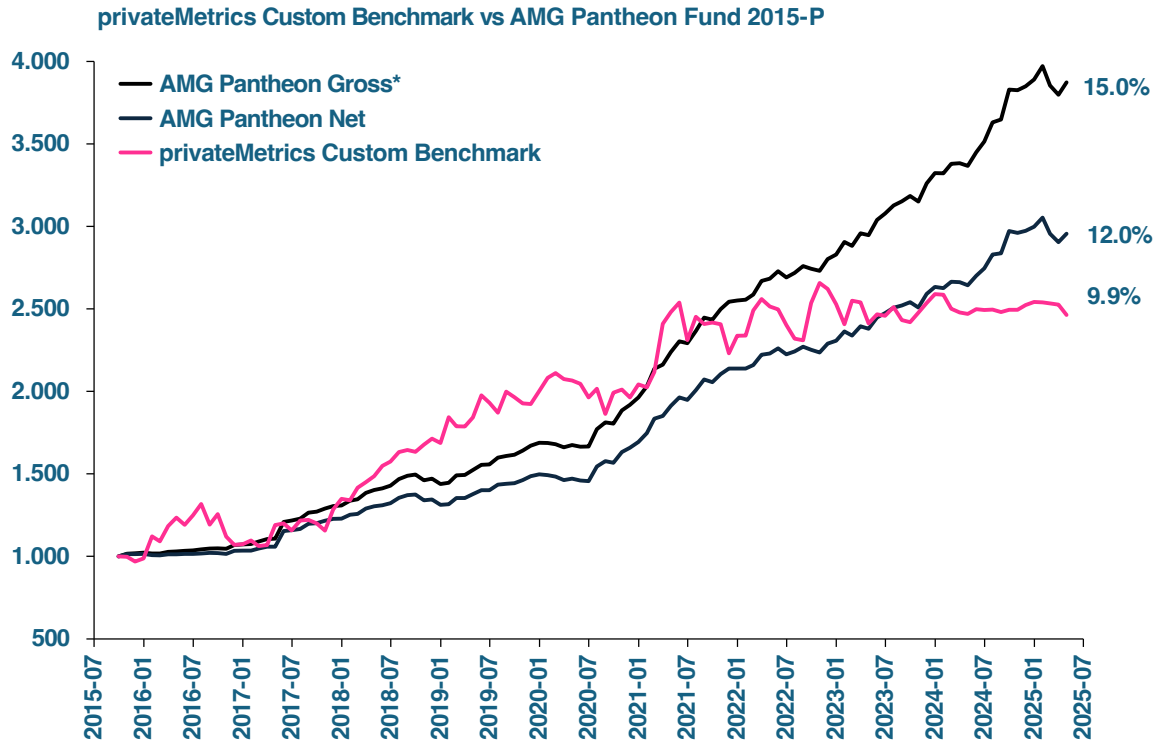
Source: privateMetrics, Pantheon Ventures. AMG Pantheon Returns presented are Gross. Adjustments made to reported net returns by SIPA. 2025 ytd = to April 30, 2025.

TABLE 5: RISK METRICS AMG PANTHEON, PRIVATE2000, AND 80/20 PORTFOLIO

	AMG Pantheon SICAV	Private2000 VW USD	Private2000 VW USD w/20% Bonds
Annualised Volatility	5.94%	17.67%	14.23%
Sharpe Ratio	2.06	0.61	0.81
Worst Month	-3.90%	-12.58%	-10.03%
Best Month	8.96%	17.38%	13.94%
# of Down Months	29 (of 115)	56 (of 115)	53 (of 115)

Source: privateMetrics, Pantheon Ventures. SIPA calculations.

FIGURE 4: PRIVATEMETRICS CUSTOM BENCHMARK VS AMG PANTHEON ANNUALISED RETURNS

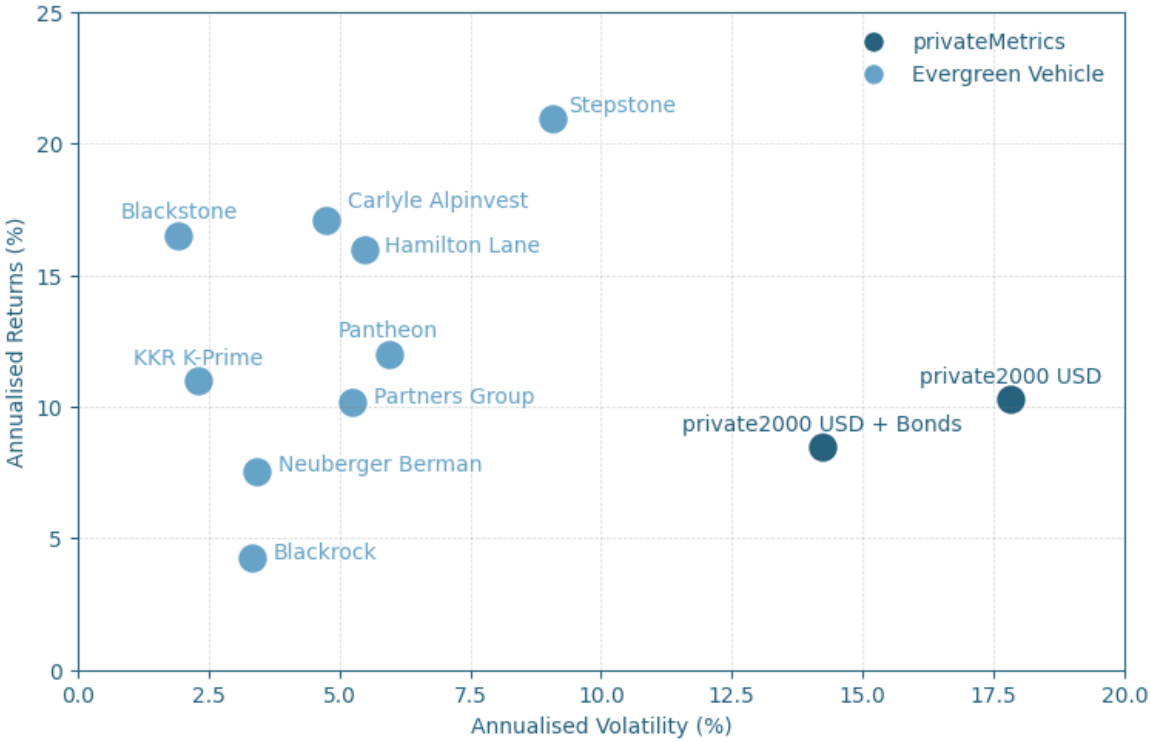


Source: privateMetrics, Pantheon Ventures. AMG Pantheon Net returns provided by Pantheon. Gross returns estimated by SIPA, based on fee disclosures in offering documents.

Evergreen Returns vs Risk

Figure 5 shows the annualised returns since inception and annualised volatility metrics for nine private equity evergreen fund offerings. Note that several vehicles have just 2-4 years of monthly return data. Volatility metrics are very low across the board, indicating that valuation smoothing remains an issue. Returns for funds involved in LP-led Secondary purchases were higher (Stepstone, Carlyle Alpinvest, Hamilton Lane, Pantheon), while those with more direct equity focus had lower returns (Blackrock, Neuberger Berman).

FIGURE 5: ANNUALISED NET RETURNS AND VOLATILITY PE EVERGREENS VS PRIVATEMETRICS



Source: privateMetrics, Fund Reports. SIPA Calculations. Denotes private equity evergreen vehicle of manager. private2000 indices assessed a 1.4% mgmt. fee and 10% incentive fee with 8% hurdle.

Conclusion

Private equity evergreen funds will continue to grow and attract an increasing pool of capital from the private wealth and retail channels. Evaluating the performance of these funds requires a shift away from IRRs to time-weighted returns. These funds can be evaluated or benchmarked against a private equities index such as the private2000, which also produces a monthly return time series.

The ability to build custom indices with privateMetrics will allow for benchmarking niche or geographically concentrated vehicles as they emerge in the market.

Drawdown fund IRRs, quartile rankings, and manager benchmarks are not appropriate and potentially misleading when evaluating evergreen fund performance. Evergreen vehicles will likely play a big role in the retirement push in the US and other jurisdictions, making it critical to understand how to evaluate performance and risk.

Appendix

The privateMetrics® Valuation Model

Our approach to the valuation of private companies is designed to maximise the available transaction and financial data in private markets and provide a standardised and systematic manner to update prices with every observed transaction.

First, we construct a multi-factor model of prices using a sample of observed transactions over time which can infer the unbiased and precise factor prices that investors pay for different characteristics of a private asset. Although every transaction is idiosyncratic or unique, in a large sample of transactions, the individual errors in each transaction price can be diversified away to discern the price attributable to each factor. Factor prices refer to the premium (or discount) that an investor is willing to pay to seek exposure to a specific factor of return in private companies. For example, observing the relationship between size and valuation among reported transactions, it can be inferred how much premium or discount an investor is willing to pay for purchasing a larger private company.

Second, an important and key application of this approach is that, with the estimated factor prices, say for size, it would then be possible to price unlisted private companies whose size information is available, irrespective of whether they are traded or not. This approach provides a more robust estimate for FV and enables the creation of representative indices of private companies.

Our approach's novelty is calibrating the model to newly observed transactions obtaining the factor price evolution over time, which allows us to update the valuation for all tracked unlisted private companies.

Common risk factors

If investors trade unlisted private companies from each other in mutually negotiated transactions, there must be some common characteristics that at least partially explain prices. For example, private companies that have higher profits or growth opportunities may be more valuable to investors than those that are not.

To arrive at a potential list of factors, we follow simple criteria that there needs to be an economic rationale for the factor to affect valuation. The factor should also be statistically related to the valuation. Moreover, the factor should also be objectively observable or measurable. With a potential list of factors, our factor selection is the result of a statistical approach, where the factors that can satisfactorily explain the variation in observed transaction valuations are included in the final model while trading off being parsimonious with being able to explain a higher variance in valuation. The privateMetrics asset pricing model uses five key risk factors as below:

- **Size**: Larger companies may be more complex, have higher transaction costs, and be less liquid, all of which can make them trade at a lower valuation per $ of revenue.

- **Growth**: As traditional PE strategies rely on growing the entry multiple, that may involve both increasing its top and bottom lines, i.e., revenue and profits. Thus, companies that can grow faster can be more sought after, making them more valuable.
- **Leverage**: Leverage can make a company riskier as it increases the risk of default. However, there is also a signaling effect of leverage, as companies with stable consistent cash flows can support a higher leverage, and vice versa. Thus, leverage is expected to influence the valuation of a company.
- **Profits**: More profitable companies have more predictable (less risky) future payouts and hence attract a lower risk premium, making them more valuable.
- **Maturity**: Younger companies have fewer track records and face higher information uncertainty. Studies have shown that firms with high uncertainty tend to be overvalued and earn lower future returns. Thus, the maturity negatively affects valuation.
- **Country risk**: Investors may require a high return when investing in a high-risk country, thus depressing the current valuation. In other words, in countries with lower risk, investors may be willing to purchase assets at a higher valuation as government policies may be more predictable with lower macroeconomic risks.

TABLE 1: KEY FACTORS, THEIR EFFECT ON VALUATION, & THE ECONOMIC RATIONALE FOR INCLUDING THEM IN THE MODEL

Factor	Definition (Proxy)	Effect on price	Economic Rationale	References
Size	Revenues	Negative	Larger firms are more illiquid and trade a lower price	Fama & French (1993)
Growth	Change in Revenues	Positive	Companies with higher revenue growth trade at a higher price	Fama & French (1992), Petkova & Zhang (2005)
Leverage	Total debt / Revenues	Positive	Companies that can borrow more have a lower cost of capital and a higher value	Gomes & Schmid (2010), George & Hwang (2010)
Profits	Ebitda Margin	Positive	Companies that have higher profits have a higher value	Novy-Marx (2013), Hou et al. (2015)
Maturity	Years since incorporation	Negative	Companies that are mature exhibit less growth potential and trade a at a lower price	Jiang et al. (2005)
Country Risk	Term Spread	Negative	Companies in high-risk countries face more uncertain prospects	Chen & Tsang (2013)

SOURCE: CALCULATED USING OVER 10K DEALS FROM PITCHBOOK, CAPITALIQ, FACTSET, AND OTHER PRIMARY SOURCES BETWEEN 1999-2022

Our factors have been documented in prior academic studies to be associated with valuation. We also include factors that have been identified as key determinants of valuation from a survey of private equity practitioners that we conducted in 2023. Table 1 summarises the key factors that we use in the model, how they are measured, each factor's effect we document in the data on average, the economic rationale for their inclusion, and citations for the work that underpins their inclusion.

Model set up

The privateMetrics asset pricing model uses the Price-to-Sales ratio of observable transactions (the entry price multiple) as the modelled variable. The model is estimated as the linear sum of the product of factor exposures and factor prices. The estimation can then separate the systematic part of the valuation while leaving out "noise" in each valuation.

$$\frac{P}{S} = a + \sum_{k=2}^{K} b_k l_k + e$$

Following standard asset pricing notation, the factor exposure or factor loading is called a beta (β), and the factor premium is called a lambda (l) for the k factors in the model. a is the intercept and e is the noise or idiosyncratic part of the valuation.

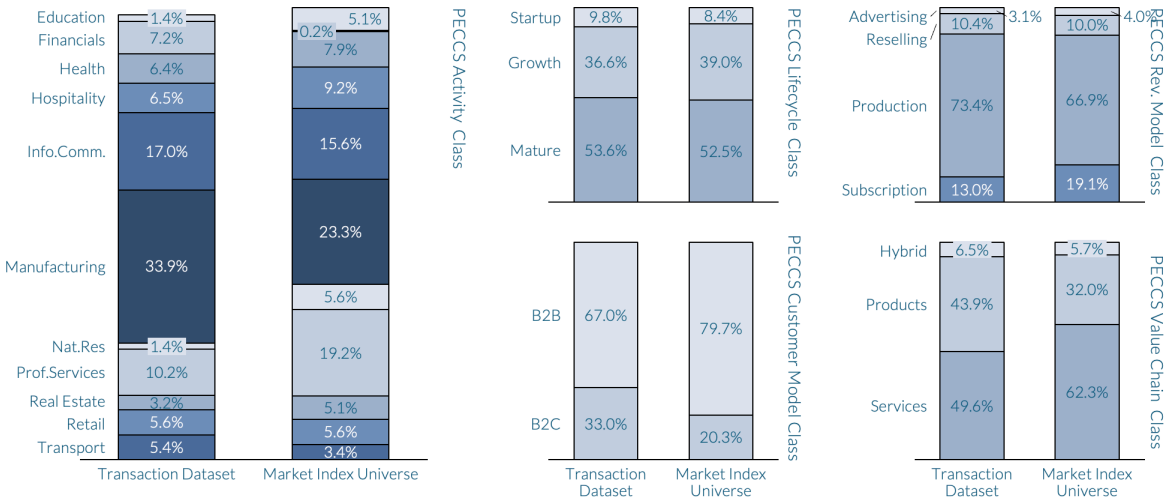
Model calibration

The privateMetrics model uses a carefully curated dataset of more than 10k+ unlisted private company investments going back two decades sourced from a wide variety of datasets including PitchBook, Factset, Capital IQ, fund manager reports, and other publicly available data sources.

We calibrate this model using new observations monthly to update its estimation of the price of risk of each factor. In other words, each transaction observed is then used to 'update' this model (i.e., obtain new ls) through a dynamic estimation (using a Kalman filter), which retains the memory of past ls while also allowing the new transaction to influence the relationship while keeping the average e close to zero. More details on the implementation of the model are available in our online documentation and Selvam and Whittaker (2024). The dataset covers all key segments of the market as shown in Figure1.

A good application of using the model to value unlisted private companies is to create a representative marked-to-market index of private companies that are regularly valued. The privateMetrics index universe in Figure 1 includes the constituents of the private2000® index constructed by Scientific Infra & Private Assets, which is developed on this shadow pricing idea and captures the performance of private companies in 30 countries globally that are important for private equity investors (read more about the index here).

FIGURE 1: PRIVATEMETRICS TRANSACTION DATASET COMPARED TO THE PRIVATEMETRICS INDEX UNIVERSE BY PECCS PILLAR & CLASS



How precise are the predictions across PECCS® pillars?

To examine how closely the predicted valuations track the raw modelled valuations in transactions, we compute the average estimation errors of the full sample, and also by classes within each PECCS® pillar. What stands out is that although the model by design is expected to have lower estimation errors in the full sample, the within PECCS® class estimation errors are also very small. All the errors are within ±10%, reassuring that the model predictions on average even within each segment of PECCS® are reasonable. The errors are summarised in Table 5.

The most commonly used metric of valuation in private markets is EV/EBITDA as PE owners have the flexibility to alter the capital structure of their holding company and hence are more interested in operational profitability without factoring interest costs. However, our model is based on P/S because P/S is statistically better, stable, and not affected by loss-making companies. Thus, one may be concerned whether our predictions for EV/EBITDA might be biased.

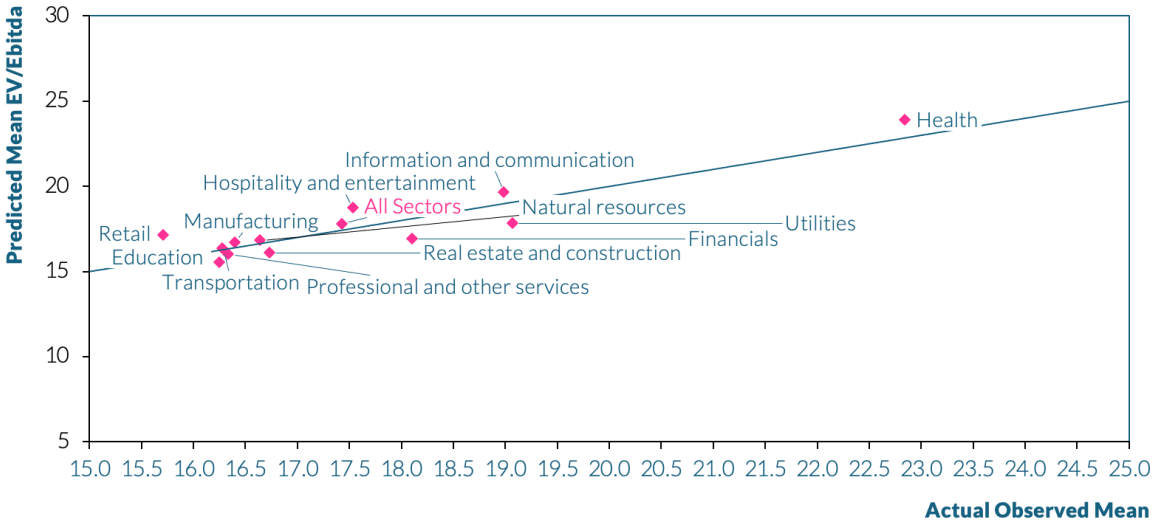
To ensure that is not the case, we compute the EV based on the book value of debt and predicted equity valuation and divide the sum by the EBITDA to get a predicted EV/EBITDA and compare it to transaction implied ratios. Figure 3 presents the average predicted and observed EV/EBITDA by PECCS® activity classes. We find that the predictions are very close to the observed values, thus mitigating this concern.

TABLE 5: AVERAGE ESTIMATION ERRORS ACROSS PECCS® CLASSES, BASED ON THE DIFFERENCE BETWEEN TRANSACTED VALUATIONS AND FACTOR MODEL PREDICTIONS

PECCS Pillar	PECCS Class	Mean Estimation Error	PECCS Class	Mean Estimation Error	PECCS Pillar
PECCS Activity	Education and public	0.9%	Startup	0.1%	PECCS Lifecycle Phase
	Financials	1.8%	Growth	-1.7%	
	Health	2.6%	Mature	2.8%	
	Hospitality and entertainment	-1.1%	Advertising	1.2%	PECCS Revenue Model
	Information and communication	-4.4%	Reselling	4.6%	
	Manufacturing	2.5%	Production	2.9%	
	Natural resources	9.4%	Subscription	-6.9%	
	Professional and other services	3.3%	B2B	1.5%	PECCS Customer Model
	Real estate and construction	1.9%	B2C	0.9%	
	Retail	0.5%	Hybrid	0.6%	PECCS Value Chain
	Transportation	7.2%	Products	1.1%	
Full Sample		**1.1%**	Services	3.4%	

SOURCE: CALCULATED USING OVER 10K DEALS FROM PITCHBOOK, CAPITALIQ, FACTSET, AND OTHER SOURCES BETWEEN 1999-2022

FIGURE 3: PREDICTED VERSUS ACTUAL EV/EBITDA RATIOS BY PECCS® ACTIVITY CLASSES



SOURCE: CALCULATED USING OVER 10K DEALS FROM PITCHBOOK, CAPITALIQ, FACTSET, AND OTHER SOURCES BETWEEN 1999-2022

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Our products come from the cutting-edge R&D of the EDHEC Infrastructure & Private Assets Research Institute, established in 2016 by EDHEC Business School. In 2019, we transformed this academic research into a commercial enterprise, providing services like private market indices, benchmarks, valuation analytics, and climate risk metrics. We take pride in our unique dual identity, bridging scientific research and market applications.

The EDHEC Infrastructure & Private Assets Research Institute (EIPA) continues to advance academic research and innovate with technologies in risk measurement and valuation in private markets, especially utilising artificial intelligence and language processing. Our company, Scientific Infra & Private Assets (SIPA), supplies specialised data to investors in infrastructure and private equity.

Merging academic rigor with practical business applications, our dedicated team excels in integrating quantitative research into private asset investing. Our products, infraMetrics® and privateMetrics®, are unique in the market, stemming from thorough research rather than being ancillary services of larger data providers. We are the Quants of Private Markets, leading with innovation and precision.

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