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Bridge to Alpha

Why private equity's value bridge falls short — and what to use instead

The Value Bridge Analysis separates deal and fund performance into operating income growth, multiple expansion and changes in net debt. It is arithmetically accurate and tells you nothing about skill. This paper shows where the value bridge misleads, recasts it as an IRR bridge to expose the true effect of leverage, and replaces it with an alpha bridge built on Direct Alpha and privateMetrics® benchmarks.

A PEI GROUP COMPANY

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Scientific Infra & Private Assets (SIPA) is a private-market index and benchmark provider, part of the PEI Group and a registered benchmark administrator with ESMA. This paper was prepared using SIPA's privateMetrics® data. Contact sales@sipametrics.com for more information.

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Executive Summary

The Value Bridge Analysis ('VBA') is a tool used by private equity investors to evaluate GP deal and fund performance by separating performance into several categories, including operating income growth, multiple expansion or contraction, and changes in net debt. It can be run for an individual deal or across an entire fund. The idea is that equity IRRs and MOIC driven by operating income growth and debt repayment are 'good', while returns driven by multiple expansion or leverage are less indicative of manager skill, or not repeatable. On the surface this sounds reasonable, but it often misleads and can reward a manager for broad market movements. It is not a proxy or substitute for alpha. All analysis should reflect that investors in private equity are exposed to both market risk and manager skill.

Results do not indicate if a manager has delivered alpha. While the VBA may be arithmetically accurate, it offers no insight into whether the fund manager demonstrated skill or generated alpha. Operating income growth can result from various strategies — organic or M&A — each of which may create or destroy value depending on returns on capital. The analysis also fails to distinguish between overall market performance and manager-specific contributions, making attribution impossible. If an entire sector experiences margin expansion, should the manager receive credit for it?

VBA does not measure risk. The VBA is primarily an accounting exercise and a marketing tool, overlooking two critical aspects of performance evaluation: risk and benchmark comparison. It also fails to capture the true effects of leverage. The influence of debt in amplifying returns is a fundamental principle in the leveraged buyout industry, yet the VBA does not adequately reflect its impact.

VBA vs Direct Alpha. Calculating alpha using Direct Alpha against a relevant benchmark gives a clearer indication of whether the manager genuinely added value. Simply holding a portfolio of companies with strong VBA results — EBITDA growth, margin expansion, net debt reduction — does not necessarily imply alpha generation. The manager may have paid full prices for those assets, or broader sector performance may have driven returns, leaving the manager with only market performance or less. Conversely, the VBA may position a GP unfavourably despite genuine alpha. A more precise approach is to construct an 'alpha bridge' that separates the market return from the specific sources of value creation that contribute to total fund or deal IRR.

> **Key takeaway.** The VBA implies that the fund manager largely controls the value creation process, and therefore returns. It ignores the underlying private equity market that drives a significant component of performance. Manager skill — alpha — can augment returns, but requires a different approach to measure. The VBA can pull the wool over your eyes and lead to incorrect conclusions about a deal or a fund.

To demonstrate the point, we evaluate two TaylorMade Golf buyouts as a deal-level example, and examine the fund-level performance of Clayton Dubilier & Rice and Francisco Partners to separate manager performance from market contribution.

What is the Value Bridge?

The value bridge is an accounting-based methodology designed to identify the key value drivers associated with a transaction, or with the entire transaction set in a fund. We construct a typical but hypothetical deal below to show what this looks like.

TABLE 1 — HYPOTHETICAL DEAL ASSUMPTIONS

ASSUMPTION	VALUE
Revenue at entry	$1.0bn
EBITDA margin at entry	15%
Entry and exit multiple	12× EBITDA
Hold period	5 years
Organic revenue growth	5% p.a.
EBITDA margin expansion	+250bps over 5 years
Leverage at entry	6.5× EBITDA at 9%
Tax rate	25%
Capex / D&A	5% p.a.
Acquisition price	**$1.8bn — $975m debt / $825m equity**

Source: Scientific Infra & Private Assets. Stylised transaction constructed for illustration.

17.2%	**2.2×**	**54%**	**11.6%**
Gross deal IRR	Gross MOIC	Debt in the capital structure at entry	All-equity IRR with leverage removed

Figure 1 shows what a Value Bridge Analysis looks like for a deal with these characteristics.

FIGURE 1 — VALUE BRIDGE ANALYSIS: 2.2× MOIC / 17.2% IRR

Source: Scientific Infra & Private Assets. Stylised deal as per Table 1.

As Figure 1 shows, most of the increase in equity value is attributed to growth and margin improvement, while very little is associated with debt or leverage — despite a capital structure at outset comprising more than 54% debt. The initial equity of 1.0× is increased to 1.6× via EBITDA growth, to 2.1× via margin improvement, and to 2.2× through debt reduction. In effect, almost all of the increase in value appears to be due to operational factors.

This approach, however, fails to account for the broader market in which the investor operates, and does not accurately reflect the primary impact of leverage. It effectively combines beta and alpha, often attributing most of the gains to alpha, despite being unable to distinguish between the two.

Why is it Used?

The value bridge began as a GP marketing tool, designed to convey that the source of returns was primarily operational improvement rather than leverage or multiple expansion. To justify higher management fees and carried interest, GPs were keen to present their results as almost exclusively 'value-add', and therefore worthy of such a fee structure. Many LPs adopted the tool as part of their due diligence process, to show investment committees that they were not hiring financial engineers but good operators who could drive value regardless of market conditions. The argument has flaws. We turn first to the components, to show how each can produce misleading interpretations.

Breaking Down the Components

EBITDA growth. EBITDA growth represents the growth in absolute EBITDA dollars, assuming margins remain flat over the period, scaled by the entry EBITDA multiple. It largely captures revenue growth, and mixes the market contribution to growth — general inflation plus industry-specific trends — with management efforts to drive outsized company-specific revenue growth. Some value bridges attempt to back out the industry growth rate and attribute the remainder to manager value-add. This leaves discretion to the manager to decide what represents the 'industry', which may not be indicative of the market. Benchmarks should be decided before the evaluation, not after. EBITDA growth is also not free: it requires investment in M&A, capex and/or working capital, and this analysis says nothing about whether the growth in EBITDA was value enhancing.

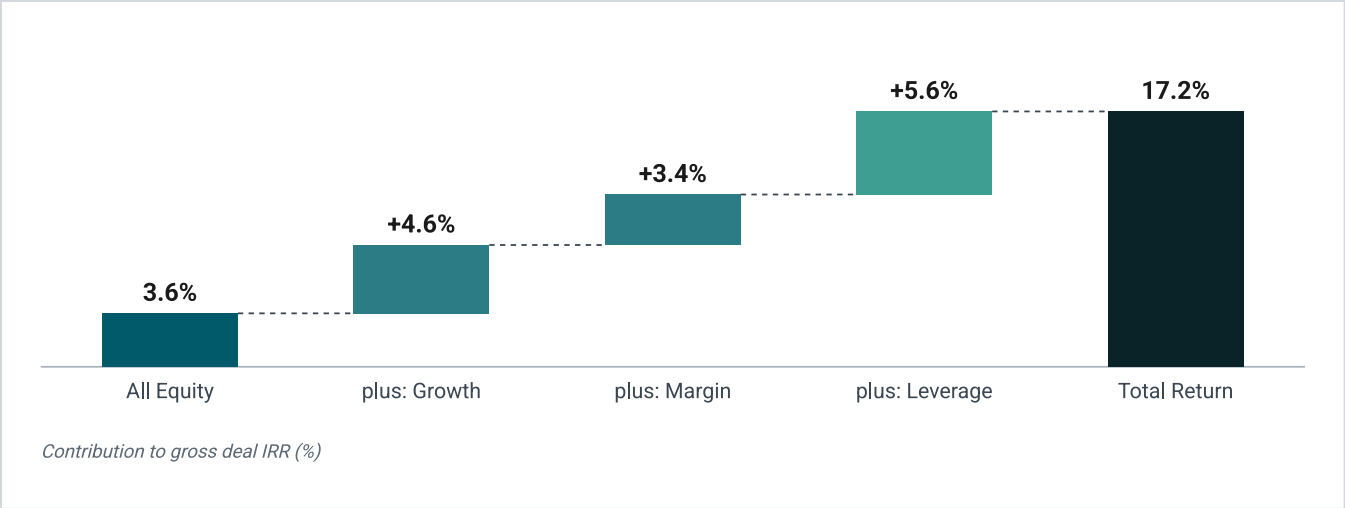
Finally, because growth is a priced factor in our pricing model, higher-growth companies tend to trade at higher valuations (see Appendix). A fund of higher-growth companies — Francisco Partners, discussed later — will show a very attractive value bridge, but may simply be loading on a priced factor.

EBITDA margin growth. This reflects the additional EBITDA generated through margin expansion from acquisition to exit, scaled by the entry multiple. Margin expansion can also mislead: it can be a function of overall revenue growth (market growth plus manager-specific initiatives), the level of fixed costs in the business model, and the performance of the industry. It is further complicated by M&A and divestiture activity. One can imagine all the moving parts involved in doing this analysis for a fund with ten or more portfolio companies. There is significant opportunity to manage these results.

Multiple expansion. This represents the change in the purchase multiple — EV/EBITDA, for example — from entry to exit, scaled by exit EBITDA. In our example both are the same, 12×. Multiples also have a market component, as they reflect the cost of capital and growth. Changes in interest rates and risk premia have an impact on prices. We have observed this in the private2000® index, where EV/EBITDA multiples have declined by over 20% since mid-2021. This component tends to be discounted for the reasons mentioned. Yet market timing is a source of alpha, and to the extent that a manager can 'buy well', it can be a component of alpha. Unfortunately, the value bridge cannot tell us this.

Debt repayment. Debt and leverage are the final component, and potentially the most egregiously misrepresented. In the VBA, the impact of debt is limited to the repayments that flow to equity. This understates the role of debt in a transaction, because the main impact of leverage is to magnify a return stream by limiting the upfront equity capital required. We show this more explicitly by recasting the VBA as an IRR bridge.

FIGURE 2 — RECAST VALUE BRIDGE ANALYSIS: IRR BRIDGE BY COMPONENT



Source: Scientific Infra & Private Assets. Stylised deal as per Table 1.

Figure 2 recasts the returns, starting with an all-equity IRR and sequentially adding margin improvement, growth and then leverage. Examined this way, the true impact of leverage is accounted for. Rather than being a small and insignificant component, leverage is the largest single contributor.

Remove leverage from this transaction and the IRR falls from 17.2% to 11.6%. The true impact of leverage is not just the debt repaid over the life of the deal, but its effect on returns: an 11.6% all-equity return is levered up to 17.2%. Leverage magnifies the all-equity IRR by 48% and contributes roughly 32% of the overall IRR. None of this is represented in the value bridge, which understates the all-in impact of leverage.

The underlying problem nonetheless persists. We are still mixing beta and alpha in the first three buckets — all-equity, growth and margin — with no way to know which portion represents alpha.

Does it Convey Manager Skill?

In the original value bridge in Figure 1, it is impossible to determine whether the manager generated alpha or simply had market exposure. As shown, the leverage impact is understated, which implies that it is instead embedded in the other components — magnifying EBITDA growth and margin expansion — rendering the analysis further misleading.

While the second approach more correctly reflects the impact of leverage on the deal, it still conflates beta and alpha, and we do not know whether the manager is simply levering up market exposure. To assess this, we need to compare the transaction to the private equity market by calculating alpha. In essence, we need a beta + alpha bridge to total IRR.

Deal Example: TaylorMade Golf

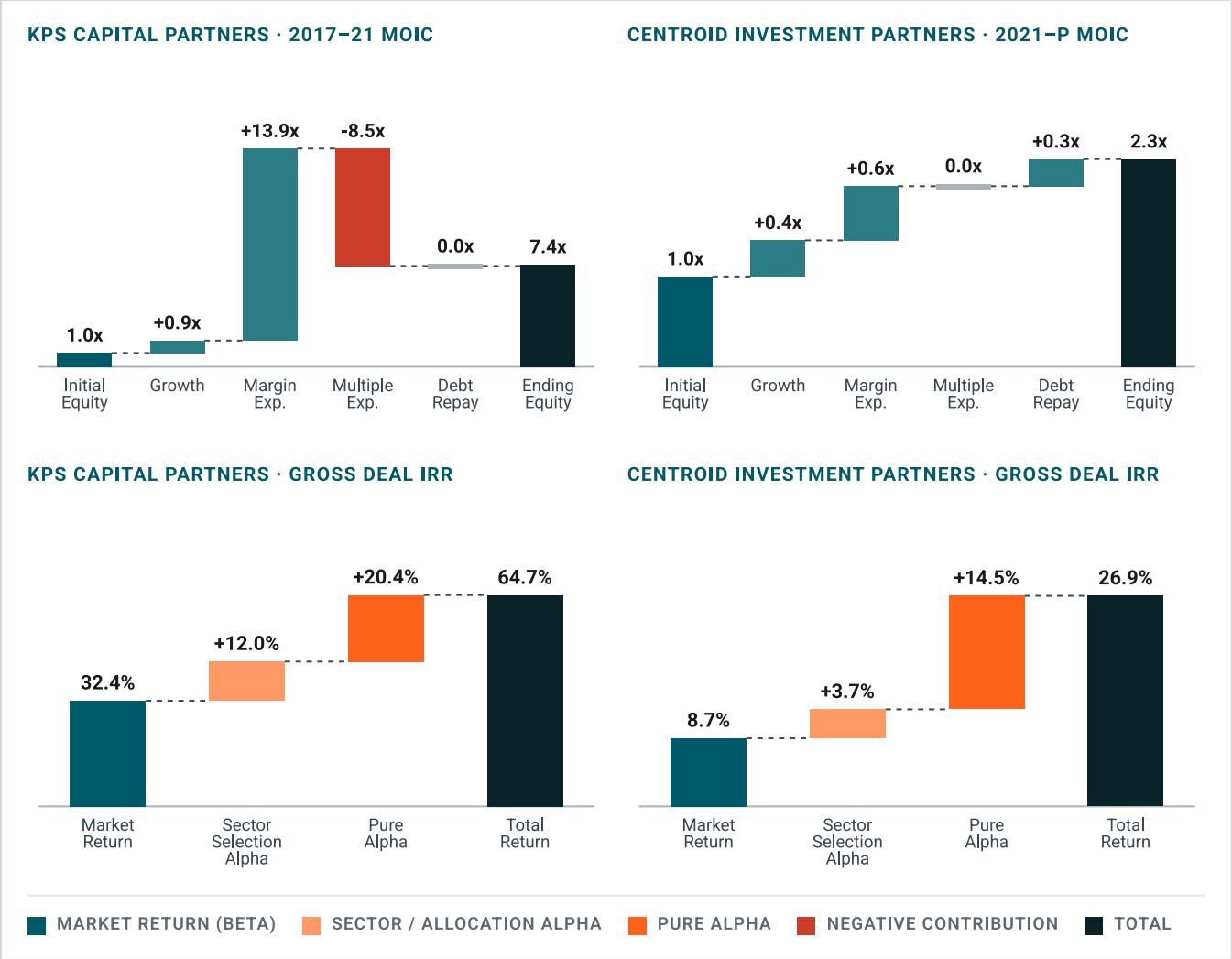
TaylorMade Golf has been topical in private equity after two rounds of private equity ownership. KPS Capital Partners carved the company out of Adidas in 2017 for a total price of $425 million (~$200 million equity), turned the business around after years of underperformance within Adidas, and sold it for $1.7bn to the Korean private equity house Centroid Investment Partners in 2021. Centroid is currently evaluating a sale of TaylorMade: Old Tom Capital withdrew from a reported $2.7 billion acquisition in early 2026, after failing to raise the required funds. We examine what the value bridge analysis and the Direct Alpha approach would show for both investors at their respective points of exit.

For KPS Capital Partners, we estimate the initial equity cheque at $200 million, in line with publications showing an initial investment of between $155 million and $225 million. For Centroid Investment Partners, we assume a sale at the same buy-in multiple (~8.5×). Within PECCS®, the US manufacturing activity class has shown a 10–15% reduction in EV/Sales multiples since 2021; however, beginning with Covid, the ‘work from home’ era also produced a boom in the industry, supportive of prices.

The VBA can be a source of confusion, especially when a deal is not plain vanilla. During KPS’s ownership, TaylorMade was a turnaround proposition with limited EBITDA at acquisition — less than $20 million. This grew to approximately $200 million at exit and produced a 7–10× return on estimates. That translates into a very large margin expansion contribution, but also an implied multiple contraction, because the company was more profitable at exit.

Alternatively, Alpha is calculated using the Direct Alpha method, first comparing deal returns to the broad private2000® index, then to the most relevant sector index — in this case, US manufacturing. Pure alpha accounts for returns achieved in excess of the sector index and reflects the manager’s ability to choose the right deal, structure and timing, and to effect operational change. Sector selection alpha reflects the manager’s allocation to a sector, or factor tilts. See the Appendix for a fuller explanation of the methodology.

FIGURE 3 — CENTROID INVESTMENT PARTNERS AND KPS CAPITAL PARTNERS: VALUE BRIDGE VS ALPHA BRIDGE



Source: privateMetrics®, PitchBook. For KPS's investment, an assumed $200 million equity investment (reported range $155–225 million), with no regular or special dividends; actual returns may be higher based on interim distributions. For Centroid, no dividends assumed and an estimated exit multiple using the privateMetrics PECCS® Manufacturing activity class for the relevant period. Actual realisation may differ from the stylised result presented above.

It is much cleaner and more telling to look at the alpha bridge at the bottom of Figure 3. There we can see how the various components contributed to deal IRR. The market was strong, but the deal was exceptional, delivering 32% alpha. We also see that the US manufacturing sector was strong relative to the broader private2000® index, with sector selection alpha positive for both investors.

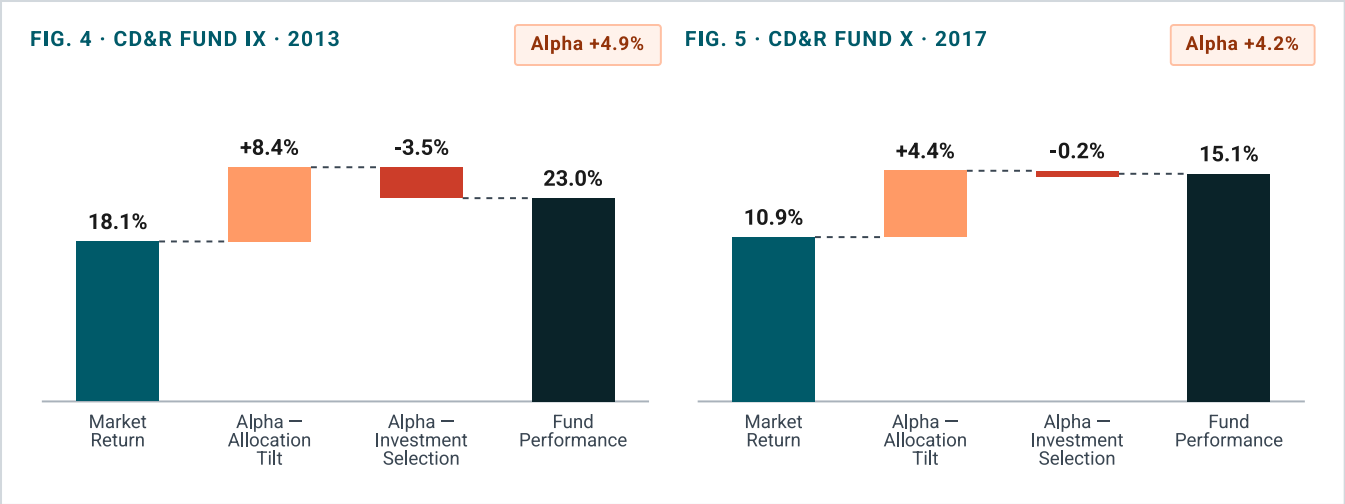
Despite lower returns, Centroid could achieve meaningful alpha if it is able to exit at a similar multiple to entry. This is because the private equity market has been much weaker during its ownership than over the 2017–2021 period.

Bridge to Alpha

Moving from deal to fund level, we evaluate two fund managers — Clayton Dubilier & Rice and Francisco Partners — to show how much more informative the Direct Alpha approach is in identifying sources of return. All funds discussed below are considered 'top quartile' for their respective vintages; we will see how that translates using the alpha bridge.

Clayton Dubilier & Rice has long highlighted its operational value-add as a key differentiator. Figures 4 and 5 present the IRR bridge for Clayton Dubilier & Rice funds IX (2013 vintage) and X (2017 vintage).

FIGURES 4 AND 5 — CLAYTON DUBILIER & RICE FUND IX AND FUND X: IRR BRIDGE



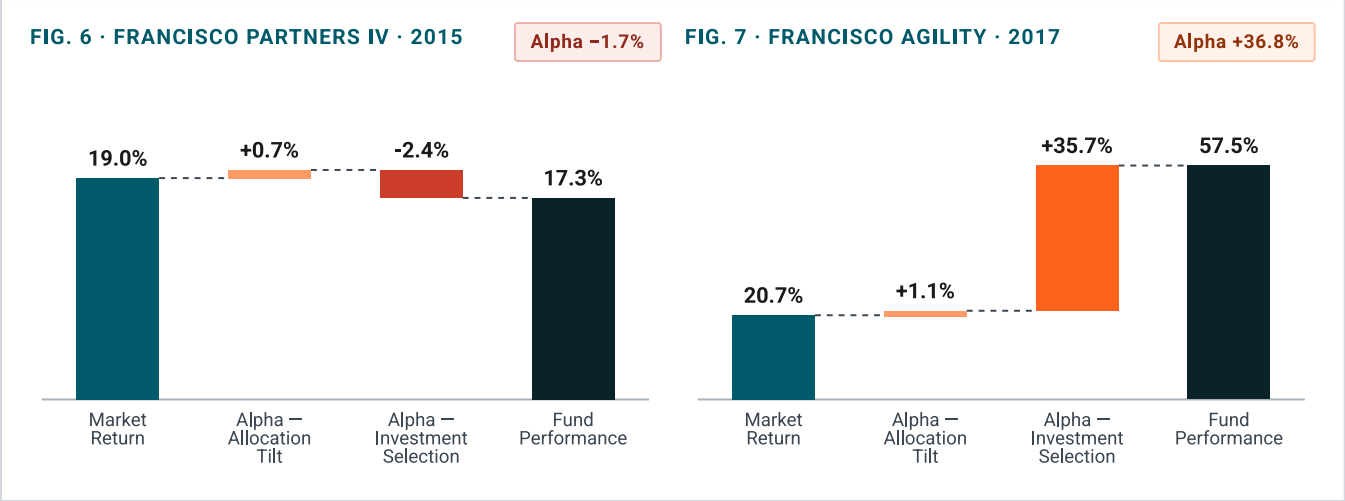
Source: privateMetrics®, Preqin.

Both funds delivered positive alpha and therefore outperformed the relevant market index, adjusted for the fund's market exposure. The market component of the fund IRR is significant: 18.1% of 23.0% in Fund IX, and 10.9% of 15.1% in Fund X. This representation is more insightful than the value bridge analysis, which implies that operational improvements drive returns and are therefore almost entirely a source of manager skill.

By reframing the analysis away from accounting and towards comparison with a relevant market benchmark, investors get a better perspective on the true alpha contribution of their manager. It is clear from these figures that an investor in these funds is exposed to both the underlying private equity market and the potential skill of the fund manager. The value bridge implies that managers operate largely free from market forces. This method is also consistent with approaches used in other asset classes, including public equities, where it is well understood that the primary source of returns is the market.

Turning to Francisco Partners, the firm was an early mover in the technology buyout space and believes its sector focus and expertise deliver technology companies a performance advantage. Figure 6 shows the IRR bridge for Francisco Partners IV, a 2015 vintage. Figure 7 shows Francisco Partners Agility, a smaller buyout fund with a 2017 vintage. Both funds were top quartile for their vintage.

FIGURES 6 AND 7 — FRANCISCO PARTNERS FUND IV AND AGILITY FUND: IRR BRIDGE



Source: privateMetrics®, Preqin.

Once again, an investor in Francisco Partners IV has significant private equity beta exposure. Market exposure accounted for 19.0% of the return, with alpha slightly negative. In a value bridge analysis, a portfolio of growing technology companies with expanding margins would imply that the manager drove most of the returns through operational enhancement. Despite being a top-quartile fund, once we control for the market, returns were in line with it. In effect, the manager paid fair value for those characteristics when the deals were struck. Only by observing the beta + alpha bridge can one see how important the market is in determining overall returns.

In the Francisco Agility fund, the manager delivered tremendous alpha, mostly pure alpha. The bridge shows a clean depiction of the exposure an investor in the fund holds. Despite a 57.5% IRR, the market return comprised almost 21%, again highlighting the underlying beta exposure. Nonetheless, the manager delivered almost 36% pure alpha, an exceptional outcome for its investors.

Conclusion

A private equity investor assumes both market risk (beta) and sector or selection bets (alpha). For each transaction or fund, it is essential to recognise that the investor is inherently exposed to systematic risk in the private equity market. To properly evaluate a deal or a manager's performance, it must therefore first be measured against market performance before any claim of alpha can be made.

The value bridge analysis overlooks the investor's market exposure and can misrepresent the manager's contribution in both directions — overstating or understating skill, and leading to incorrect assessments of performance. Without a consistent interpretation of its output, the value bridge ultimately fails to give investors a reliable assessment of true manager skill.

By incorporating Direct Alpha into the due diligence toolkit, LPs gain a more reliable measure of skill. For GPs assessed using biased manager benchmarks, the approach provides a way to demonstrate that they have generated alpha even when they are not classified as top quartile — an alternative way to position themselves in the market.

privateMetrics® API integration

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Index Catalogue

Browse our catalogue of hundreds of private equity, infrastructure and infra debt indices, inc. market indices like the infra300 and private2000, and thematic indices representing specific market segments.

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Query the PECCS® and TICCS® taxonomies used to create the privateMetrics universe. Access class codes, names and definitions to build your own index and comps customisations applications.

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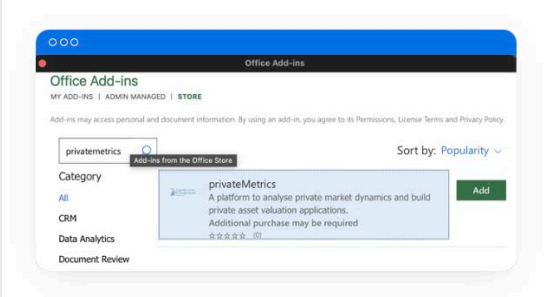
Create customised comp sets using PECCS® and TICCS® segments, geography and systematic risk profiles. Get metrics like discounts rates and EBITDA multiples.

Yield Curves

Query risk-free rates for a given pricing and maturity date to support discounted cash flow (DCF) calculations, valuation models, and other financial analyses.



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Appendix

Calculating alpha with privateMetrics®

Compound the fund cash flows by the return of the private market index from the date of each cash flow to the calculation date, then calculate the internal rate of return of the adjusted cash flows — the Private Market Equivalent. The inputs required are the fund's historical cash flows and NAV, and a private market index.

Step 1 — adjust the cash flows

$$CF^*_t = CF_t \times (I_T / I_t)$$

CF_t is the cash flow at time t (positive for distributions, negative for contributions); I_T is the value of the private market index on the calculation date T; I_t is the value of the index at time t; CF^*_t is the adjusted fund cash flow.

Step 2 — solve for the rate r

$$\Sigma_t \, CF^*_t \, (1 + r)^{-t} + NAV_T \, (1 + r)^{-T} = 0$$

r is the Direct Alpha rate, analogous to an IRR. A Private Market Equivalent greater or lower than 0 indicates that the fund has outperformed or underperformed the private market index.

We have made it straightforward to calculate the alpha of a private equity or infrastructure fund using the privateMetrics API and a pre-defined Excel template. It involves three steps:

- **Select the relevant broad market and strategy benchmarks.** Given a private fund, select a corresponding privateMetrics broad market index — for example the private2000® index for global private equities — and a strategy index corresponding to the fund's style, e.g. US Tech Mid-Cap.
- **Get the fund data needed to compute Direct Alpha.** All historical cash flow and NAV data for the same fund are required to apply the Direct Alpha methodology.
- **Find Total Alpha, Style Alpha and Pure Alpha.** Using the two privateMetrics benchmarks and the fund cash flow and NAV data, it is possible to compute Total Fund Alpha (relative to the broad market), Pure Alpha (relative to the style benchmark) and Style or Asset Allocation Alpha (the difference between the two).

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 to provide a standardised, systematic manner in which 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, in a large sample 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 a larger private company.

Second, a key application of this approach is that, with the estimated factor prices, it becomes possible to price unlisted private companies whose characteristics are known, irrespective of whether they are traded or not. This provides a more robust estimate for fair value and enables the creation of representative indices of private companies.

The novelty of the approach 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 with each other in mutually negotiated transactions, there must be common characteristics that at least partially explain prices. For example, private companies with higher profits or growth opportunities may be more valuable to investors than those without.

To arrive at a potential list of factors, we follow simple criteria: there must be an economic rationale for the factor to affect valuation; the factor should be statistically related to valuation; and it should be objectively observable or measurable. Factor selection is then the result of a statistical approach, where factors that satisfactorily explain the variation in observed transaction valuations are included in the final model, trading off parsimony against explained variance. The privateMetrics asset pricing model uses the key risk factors 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 dollar of revenue.
- **Growth.** As traditional PE strategies rely on growing the entry multiple, which may involve increasing both top and bottom lines, companies that can grow faster are more sought after and therefore more valuable.
- **Leverage.** Leverage can make a company riskier as it increases the risk of default. There is also a signalling effect: companies with stable, consistent cash flows can support higher leverage, and vice versa. Leverage is therefore expected to influence valuation.
- **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 shorter track records and face higher information uncertainty. Studies have shown that firms with high uncertainty tend to be overvalued and earn lower future returns; maturity therefore negatively affects valuation.
- **Country risk.** Investors may require a higher return when investing in a high-risk country, depressing the current valuation. In countries with lower risk, investors may be willing to purchase assets at a higher valuation as government policies are more predictable and macroeconomic risks lower.

TABLE A1 — KEY FACTORS, THEIR EFFECT ON VALUATION AND THE ECONOMIC RATIONALE FOR INCLUDING THEM

FACTOR	DEFINITION (PROXY)	EFFECT ON PRICE	ECONOMIC RATIONALE	REFERENCES
Size	Revenues	▼ Negative	Larger firms are more illiquid and trade at 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 with higher profits have a higher value	Novy-Marx (2013), Hou et al. (2015)
Maturity	Years since incorporation	▼ Negative	Mature companies exhibit less growth potential and trade 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 10,000 deals from PitchBook, Capital IQ, FactSet and other primary sources between 1999 and 2022.

Our factors have been documented in prior academic studies to be associated with valuation. We also include factors identified as key determinants of valuation in a survey of private equity practitioners that we conducted in 2023. Table A1 summarises the factors used in the model, how they are measured, each factor's average effect in the data, the economic rationale for inclusion, and the citations that underpin them.

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, separating the systematic part of the valuation while leaving out the 'noise' in each valuation.

$$\log(P/S)_i = \alpha + \Sigma_k \beta_{i,k} \lambda_k + \varepsilon_i$$

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

Model calibration

The privateMetrics model uses a carefully curated dataset of more than 10,000 unlisted private company investments going back two decades, sourced from PitchBook, FactSet, Capital IQ, fund manager reports and other publicly available data sources.

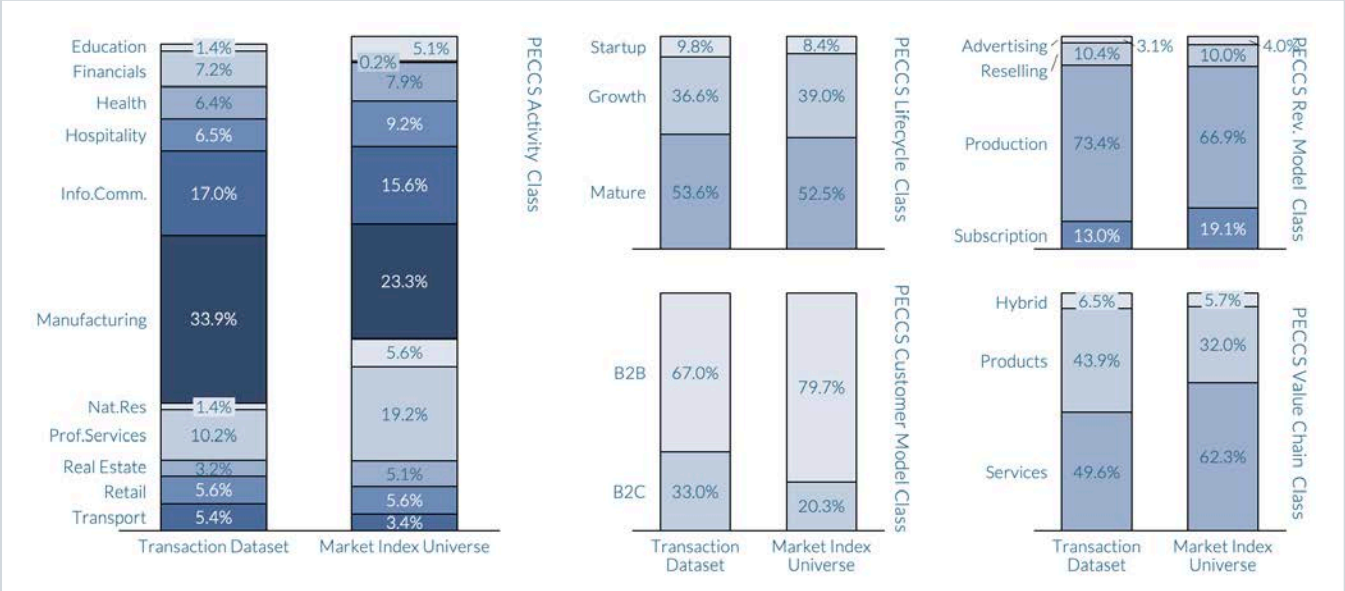
We calibrate the model using new observations monthly to update its estimation of the price of risk of each factor. Each transaction observed is used to 'update' the model — that is, to obtain new λs — through a dynamic estimation using a Kalman filter, which retains the memory of past λs while allowing the new transaction to influence the relationship, and keeps the average ε close to zero. More detail on the implementation is available in our online documentation and in Selvam and Whittaker (2024).

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 A1 includes the constituents of the private2000® index, constructed by Scientific Infra & Private Assets on this shadow-pricing idea, which captures the performance of private companies in 30 countries globally that are important for private equity investors (read more about the index here).

How precise are the predictions across PECCS® pillars?

To examine how closely predicted valuations track raw modelled valuations in transactions, we compute the average estimation errors of the full sample, and also by class within each PECCS® pillar. Although the model is by design expected to have lower estimation errors in the full sample, the within-class estimation errors are also very small. All errors are within ±10%, reassuring that the model predictions are reasonable even within each segment of PECCS®. The errors are summarised in Table A2.

FIGURE A1 — PRIVATEMETRICS TRANSACTION DATASET COMPARED TO THE INDEX UNIVERSE BY PECCS® PILLAR AND CLASS



Source: Scientific Infra & Private Assets, privateMetrics®. Shares shown as a percentage of the transaction dataset and of the index-universe constituents.

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 are therefore more interested in operational profitability without factoring in interest costs. Our model, however, is based on P/S, because P/S is statistically better, more stable, and not affected by loss-making companies. One may therefore be concerned that our predictions for EV/EBITDA might be biased.

To ensure that is not the case, we compute EV based on the book value of debt and the predicted equity valuation, and divide the sum by EBITDA to get a predicted EV/EBITDA, which we compare to transaction-implied ratios. Figure A2 presents the average predicted and observed EV/EBITDA by PECCS® activity class. The predictions are very close to the observed values, mitigating this concern.

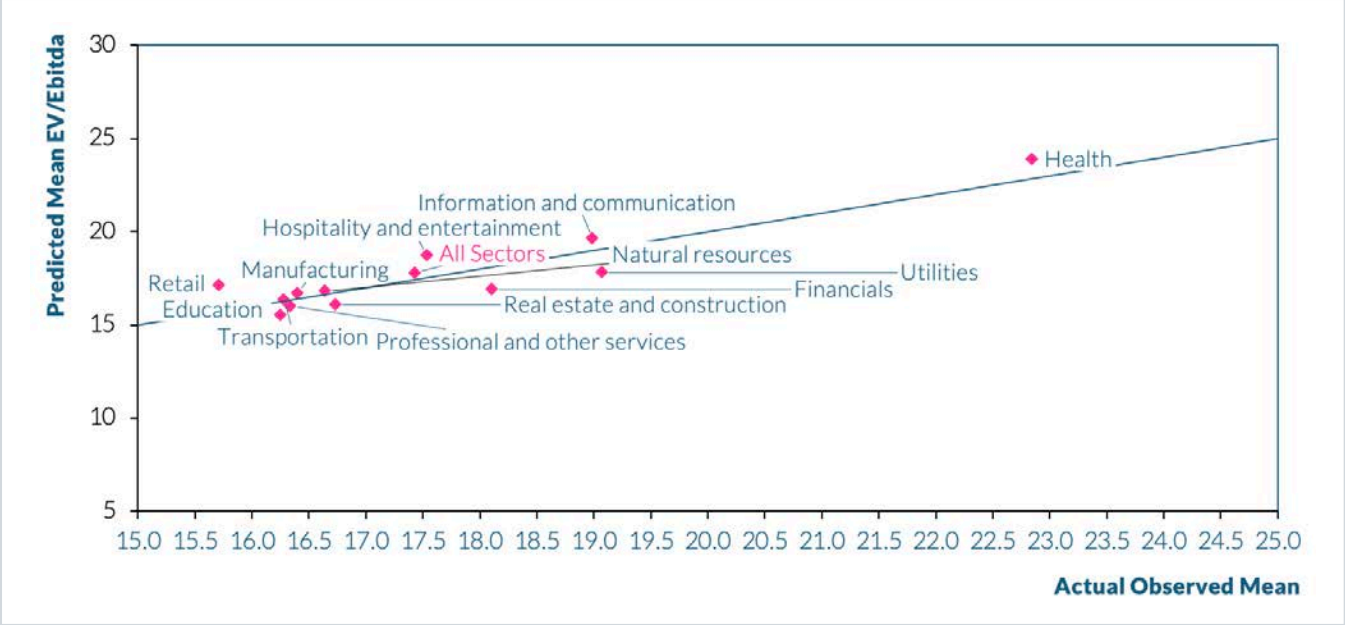
TABLE A2 — AVERAGE ESTIMATION ERRORS ACROSS PECCS® CLASSES

PECCS ACTIVITY	MEAN EST. ERROR
Education and public	0.9%
Financials	1.8%
Health	2.6%
Hospitality and entertainment	−1.1%
Information and communication	−4.4%
Manufacturing	2.5%
Natural resources	9.4%
Professional and other services	3.3%
Real estate and construction	1.9%
Retail	0.5%
Transportation	7.2%
Full sample	**1.1%**

PECCS CLASS	MEAN EST. ERROR
LIFECYCLE PHASE	
Startup	0.1%
Growth	−1.7%
Mature	2.8%
REVENUE MODEL	
Advertising	1.2%
Reselling	4.6%
Production	2.9%
Subscription	−6.9%
CUSTOMER MODEL	
B2B	1.5%
B2C	0.9%
VALUE CHAIN	
Hybrid	0.6%
Products	1.1%
Services	3.4%

Source: calculated using over 10,000 deals from PitchBook, Capital IQ, FactSet and other sources between 1999 and 2022.

FIGURE A2 — PREDICTED VERSUS ACTUAL EV/EBITDA RATIOS BY PECCS® ACTIVITY CLASS



Source: calculated using over 10,000 deals from PitchBook, Capital IQ, FactSet and other sources between 1999 and 2022.

Direct Alpha explained

A simple way to use a market benchmark to decompose the performance of private funds is the Direct Alpha approach of Gredil et al. (2021), by which a fund IRR can be written as the sum of the market return earned over the same cash flow profile and the manager's alpha.

$$IRR_{fund} = r_{market} + \alpha_{total}$$

$$\alpha_{allocation} = \alpha_{total} - \alpha_{pure}$$

$$IRR_{fund,\ net} = r_{market} + \alpha_{allocation} + \alpha_{pure}$$

Total Fund Alpha is measured against a broad market benchmark; Pure Alpha against a strategy-specific benchmark. The difference between them is Allocation Alpha.

The alpha of each manager can be broken down into multiple sources. Fund managers generate alpha through a combination of strategic decision-making and execution capability, falling broadly into three categories: asset allocation, asset selection and structuration. Asset allocation involves strategic bets on different market segments, such as sector and geographic focus. Asset selection involves choosing specific investments and determining optimal timing for distributions. Structuration includes adjusting leverage or reducing market risk through mechanisms such as preferential exit strategies, which can enhance returns while managing exposure.

We extend this approach to distinguish between sources of alpha. Using a broad market benchmark to measure Total Fund Alpha in combination with a strategy-specific benchmark — mid-market US Tech, for example — to control for the impact of asset allocation decisions, it is straightforward to split Total Fund Alpha into Asset Allocation Alpha and Pure Alpha.

Asset Allocation Alpha represents the portion of returns attributable to the manager's choice of market segment or style exposure — sectoral, geographic or factor tilts. Net Pure Alpha isolates the value added by the manager's investment selection and structuring skills, including the timing of distributions, leverage decisions and exit strategies, after fees. This shows how fund managers create value, and enables investors to assess which proportion of market outperformance stems from strategic decisions and which from operational and investment expertise.

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SIPA was born at **EDHEC Business School**. Its products come from the R&D of the EDHEC Infrastructure & Private Assets Research Institute, established in 2016, and in 2019 that academic research was turned into a commercial enterprise providing private market indices, benchmarks, valuation analytics and climate risk metrics. More than a decade and $25 million of research underpin the models in use today.

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