BRIDGE TO ALPHA

Why Private Equity's Value Bridge Falls Short…

March 2025

Executive Summary

The Value Bridge Analysis ("VBA") is a tool used by private equities investors to evaluate GP deal and fund performance by separating performance among several categories, including 1) Operating Income Growth, 2) Multiple Expansion/Contraction, and 3) Changes in Net Debt. This analysis can be conducted for an individual deal or across an entire fund. The idea behind the VBA is that equity IRRs and MOIC driven by operating income growth and debt repayment are "good", while IRRs driven by multiple expansion or leverage are less indicative of manager skill, or not repeatable. On the surface this sounds reasonable, but it can often mislead and can award a manager for broad market movements. It is not a proxy or substitute for alpha. All analysis should reflect that investors in private equities are exposed to both market risk and manager skill.

Results do not indicate if a manager has delivered alpha. While the VBA analysis may be arithmetically accurate, it offers no insight into whether the fund manager demonstrated skill or generated alpha. For instance, operating income growth can result from various strategies—organic or M&A—each of which may either create or destroy value depending on returns on capital. Additionally, the analysis 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 this?

VBA does not measure risk. VBA primarily serves as an accounting exercise and a marketing tool, overlooking critical aspects of performance evaluation—specifically, risk and benchmark comparisons. Additionally, it fails to accurately capture the true effects of leverage. The influence of debt in amplifying returns is a fundamental principle in the leveraged buyout industry, yet VBA does not adequately reflect its impact.

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

Key Takeaway. VBA implies that the fund manager largely controls the value creation process and thus returns. It ignores the fact that there is an underlying private equities market that will drive a significant component of performance. Manager skill, or 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 the performance of a deal

or fund. We evaluated two TaylorMade Golf buyouts as an example and examined the performance of Clayton Dubilier & Rice and Francisco Partners to assess manager performance and market contribution to total returns.

What is the Value Bridge?

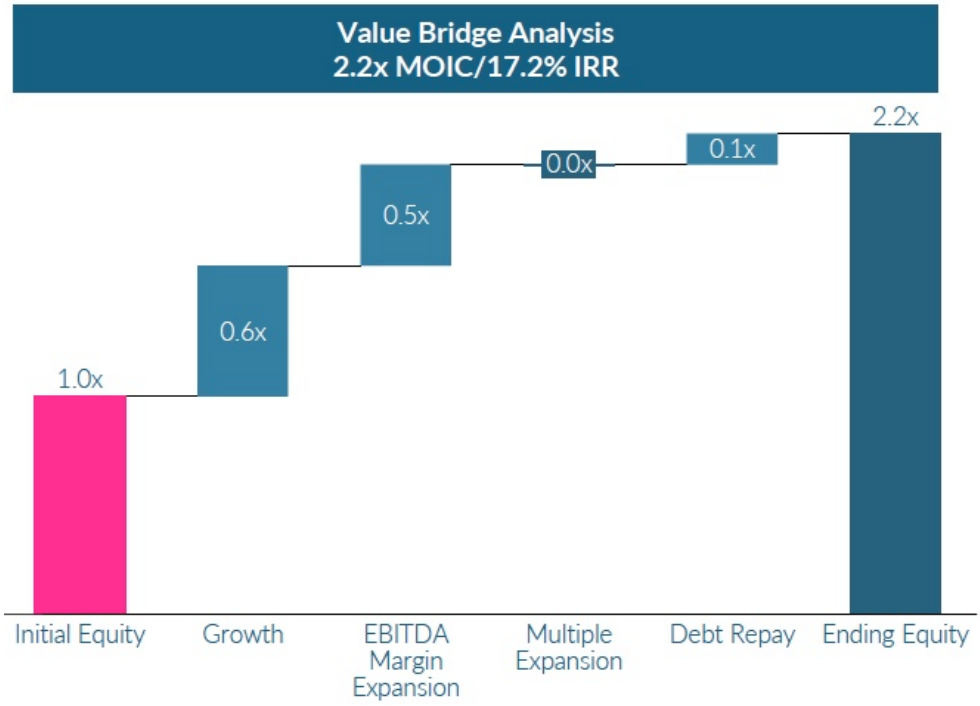
The value bridge is an accounting-based methodology designed to identify the key value drivers associated with a transaction, or the entire transaction set in a fund. We construct a typical but hypothetical deal below to show what this would look like.

Key Assumptions:

- Company with $1Bn of revenue and 15% EBITDA margins at time of deal.
- Entry and exit multiples of 12x EBITDA. 5-year hold period.
- Organic revenue growth of 5%/yr. EBITDA margin expansion of 250bps over 5 years.
- Debt/EBITDA of 6.5x/ EBITDA financed at 9%. Tax rate of 25%. Capex/D&A of 5%/year.
- Acquisition price of $1.8 billion funded with $975 million of debt and $825 million of equity.
- This generates a gross IRR of 17.2% and MOIC of 2.2x.

The figure below shows what a Value Bridge Analysis would look like for a deal with these characteristics.

FIGURE 1: VALUE BRIDGE ANALYSIS



As Figure 1 shows clearly, most of the increase in equity value is attributed to growth and margin improvement, while very little is associated with debt/leverage despite a capital structure at outset that is comprised of more than 54% debt. The initial equity of 1.0x is

increased to 1.6x via EBITDA growth, 2.1x via margin improvement, and to 2.2x through debt reduction. In effect, almost all the increase in value appears to be due to operational factors.

However, this approach fails to account for the broader market in which the investor operates and does not accurately reflect the primary impact of leverage. As a result, it effectively combines beta and alpha, often attributing most of the gains to alpha, despite the inability to distinguish between the two using this analysis alone.

Why is it Used?

The value bridge began as a GP marketing tool to convey that the source of their returns was primarily driven by operational improvements and not leverage or multiple expansion. To justify the higher management fees and carried interest, GPs were keen to present their results as almost exclusively 'value-add' and thus worthy of such a fee structure. Many LPs employed this tool as part of their due diligence process to highlight to their investment committees that they are not hiring 'financial engineers' but rather good operators who can drive value regardless of market conditions. This argument has flaws and will be addressed throughout the report. We first turn to the components to show that they 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. This largely captures revenue growth and mixes the market contribution to growth (general inflation plus industry specific growth trends) with management efforts to drive outsized company specific revenue growth. Some value bridges attempt to back out the industry growth rate and thus attribute the remainder of growth to value added by the managers. This leaves discretion to the managers to decide what represents the 'industry' and may not be indicative of the market. Benchmarks should be decided upon before the evaluation, not after. Complicating matters further, EBITDA growth is generally not free. It requires investment, either in M&A, capex and/or working capital and this analysis does nothing to tell us whether the growth in EBITDA was value enhancing.

Finally, as growth represents a priced factor in our pricing model, higher growth companies tend to trade at higher valuations (see Appendix). A fund of higher growth companies (see Francicso Partners later) will show a very nice value bridge but may just be loading on a priced factor.

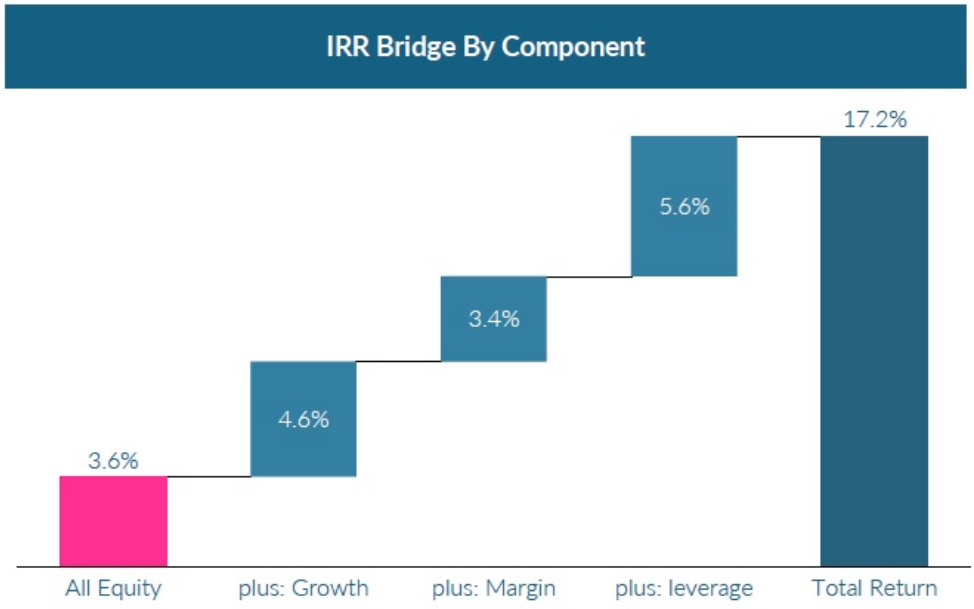
EBITDA Margin Growth. EBITDA margin growth reflects the additional EBITDA generated through margin expansion from the initial acquisition to exit, scaled by the entry multiple. EBITDA margin expansion can also mislead as it can be a function of overall revenue growth (market growth + manager specific initiatives), the level of fixed costs in the business model, and the performance of the industry. It can be further complicated by M&A and divestiture activity. One can imagine all the moving parts

involved when doing this analysis for a fund with 10+ 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 the exit EBITDA. In our example, we have assumed both are the same, 12x. Multiples also have a market component, as they reflect the cost of capital and growth. Changes in interest rates and risk premiums will 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. However, market timing is a source of alpha, and to the extent that a manager can 'buy well', this can be a component of alpha. Unfortunately, we cannot determine this from the value bridge analysis.

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 as the main impact of leverage is to magnify a return stream by limiting the upfront equity capital required. We show this more explicitly below by recasting the VBA as an IRR bridge.

FIGURE 2: RECAST VALUE BRIDGE ANALYSIS WITH IRR



The figure above recasts the returns starting with an all-equity IRR and sequentially tacking on margin improvement, growth, and then leverage. When examined in this way, the true impact of leverage on returns is accounted for. Rather than being a small and insignificant component, leverage is the largest contributor.

If you remove leverage from this transaction, the IRR of the deal falls from 17.2% to 11.6%. Thus, the true impact of leverage is not just the debt repaid over the life of the deal but leverage impact on the returns. An 11.6% all equity return is levered up to 17.2%. Leverage magnifies the all-equity IRR by 48% and contributes to approximately

32% of the overall IRR. This is not at all represented in the value bridge, which understates the all-in impact of leverage.

Nonetheless, the underlying problem persists. We are still mixing beta and alpha in the first 3 buckets – all equity, growth, and margin components. We have no way to know which portion represents alpha.

Does it Convey Manager Skill?

In the original value bridge analysis 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 the leverage impact is embedded in the other components (magnifying EBITDA growth, margin expansion), further rendering the analysis 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 beta (market) exposure. In order to assess this, we need to look at how the transaction compares to the private equities 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 undergoing 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 equity), turned the business around after years of underperformance within Adidas, and sold the company for $1.7bn to a Korean private equity house, Centroid Investment Partners, in 2021. Centroid is currently evaluating a sale of TaylorMade. We will examine what the value bridge analysis and direct alpha approach would show for both investors at their respective time of exit.

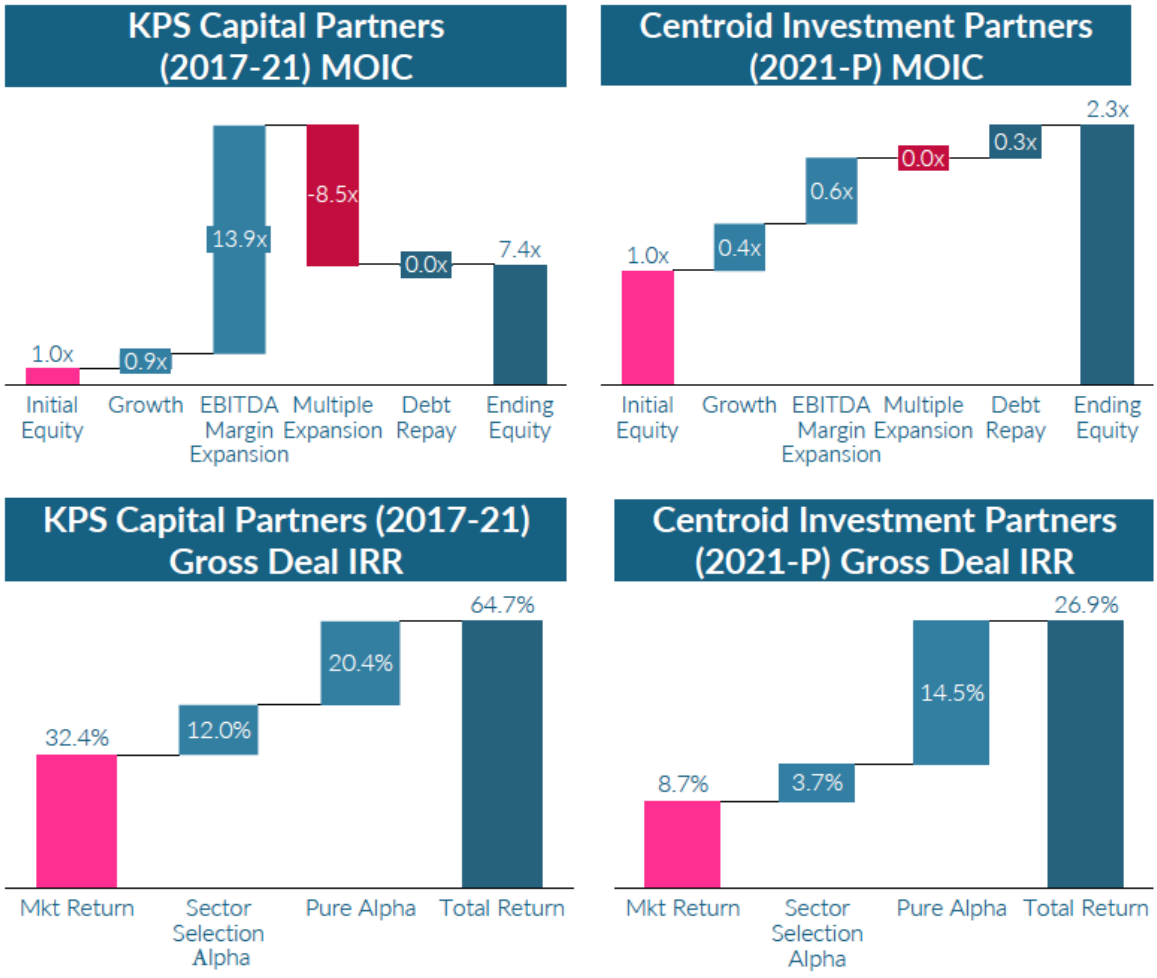
For KPS Capital Partners, we estimated that the initial equity cheque was $200 million. This is in line with publications that show an initial investment of between $155 and $225 million. In the case of Centroid Investment Partners, we have assumed that it is sold at the same buy-in multiple ~8.5x). Within PECCS, the US manufacturing activity class has shown a 10-15% reduction in EV/Sales multiples since 2021[1]. However, beginning with Covid, the ‘work from home’ era has also led to a boom in the industry[2], thus supportive of prices. Figure 3 below shows the value bridge analysis for both funds during ownership.

The VBA can be a source of confusion, especially if the deal is not plain vanilla. During KPS Capital Partners’ ownership, TaylorMade was a turnaround proposition and had limited EBITDA at time of acquisition (less than $20 million). This grew to approximately $200 million at exit and resulted in a 7-10x return based on estimates. This translates into

[1] Using Comps builder within privateMetrics, one can estimate a multiple incorporating factors such as size, leverage, profitability, growth, and by business model and lifecycle. This can be further customised to account for specific risk.
[2] https://www.ft.com/content/85d2fde1-3bfa-414f-a252-4d60118a2b7f

big margin expansion contribution but also an implied multiple contraction as the company was more profitable. 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 the deal IRR. The market was strong, but the deal was exceptional, delivering 32% alpha. We also see that US manufacturing sector was strong relative to the broader private2000 index, with sector selection alpha positive for both investors.

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



Source: privateMetrics®, Pitchbook. For KPS's investment, assumed $200 million equity investment (reported range of $155-$225 million), 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 privateMetrics PECCS Manufacturing activity class for the relevant period. Actual realisation may differ from stylised result presented above.

Figure 3 (bottom) details the alpha bridge for both ownership periods. Despite lower returns, Centroid could achieve meaningful alpha if they are able to exit at a similar multiple to entry. This is because the private equities market has been much weaker during their ownership, relative to the 2017-2021 period.

Alpha is calculated by using the Direct Alpha method, first comparing the deal returns to the broad private2000 index, then the most relevant sector index, in this case, U.S. manufacturing. The pure alpha accounts for the returns achieved in excess of the sector index and reflects the manager's ability to choose the right deal, structure, time, and effect change to improve the operations of the company. Sector selection alpha reflects the manager's allocation to a sector or factor tilts. Please see the Appendix for a more detailed explanation of the methodology.

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 and we will see how that translates using the alpha bridge.

Clayton Dubilier & Rice has long highlighted their operational value add as a key differentiator of their approach. In Figures 4 and 5 below, the IRR bridge is presented for Clayton Dubilier & Rice funds IX (vintage 2013) and X (vintage 2017).

FIGURE 4: CLAYTON DUBILIER & RICE FUND IX

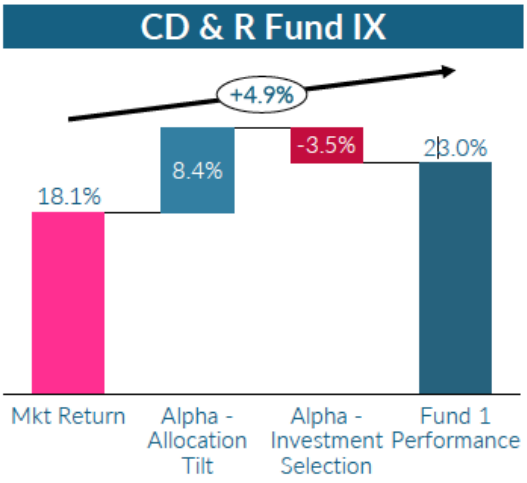
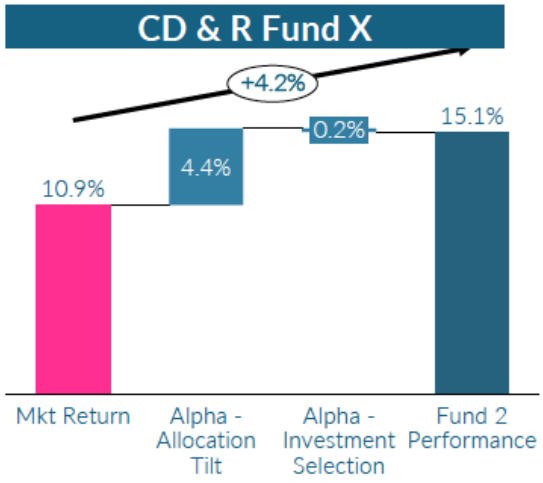


FIGURE 5: CLAYTON DUBILIER & RICE FUND X



Source: privateMetrics, Preqin

Both funds delivered positive alpha and thus outperformed the relevant market index, adjusted for the fund's market exposure. As can be observed, the market component of the Fund IRR is rather significant, 18.1% of 23% in fund IX, and 10.9% of 15.1% for fund X. This representation is more insightful than the value bridge analysis, which implies that operational improvements drive returns and thus are almost entirely a source of manager skill or value-add. By reframing the analysis away from accounting to a comparison with a relevant market benchmark, investors get a better perspective of the true alpha contribution of their manager. Importantly, it is clear from these figures that an investor in

these funds is exposed to both the underlying private equities market, and the potential skill of the fund manager. The value bridge analysis implies that managers are largely operating free from market forces. Importantly, this method is consistent with approaches used in other asset classes, including public equities. It is well understood that the primary source of returns is comprised of the market (beta).

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

FIGURE 6: FRANCISCO PARTNERS FUND IV

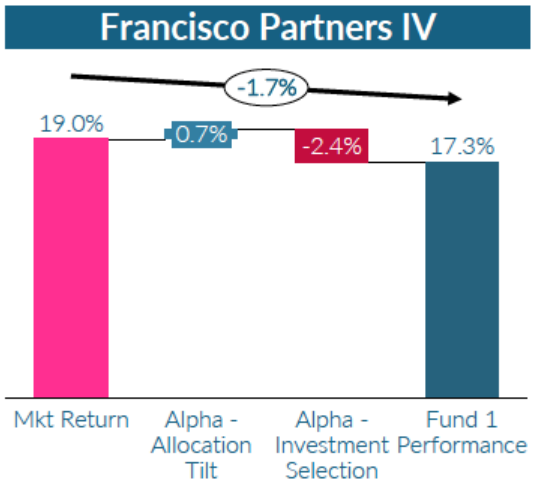
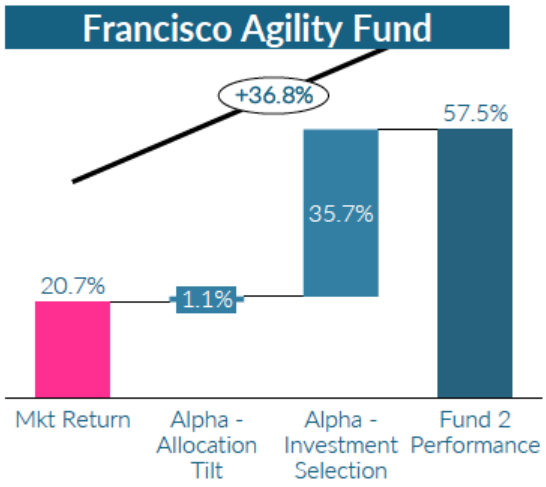


FIGURE 7: FRANCISCO PARTNERS AGILITY FUND



privateMetrics®, Preqin

Once again, we observe that an investor in Francisco Partners IV has significant private equities beta exposure. The market exposure accounted for 19.0% of the return, with alpha coming in slightly negative. In a value bridge analysis, a portfolio of growing technology companies with expanding margins would imply that the fund manager drove most of the returns, through operational enhancement. Despite being a top quartile fund, once controlling for the market, we find that returns were in line with the market. In effect, the manager has 'paid fair value' for these characteristics when they struck the deals. 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. This bridge shows a clean depiction of the exposure an investor in the fund has. Despite the phenomenal 57% IRR, the market return comprised almost 21%, again highlighting that there is an underlying beta exposure. Nonetheless, the manager delivered almost 36% pure alpha, an incredible 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. Therefore, to properly evaluate a deal or manager's performance, it must first be measured against market performance before any claims of alpha can be made. The value bridge analysis, however, overlooks the investor's market exposure and can misrepresent the manager's contribution (in both directions). That is to say, the VBA can overstate or understate the manager's skill, leading to incorrect assessments of performance. Without a consistent interpretation of its output, the value bridge analysis ultimately fails to provide investors with a reliable assessment of true manager skill. By incorporating Direct Alpha (see: **Direct Alpha**) in the investor's due diligence toolkit, LP's gain a more reliable tool for determining skill. For GPs assessed using biased manager benchmarks, this approach provides a way to demonstrate that they have generated alpha, even if they are not classified as 'top quartile' funds, giving them an alternative way to position themselves in the market.

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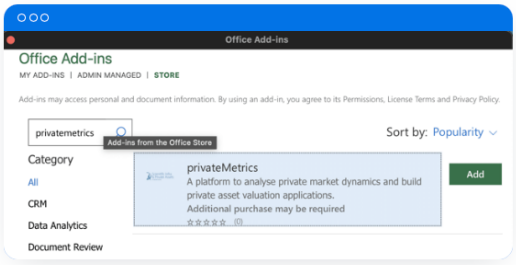

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Appendix

Calculating Alpha with privateMetrics

Approach

Compound the fund cash flows by the return of the private market index from the date of the cash flow to the calculation date. Then calculate the internal rate of return of the adjusted cash flows, which is the *Private Market Equivalent*. Inputs required: Fund's historical cash flows and NAV, Private Market Index

Step 1: Adjust the cash flows

$$\tilde{C}_t = C_t . \frac{V_b(T)}{V_b(t)}$$

C_t: Cash flow at time t (positive for distributions, negative for contributions)

$V_b(T)$: Value of the private market index on the calculation date T

$V_b(t)$: Value of the private market index at the initial time t

$\tilde{C}_t$: represents the adjusted fund cash flow

Step 2: Solve for the rate α equation linking the adjusted cash flows and the NAV:

$$\sum_{t=0}^{T} \frac{\tilde{C}_t}{(1+\alpha)^t} + \frac{NAV}{(1+\alpha)^T} = 0$$

α is the Direct Alpha rate (analogous to IRR). A *Private Market Equivalent* greater/lower than 0 indicates that the fund has outperformed or underperformed the private market index. We have made it easy to calculate alpha of a private equity or Infrastructure fund using the privateMetrics API and a pre-defined excel template. It involves three simple steps:

1. **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.
2. **Get the fund data needed to compute Direct Alpha:** For the same fund, all historical cash flow and NAV data are required to apply the Direct Alpha methodology.
3. **Find Total Alpha, Style Alpha and Pure Alpha for the fund:** Using the two privateMetrics benchmarks selected above 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 Total and Pure Alpha)

Refer to this use case for more details.

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 A1: 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 A1 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.

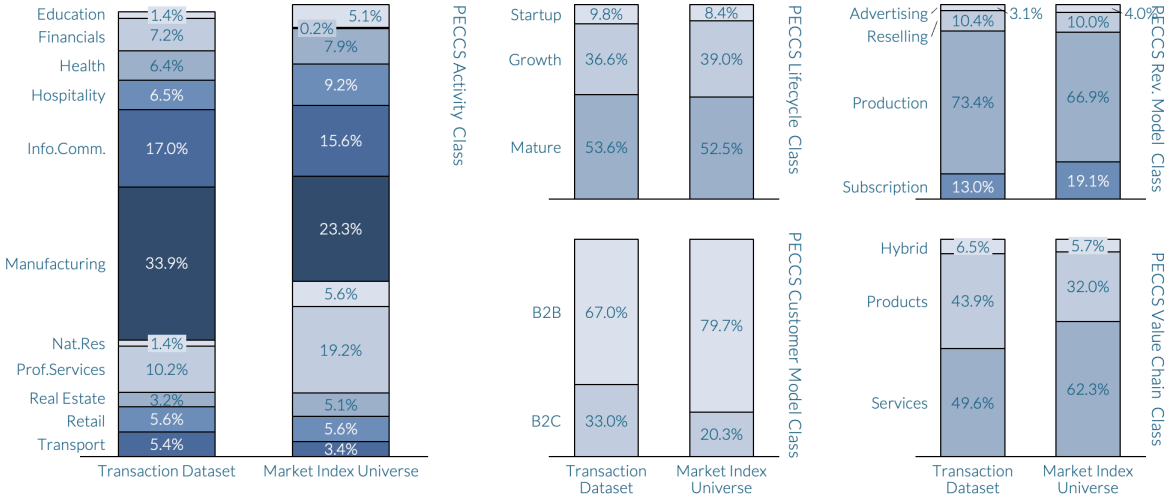
We calibrate this model using new observations monthly to update its estimation of the price of risk of each factor. In other words, each transaction observed is then used to 'update' this model (i.e., obtain new ls) through a dynamic estimation (using a Kalman filter), which retains the memory of past 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 and 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).

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 A2.

Figure A1: privateMetrics Transaction Dataset Compared to the privateMetrics index universe by PECCS pillar & class



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.

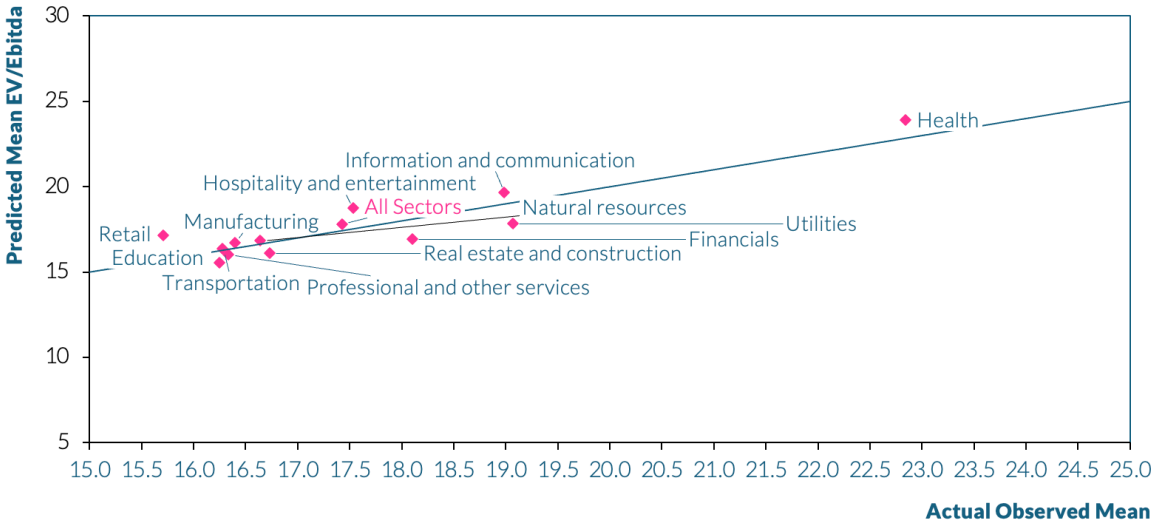
To ensure that is not the case, we compute the EV based on the book value of debt and predicted equity valuation and divide the sum by the EBITDA to get a predicted EV/EBITDA and compare it to transaction implied ratios. Figure A2 presents the average predicted and observed EV/EBITDA by PECCS® activity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

Table A2: 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 A2: 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

Direct Alpha Explanation

A simple way to the 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:

$$Fund\ IRR = Market\ Return + Total\ Fund\ Alpha$$

The Direct Alpha calculations are described in the appendix.

Next, 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 capabilities. Broadly, these efforts fall into three categories: asset allocation, asset selection, and structuration. Asset allocation involves making strategic bets on different market segments, such as sector and geographic focus. Asset selection involves choosing specific investments and determining the optimal timing for distributions, aiming to maximise returns. Lastly, 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 e.g. mid-market US Tech, to control for the impact of Asset Allocation decisions, it is straightforward to split Total Fund Alpha into two components: Asset Allocation Alpha and Pure Alpha.

The difference between Total Fund Alpha and Pure Alpha is the Allocation Alpha,

$$Allocation\ Alpha = \text{Total Fund Alpha} - \text{Pure Alpha}$$

The total fund net IRR is written:

$$Fund\ net\ IRR = Market\ Return + Asset\ Allocation\ Alpha + Pure\ Alpha - Fees$$

Or

$$Fund\ net\ IRR = Market\ Return + Asset\ Allocation\ Alpha + Net\ Pure\ Alpha$$

Asset Allocation Alpha represents the portion of returns attributable to the fund manager's choice of market segment or style exposures (sectoral, geographic or factor tilts). Net Pure Alpha isolates the value added by the manager's investment selection and structuring skills, which includes 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 specific strategic decisions or operational and investment expertise.

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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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