GETTING THE PRICE RIGHT IN GP-LED SECONDARIES

A look at the Nord Anglia deal through the privateMetrics® lens

May 2025

Executive Summary

Rise of Continuation Vehicles and Cross Fund Transactions. The tremendous growth in continuation vehicles and cross fund transactions[1] has altered the alignment of interest between LPs and GPs. With GPs now both a seller and a buyer of the same asset across vehicles, safeguards need to be in place to ensure fairness to all parties. LPs can no longer assume that the GP is perfectly aligned on valuation and pursuit of maximum sale proceeds. **LPs need to have an opinion on exit pricing**, specifically forming their own view on exit multiples and valuation, and be able to act swiftly, as there is often only a short window to decide if they will roll their holding or exit. **This is a fiduciary concern.**

LPs as Fiduciaries. LPs have relied on GPs to source, manage, and exit investments on their behalf, protected by a fund structure and limited partnership agreement that aligns interests. The rise of GP led deals necessitates more involvement from LPs **to ensure beneficiary assets are treated fairly**. This impact is felt across the portfolio, not just assets brought to the LPAC for a GP led deal, as every portfolio company could, in theory, be part of a GP led deal in the future. The SEC and FCA have introduced regulations including requiring a fairness opinion[2] from a third-party advisor. Furthermore, the ILPA has provided guidance[3] to LP Advisory Committees (LPAC) on managing a GP led process. **The privateMetrics database provides a solution, offering a tool that can help LPs form a rapid, independent view on asset pricing. This is particularly useful when conflicts of interest are present.**

privateMetrics Multiples. The privateMetrics database is a rich data set of ~1 million private companies across all Activities (sectors) that can be used to build robust valuation multiples. This provides investors with a comprehensive tool and can help derive the fair valuation range of assets underlying their funds. Built from the PECCS® taxonomy, investors can generate multiples that reflect characteristics of the company and its risk factors. Multiples will incorporate the sector, lifecycle, revenue model, customer model, and value chain of the company in question. Further, the multiple can be adjusted for risk factor exposure, including growth, leverage, size, profitability, and maturity. **This provides the LP with an 'anchor' valuation against which they can evaluate a proposed GP led transaction.**

Nord Anglia Transaction. The recent Nord Anglia transaction[4] involving EQT Funds BPEA VI and VIII, alongside third-party investors such as CPP Investments and Neuberger Berman Private Capital highlights an example of a fund transfer transaction. This particular asset has resided in at least 3 EQT/BPEA funds. The most recent transaction saw BPEA VI exit from Nord Anglia, while BPEA VIII acquired a controlling stake, with an outside investors Neuberger Berman participating in the deal. CPP

[1] 2024 Continuation Fund and Cross-Fund Market Insights
[2] SEC Guidance
[3] ILPA Guidance
[4] Neuberger Berman-led consortium takes stake in EQT-backed private school operator

Investments rolled a portion of its investment into the new deal. The 'in-house' deal was a major benefit to multiple EQT funds, with fund VI achieving a successful exit, and over $5 billion returned to investors. Fund VIII, the acquiror, benefited by being 80-90% invested following the closure of the deal. In this paper, we show how an LP could quickly form an opinion on pricing on this asset using privateMetrics, while the traditional comps and precedents approach does not inform as well.

Why privateMetrics®

privateMetrics® data can be utilized to build a comparables set reflecting the characteristics of Nord Anglia, a premium priced provider in the international day and boarding school market. The idea is to build an 'anchor' valuation that reflects the systematic risk exposure of the asset. We can do this by identifying the Company's Industrial Activity (Education – AC01), Lifecycle (Growth), Customer Model (B2C), Revenue Model (Subscription), and Value Chain (Services). By controlling for the PECCS pillars, we can find similar companies along these dimensions. Further, we can evaluate across 5 key priced risk factors to determine how companies in different quartiles are valued relative to one another. These five factors include – Size, Growth, Profitability, Leverage, and Maturity.

We can build up an anchor valuation using our privateMetrics excel add-in and the 'Comps Builder' function. This allows for a step-by-step buildup of valuation across various PECCS pillars, geographies, and key risk factors. Armed with this tool, we can derive a valuation for Nord Anglia (or any asset), reflecting its systematic risk exposure. From here, adjustments can be made for idiosyncratic risk that may be unique to the asset, particularly if held in an undiversified fund, or a fund of 1 (eg Continuation Vehicle).

More details on our MS Excel Add-in is available (here) with documentation available (here).

Secondary Market Overview

The secondary market has grown significantly in recent years and is now a tool used by LPs and GPs alike to manage liquidity, optimize or rebalance portfolios, and maintain exposure to an asset. This is a natural outcome for a maturing market. There are two broad areas in the market:

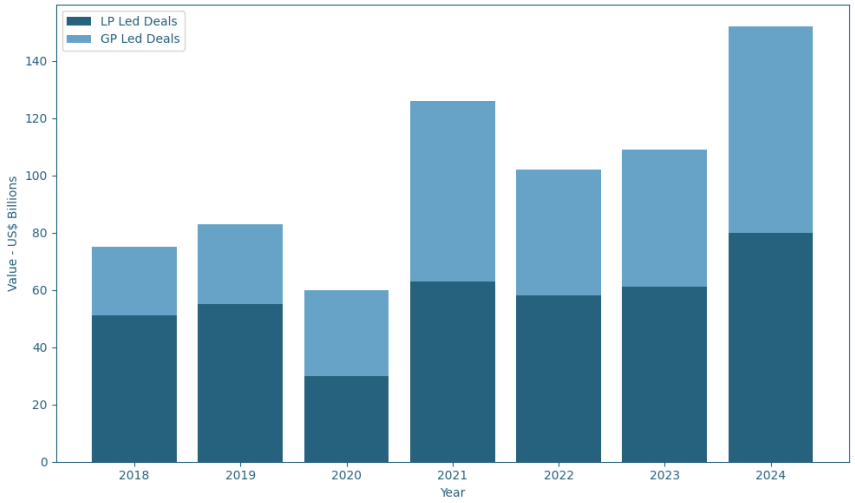
LP Led: Consist of transactions involving the purchase of existing limited partnership interests (one or a portfolio) and assuming the future capital calls (liability) of said partnership interests.

GP Led: Involve the purchase or transfer of an asset held by a GP in one fund, to a new vehicle (single or multi asset continuation vehicles) or transferred to a new fund (fund transfer), where a more recent fund acquires the interest from a prior fund.

The focus of this report is on GP led transactions and the potential conflict of interest involved with respect to pricing of transferred assets. We note the following from a leading advisor in the space:

”Historically, sponsors used a variety of other cross-fund transactions to identify opportunities, manage investments, and optimize portfolios. In 2024, we observed a record number of these transactions that crossed funds or otherwise **placed the sponsor in a potential conflict-of-interest position**, and we expect this will continue increasing throughout 2025, given current industry and market dynamics.” – Houlihan Lokey (2024 Continuation Fund and Cross-Fund Market Insights). Figure 1 provides an overview of the size of the market.

FIGURE 1: GLOBAL SECONDARY VALUE BY SEGMENT



Source: Houlihan Lokey

GP led transactions now account for roughly half of the transactions taking place in the secondary market. Furthermore, it is estimated that the fund transfer segment is as large[5] or slightly larger than the GP led component. Hence, these two components now comprise a very significant part of the exit market for GPs. The slower exit environment and pressure from LPs to obtain realizations has coincided with an increase in GP led transactions, both continuation vehicles and fund transfers. At $76 billion in 2024, GP led deals accounted for more than 10% of exit activity by value. Relative to global IPO issuance value of $113 billion, this is a significant figure. Transactions involving continuation vehicles and fund transfers are expected to continue to grow in the coming years, necessitating more rigorous engagement from LPs around the pricing of transferred assets.

Conflicts of Interest

Conflicts of Interest arise given the GP is now both a seller and a buyer of the same asset via different funds or vehicles. Alignment is no longer clear and can vary depending on

[5] 2024 Continuation Fund and Cross-Fund Market Insights

the performance of the selling fund and the vehicle the asset is being transferred to (CV vs other fund) and whether there is a 3rd party investor involved. For the buying fund, the concern is that this fund is providing an exit to the fund holding the asset, at a time where pure 3rd party exits (IPO, strategic sale, or sale to another financial buyer) are deemed unattractive. For the selling fund, the non-rolling LPs may not be equipped to determine if they are receiving fair value for the asset in question[6]. After all, LPs invest in GPs to buy, manage, and sell assets on their behalf. Finally, given the asset is often transferred into a very concentrated vehicle (sometimes just 1 asset), the buyers may incorporate significant idiosyncratic risk when valuing the asset.

Regulatory Considerations

Regulators in the US and UK have taken note of the growing prevalence of GP led transactions and have issued guidance and imposed regulations.

The SEC requires[7] that a fairness opinion or third-party valuation from an independent financial advisor be provided by the sponsors to the existing investors. This is a legal requirement for investment advisors registered with the SEC.

The ILPA has also provided guidance on best practices, including role of LPAC, and various disclosures.

The Financial Conduct Authority (FCA) recently expressed opinion on continuation vehicles. In February 2025, the FCA issued a letter to asset management firms regarding conflicts of interest and specifically mentioned continuation funds. In March 2025, the FCA issued another letter regarding valuation of private assets, particularly mentioning asset transfers and the need for fairness opinions for assets moved to continuation funds.

We next look at an example of a very large fund transfer transaction that took place in 2024 among a leading global private equity fund (EQT), notable co-investors (CPP), and non-rolling LPs in the funds involved.

Nord Anglia

Background

Nord Anglia Education (NAE or Nord Anglia) is a leading international boarding school, operating over 80 international day and boarding schools across 33 countries throughout the world. Based in London and Hong Kong, the company has grown consistently over the years both via acquisitions and organic growth. EQT, the global buyout fund, has a long history with Nord Anglia, having first acquired a stake in the firm in 2008, via Baring Private Equity Asia (BPEA - EQT acquired BPEA in 2022). BPEA subsequently floated

[6] The Rise of Private Equity Continuation Funds (2023 – Kastiel, Nili)
[7] SEC Regs

Nord Anglia in 2014 and then took it private in 2017, with CPP Investments participating in the take-private transaction. More recently, BPEA VI was seeking an exit for its stake in Nord Anglia and pursued an IPO process. In the end, EQT ended up retaining ownership of Nord Anglia, alongside other investors, including CPP Investments, Neuberger Berman Private Markets, CF Alba, and Dubai Holdings. The stake in Nord Anglia that was held in BPEA VI was sold to BPEA VIII and the above-mentioned investor group. This will extend the EQT/BPEA ownership beyond the 17 years it has already held the asset. Nord Anglia has been held across multiple BPEA funds, creating the potential for a conflict of interest as it's transferred among its various funds.

The Transaction

The latest transaction valued Nord Anglia at $14.5 billion[8]. It is estimated that the deal returned $5.4 billion to EQT Fund VI LPs and other investors. Based on publicly available information, Nord Anglia had revenues of $2 billion FY 2024 (ending August 31) and EBITDA of $700-$800 million. S&P, which rates Nord Anglia's debt, projected revenues of $2.5 billion by FYE 2026 and over $900 million of EBITDA[9]. Based on trailing EBITDA figures, the purchase multiple was approximately 18x, or 16x using forward multiples. Leverage was approximately 9x EBITDA to help finance the deal. Most of this debt was rolled over as this was not considered a 'change of control' transaction. The Company has grown steadily, with EBITDA increasing from ~$400 million in 2019 to $700 million in FY2024 and $800 million expected in FY2025.

Given the Nord Anglia transaction was transferred from one EQT fund (BPEA VI) to another (BPEA VIII), conflicts of interest are present. When not selling cleanly to a third party, the GP effectively becomes both a seller and buyer, weakening the alignment of interest with limited partners. Despite attempts to create a fair process - including use of financial advisors, seeking alternative bids, and inclusion of third-party investors (Neuberger Berman) – LPs are faced with evaluating whether their GP is incentivized to obtain maximum value. This conflict is an issue for both exiting LPs and LPs in the fund that is buying into the transaction. The former worry whether full value has been obtained, the latter whether one fund is providing liquidity to another at a time when third parties or the IPO market are not.

How Convincing is the Comps and Precedents Approach?

A common method to evaluate the valuation is to turn to publicly traded comparables and precedent transactions. Several premium international schools are owned by private equity firms and investors try to uncover recent valuations or transactions. There are challenges when using past transactions, including: 1) Small number of transactions 2) Transaction details often sparse 3) EBITDA figure can be adjusted or unadjusted and

[8] Consortium-to-Acquire-Leading-International-Schools-Organization-Nord-Anglia-Education.pdf
[9] Bach Finance Ltd. (Nord Anglia Education) Ratings | S&P Global Ratings

often not clean 4) Business models are different 5) Companies possess different characteristics along growth, maturity, leverage, profitability, organic vs m&a led growth.

For publicly traded companies, there are only a small number of similar business models that are similar (Taaleem, SISB, Fairview). There are listed players in other areas of the education market (tuition centers, for profit universities, language schools) but possess different business models.

Furthermore, these comparables trade in the listed equities market and thus do not reflect the dynamics of the private equities market. There is a wide range of trading multiples for the listed comps, providing limited insight into how this can help form a valuation range for Nord Anglia.

TABLE 1: PUBLICLY LISTED EDUCATION COMPANIES

Listed Comps	Region	Mkt Cap	EV	EBITDA Margin %	EV/EBITDA
Taaleem	UAE	$984Mn	$1.06Bn	29.6%	13.5x
SISB	SE Asia	$472Mn	$435Mn	47.0%	13.3x
Laureate Education	Americas	$3.24Bn	$3.56Bn	28.7%	7.1x
Adtalem Global Education	Americas	$4.62Bn	$5.18Bn	25.7%	11.9x
Strategic Education	Americas	$2.12Bn	$2.05Bn	18.4%	9.9x
Grand Canyon Education	Americas	$5.49Bn	$5.29Bn	30.2%	16.7x
China Education Group	China/HK	$905Mn	$2bn	26.5%	8.0x
Perdeceo Education	Americas	$2Bn	$1.55Bn	27.6%	7.5x
Fairview Intl School	UK	$82Mn	$95.5Mn	64.0%	23.7x
Nord Anglia	**Global**	**$8-10Bn**	**$14.5Bn**	**30%+**	**16-18x**

Source: Refinitiv

Obtaining multiples for private transactions is challenging due to limited disclosures. Using third party databases and ratings agencies, we can only obtain estimates of multiple from the 5 available transactions. Even if accurate, the transactions happened at various points in the past and may not reflect the current valuation environment. Further, the transactions take different forms.

For example, Brookfield recently did a preferred equity deal with GEMS for $2Bn. OMERS acquired a minority stake (<25%) in International Schools Partners from Partners Group. TA Associates completed a growth equity investment in Inspired Education Group. Multiple non-control transactions or senior equity investments may not tell an investor much about valuation for a control position in a similar asset.

Next, table 2 below highlights several of the private premium education operators, alongside ownership and deal metrics.

TABLE 2: PRIVATELY HELD DAY AND BOARDING SCHOOL OPERATORS

Private Comps	Last Deal	Age of the Data point	Owner	Deal Amount	EV/EBITDA
Cognita Schools	Sep 2018	6 years and 8 months	Jacob's Holding	US$2.6Bn	20x (26x)
GEMS Education	Jul 2024	10 months	Brookfield/CVC	US$2Bn	15-16x[10]
Inspired Education Group	May 2022	3 years	TA Assoc/Warburg	US$1.4Bn	NA
International Schools Par.	May 2021	4 years	Partners/OMERS	$575Mn	>20x
Globeducate	June 2024	1 year	Providence/Wendel	$676Mn	16.7x
Nord Anglia	**March 2025**		**EQT/BPEA**	**$14.5Bn**	**16-18x**

Source: FT, Refinitiv, Pitchbook, Fitch, Ion - Cognita (26x deal from 2018. 20x current ind.), S&P, Globeducate.

In the private equities' comps set, we find similar business models but a dearth of information. Public markets pose the opposite problem – fewer relevant comps but higher quality data. The valuation exercise using public comps and precedents highlights another important point. One cannot proxy the private equity company with a public market comparable. Many sub sectors are almost exclusively represented in the private equities market. This is what we observed with Nord Anglia and the premium education segment. This requires use of a private equities' dataset. Second, most LPs are not industry experts and will not have the expertise or time to track down the relevant comp set. privateMetrics addresses this by allowing one to form a view on multiples of any private company rapidly.

The privateMetrics® Approach

We can turn to privateMetrics to see how one can leverage the database to build a reasonable valuation multiple for Nord Anglia. We then compare this to what is available from prior transactions and listed equity comparables.

With knowledge of the company's characteristics, including operating metrics like total revenue, revenue growth, ebitda margin, and financial leverage, we can build a valuation from a large and robust set of comparables that reflect those of Nord Anglia. In effect, we don't need to find an exact match in the boarding school education industry, but rather, a rich set of comparables that operate in the same Activity class, have a similar business model, and possess similar exposures to risk factors. Examining Nord Anglia in particular, we observe:

Size - $2 billion of revenue and $14.5 billion in transaction size. This would place Nord Anglia in the 5th quintile (highest) of privateMetrics.

Growth – The Company has grown its revenue from approximately $2 billion in 2020 to $2.5 billion currently. This translates into an ~ 5% annual growth rate. This would place Nord Anglia in the middle of the pack at Quintile 3.

[10] Fitch Withdraws GEMS' Ratings. Brookfield. Estimate only based on EBITDA of $380Mn and ~$6Bn EV.

Leverage – The leverage in the deal is approximately Debt/EBITDA of 9x and total debt/revenues of >2x, which would make it very highly levered and placed in quintile 5.

Profit – At the EBITDA level, Nord Anglia is extremely profitable with EBITDA/Sales levels of 30%+. However, free cash flow is much lower at approximately $100 million against revenues of $2.5 billion, or 4%, as per S&P[11]. Given the business model has significant capitalized lease on the balance sheet, EBITDA margins overstate true profitability. Therefore, we place Nord Anglia in quintile 3.

From this, we can build the valuation. Table 3 details the valuation build for Nord Anglia comps. We use trailing 1, 3-, 5-, and 10-year periods for determining multiples as valuation environments can change. To begin, we evaluated all companies in the PEU (Private Equity Universe) that are classified in the Education & Public (AC02) Activity Class. With this simple screen, we observe that multiples range from 15.3x (1 year data) to 16.8x (5 year data). As we move down the table, we continue to refine the screen, controlling for PECCS customer model (B2C) and production model (services). Once we have identified the correct PECCS pillars, the risk factors can be incorporated. In the case of Nord Anglia, we consider the above-mentioned risk factors – Growth, Profits, Leverage, and Size. The final set of multiples in light blue reflects the intersection of the PECCS pillars and the 4 risk factors.

TABLE 3: NORD ANGLIA MULTIPLE BUILD WITH PRIVATEMETRICS

Nord Anglia Multiple Build		**EV/EBITDA Over prior 1, 3, 5 and 10 Year (Median)**			
privateMetrics	**Quintile**	**1 Year**	**3 Year**	**5 Year**	**10 Year**
Education & Public (AC02)		15.3x	16.3x	16.8x	16.7x
Plus: B2C & Services		13.6x	15.5x	15.9x	16.1x
Plus: Growth	3	13.8x	14.5x	14.8x	15.1x
Plus: Profits	3	14.6x	16.5x	17.7x	20.5x
Plus: Leverage	5	15.0x	16.5x	17.3x	18.7x
Plus: Size	5	**13.6x**	**15.8x**	**16.1x**	**17.3x**
Company Count		184	116	126	131
Observations		614	1,506	1,762	2,721
Nord Anglia		**16-18x**			

Source: privateMetrics

Based on this, the longer-term EV/EBITDA multiples coalesce around the 16-17x level. The shorter-term multiple is just under 14x. Despite adding granularity, we still have a robust number of companies (>100) and observations in the comps set.

The multiples from privateMetrics compare reasonably to what was observed in the Nord Anglia transaction, which took place at an estimated ~16-18x EBITDA. This is a relatively quick and elegant solution that allows an investor to for a baseline valuation with limited details about the portfolio company. This can be done because there is rich database of private equities' companies organized by PECCS that allow one to proxy other assets.

[11] Bach Finance Ltd. (Nord Anglia Education) Ratings | S&P Global Ratings

Conclusion

The emergence of GP led exits via continuation funds and fund transfers has changed the relationship between GPs and LPs. This exit path has grown considerably in past years and is expected to continue to grow going forward. **GP Led deals are here to stay and LPs must adapt to protect their interests.** Given the potential conflict of interest with GPs becoming both a seller and buyer through various vehicles, **LPs must have an independent view on portfolio company asset pricing and valuation**. The requirement for fairness opinions provides some comfort but is not truly independent. Advisors cannot serve two masters. privateMetrics offers an unbiased alternative as it contains over 1mm assets, all private companies, that are arranged via the PECCS taxonomy. This allows one to build an 'anchor' valuation multiple that reflects the industry, business and revenue model, and exposure to systematic risk factors. From this 'anchor' multiple, the analyst can then customize the multiple to reflect idiosyncratic risk or other unique considerations. As demonstrated, public comparables reflect a different market and often do not have the same business model. Transaction data can be limited, leaving little confidence in reported multiples. privateMetrics provides an elegant solution that allows an LP to respond quickly to a proposed transaction. Most importantly, it helps them decide to sell or roll, and the implications of each.

privateMetrics API integration

Access all privateMetrics data programmatically and build your own applications for private market investing and reporting

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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Build custom benchmarks setting target weights by PECCS, TICCS, style and geography that align with your strategy. All index metrics are recalculated for you.

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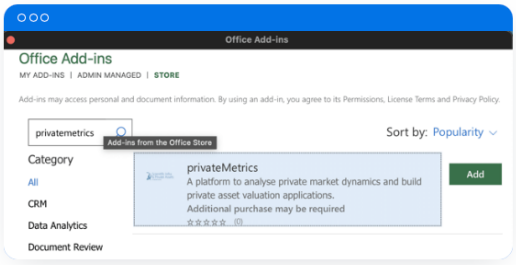
Query risk-free rates for a given pricing and maturity date to support discounted cash flow (DCF) calculations, valuation models, and other financial analyses.



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privateMetrics Excel Add-in Documentation

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.

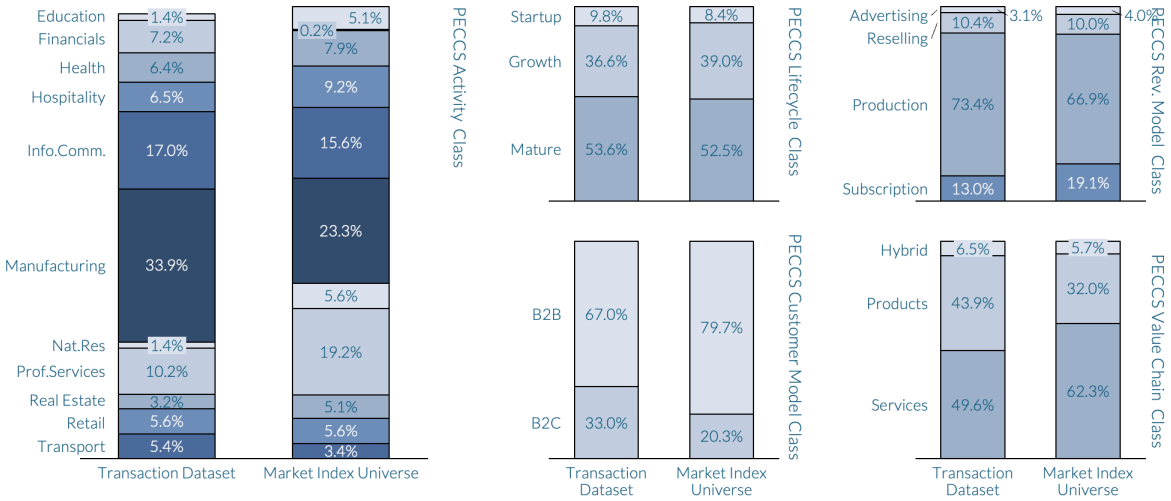
We calibrate this model using new observations monthly to update its estimation of the price of risk of each factor. In other words, each transaction observed is then used to ‘update’ this model (i.e., obtain new ls) through a dynamic estimation (using a Kalman filter), which retains the memory of past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

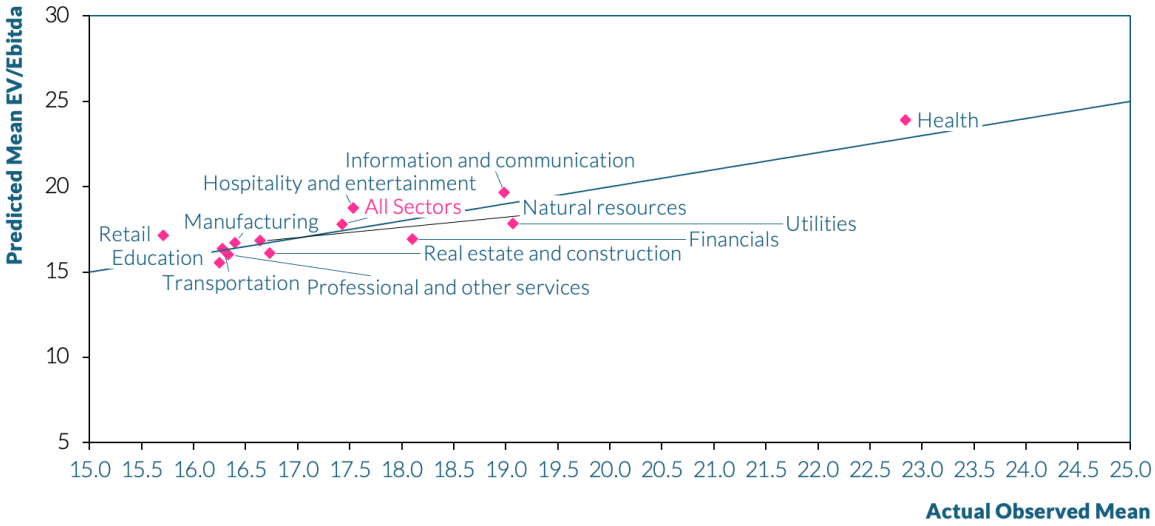
To ensure that is not the case, we compute the EV based on the book value of debt and predicted equity valuation and divide the sum by the EBITDA to get a predicted EV/EBITDA and compare it to transaction implied ratios. Figure A2 presents the average predicted and observed EV/EBITDA by PECCS® activity 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

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