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The marketability discount in valuation multiples of South Africa's* private equity market

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*Emerging Market data included due to limited South African datapoints.

Abstract

The aim of this research is to give the South African private markets industry guidance on how to think of the marketability discount as well as give an equation to ensure that the discount is calculated with similar rules. The use of a standard and fair marketability discount would avoid erroneous equity valuation conclusions, and thus provide more accuracy to investment decisions than is currently the case. the aim of the research is to analyse the behaviour of the marketability discount given the size of the enterprise. The aim is to build a model that introduces variables that capture size, profitability, and risk. In this way, the marketability discount, MD, can be isolated by checking, at the same time, the impact of the rest of the variables in each EV ratio. The valuation methodology applied in this paper was 32 emerging market transactions between 2003 and 2023. This research reiterates the importance of removing subjectivity in investment decisions to quantify risk accurately which results in reliable investment returns.

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1. Background

1.1. Significance

Asset management companies purchase assets both in the listed market and the private equity market. Investors use valuations to help determine the value of potential and current investments. Valuations are determined by using data and information made public by listed companies. Valuations are then used to determine the transaction price when the shares of these companies are being bought and/or sold – this is in the premise that assets will be priced at what is known as Fair Value.

According to the IPEV guidelines, Fair Value denotes the price attainable in an Orderly Transaction among Market Participants at the designated Measurement Date. The methodology assumes that the hypothetical transaction occurs either in the Principal Market or, in its absence, in the Most Advantageous Market for the specific asset. In the case of actively traded (quoted) Investments, the Fair Value hinges solely on available market prices for identical instruments. However, for Unquoted Investments, the Valuer must envision the Investment being realized or sold at the Measurement Date, irrespective of the readiness of the instrument or the Investee Company for sale, or the intentions of its shareholders to sell in the near future.

In instances where Funds are invested in diverse securities or tranches of the same Investee Company, the approach to Fair Value estimation depends on whether a Market Participant would transact all positions in the same underlying Investee Company simultaneously or separately. For example, if series A, series B, and series C are expected to be transacted together, Fair Value would be determined for the aggregate Investment in the Investee Company. Conversely, if transactions are anticipated to occur separately, such as purchasing series A independently from series B and series C, or if Debt Investments are acquired independently of equity, then Fair Value should be assessed for each individual financial instrument.

Consistency is paramount in Fair Value estimation, with the expectation that the valuation process employs uniform Valuation Techniques from one Measurement Date to another. This holds true unless there is a discernible change in market conditions or Investment-specific factors that would prompt a modification in how a Market Participant determines the value.

This consistency is not only crucial across different Measurement Dates but also for Investments sharing similar characteristics, industries, and/or geographies.

The following valuation techniques are commonly used in the Private Equity space:

Discounted cash flow analysis:

This valuation technique involves taking the business's future free cash flow and discounting the cashflows to the present day using an appropriate discount rate. This will then give you the value of the future cash flows, today.

The Discounted Cash Flows (DCF) technique possesses a versatile quality, allowing its application to any stream of cash flows or earnings. In the realm of Private Capital valuation, this adaptability empowers the Valuation Technique to address situations that might pose challenges for other methods. Despite its potential application to businesses undergoing substantial changes, such as rescue refinancing, turnaround, strategic repositioning, loss-making, or in its initial stages, there exists a notable risk associated with employing this Valuation Technique.

The drawbacks of the DCF technique revolve around its demand for meticulous cash flow forecasts and the necessity to estimate the 'terminal value' and an appropriate risk-adjusted discount rate. Each of these elements necessitates substantial subjective judgments, and the resulting present value is often highly sensitive to minor alterations in these inputs.

Peer comparable multiple company analysis:

Finding a basket of comparable companies listed on an exchange and interpolating the multiple that the listed company is trading at on the unlisted company. This Valuation Technique is suitable for an investment in a well-established business characterized by a recognizable and sustainable stream of ongoing earnings or revenue. The following section provides instructions for conducting valuations for businesses with positive earnings. Moreover, for businesses in the developmental stage that have not yet generated positive earnings, multiples of actual or projected revenue can serve as a foundation for the valuation process.

A multiple in the context of this work is defined as the current market value of the asset divided by its last twelve months (LTM) earnings.

Precedent transactions analysis:

In the determination of a reasonable multiple, recent transactions involving the sale of similar companies are occasionally enlisted as a reference point. Advocates of this approach contend that such transactions, which entail the transfer of entire companies, hold greater relevance than quoted multiples, which are tied to the valuation of 'small parcels' of shares. Nevertheless, the appropriateness of relying on recent transaction data is frequently compromised by a myriad of factors:

One challenge arises from the absence of forward-looking financial data and other pertinent information essential for identifying and adjusting for points of divergence. The limited reliability and transparency of reported earnings figures for private companies further exacerbate the complexities surrounding this methodology.

Another complicating factor is the elapsed time since the negotiation or consummation of the transaction. Over time, circumstances may change, impacting the relevance of the transaction as a benchmark.

Reputational issues, encompassing environmental, social, and governance (ESG) factors, also wield influence over the reliability of recent transaction data. The significance of these factors can fluctuate and, in turn, affect the appropriateness of utilizing such transactions as a benchmark.

Moreover, fluctuations in market conditions introduce an additional layer of uncertainty. The dynamic nature of markets may alter the comparability of recent transactions, necessitating a careful evaluation of the contextual environment in which they occurred.

Lastly, the absence of dependable pricing information for the transaction itself adds another layer of complexity. The lack of clear and reliable pricing details can cast doubt on the accuracy of utilizing the transaction as a benchmark for determining a reasonable multiple.

In summary, while recent transactions serve as a valuable point of reference in the quest for a reasonable multiple, their applicability is subject to the intricate interplay of factors such as the absence of forward-looking data, reliability issues with private company earnings figures, elapsed time since the transaction, reputational influences, market condition fluctuations,

and the lack of dependable pricing information. Careful consideration and contextual analysis are imperative to navigate these challenges effectively.

Source of Funds

Emerging market asset managers manage three types of funds:

1. Funds from pension and retirement funds;
2. Funds from businesses; and
3. Funds from individuals.

The biggest of the three is the funds from pension and retirement funds. When looking into managing pension and retirement funds, a lot of work is done in managing asset allocation to ensure that the future liabilities of the funds are met accurately.

The degree of accuracy of expected returns is premised upon the margin of error when investment valuations are conducted. To minimize this margin of error for the benefit of pensioners and investors, the asset management industry needs to ensure that the valuation techniques used guarantee that risk is allocated and quantified appropriately and accurately. This then results in assets being valued correctly and asset managers making investment decisions off reliable return expectations.

In the long term, this ensures that there are no asset-liability mismatches, and the value of investors' funds is protected.

In South Africa specifically, the two biggest pension funds being the Government Employees Pension Scheme and the Eskom Pension & Provident Fund are defined benefit funds. A defined benefit pension fund gives an employee a guaranteed pension pay-out at retirement based off your salary and years of service. This places a significant responsibility on asset allocators to ensure that investment decisions today will match the funds liabilities in the future. In the emerging market context, an individual's retirement savings represent a significant portion of ones generated wealth in their lifetime. It is therefore important that educated investment decisions are taken on behalf of the fund to protect the value of the retirement savings.

Therefore, a thorough understanding of the fundamental valuation principles and emerging market challenges in this respect seems imperative.

The most popular valuation approaches used in practice is the peer multiples valuation methodology (Bhojraj and Lee, 2002; Asquith et al., 2005; Damodaran, 2006b; Roosenboom 2007; Minjina, 2008; PwC, 2012).

This method of valuation utilizes a suitable multiple applied to a performance metric, such as revenue or earnings, of the investee company to arrive at a value for the business. It is a suitable method for valuing an investment in an established business with a recognizable and sustainable flow of earnings or revenue. (IPEV Guidelines, December 2022).

The International Private Equity and Venture Capital Valuation Guidelines suggest that depending on factors such as the enterprise's stage of development, industry, and location, market participants may utilize a multiple of earnings, revenue, or other industry-specific metrics. When using the multiples valuation method to determine an enterprise's fair value, the valuer is advised to:

a. Apply a reasonable multiple taking into consideration the dimensions, risk profile, and earnings growth prospects inherent to the underlying company, and apply it to the relevant indicator of value, whether it be earnings or revenue. This tailored approach acknowledges the nuanced nature of the enterprise and seeks to align the multiple with its specific characteristics.
b. Adjust the Enterprise Value for surplus assets and excess liabilities that are not linked to the current profit generation of the company. This adjustment ensures a more accurate reflection of the enterprise's intrinsic value by eliminating extraneous factors that may distort the assessment, providing a clearer picture of its economic standing.

When employing multiples, analysts generally commence by identifying a market price variable and a matching value driver (Schreiner and Spremann, 2007; Damodaran, 2009). They then select a set of comparable companies, known as a peer group, which they use to estimate a peer group multiple. Finally, the peer group multiple is multiplied by the target company’s value driver to determine the value of the target company’s enterprise and/or equity value.

The relevant literature on developed markets suggests that peer group selection based on a careful selection of valuation fundamentals may improve the valuation accuracy of multiples. However, extant literature does not offer an emerging market perspective in this regard. Unfortunately, many emerging market transactions are never finalized because of the inability of parties to agree on valuations. In fact, 49 top financial analysts, surveyed by PwC (2012), cite this as the key cause of failed deals in emerging markets. (S.Nel, W.Bruwer, N. Le Roux 2014).

When using the comparable company multiple approach, the valuer must identify an appropriate set of publicly traded comparable companies to the investee company. The best comparable company available may be a direct competitor, in the same industry, or have similar performance metrics.

Understanding the comparability of selected companies may impact the strength of the valuation's conclusion from the comparable company multiple approach, and thereby affect whether additional valuation techniques are necessary. In addition, once a comparable set of companies is established, it should be consistently maintained unless other market information becomes available. (IPEV Guidelines, December 2022)

Several earnings multiples or ratios are commonly used such as:

- Price/earnings (P/E) multiple;
- An enterprise value/earnings before interest and tax (EV/EBIT) multiple;
- An enterprise value/earnings before interest and tax and amortization (EV/EBITA) multiple; and an enterprise value/earnings before interest and tax and amortization and depreciation (EV/EBITDA) multiple.

Each of these multiples serves as a metric for assessing the valuation of a company, and their utilization hinges on the specifics of the valuation context and the particularities of the companies under consideration.

Any of the above earnings multiples can be used, however, it is suggested that the selected multiple should be appropriate for the specific investment. Where EBITDA multiples are available, these are commonly used by investors.

When EBITDA multiples are not available, P/E multiples may be used since these are commonly

reported. For a P/E multiple to be comparable, the two entities should have similar financing structures and levels of borrowing. The capital structure of a business, i.e., its financing structures have a significant impact on the net profit generated in the business. This is because if Company A has financed the business using debt, and Company B financed the business using equity – Company A will have an interest bill (finance cost) which decreases net profit and Company B won't have an interest bill which would increase net profit. The choice of financing used (debt or equity) therefore negatively affects the comparability of bottom-line earnings, i.e., net profit.

As a result, when using a P/E ratio, it is advisable to use an EBIT amount that has been modified to reflect the impact of finance expenses linked to operations, working capital necessities, and tax consequences. These changes are intended to neutralize the influence of acquisition financing on profits and, as a result, on Enterprise Value, which is subsequently adjusted (IPEV Guidelines, December 2022)

Adjusting the multiple

Peer multiples are often accompanied by valuation discounts or premiums based on, but not limited to:

- The size and diversity of earnings, thereby reflecting the asset's capacity to weather economic downturns and uncertainties, becoming a pivotal determinant in the valuation process.
- The inherent liquidity risk associated with an unlisted asset, acknowledging the potential challenges and implications it might pose in the valuation context.
- The aspect of control or influence, exerting a significant influence on the investor's ability to liquidate their position, thereby acting as a critical variable in determining the valuation outcome.
- The consideration of country risk, recognizing the impact of geographical and geopolitical factors on the overall risk profile and, subsequently, the valuation of the asset.
- The pace of growth in earnings, serving as a crucial parameter that can significantly influence the valuation metrics, introducing an element of dynamism and future potential.
- The assessment of keyman dependency and/or risk, recognizing the influence and reliance on specific individuals within the organization and the potential impact on valuation dynamics.
- The evaluation of how diverse the product offering is, acknowledging the breadth and variety of products in the business portfolio and its implications for the valuation.
- The scrutiny of the level of customer concentration, considering the potential risk associated with reliance on a small number of key customers and its ramifications for valuation.
- The examination of the level of debt in the business, recognizing the impact of financial leverage on the overall risk and valuation considerations.
- Furthermore, any other reason that may contribute to variations in the quality of earnings, thereby broadening the scope of factors that could potentially influence the valuation outcome in a nuanced and multifaceted manner.

All the above-mentioned risks affect the overall **marketability** of the asset. For the purpose of this research paper, the marketability discount/premium will capture the risks identified and

will be defined as the difference in the peer multiple and the multiple used to value the unlisted asset.

The size of the relevant discount or premium is often left to the analyst's discretion and is sometimes guided by a range given by the likes of the PwC Valuation Survey. The PWC Valuation Survey is conducted by asking its clients (financial analysts and corporate financiers) to give their view on the size of a discount they would apply for a specific risk measure, similar to the ones noted above. Once the results of the survey are completed, each risk measure is presented with a size range based off the results of the survey. PWC eliminates the first and fourth quartiles in an effort to eliminate outliers in the data. Therefore, the suggested range for the discount/premium presented is the average range falling between the second and third quartiles. This range given by the PWC survey is then used as a guide for the private markets industry. The use of the survey is flawed as it uses discretion as a guide, not fundamentals. Similarly, according to the IPEV Valuation guidelines, a level of discretion and judgment must be used based on company-specific facts and circumstances of the business that would affect the multiple paid and the discount applied.

Given that the PWC Survey suggests a range while the IPEV Valuation guidelines also refer to analysts' judgment, this presents a huge risk of discrepancy in valuations and expected returns.

1.2. Research Problem

The use of market valuation multiples has become very important (Covrig & McConaughy, 2015; Dong, Jiao, & Sun, 2017; Ferraro, 2017; Serra & Fávero, 2017; Gupta, 2018). Its use is recommended by both international accounting standard (IFRS 13) and by the main international asset valuation guidelines (EVCA).

A valuation multiple is a ratio, normally the market value of a firm's assets divided by an economic magnitude of it (earnings). The objective of the multiples valuation is to assess a company by creating a benchmark, usually based on industry information (Rodriguez Lopez and Rubio Martin 2019).

The incorporation of a market model, wherein a private company is compared to industry-listed firms during the valuation process, introduces an added layer of complexity, necessitating the utilization of a fitting illiquidity discount, as discussed by Grbenic in 2017. The exploration of the illiquidity discount concerning unlisted versus quoted companies in the American market garnered significant attention in financial literature toward the conclusion of the previous century, as evidenced by studies conducted by Hertzel and Smith in 1983, Wruck in 1989, Silber in 1991, and Emory in 1997. This scrutiny extended into the first decade of the current century, with contributions from Koeplin, Sarin, and Shapiro in 2000, Bajaj, Denis, Ferris, and Sarin in 2001, Officer in 2007, De Franco, Gavious, Jin, and Richardson in 2008, and Elnathan, Gavious, and Hauser in 2010. Despite this extensive exploration, a notable lack of consensus emerged among these authors concerning the variables defining the peer group and the evaluation of the illiquidity discount.

In contrast to the discounted cash flows (DCF) technique, the multiples approach stands out as an intuitive valuation method that obviates the need for intricate forecasts of future free cash flows or residual incomes. This method links the value of the company to a cohort of comparable firms, facilitating a straightforward analysis of their stock prices to generate a ratio that can be applied as a multiplier to the target company's value driver. Particularly advantageous for determining the price in a private transaction, this method aligns with the observations made by Rodriguez Lopez and Rubio Martin in 2019.

The predominant approach in enterprise valuation involves assessing the enterprise as if it were of substantial size, marketability, and liquidity, drawing upon market-ratio transactions as benchmarks. Once this initial valuation is concluded, the subsequent step involves the application of size, marketability, and/or liquidity discounts to effectively quantify the inherent risks associated with the size, marketability, and liquidity attributes of the enterprise. The works of Bajaj et al. (2001) and Pratt (2009) contribute insights, defining marketability as the extent to which an asset can be swiftly converted into cash with minimal transaction costs.

It is imperative to note, as emphasized by PwC, the crucial distinction between a marketability discount and a minority discount. While the minority discount captures the absence of ownership control, addressing limited ownership and a lack of operational control, the marketability discount pertains to the speed and certainty with which the ownership certificate (share) can be converted into cash.

Despite the application of an initial discount for a minority interest due to the lack of control, there remains a notable challenge in selling a non-controlling interest compared to a controlling ownership interest. Consequently, an anticipated correlation between marketability and ownership share emerges. Even after the application of one discount for a minority interest, the sale of a non-controlling interest is generally more challenging than that of a controlling ownership interest. This expectation leads to the inference that the marketability discount is likely to decrease with the size of the ownership share.

The PwC 2016/2017 valuation survey defines size as the difference in revenue, earnings or book value of the asset compared to its listed counterparts.

Activity in the private equity industry is an important value creation method and plays a key role in economic growth in emerging markets. There however has been evidence of the lack of objectivity from analysts' recommendations in equity valuation (Kolasinski & Kothari, 2008). The size of the marketability and size discounts applied on valuations by an analyst vary and is often left to discretion.

This research is important to South Africa because the biggest form of capital available to asset managers is pension fund capital. The two biggest South African pension funds being

the Government Employees Pension Scheme and the Eskom Pension and Provident Fund are both defined benefit funds. As mentioned earlier, in an unequal society like South Africa, it is important that those managing the funds of hard-working individuals are ensuring that all investment decisions are based off accurate pricing methodologies in order to protect the value of the retirement funds.

1.3. Research Objectives

The objective of this paper is to assess the size of the marketability discounts in the South African (and by extension the emerging market) private equity market for the EV/EBITDA ratio as well as to explain the behaviour of it. Similar to the work done by Rodriguez Lopez and Rubio Martin (2019), this research contributes to the growing calls for in depth discussions of the marketability discount when valuing private companies.

The research aims to give the South African private markets industry guidance on how to think of the marketability discount as well as give an equation to ensure that the discount is calculated with similar rules. The use of a standard and fair marketability discount would avoid erroneous equity valuation conclusions, and thus provide more accuracy to investment decisions than is currently the case.

The study will include emerging market data points due to the limited available private equity data.

2. Limitations

- The study only had 32 observations which is a relative sample size small.
- The study could include other independent variables that capture more information about the target company.

3. Literature review

Valuation in both the developed and emerging market contexts has been a topic of study for decades as the investment environment continues to evolve. Multiples have been widely used as a preferred tool to value both listed and unlisted assets. Areas of focus when studying the use of multiples as a valuation tool range from the types of multiples to use, the selection of comparable peer groups to studying the discounts/premiums used. This is all in an effort to estimate the value of an investment as well as justify investment recommendations driven by the expected returns.

As per Palepu, Healy, and Peek (2010), a pivotal consideration in the application of pricing multiples lies in the identification of comparable companies. However, the divergence in accounting practices among firms may render seemingly similar companies distinct, introducing the potential for inaccurate valuations and complicating the process of selecting peers, as articulated by Young and Zeng (2013). Young and Zeng's research underscores the significance of enhancing accounting comparability to augment the precision of valuations based on multiples, taking into account the underlying economic characteristics.

Examining the emerging market perspective on peer group selection practices, Nel et al. (2014) delved into the potential improvement in valuation accuracy achievable through a meticulous selection of valuation fundamentals when utilizing multiples for equity valuation. The study scrutinized whether multiples, whose peer groups are constructed based on a combination of valuation fundamentals, demonstrate a superior level of accuracy compared to those relying on single-factor valuation fundamentals.

A further objective was to pinpoint the optimal valuation fundamental for multiples-based peer group selection. The outcomes of the research underscored that a careful selection of valuation fundamentals could yield substantial enhancements in valuation accuracy, with multiples utilizing peer groups based on valuation fundamentals securing precision gains of up to 37.88%.

In the realm of academic literature, the scrutiny of listed companies has assessed the accuracy of valuation multiples contingent upon the economic characteristics considered in peer group selection. Conclusions drawn from studies, including those by Alford (1992), Kim & Ritter (1999), Bhojraj & Lee (2002), E. Lie & H. J. Lie (2002), Liu, Nissim, & Thomas (2002, 2007),

López, Antón, & Cerviño (2011), Young & Zeng (2015), Celli (2017), and Rubio (2019), emphasize that relying solely on a specific industry for criteria may be insufficient. Instead, the inclusion of additional control factors such as size, profitability, and risk are deemed essential for a comprehensive and accurate assessment of valuation multiples.

The study by Rodriguez Lopez and Rubio Martin (2019) assesses the fair marketability discount (MD) in the Spanish market for valuation multiples comparing public versus private transactions. The study finds that to obtain MD, you have to understand the impact of the following factors on the size of the MD:

- The industry the firm operates in;
- The size of the firm in terms of revenue;
- The profitability of the firm;
- The year of the transaction;
- Country specific risk;
- Liquidity risk; and
- Stock specific risk.

The interactions of MD with each variable showed different investors' perceptions about non marketability enterprises explaining MD in the study.

A study by Bhojraj and Lee (2002) or Young and Zeng (2015) will both show that profitability variables have a positive impact on valuations (small discount applied) while risk variables such as leverage have a negative effect on valuations (larger discount applies. These views have been highlighted in the hypothesis section of the report.

The size of the discount applied to a transaction is a function of:

- The size of the business relative to the listed peers. The measure that will be used in the study will be revenue in South African rands;
- The size of the earnings before interest, tax, depreciation, and amortization of the business relative to the listed peers;
- The capital structure of the business relative to the listed peers evidenced by the debt-to-equity ratio at the time of the transaction;
- The profitability of the business relative to the listed peers evidenced by the EBITDA Margin % (Earnings before interest, tax, depreciation and amortization divided by revenue) at the time of the transaction.

The table below summarises the literature review that referred to marketability/illiquidity discount from Rodriguez-Lopez and Rubio-Martin (2019).

Period & Author	No. of obs	Country	Objective of study	Result
1985–1997. Emory (1997)	310	USA	To calculate the illiquidity discount in IPO transactions	The discount changes over the years, from 60% to 43%
1984–1998. Koeplin et al. (2000)	84	USA	To calculate the illiquidity discount comparing Public v Private enterprises	They found an average discount of 28% for EV/EBITDA, but a minimum of –2.28% for EV/Sales
1990–1995. Bajaj et al. (2001)	88	USA	To delimit the illiquidity discount from restricted shares in IPO transactions throughout a cross section model	They found a discount from 2% to 43% depending on the economic factor of enterprises. The medium discount is 14.09%
1995–2002. Kooli, Kortas, & L'her (2003)	331	USA	Regarding the illiquidity discount Comparing a portfolio of public versus private enterprise. After this to find the fair illiquidity discount for restricted enterprises	The average discount is 24%
1999–2006. Block (2007)	91	USA	To calculate the illiquidity discount comparing one public enterprise v/ a private enterprise breaking down the discount by industries	The average discount is 20% but the lowest discount is in financial institution and the largest one is in the manufacturing sector
1979–2003. Officer (2007)	364	USA	Determine the discount Public v Private and explain the behaviour of it	Parent firms sell subsidiaries when their needs for cash are important. The discount is associated with parents' loan spreads and previous abnormal prices returns. The medium discount is 20%
1994–2005. De Franco et al. (2008)	664	USA	Determine the discount public v private and to analyse Differences of Public vs Private enterprises	Medium discount: 29%, presenting Evidences that valuation multiples of public enterprises are increasing in factors that proxy for earnings quality (e.g., Big 4 auditor) as well as a proxy for liquidity (e.g., working capital)

Period & Author	No. of obs	Country	Objective of study	Result
1996–2005. Cooney, Moeller, & Stegemoller (2009)	68	USA	They test whether valuation changes of the target affect acquirer announcement returns in IPOS withdrawals	This fact could explain in part prior private undervaluation. It would represent other factor to separate from the illiquidity discount or even affect it
1991–2006. Elnathan et al. (2010)	147	Israel	To compare public v private market ratios of enterprises	Results regard the existence of a discount in private firm valuations as a consequence of the experts' compliance with the interests of the commissioner. Average discount of 21%
1993–2008. Paglia & Harjoto (2010)	431	USA	To delimit and to explain the illiquidity discount in Public v Private enterprises	They found an average discount of 28% for EV/EBITDA, but a minimum of –2.28% for EV/Sales

Table 1

In a comprehensive overview, it becomes apparent that preceding investigations concerning the juxtaposition of public and private acquisitions exhibit a dual-faceted categorization (Koeplin & Shapiro, 2001; Block, 2007; Paglia & Harjoto, 2010). Within this dichotomy, certain scholars' endeavor to disentangle the intricacies of the Marketability discount (MD) by engaging in a meticulous comparison of private and public enterprises. This comparison is often executed by aligning them based on various criteria such as peer group selection or assessing a singular enterprise. Among the frequently employed control factors to isolate MD, Industry, Size, Year, and Country stand out. Nevertheless, a striking lack of consensus persists regarding the criteria explicating the absence of Marketability (Koeplin & Shapiro, 2001; Kooli et al., 2003; Block, 2007; Officer, 2007).

On a parallel track, an alternate group of researchers endeavours to scrutinize the disparities in the prices of public and private enterprises, attributing these distinctions to a confluence of factors. These factors encompass but are not limited to earnings quality, target valuations, and the influence of commissioners, as highlighted by Elnatham et al. (2010). In this multifaceted exploration, the complexity of the interplay between public and private acquisitions unravels through a nuanced analysis of diverse elements contributing to the observed variations in prices.

This study aspires to bridge existing gaps in the understanding of the application of discounts to the comparable peer EV/EBITDA multiple in emerging market Private Equity transactions by providing a comprehensive and nuanced analysis. By examining a dataset comprising 32 observations, the research endeavours to shed light on various facets of this practice, contributing valuable insights to the current body of knowledge.

One key focus of the study is to unveil the average size of the discount applied in these transactions, emphasizing its substantial nature

The knowledge gap in this paper refers to areas within the understanding of the application of discounts to the comparable peer EV/EBITDA multiple in emerging market Private Equity transactions where there is a lack of comprehensive and detailed insights. Despite existing studies and analyses on this topic, certain aspects remain unclear or insufficiently explored, creating a gap in our understanding.

The knowledge gap may encompass various dimensions, such as:

Detailed Variation Analysis: Existing studies might lack a thorough examination of the detailed variations in the size of discounts applied to the comparable peer EV/EBITDA multiple. This includes a nuanced exploration of the range, extremes, and distribution of discounts within the dataset.

Factors Influencing Discounts: There may be limited insights into the specific factors or circumstances that drive the variations in the size of discounts. Understanding the determinants of these discounts is crucial for gaining a more holistic perspective.

Comparative Analysis: The comparison of emerging market Private Equity transactions with other markets or regions might not be adequately addressed. A comparative analysis could reveal whether observed practices are unique to emerging markets or share similarities with more established markets.

Applicability of Standard Practices: The applicability of standard practices or valuation methodologies in the context of emerging markets may be unclear. Assessing whether commonly accepted practices hold true in the unique dynamics of emerging markets is vital.

Market Trends and Evolution: The knowledge gap may also pertain to the lack of insights into the evolving trends in the application of discounts over time within emerging market Private Equity transactions.

Understanding Norms and Deviations: There might be insufficient clarity on what is considered a norm in terms of the size of discounts and the circumstances under which deviations from this norm are acceptable or expected.

Addressing these aspects would contribute to closing the knowledge gap, providing a more comprehensive and nuanced understanding of the factors influencing the application of discounts to the comparable peer EV/EBITDA multiple in emerging market Private Equity transactions. Closing this gap is essential for advancing the field, facilitating more informed decision-making, and guiding future research in this domain.

4. Research methodology

3.1. Hypothesis

The size of the discount applied to a transaction is a function of the following:

- The size of the business relative to the listed peers. The measure that will be used in the study will be revenue in South African rands;
- The size of the earnings before interest, tax, depreciation, and amortization of the business relative to the listed peers;
- The capital structure of the business relative to the listed peers evidenced by the debt-to-equity ratio at the time of the transaction;
- The profitability of the business relative to the listed peers evidenced by the EBITDA Margin % (Earnings before interest, tax, depreciation and amortization divided by revenue) at the time of the transaction.

Size of business

In the context of this study, the size of the business will be measured using the total revenue generated in the last twelve months (LTM) prior to the transaction taking place. It is expected that a bigger business (in terms of revenue) is less risky than a smaller business. The size of the revenue generated indicates whether the business is still new in the industry, or it is a mature business with a proven business model. You would expect that the size of the business would have an inverse relationship with the size of the discount applied.

Size of earnings

In the context of this study, similar to the variable above (size of business), the earnings measure that will be used is the last twelve months (LTM) earnings before interest, tax, depreciation and amortisation (EBITDA). We will use this measure of profitability because it strips the effect of the capital structure of the business (i.e., how the business is funded) and the size of the asset base (i.e. depreciation expense).

It is expected that the size of the earnings of the business would have an inverse relationship to the size of the discount applied. This is also a measure of where the business is in its growth trajectory and thus gives a measure of risk when compared to the listed peer group.

Capital Structure

The capital structure of the business speaks to how the business is funded, i.e., either the business is funded by debt and/or equity. The ratio of the debt-to-equity split (known as the debt-to-equity ratio – D/E) at the time of the transaction is a measure of risk in the business. It is expected that a business that is majority funded by debt is riskier than the business that is majority funded by equity. This hypothesis is driven by the notion that should the business experience a challenging year, they will not be able to meet its debt obligations which could see the business being taken over by the banks and could possibly face liquidation. It is expected that the D/E ratio will have a positive relationship to the size of the discount applied.

Profitability

In the context of the study, profitability will be measured as the percentage ratio of the earnings before interest, tax, depreciation, and amortisation (EBITDA) to the revenue of the business. This is known as the EBITDA Margin. This measure tells us how much profit the business can generate per unit of revenue. A business with a higher EBITDA Margin, the more efficient the business is at extracting value for shareholders. The higher EBITDA margin also signals that the business has more headroom to remain profitable should costs in the business increase due to exogenous factors. As a result, a business with a lower EBITDA margin that the comparable peers are expected to be riskier than the peers. The EBITDA Margin should therefore have an inverse relationship with the size of the discount.

3.2. Data collection

In collecting the data for the study, Private Equity firms were identified and contacted to provide transaction information. Due to the size of the industry and the limited publicly available South African data points, the research had to pivot and use public information not only for South Africa, but Emerging Markets as a whole.

Reasons given by South African Private Equity firms include but are not limited to the size of the market being too small that confidentiality concerns will emerge.

Information was gathered from a midmarket Private Equity Fund in South Africa, S&P Capita IQ and Damadorian Online.

The dataset of transactions used in the study ranges from the year 2003 to 2023.

Information included the following:

i. Year of acquisition
ii. EV/EBITDA multiple used for valuation
iii. Leverage at time of acquisition (D/E or Net debt/EBITDA ratios)
iv. Size, the enterprise's assets amount at book-value
v. Sector/Industry

33 observations which met the criteria and had all the relevant information available publicly were thus available for the study**.**

The limited number of observations in my study stems from the inherent challenges associated with the availability of comprehensive and publicly accessible information in emerging markets. This scarcity of data poses a significant hurdle to conducting thorough and expansive research within the domain of emerging market Private Equity transactions.

Emerging markets often exhibit a lower level of transparency and disclosure compared to more developed counterparts. Various factors contribute to this information gap, including less stringent regulatory frameworks, diverse reporting standards, and a general lack of standardized disclosure practices among companies operating in these markets.

In many instances, companies in emerging markets may not be obligated to disclose detailed financial information or transaction specifics publicly. The absence of such comprehensive data significantly limits the scope of research and hampers the ability to gather a sizable sample for analysis.

Furthermore, the nature of Private Equity transactions adds an additional layer of complexity. Private transactions inherently involve a higher degree of confidentiality, and companies involved may not be inclined to disclose sensitive financial details publicly. As a result, obtaining a sufficient number of observations that meet the criteria for the study becomes a formidable challenge.

This scarcity of publicly available information underscores the unique challenges inherent in researching emerging market Private Equity transactions. Despite the limitations imposed by the data constraints, the study aims to provide valuable insights within the constraints of the available information, contributing to the understanding of this complex and less-explored facet of financial research.

Similar to the study by Rodriguez-Lopez and Rubio-Martin (2019), and the referencing of Elnathan et al. (2010), alongside the purpose of homogenising the data, each variable was transformed to its natural logarithm. To solve for other issues such as non-stationarity, an Augmented Dicky Fuller test was conducted on each variables data. Where the data contained a unit root, it was difference till the data was stationary.

3.3. Variables and Model

Due to the limited nature and limitations of the data, the aim of the research is to analyse the behaviour of the marketability discount given size of the enterprise. The aim to build a model that introduces variables that capture Size, profitability and risk. In this way, the marketability discount, MD, can be isolated checking, at the same time, the impact of the rest of the variables in each EV ratio.

Dependent variable:

- Size of discount

Independent variables:

- Size - LTM Revenue at time of transaction
- Size - LTM EBITDA at time of transaction
- Capital Structure – D/E ratio at the time of transaction
- Profitability – EBITDA ratio at the time of transaction

The dependant variable and independent variables were plotted and tested for stationarity for all of the 32 observations of the size of discount.

Augmented Dicky-Fuller Unit Root test is to be conducted to confirm the hypothesis that data is stationary. All variables were transformed into log data and the test was conducted.

Descriptive statistics

The implications of descriptive statistics on empirical tests are significant in shaping the validity and reliability of the study's findings. Descriptive statistics provide a summary of the key features of a dataset, offering insights into its central tendencies, dispersion, and distribution. Understanding the implications involves considering several crucial aspects:

Normality and Distribution: Descriptive statistics reveal the distribution of the data, and assessing normality is often a critical assumption in many statistical tests. If the data deviates significantly from a normal distribution, it can impact the appropriateness of certain parametric tests. Non-normal distributions may necessitate the use of non-parametric tests or transformations to ensure the robustness of the empirical tests.

Central Tendency: Measures like mean, median, and mode provide insights into the central tendency of the data. These measures guide the choice of empirical tests, especially when determining whether parametric or non-parametric methods are more suitable. Additionally, understanding the spread around the central tendency helps in assessing the variability of the data.

Outliers and Skewness: Descriptive statistics help identify outliers and skewness in the data. Outliers can disproportionately influence empirical tests, and addressing their impact is crucial for maintaining the test's integrity. Skewness may necessitate transformations or alternative statistical approaches, depending on the nature and extent of skew in the data.

Sample Size: Descriptive statistics include information on the size of the sample. A small sample size might limit the generalizability of the empirical results and could affect the

power of statistical tests. Understanding the sample size implications is vital for interpreting the robustness and reliability of the study's findings.

Variable Relationships: Descriptive statistics can highlight relationships between variables, guiding the selection of appropriate empirical tests. Correlation coefficients and scatterplots, for instance, can indicate the strength and direction of relationships, influencing the choice of tests such as regression analysis.

Homogeneity of Variance: Descriptive statistics also contribute to assessing the homogeneity of variance, a crucial assumption in various statistical tests. Unequal variances can impact the outcomes of tests like ANOVA, emphasizing the importance of checking this assumption.

In summary, the implications of descriptive statistics on empirical tests revolve around ensuring the alignment of statistical methods with the characteristics of the data. Recognizing the nature of the dataset through descriptive statistics enables researchers to make informed decisions about the most suitable empirical tests, ensuring the validity and reliability of the study's outcomes.

Size of discount

Table 2

Null Hypothesis: Size of discount has a unit root		**t-statistic**	**Probability**
Augmented Dickey-Fuller test statistic		**-2,88692**	**0,0596**
Test critical values	*1%*	*-3,689194*	
	5%	*-2,971853*	
	10%	*-2,625121*	

The test was conducted on the raw data, logged data, and the differenced and logged data. The data was not stationary at the raw level and logged level. As seen in figure 2, the data is stationary at the first difference level at a 10% significance level.

LTM Revenue

Table 3

Null Hypothesis: LTM revenue has a unit root		**t-statistic**	**Probability**
Augmented Dickey-Fuller test statistic		**-6,04127**	**0,0000**
Test critical values	*1%*	*-3,699871*	
	5%	*-2,976263*	
	10%	*-2,627420*	

The test was conducted on the raw data, logged data, and the differenced and logged data. The data was not stationary at the raw level and logged level. As seen in figure 3, the data is stationary at the first difference level at a 1%, 5% and 10% significance level.

LTM EBITDA

Table 4

Null Hypothesis: LTMEBITDA has a unit root		**t-statistic**	**Probability**
Augmented Dickey-Fuller test statistic		**-7,03037**	**0,0000**
Test critical values	*1%*	*-3,67017*	
	5%	*-2,963972*	
	10%	*-2,621007*	

The test was conducted on the raw data, logged data, and the differenced and logged data. The data was not stationary at the raw level and logged level. As seen in figure 4, the data is stationary at the first difference level at a 1%, 5% and 10% significance level.

EBITDA Margin

Table 5

Null Hypothesis: EBITDA Margin has a unit root		**t-statistic**	**Probability**
Augmented Dickey-Fuller test statistic		**-3,18782**	**0,0352**
Test critical values	*1%*	*-3,78803*	
	5%	*-3,012363*	
	10%	*-2,646119*	

The test was conducted on the raw data, logged data, and the differenced and logged data. The data was not stationary at the raw level and logged level. As seen in figure 5, the data is stationary at the first difference level at a 5% and 10% significance level.

Debt Equity Ratio

Table 6

Null Hypothesis: Debt Equity Ratio has a unit root		**t-statistic**	**Probability**
Augmented Dickey-Fuller test statistic		**-4,62534**	**0,0008**
Test critical values	*1%*	*-3,661661*	
	5%	*-2,960411*	
	10%	*-2,619160*	

The test was conducted on the raw data and logged data. The data was not stationary at the raw level. As seen in figure 6, the logged data is stationary at a 1%, 5% and 10% significance level.

For the purpose of the research, we will be working on a 90% confidence level of all variables.

3.4. Descriptive Summary (Size of the discount)

Figure 1

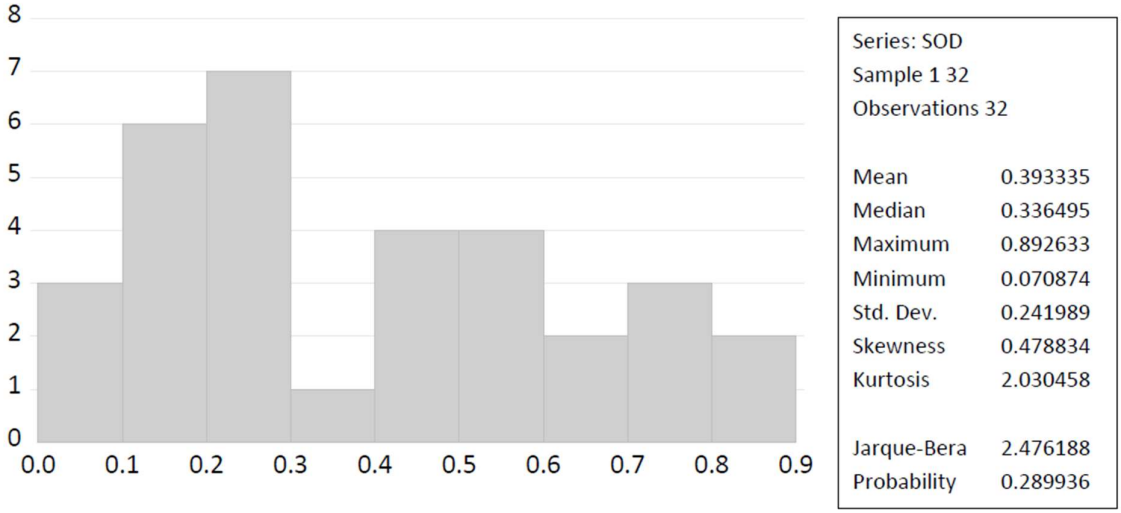

Figure 1 is an analysis of the size of the discount of all transactions. The analysis illustrates the following:

The examination of emerging market Private Equity transactions reveals insightful results regarding the application of discounts to the comparable peer EV/EBITDA multiple. The average size of the discount, derived from a dataset of 32 observations, is notably substantial, standing at 39.33%. This indicates a prevalent tendency in these transactions to apply a considerable reduction to the comparable peer metric.

Diving deeper into the dataset, the analysis highlights the range of discounts applied, showcasing the maximum and minimum extents. The maximum discount recorded is a striking 89.26%, underscoring instances where transactions witness a substantial deviation from the norm. Conversely, the minimum discount observed is 7.10%, indicating the presence of transactions where the discount applied is comparatively more conservative.

To assess the variability within the dataset, the standard deviation is employed, revealing a figure of 24.19%. This signifies that, within the dataset, approximately 68% of the observations fall within a range between 15.14% (39.33% - 24.19%) and 63.52% (39.33% + 24.19%). This measure provides insights into the degree of fluctuation in the size of discounts across the observed transactions.

The skewness of the dataset, computed at 0.48, suggests a relatively symmetrical distribution of the 32 observations. This symmetrical nature indicates a balance in the distribution of discounts, with neither side of the dataset exhibiting a pronounced bias.

Turning attention to kurtosis, the computed value of 2.03 implies a fairly flat distribution with lighter tails in the dataset. This suggests that the observed discounts tend to cluster around the average, contributing to a distribution that is less peaked and displays a more gradual decline.

Lastly, the Jarque-Bera test statistic, a goodness-of-fit test, yields a value of 2.476188, suggesting a 29% probability that the sample of data observations follows a normal distribution. This assessment provides valuable insights into the overall conformity of the dataset to a normal distribution, allowing for a nuanced understanding of the statistical characteristics inherent in the application of discounts to the comparable peer EV/EBITDA multiple in emerging market Private Equity transactions.

3.5. Regression

Based on the data collected, the equation to determine the size of the Marketability discount as the dependent variable to be defined as:

$$MD = \alpha + \beta_1 LTMRev + \beta_2 LTMEBITDA + \beta_3 EBITDAMargin + \beta_4 DebtEquity$$

Where ***MD*** is defined as the marketability discount, i.e., size of the discount which captures size, profitability, and risk of the asset. ***LTMRev*** is defined as the last twelve months revenue in ZAR at the time of the transaction. ***LTMEBITDA*** is defined as the last twelve months earnings before interest, tax, depreciation, and amortisation at the time of the transaction. ***EBITDAMargin*** is defined as LTM EBITDA divided by LTM Revenue at the time of the transaction. ***DebtEquity*** is defined at the debt position of the asset divided by the equity at the time of the transaction.

In the observations used for the study, the MD (size of discount) was calculated as:

$$\left(\frac{EV}{EBITDA_{peer}} - \frac{EV}{EBITDA_{entity}}\right) \div \frac{EV}{EBITDA_{peer}}$$

Equation 1

5. Results

Equation

Table 7

Variable	Coefficient	Standard error	t-statistic	Probability
Contstant	-0,030304	0,250685	-0,120885	0,9048
LTM Revenue	-0,219147	0,344221	-0,636646	0,5304
LTM EBITDA	-0,181164	0,24341	-0,744275	0,4639
EBITDA Margin	0,152207	0,272173	0,561052	0,5800
Debt Equity ratio	0,057563	0,086967	0,661895	0,5143

The regression above which included 29 observations after adjustments suggests that the size of the discount applied to the peer multiple when valuing private equity transactions should be:

$$MD = -0.03 + -0.22xLTMRev + -0.18xLTMEBITDA + 0.15xEBITDAMargin + 0.06xDebtEquity$$

Equation 2

The results of the regression show that none of the coefficients are not statistically significant at a 90% confidence level.

This finding suggests that the explanatory variables included in the model may not be adequately capturing the variation in the dependent variable. The solution should look to explore the possibility of identifying more suitable explanatory variables.

The most significant coefficient is the EBITDA (with a confidence of 50%) that the larger the entity being valued is in terms of earnings, the smaller the discount to be applied to the peer EV/EBITDA multiple.

The R-squared of 9.03% further illustrates that this regression does not explain the relationship between the size of the discount and the dependent variables that capture size, profitability, and risk of the entity. An R-squared of 9.03% can be interpreted as this regression equation on explaining 9.03% of the relationship in the sample set.

The equation above is thus significant at a 40% confidence level which is not high enough to draw a statistically significant conclusion.

However, based on the equation, we could say that there has been evidence of the following:

- All private transaction should always be valued at a discount to its peers;
- The size of entity in terms revenue and earnings has an inverse relationship to the marketability discount;
- The debt/gearing levels of the entity which captures risk has a positive relationship to the size of the marketability discount.

6. Conclusion

The research aimed to give the South African private markets industry guidance on how to think of the marketability discount as well as give an equation to ensure that the discount is calculated with similar rules. The use of a standard and fair marketability discount would avoid erroneous equity valuation conclusions, and thus provide more accuracy to investment decisions than is currently the case.

There is minimal awareness of the potential repercussions of miscalculating the size of the discount applied to private market transactions. In South Africa specifically, there is a lot of education needed in the asset management industry to change the perceptions of the private markets industry and the risks associated with it.

It is important that risk is priced accordingly in all valuations for the sake of the integrity of the expected returns, and in turn the future liabilities that must be met by the retirement industry.

Based on the results, it can be said that the size of the discount applied in a private equity transaction is a function of the size of the entity, profitability and leverage. The research suggests that although there is a relationship, it is not significant enough at this stage. A study that includes other variables such as control, diversity of earnings and other company specific metrics would further make the equation robust.

A subsequent study with a larger sample size which could give more conclusive results could provide the asset management industry a standardised way to value private entities and as such limit the bias of the valuer at the time of the transaction.

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