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Valuation Differences Between Financial and Strategic Acquisitions: Evidence from Global M&A Transactions

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Abstract

This dissertation analyses whether Financial (Funds) and Strategic buyers systematically pay different transaction multiples for acquisition targets, using a sample of 7,135 global completed acquisitions between 2000 and 2026. The valuation is primarily measured using EV/Total Assets and EV/EBITDA, with EV/EBIT providing an additional earnings-based robustness metric. The econometric methodology combines cross-sectional OLS regressions with alternative specifications and Propensity Score Matching to account for potential differences in the observable characteristics of the transactions undertaken by the two buyer groups. Although the preliminary descriptive statistics indicate that PE acquisitions have higher average transaction multiples and that these transactions involve systematically different targets, particularly smaller firms, once target and transaction characteristics are introduced in the analysis, Target Size emerges as a significant determinant of acquisition valuation, while buyer type is not statistically associated with any of the three main valuation multiples under study. This result remains consistent across the robustness analyses and after constructing a matched sample, suggesting that the observed differences in acquisition valuation are more closely related to the characteristics of the acquired firms than to buyer identity itself.

Keywords: Private Equity, Financial Buyers, Strategic Buyers, Transaction Multiples, Acquisition Valuation, Propensity Score Matching.

Resumo

Esta dissertação analisa se os compradores financeiros (fundos) e estratégicos pagam sistematicamente múltiplos de transação distintos pelas empresas-alvo, com base numa amostra de 7.135 aquisições concluídas a nível global entre 2000 e 2026. A avaliação é medida principalmente através dos múltiplos EV/Total Assets e EV/EBITDA, sendo o EV/EBIT utilizado como uma medida adicional de robustez baseada nos resultados operacionais. A metodologia econométrica combina regressões *OLS cross-sectional,* especificações alternativas e *Propensity Score Matching*, de forma a considerar potenciais diferenças nas características observáveis das transações realizadas pelos dois grupos de compradores. Embora as estatísticas descritivas preliminares indiquem que as aquisições por Private Equity apresentam múltiplos de transação médios mais elevados e envolvem empresas-alvo com características sistematicamente distintas, em particular empresas de menor dimensão, após a introdução das características da empresa-alvo e da transação na análise, a Dimensão da Empresa-Alvo revela-se um determinante significativo da avaliação da aquisição, enquanto o tipo de comprador não apresenta uma associação estatisticamente significativa com nenhum dos três múltiplos de avaliação analisados. Este resultado mantém-se consistente nas análises de robustez e após a construção de uma amostra emparelhada, sugerindo que as diferenças observadas na avaliação das aquisições estão mais estreitamente associadas às características das empresas adquiridas do que à identidade do comprador.

Palavras-chave: Capital Privado, Compradores Financeiros, Compradores Estratégicos, Múltiplos de Transação, Avaliação de Aquisições, Propensity Score Matching.

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1. Introduction

Mergers and acquisitions are a major component of the corporate control market, through which ownership and resources are transferred among firms and investors (Jensen & Ruback, 1983). Within this market, Strategic Buyers and Private Equity investors represent two economically distinct categories of acquirers. The Strategic Buyers engage in M&A transactions as part of their overall business strategy, while the Private Equity Funds buy companies to increase their value over a finite period before eventually exiting the investment (Gompers et al., 2016; Kaplan & Strömberg, 2009). Given the recent growth in the volume of Private Equity investments in corporate acquisitions, the coexistence of buyers with different investment horizons and value-creation objectives creates an opportunity to investigate whether buyer type is reflected in acquisition valuation.

The existing literature offers various arguments for why two distinct buyers may value the same target differently, and the key reason lies in their differing expectations. Strategic Buyers may be willing to pay a premium when a merger with the target can generate greater synergies, while financial buyers evaluate targets on their standalone value and the potential returns achievable during their ownership period (Gorbenko & Malenko, 2014). At the same time, differences in acquisition prices cannot be attributed exclusively to the type of buyer, as PE and Strategic Buyers can exhibit systematic biases in their target selection and transactions. Fidrmuc et al. (2012) show that the probability of an acquisition being made by a PE firm depends on target and deal characteristics, suggesting that differences in deal values reflect distinct transactions chosen by each group of buyers. Despite the extensive literature on M&A pricing and PE mergers and acquisitions, there is limited evidence on whether Strategic Buyers pay higher transaction multiples than PE investors once observable differences across targets and transactions are accounted for.

Within this context, this dissertation investigates whether Strategic Buyers systematically pay higher transaction multiples than Private Equity Buyers, due to synergy effects, after controlling for some specific observable variables. The analysis relies on a sample of 7,135 completed majority acquisitions retrieved from Orbis M&A, covering the period from 2000 to 2026, with acquisition valuation captured primarily through EV/Total Assets, EV/EBITDA, and EV/EBIT as a robustness check. The relationship between buyer type and transaction valuation is initially estimated through cross-sectional OLS regressions that account for observable target and deal characteristics, as well as industry and year dummies.

To ensure the robustness of the results, the analysis is supplemented with alternative functional forms and a more restrictive winsorisation threshold, as well as a Propensity Score Matching procedure that improves the comparability of transactions.

By focusing directly on multiples, this research contributes to the existing literature on acquisition pricing by linking the buyer type with the dimension of relative valuation, where the use of accounting fundamentals and variations in firm characteristics plays an important role in understanding the value of the transaction multiples (Lie & Lie, 2002; Liu et al., 2002). The structure of this dissertation is as follows. Chapter 2 reviews the relevant literature on acquisition pricing, Private Equity, and Transaction Multiples, while Chapter 3 develops the research hypotheses. Chapter 4 presents the data and methodology used in the empirical analyses, followed by the results, robustness analyses and Propensity Score Matching in Chapter 5. Finally, Chapter 6 concludes by discussing the main findings, limitations, and areas for further research on this topic.

2. Literature Review

2.1 Acquisition Pricing and the Market of Corporate Control

The market of corporate control is an *"arena in which managerial teams compete for the rights to manage corporate resources"* (Jensen & Ruback, 1983, p. 5). This economic framework explains the transfer of ownership and control of a company's assets to those who intend to manage them efficiently, emphasising that acquisitions are an effective mechanism for reallocating assets to owners capable of extracting their maximum economic value (Andrade et al., 2001). The broader literature also confirms that corporate acquisitions can serve different purposes (Jensen, 1986; Jensen & Ruback, 1983), allowing inefficiently managed assets to be transferred to new owners capable of improving the company's performance. Consequently, this change in control creates an incentive for incumbent managers to improve the allocation of corporate resources to maximise the firm's value. Gorbenko and Malenko (2014) show that acquisition prices reflect not only the target's existing operating position but also the gains that prospective buyers expect to obtain through an improved governance structure after the transfer of control (Jensen & Ruback, 1983).

Damodaran (2005) attributes the economic rationale for these transactions to the existence of synergies, which is the additional value created through the merger of firms and argues that acquisitions are made because the combined entity is expected to generate value beyond the sum of its individual parts (Devos et al., 2009), anticipating improvements in future cash flows rather than invoked *ex post* to justify the acquisition prices (Bradley et al., 1988). Devos et al. (2009) show that average merger synergies are approximately 10% of the combined equity value, with these gains arising predominantly from operating improvements rather than tax benefits.

Although the existence of synergies provides an economic justification for acquisitions (Damodaran, 2005), several studies demonstrate that not all buyers assign the same value to a target or are willing to pay the same price. The expected gains depend on the resources, capabilities and strategic objectives of each acquirer, making the valuation of a target intrinsically buyer-specific (Hoberg & Phillips, 2010). Gorbenko and Malenko (2014) study how bidders commonly assign different values to identical targets and generally find that strategic buyers allocate higher values due to expected operating synergies. In this study, financial buyers emerge as the primary bidders for a large share of firms, particularly those offering greater restructuring opportunities. Equally, Hoberg and Phillips (2010) find that

mergers are more successful when bidders possess complementary product-market assets, reinforcing the criteria that acquisition value depends not only on the target itself but also on the identity of the acquiring firm.

Behavioural studies also suggest that distinct acquisition prices reflect not only differences in valuation but also variances in the competitive process through which transactions are made. The *hubris hypothesis* (Roll, 1986) suggests that acquirer managers may overestimate their ability to generate synergies, leading winning bids to exceed the target's fundamental value. The literature also states that the competition for corporate assets is not restricted to observable bidding values. Bargeron et al. (2008) document that publicly listed acquirers generally pay higher prices than private equity buyers, and further studies by Boone and Mulherin (2007) show that many acquisitions came from private sale processes involving several potential buyers. Consistently, Laamanen (2007) and Fidrmuc et al. (2012) document how negotiation processes, transaction characteristics, and information asymmetries affect the final acquisition price and the type of firm being acquired, rather than solely systematic differences in buyers' willingness to pay.

The capital market conditions can also bias acquisition activity (Rhodes-Kropf et al., 2005), and even though the mechanisms underlying the cycles remain debatable, merger waves have increasingly been recognised as a recurrent feature of the market for corporate control, normally associated with temporary deviations between market prices and the intrinsic values of firms. Rhodes-Kropf et al. (2005) find that highly valued firms are more likely to acquire relatively undervalued targets, while Harford (2005) attributes merger waves to the interaction between industry shocks and the amount of capital available, indicating that positive financing conditions determine the firms' ability to respond to restructuring opportunities. Empirical evidence from Dong et al. (2006) shows that stock market valuations also influence acquisition decisions through market-timing incentives, and Moeller et al. (2004) confirm that shareholder value creation considerably varies across transactions due to firm size and deal characteristics. More recent literature by Bianconi and Tan (2019) emphasises that acquisition activity should be interpreted in light of the wider financial environment, in which financing constraints, capital market conditions and institutional settings influence acquirors' acquisition opportunities.

2.2 Private Equity Buyers in Corporate Acquisitions

Private equity investors have become key players in the corporate control market, accounting for a significant share of global mergers and acquisitions (Gompers et al., 2016). According to Kaplan and Strömberg (2009), contrary to strategic buyers, who typically aim to integrate the target within their existing operations, private equity funds hold the target company for a limited period of time to improve its value before selling it again via trade sale, secondary buyout, or an initial public offering (Balasubramaniam et al., 2024).

The literature also characterises private equity as an active ownership model (Kaplan & Strömberg, 2009), since it relies on continuous improvements in companies' corporate governance models and operational efficiency, aligned with strategic repositioning in the market and greater incentives between managers and corporate owners. Gompers et al. (2016) collected evidence from industry practitioners that reinforces the previous view that operational improvements and governance changes are the principal drivers of investment performance, while financial engineering represents only one component of the investment process. The study by Kaplan and Sensoy (2015) also shows that the competitive advantage of modern private equity firms is more dependent on specialised operational capabilities and industry expertise, implying that different private equity funds may assign distinct values to identical acquisition opportunities based on their ability to generate value after the transaction.

Kaplan and Stein (1993) revealed that the growth of the leveraged buyout market in the 1980s was associated with more aggressive financing structures and higher acquisition prices. The empirical evidence of Axelson et al. (2013) shows that these leveraged buyouts depend more on the state of credit markets than on firm-specific factors, which means that favourable financial conditions make debt more available and acquisition prices higher. The results of Martos-Vila et al. (2019) show that changes in debt market conditions affect not only how deals are financed but also the competitive position of financial buyers relative to strategic acquirers.

According to Dittmar et al. (2012) and Guo et al. (2011), financial buyers tend to acquire firms where active ownership, governance improvements, and operational restructuring can generate future substantial gains. This investment approach extends well beyond individual buyouts through buy-and-build strategies (Hammer et al., 2022), which are platform acquisitions where the basis consists of subsequent add-on purchases and future

consolidation. In these cases, buyers are often willing to pay relatively high prices for platform companies because part of their value comes from future acquisition opportunities rather than from their stand-alone fundamentals (Hammer et al., 2022).

Gorbenko and Malenko (2014) and Salva and Zhang (2022) show that although strategic buyers assign, on average, higher values to targets, financial bidders become the highest valuers for a significant subset of mature and operationally underperforming firms, arguing that strategic acquirers value merger-specific synergies, while financial buyers are more likely to exploit opportunities arising from target undervaluation. Bargeron et al. (2008) document higher prices among public acquirers, while Fidrmuc et al. (2012) demonstrate that much of this evidence is explained by differences in target selection and transaction characteristics once the sale process is explicitly considered. Even within the Private Equity industry framework, the systematic pricing advantage is not homogeneous, as Officer et al. (2010) find that *consortium* acquisitions (club deals) are associated with lower purchase prices than comparable single buyouts.

2.3 Transaction Multiples as Measures of Acquisition Pricing

Transaction multiples are commonly used in M&A literature to represent the price assigned to a target relative to an observable operating or accounting fundamental ratio, thereby allowing acquisition prices to be compared across transactions of different sizes (Kaplan & Ruback, 1995; Officer, 2007; Shaffer, 2024). Contrary to acquisition premiums, which measure the offer price relative to the target's pre-announcement market price, transaction multiples translate the value paid on the transaction in relation to the economic scale of the acquired business, and these ratios can be applied to public as well as privately owned firms if the appropriate financial data is available (Li & Tong, 2018; Officer, 2007; Shaffer, 2024). This distinction is relevant because a high premium does not necessarily indicate a high valuation multiple, particularly when the pre-acquisition market value of the target firm is low due to information problems or other firm-specific factors (Laamanen, 2007; Li & Tong, 2018).

The empirical research of Kaplan and Ruback (1995) supports the idea that relative valuation assumes that prices of economically comparable firms include all relevant and reliable information about the company under study. According to these researchers, although both the discounted cash flow and multiples-based approaches incorporate expectations into the valuation process, both methods can also provide informative estimates of the transaction

value (Kaplan & Ruback, 1995). The results from the discounted cash flow approach show that, on average, estimates are within 10% of the actual deal value and that comparable firms and transactions can also be used to produce useful valuation benchmarks. Further studies by Liu et al. (2002) demonstrate that multiple valuation avoids modelling every single part of the future cash flow expectations and includes all of them in one observable ratio, hence, multiples "*can communicate efficiently the essence*" (Liu et al., 2002, p. 136) of comprehensive valuation, even though their effectiveness depends on whether the selected ratio properly reflects the performance of the company.

Thus, the literature does not identify a single multiple appropriate to all situations, but earnings-based measures tend to contain more pricing information than revenue- or book-value-based ratios (Lie & Lie, 2002). Liu et al. (2002) documented that forward earnings yield the smallest pricing errors in their sample, with values below 15% for about half of the observations, while historical earnings outperform sales and several cash-flow measures. In the M&A advisory context, Shaffer (2024) reports that EBITDA accounts for around 32% of multiple denominators, followed by net income at 25% and revenue at 22%. The author also documents a corresponding trend towards EBITDA over EBIT and net income, although the most common individual multiple is enterprise value to current EBITDA based on trading comparables, which constitute only 7.48% of the sample.

In acquisition research, enterprise-value multiples are particularly important because these ratios reflect the value of a business attributable to both debt and equity holders, making them suitable for comparison with operating measures that are not directly affected by financing decisions (Lie & Lie, 2002; Liu et al., 2002). EBITDA and EBIT are frequently used as denominators because both measures reflect operating performance before the effects of capital structure, reducing potential bias arising from differences in financing decisions across firms (Liu et al., 2002; Shaffer, 2024). Lie and Lie (2002) also find that the enterprise value-to-book value of assets ratio generally yields more precise and less biased valuation estimates than sales- and earnings-based alternatives, although its relative performance varies with firm size, profitability, and intangible asset intensity. Officer (2007) demonstrates discounts of approximately 15% to 30% between the multiples paid for unlisted targets and those observed in comparable public acquisitions, while Li and Tong (2018) find that greater target information uncertainty is associated with lower valuation multiples even when acquisition premiums are higher. In Private Equity-backed buy-and-

build transactions, Hammer et al. (2022) show that PE investors pay up to 28% higher EV/Sales multiples for platform companies than for comparable non-platform investments, indicating that transaction ratios may also integrate specific growth opportunities that are not fully captured in the target's current operating performance.

The comparability behind these measurements is not mechanical or neutral (Alford, 1992; Bhojraj & Lee, 2002), as stated by Eaton et al. (2022), investment banks take into consideration product-market relatedness when choosing comparable firms, while traditional three- and four-digit SIC code classifications frequently fail to capture the relevant economic overlap. This evidence further indicates that advisors tend to select relatively large, high-growth peers with considerable valuation multiples, and the multiples of the selected firms are positively associated with both acquisition premiums and target announcement returns (Eaton et al., 2022).

2.4 Determinants of Transaction Multiples

Research on acquisition pricing has shown that observed transaction multiples are influenced by several factors beyond the buyer type (Fidrmuc et al., 2012). In different empirical regression models, when transaction multiples are under study, these variables are used as controls, making it possible to identify if the buyer type is significantly associated with the deal value or whether the economic differences between the two firms are responsible for it (Fidrmuc et al., 2012; Mason & Stegemoller, 2022).

According to Moeller et al. (2004) and Li and Tong (2018), larger and profitable firms have more stable operating performance, lower information asymmetry, and better access to financial information, which may affect the valuation assigned by potential acquirers. Moeller et al. (2004) document a strong size effect in takeover outcomes, and Fidrmuc et al. (2012) find that more profitable and less leveraged firms are usually sold through competitive auctions rather than controlled sales or private negotiations. From the analysis of 2,676 acquisitions, Li and Tong (2018) discover that higher information uncertainty is related to lower valuation multiples, while Mason and Stegemoller (2022) argue that the limited disclosure of financial information is related to privately held firms, observing that only 10% of private-target acquisitions provide enough information to calculate a simple price-to-sales multiple. Information asymmetry may also affect firms through financing conditions, as reductions in information production can increase the cost of debt and the incidence of adverse credit events (Derrien et al., 2016).

As previously discussed, Kaplan and Stein (1993) connect the growth of the leveraged buyout market in the late 1980s to more aggressive financing structures and higher deal values. The research of Axelson et al. (2013) also shows that the amount of debt used in buyout deals depends mostly on the credit-market conditions rather than conventional firm-specific characteristics, and this view is consistent with the studies of Kaplan and Strömberg (2009) and Gompers et al. (2016), who identify access to leverage as one of the defining features of the modern Private Equity investment model, as greater access to debt financing may support higher acquisition prices but may subsequently be associated with lower fund returns.

Hoberg and Phillips (2010) show that firms that merge with those having complementary product-market features and economically related transactions have a higher probability of achieving better operating results than conventional industry classifications. Kim's (2018) paper also confirms that industry conditions affect the value of specialised assets, showing that asset-specific companies receive significantly larger valuation discounts during adverse industry crises. Cross-country evidence shows that institutional quality is a key predictor of acquisition activity around the world, as Rossi and Volpin (2004) document higher merger activity and takeover premiums in countries characterised by stronger shareholder protection and higher accounting quality, while Erel et al. (2012) show that geography, capital-market conditions, and investor protection significantly influence cross-border acquisition activity. Rhodes-Kropf et al. (2005), Harford (2005), and Dong et al. (2006) show that market valuations, financing conditions, and merger waves can affect acquisition activity and transaction prices in different periods. Thus, public bidding contests represent only the *"tip of the iceberg"* (Boone & Mulherin, 2007, p. 847) of the takeover competition, as in Boone and Mulherin's (2007) sample, half of the targets were privately auctioned among multiple bidders despite the absence of a subsequent public bidding contest. Similarly, Fidrmuc et al. (2012) document that the buyer's identity, the selling mechanism, and the acquisition price determine differences in valuation estimates. In fact, the deviations between Strategic and Private Equity buyers are significantly reduced when all these aspects are assessed simultaneously. The liquidity and the ownership structure of each company have been shown to affect the acquisition value, as seen by Officer (2007), who achieved acquisition discounts between 15% and 30% for privately held firms and corporate subsidiaries, relative to comparable public targets, and later, Officer et al. (2010) find that the prices for club-sponsored acquisition deals are lower than those in single-sponsored acquisition deals.

3. Hypothesis Formulation

Strategic and Financial (PE) buyers differ substantially in their sources of value creation (Gompers et al., 2016; Gorbenko & Malenko, 2014; Kaplan & Strömberg, 2009), and the literature reaches mixed conclusions regarding the prices paid by the two buyer groups. As reviewed in the previous chapter, Bargeron et al. (2008) documented higher acquisition prices among corporate acquirers, while Fidrmuc et al. (2012) show that corporate acquirers are no different from private equity investors when factors such as target and transaction characteristics are considered.

Much of the existing literature relies on acquisition premiums, announcement returns or shareholder wealth effects, particularly in transactions involving publicly listed firms (Bargeron et al., 2008; Boone & Mulherin, 2007). Although transaction multiples are widely used in true mergers and acquisitions and in much of the empirical research (Damodaran, 2002; Lie & Lie, 2002; Liu et al., 2002), the studies employing these measures generally address different research settings, including valuation discounts for private firms, buy-and-build acquisitions, and valuations of privately held companies (Hammer et al., 2022; Mason & Stegemoller, 2022; Officer, 2007). Direct evidence on whether Strategic Buyers and Private Equity investors systematically differ in the transaction multiples paid for comparable targets remains relatively limited, particularly once differences in target, market and deal characteristics are considered (Alexandridis et al., 2017; Fidrmuc et al., 2012; Mason & Stegemoller, 2022). At the same time, Strategic Buyers may incorporate buyer-specific operating synergies into their valuations that are not equally available to financial acquirers, providing a theoretical basis for expecting higher transaction multiples among strategic bidders (Fidrmuc et al., 2012; Gorbenko & Malenko, 2014). All this evidence supports the formulation of the following hypothesis:

H1: *Strategic Buyers pay higher transaction multiples than Private Equity Buyers, ceteris paribus.*

Since acquisition pricing can be measured using different enterprise-value multiples, the main hypothesis is evaluated separately for each of the successive pricing measures:

H1a: *Strategic Buyers pay higher EV/Total Assets multiples than Private Equity Buyers.*

H1b: *Strategic Buyers pay higher EV/EBITDA multiples than Private Equity Buyers.*

H1c: *Strategic Buyers pay higher EV/EBIT multiples than Private Equity Buyers.*

4. Data and Methodology

4.1 Data Description and Sample Construction

The data used in the empirical analysis were collected from Orbis M&A. The sample construction was based on two separate searches: PE deals were taken directly from the Private Equity section, while Strategic Buyer deals were obtained from the broader M&A database. The sample includes transactions from January 2000 to June 2026.

In the database extraction process, both samples were restricted to transactions categorised as Completed or Completed (assumed), with an acquired stake of at least 50% and a minimum value of USD 100 million. The focus on majority acquisitions is consistent with previous empirical studies where researchers analyse deals in which the buyer acquires significant ownership in the target (Hammer et al., 2022), while the minimum deal value requirement ensures that only economically significant acquisitions are included. The availability of the transaction value and target accounting information is particularly important when acquisition pricing is measured through transaction multiples, since these ratios relate the observed deal value to the target's underlying financial characteristics (Li & Tong, 2018; Officer, 2007). The initial Orbis searches yielded 45,726 Strategic Buyer transactions and 214 Private Equity transactions.

Following the extraction from Orbis M&A, the observations were manually screened and cleaned in Microsoft Excel and deals with missing or non-positive deal values or pre-deal total assets were eliminated, with the deal-value condition serving as an additional consistency check on the restriction already imposed during the database criteria search. Duplicate observations were excluded, and, within the Strategic Buyer sample, multi-target acquisitions were also removed because target-level financial information could not be clearly associated with a single acquired company. The acquirer information was also reviewed to ensure a consistent classification of buyer type, and transactions for which the acquirer could not be reliably identified, as well as acquisitions made by governments, sovereign wealth funds, and other investor categories outside the scope of the analysis, were eliminated. The distinction between financial and strategic acquirers is particularly relevant given the differences in investment objectives and sources of value creation known for the two buyer groups (Fidrmuc et al., 2012; Gorbenko & Malenko, 2014). The complete Excel screening procedure reduced the sample to 7,490 transactions, of which 7,423 were Strategic Buyer acquisitions, and 67 were Private Equity.

Following the calculation of financial autonomy, 343 observations with negative values and 12 observations for which the measure could not be computed were excluded, and the final sample became 7,135 acquisitions, of which 7,068 were from Strategic Buyers, and 67 were Private Equity transactions, over the period from 2000 to 2026. Table 1 summarises the successive stages of the sample construction process.

Table 1 - Sample Selection Process

The table summarises the successive stages of sample selection from the initial Orbis M&A extraction to the final sample used in the empirical analysis. Strategic Buyer and Private Equity transactions are reported separately at each stage.

Sample Selection Stage	Strategic Buyers	Private Equity	Total
Initial extraction (Orbis M&A)	45,726	214	45,940
Sample after restrictions	7,068	67	7,135

4.2 Variable Definition

4.2.1 Dependent Variables

The acquisition pricing is measured using three main transaction multiples: EV/Total Assets, EV/EBITDA, and EV/EBIT. In each case, Enterprise Value corresponds to the deal value reported in Orbis M&A, while the denominator is derived from the target firm's pre-deal financial information. The use of alternative denominators allows the transaction value to be measured relative to the asset base and the operating performance of the acquired firm, providing complementary measures of acquisition valuation (Lie & Lie, 2002; Liu et al., 2002).

The first dependent variable, EV/Total Assets, measures Enterprise Value relative to the target's pre-deal asset base and, unlike earnings-based multiples, this measure does not depend on positive operating earnings and can actually provide an alternative valuation benchmark based on the economic scale of the target firm (Lie & Lie, 2002). The ratio EV/Total Assets is available for all observations in the final sample and is defined as:

$$\frac{EV}{TA} = \frac{Enterprise\ Value}{Pre-Deal\ Target\ Total\ Assets}$$

The second measure, EV/EBITDA, relates Enterprise Value to target pre-deal earnings before interest, taxes, depreciation and amortisation, and this denominator is widely employed in the academic literature as it can help to compare firms with different financing

and accounting structures (Lie & Lie, 2002; Liu et al., 2002). To preserve the economic interpretation of the ratio, the multiple is computed only for observations reporting positive pre-deal EBITDA, a condition satisfied by all 7,135 transactions in the final sample.

$$\frac{EV}{EBITDA} = \frac{Enterprise\ Value}{Pre-Deal\ Target\ \ EBITDA}$$

The third dependent variable, EV/EBIT, measures Enterprise Value relative to the target's pre-deal earnings before interest and taxes and, compared to EBITDA, this measure incorporates depreciation and amortisation expenses, which provides an earnings-based valuation measure that reflects differences in the depreciation intensity of the target's operations (Lie & Lie, 2002). Consistent with the treatment of EV/EBITDA, the ratio is maintained only for observations reporting positive pre-deal EBIT and is consequently available for 6,334 transactions and defined as follows:

$$\frac{EV}{EBIT} = \frac{Enterprise\ Value}{Pre-Deal\ Target\ EBIT}$$

4.2.2 Independent Variable

The main independent variable of this dissertation is a dummy variable, *PE Buyer,* that identifies the type of acquirer involved in each transaction. This distinction reflects differences in their investment objectives and sources of value creation and constitutes the central dimension of the empirical analysis (Fidrmuc et al., 2012; Gorbenko & Malenko, 2014). The variable takes the value of one when the acquirer is classified as a Private Equity buyer and zero when the transaction is made by a Strategic Buyer:

$$PE\ Buyer = \begin{cases} 1, & if\ the\ acquier\ is\ a\ PE\ Buyer \\ 0, & if\ the\ acquirer\ is\ a\ Strategic\ Buyer \end{cases}$$

Accordingly, the Strategic Buyers constitute the reference category, and a negative coefficient on PE Buyer indicates that Private Equity investors pay lower transaction multiples than Strategic Buyers, conditional on the remaining characteristics included in the corresponding specification.

4.2.3 Control Variables

The empirical specifications include a set of control variables to account for observable differences across targets and transactions that may influence acquisition pricing independently of the buyer identity. Consistent with the determinants identified in the

acquisition literature, the controls capture differences in target size, financial structure and operating performance, as well as transaction, geographical, industry and temporal characteristics (Fidrmuc et al., 2012; Mason & Stegemoller, 2022).

Target Size accounts for differences in the economic scale of the acquired firms and is measured as the natural logarithm of the target's pre-deal Total Assets. This variable is frequently included in pricing models because acquisition characteristics and valuation levels may vary systematically with the firm size, while the logarithmic transformation reduces the substantial dispersion in total assets across companies (Fidrmuc et al., 2012; Mason & Stegemoller, 2022).

$$Target\ Size = \ln(Pre - deal\ Total\ Assets)$$

Financial Autonomy is used to assess the targets' capital structure before the acquisition, measured as the proportion of total assets financed by shareholders' funds. The ratio captures the degree of dependence on equity financing and provides an idea of the target's leverage, as higher financial autonomy generally reflects lower reliance on debt financing. This makes it possible to compare the capital structures of different companies, which may be particularly relevant in mergers involving financial bidders (Axelson et al., 2013; Kaplan & Stein, 1993).

$$Financial\ Autonomy = \frac{Shareholders\ Funds}{Pre - deal\ Total\ Assets}$$

Profitability is an important source of cross-sectional variation in valuation, since differences in operating performance may be reflected in the transaction multiples observed across comparable firms (Fidrmuc et al., 2012; Lie & Lie, 2002). The *Operating Margin* is calculated whenever operating revenue is positive, and EBIT is available, and is defined as:

$$Operating\ Margin = \frac{Pre - deal\ EBIT}{Pre - deal\ Operating\ Revenue}$$

Transaction characteristics are represented by the *Acquired Stake*, which measures the percentage of the target acquired in each transaction. Even though the sample consists primarily of acquisitions, ownership ranges from 50% to 100% of the target firm, and these distinct levels of transferred control may reflect differences in acquisition costs (Fidrmuc et al., 2012; Officer, 2007). This variable is kept as the percentage extracted from Orbis M&A,

such that a one-unit increase corresponds to a one-percentage-point increase in the acquired ownership stake.

The geographical dimension is captured by *US Target*, a binary variable equal to 1 when the target firm is in the United States and 0 otherwise. By controlling for this factor, we account for potential differences in acquisition valuations that may be due to the institutional and market environment in which the targets operate. This approach is consistent with previous research that found substantial cross-country variation in M&A activity and outcomes (Rossi & Volpin, 2004).

$$US\ Target = \begin{cases} 1, & if\ the\ target\ is\ in\ the\ USA \\ 0, & if\ the\ target\ is\ outside\ the\ USA \end{cases}$$

To account for industry heterogeneity, the detailed NACE Rev. 2 classifications of target firms were aggregated into eleven broad industry sectors, such as Agriculture & Food, Industrials, Energy & Environment, Consumer Goods & Retail, Transportation & Logistics, Information & Communication Technology, Financial Services, Real Estate, Business Products & Services, Healthcare, and Other. These groups reduce the fragmentation associated with detailed industry classifications while preserving economically meaningful sectoral differences.

Finally, the empirical specifications incorporate two important and distinct dimensions, *target-industry* and *transaction-year* fixed effects, where industry fixed effects account for systematic differences in valuation across the eleven sector categories described above, while year fixed effects capture common temporal variation in acquisition and financing conditions over the sample period (Alexandridis et al., 2017; Harford, 2005).

Table 2 - Variables' Definitions

The table presents the variables used in the empirical analysis, together with their definitions, measurement and data source.

Variables	Definitions	Measurement	Source
Dependent Variables			
EV/Total Assets	Acquisition value relative to target assets	EV/ Pre-deal Total Assets	Orbis
EV/EBITDA	Acquisition value relative to target EBITDA	EV / Pre-deal EBITDA	Orbis
EV/EBIT	Acquisition value relative to target EBIT	EV/ Pre-deal EBIT	Orbis
Independent Variable			
PE Buyer	Buyer Type Indicator	Binary (1 = PE; 0 = SB)	Orbis
Control Variables			
Target Size	Size of the target firm before the acquisition	Ln (Pre-deal Total Assets)	Orbis
Financial Autonomy	Target Capitalisation	Shareholders' Funds / Total Assets	Orbis
Operating Margin	Target Operating Profitability	EBIT / Operating Revenue	Orbis
Acquired Stake	Ownership Stake Acquired	Acquired Stake (%)	Orbis
US Target	Target Location	Binary (1 = US; 0 = Otherwise)	Orbis
Industry FE	Target Industry	Target Sector	Orbis
Year FE	Transaction Year	Transaction Year	Orbis

4.3 Descriptive Statistics

The initial distribution of the variables used in the study is shown in Table 3, which presents the main descriptive statistics for the three transaction multiples and their respective controls to identify any differences in characteristics that should be considered in the methodology discussion.

Table 3 - Global Descriptive Statistics

The table reports the descriptive statistics of the transaction multiples and control variables before winsorisation. EV/Total Assets and EV/EBITDA are available for the full sample of 7,135 transactions, while EV/EBIT is calculated only for transactions with positive pre-deal EBIT. Target Size is measured as the natural logarithm of pre-deal Total Assets, and Acquired Stake is expressed as a percentage.

	N	Mean	Std. Dev.	Median	Min	Max
EV/Total Assets	7135	14.64	624.56	1.42	0.00	51,029.09
EV/EBITDA	7135	279.08	7,632.51	13.62	0.02	564620
EV/EBIT	6334	695.12	26,417.79	19.49	0.02	1,900,000
Target Size	7135	12.87	1.69	12.79	2.76	19.80
Financial Autonomy	7135	0.48	0.24	0.47	0.00	1.90
Operating Margin	7072	0.57	28.53	0.10	-7.54	2,364.91
Acquired Stake (%)	7135	93.38	14.42	100.00	50.00	100.00

The analysis of the raw initial data shows substantial dispersion of values in the main transaction multiples, particularly at the upper tails of their distributions. The EV/Total Assets ratio has a mean of 14.64, a median of 1.42, and a maximum of 51,029.09. Similarly, the other two transaction multiples show a greater distance between their measures of central tendency and the extreme statistical points, which suggests pronounced right-skewness across the three valuation measures and a relatively small number of extreme observations influencing the sample averages that should be analysed.

A similar pattern is observed for some of the target's financial characteristics, as the ratio of Operating Margin shows a mean of approximately 0.57 and a median of 0.10, revealing large values in the upper tail, and Financial Autonomy also has values in the upper tail that lie considerably above the central part of its distribution. In contrast, the ratios related to the target size and the acquired stake of the targets have much more stable distributions, with a mean acquired stake of 93.38% and a median of 100%, which is consistent with the requirement of majority acquisition made in the sample construction criteria. Thus, these

distributional issues arise primarily in the multiples and in some of the financial ratios, rather than representing a general characteristic of all the variables included in the empirical analysis.

Given the magnitude of the extreme values identified in the first descriptive analysis, the three transaction multiples and two of the financial ratios were winsorised at the 5th and 95th percentiles. This procedure minimises the effect of observations located in the extreme tails of the distributions without removing them from the sample, preserving the available information, while reducing the extent to which a limited number of extreme observations may disproportionately affect subsequent estimates. After winsorisation, the median values of the respective variables remain unchanged while their mean and ranges are considerably less affected by extreme outlier values. As an example, the overall mean of EV/Total Assets decreases from 14.64 to 2.17 (Appendix Table 20), while its median remains at approximately 1.42, with similar changes observed for EV/EBITDA and EV/EBIT.

The descriptive statistics were extended to distinguish transactions according to the buyer type (Table 4), to provide an initial assessment of whether acquisition valuations and the characteristics of the acquired targets differ between the two groups.

Table 4 - Descriptive Statistics and Univariate Tests by Buyer Type After Winsorisation

The table reports descriptive statistics separately for Strategic Buyer (SB) and Private Equity (PE) transactions. EV/Total Assets, EV/EBITDA, EV/EBIT, Financial Autonomy and Operating Margin are winsorised at the 5th and 95th percentiles. Target Size is measured as the natural logarithm of pre-deal Total Assets, and Acquired Stake is expressed as a percentage. EV/EBIT is calculated only for transactions with positive pre-deal EBIT. The difference in mean values is calculated as Strategic Buyer minus Private Equity (SB−PE). Welch's two-sample t-tests, allowing for unequal variances, are reported for all variables. Wilcoxon rank-sum tests are reported for the three transaction multiples.

	Strategic Buyer					**Private Equity**					**Difference**	**T-test**	**Wilcoxon**
	N	**Mean**	**Median**	**Min**	**Max**	**N**	**Mean**	**Median**	**Min**	**Max**	**(SB-PE)**	**p-value**	**p-value**
EV/Total Assets	7068	2.17	1.42	0.27	8.60	67	2.57	1.81	0.27	8.60	-0.40	0.1495	0.0613
EV/EBITDA	7068	31.38	13.61	2.82	198.34	67	35.21	14.44	2.82	198.34	-3.83	0.5676	0.5476
EV/EBIT	6269	45.74	19.49	4.13	286.80	65	50.46	19.32	4.53	286.80	-4.72	0.6168	0.8054
Target Size	7068	12.88	12.79	2.76	19.80	67	11.97	11.88	7.48	15.36	0.91	<0.001	-
Financial Autonomy	7068	0.48	0.47	0.09	0.86	67	0.42	0.42	0.09	0.86	0.05	0.0505	-
Operating Margin	7005	0.15	0.10	-0.05	0.54	67	0.15	0.11	-0.05	0.54	0.00	0.9637	-
Acquired Stake (%)	7068	93.39	100.00	50.00	100.00	67	92.72	100.00	51.03	100.00	0.67	0.6899	-

According to Table 4, Private equity transactions provide higher average transaction multiples compared to strategic buyers across all three main valuation ratios. The mean EV/Total Assets is 2.57 for Private Equity acquisitions compared with 2.17 for Strategic Buyers, while the mean EV/EBITDA is 35.21 and 31.38, respectively, and a similar pattern is shown for EV/EBIT. The differences in the median values are considerably smaller, particularly for the earnings-based multiples, which suggests that these distributions are relatively similar across the two buyer types despite the discrepancies observed in their respective means.

The differences between the two groups were also evident in certain characteristics of the acquired targets. Private Equity funds tend to buy smaller companies, with a mean Target Size of 11.97 and 12.88 for Strategic Buyers, and a lower average Financial Autonomy of 0.42 compared with 0.48. Conversely, operating margins are similar for both types of buyers, at about 0.15. The acquired stake also shows nearly 92.72% for Private Equity transactions and 93.39% for Strategic Buyer transactions, with a median of 100% in both groups.

To assess whether these values extend beyond the descriptive evidence, a series of univariate tests is performed to determine whether the differences between private equity and strategic buyer transactions are significant. The differences in the mean values are examined using two-sample t-tests with unequal variances, while the transaction multiples are assessed using Wilcoxon rank-sum tests, as reported in Table 4.

The univariate tests show no statistically significant differences in the mean transaction multiples between Private Equity and Strategic Buyer acquisitions at the 5% significance level. The difference in EV/Total Assets yields a p-value of 0.1495, while the corresponding values for EV/EBITDA and EV/EBIT are 0.5676 and 0.6168, respectively. A similar conclusion follows from the Wilcoxon rank-sum tests, with p-values of 0.0613 for EV/Total Assets, 0.5476 for EV/EBITDA, and 0.8054 for EV/EBIT. Although the EV/Total Assets result is relatively close to conventional significance thresholds, it remains above the 5% level, indicating that the univariate results do not show statistically significant differences in transaction multiples between the two buyer groups.

Regarding the control variables, the results show a different pattern, particularly with respect to Target Size, for which PE transactions, on average, acquire smaller targets than Strategic Buyers, and this difference is statistically significant at conventional levels ($p < 0.001$).

Financial Autonomy also presents some evidence of differences across buyer types, although its p-value of 0.0505 remains marginally above the 5% significance threshold, whereas the results for Operating Margin (p = 0.9637) and Acquired Stake (p = 0.6899) provide no evidence of statistically significant changes.

4.4 Empirical Methodology

4.4.1 Econometric Specification

To examine whether acquisition valuations systematically differ between Private Equity and Strategic Buyers, the baseline analysis relies on a series of cross-sectional Ordinary Least Squares (OLS) regressions. As discussed in the descriptive analysis, the baseline model will involve winsorised data at the 5th and 95th percentiles to reduce the impact of extreme outlier values, and four separate models will be estimated for each of the three main transaction multiples. Thus, the basic model can be expressed as follows:

$$Multiple_i = \alpha + \beta_1 PEBuyer_i + \gamma X_i + \delta_s + \lambda_t + \epsilon_i \qquad (1)$$

The $Multiple_i$ represents EV/Total Assets, EV/EBITDA or EV/EBIT for each transaction i, $PEBuyer_i$ is the main explanatory dummy variable that equals one when the acquirer is a Private Equity Fund or zero when it is a Strategic Buyer. The coefficient β_1 shows the numerical difference in the transaction multiples associated with PE acquisitions relative to SB acquisitions, and given the main developed hypothesis, a negative and statistically significant coefficient on $PEBuyer_i$ would support the idea of Strategic Buyers paying higher transaction multiples than Private Equity buyers. The variable X_i represents the set of target- and transaction-level controls, while δ_s and λ_t capture target-industry and transaction-year fixed effects, respectively.

For each transaction multiple, the baseline model is estimated through four progressive specifications. The first includes only the PE Buyer indicator, providing an initial estimate of the difference between PE and Strategic Buyer transactions, then, additional controls for Firm Size, Capital Structure and Margins are added in the second and third regressions. Finally, the full baseline model is presented in the fourth regression, accounting with Acquired Stake, US Target indicator, and Industry and Year fixed effects. This sequential structure allows the PE Buyer coefficient to be carefully examined as a broader set of observable characteristics and fixed effects are introduced into the analysis.

In addition to the baseline specifications, the interaction between PE Buyer and Target Size is estimated to examine whether the association between buyer type and transaction valuation varies with the economic scale of the target. The choice of using Target Size is motivated by both the characteristics of the sample and the existing literature. The descriptive and univariate analyses show that PE acquisitions involve significantly smaller targets than Strategic Buyer acquisitions, while Target Size emerges as a persistent determinant of the three transaction multiples. The previous empirical literature also identifies firm size and target characteristics as relevant sources of heterogeneity in acquisition outcomes and valuation (Fidrmuc et al., 2012; Lie & Lie, 2002; Moeller et al., 2004). Accordingly, the interaction specification allows the estimated difference between PE and Strategic Buyer transactions to vary across the Target Size distribution rather than imposing a constant buyer-type differential. Before constructing the interaction term, the variable Target Size is mean-centred, so that the coefficient on PE Buyer represents the estimated buyer-type differential for a target of average size. Given the limited number of PE observations, this analysis is treated as an additional assessment of valuation heterogeneity rather than as a separate hypothesis test.

Before estimating the baseline models, diagnostic tests were conducted to detect potential econometric issues. The Variance Inflation Factors (VIFs) indicate no evidence of problematic multicollinearity, with individual values ranging from 1.01 to 1.24 and a mean VIF of 1.11, and the Breusch–Pagan and White tests reject the null hypothesis of homoskedasticity for all three transaction multiples, suggesting that homoskedastic errors in the baseline models cannot be assumed. Further, the Ramsey RESET test also rejects the null hypothesis of correct functional-form specification for all three baseline models, raising questions regarding potential limitations in the functional form. Consequently, all reported models are estimated using heteroskedasticity-robust standard errors, which helps to provide consistent inferences in the presence of heteroskedastic disturbances (White, 1980). These detailed diagnostic results are reported in the Appendix (Tables 21 and 22).

Then, to assess the sensitivity of the baseline estimates to the functional form, and increase the robustness of the analysis, the three transaction multiples were transformed into natural logarithms, and the same regression specifications were re-estimated using ln (EV/Total Assets), ln (EV/EBITDA) and ln (EV/EBIT) as dependent variables. The logarithmic transformation reduces the influence of the pronounced right-skewness observed in the

transaction multiples and provides an alternative specification to the models estimated in levels. The same sequence of controls, industry and year fixed effects, and heteroskedasticity-robust standard errors is used in the following analysis.

Further, a second robustness exercise was performed to provide an additional assessment of whether the estimated relationship between buyer type and transaction multiples is sensitive to observations located in the tails of the underlying distributions, with a more restrictive winsorisation threshold of the 10th to 90th percentiles, and the resulting measures were used to re-estimate the same sequence of regression specifications.

Finally, after estimating the PE Buyer × Target Size interaction for all three valuation measures in the baseline specification, the additional robustness analysis focuses on EV/Total Assets, the only measure for which the interaction is statistically significant. The interaction model was re-estimated using the logarithmic transformation of EV/Total Assets and the alternative 10th–90th percentile winsorisation threshold. These specifications assess whether the identified size-related heterogeneity is sensitive to the functional form of the dependent variable or to the treatment of observations in the tails of the distribution.

The statistical significance is assessed at the conventional 1%, 5% and 10% levels, and the empirical assessment of the hypothesis focuses primarily on the sign, magnitude and statistical significance of the PE Buyer coefficient, while the remaining covariates capture observable factors that may also be associated with acquisition valuation.

4.4.2 Propensity Score Matching

As a complementary empirical approach, Propensity Score Matching (PSM) was employed to improve comparability between Private Equity and Strategic Buyer transactions, given the systematic differences in observable target and transaction characteristics across the two buyer groups. In some empirical studies, the discrepancy between treatment and control groups can reflect systematic differences between groups rather than the treatment itself. According to Rosenbaum and Rubin (1983), the propensity score is defined as the conditional probability of being in the treatment group given a set of observed covariates, allowing observations with similar treatment probabilities to be compared. In the present analysis, Private Equity acquisitions constitute the treatment group, while Strategic Buyer acquisitions form the control group.

The propensity scores were estimated using a probit model, in which the probability of an acquisition being undertaken by a Private Equity buyer is modelled as a function of Target Size, Financial Autonomy, Operating Margin and US Target, together with target-industry and transaction-period indicators. The selected covariates capture observable characteristics potentially associated with both buyer type and transaction valuation, consistent with the importance of theoretically motivated covariate selection in propensity score estimation (Caliendo & Kopeinig, 2008).

To account for the changes over time in the transaction conditions while maintaining sufficient observations within each group, transaction years are aggregated into five periods: 2001–2005, 2006–2010, 2011–2015, 2016–2020 and 2021–2026, and the transactions completed in 2000 are excluded from the matching procedure because no Private Equity acquisitions are registered in that year. The matching pool was also restricted to target industries in which both buyer types are represented.

Following proper propensity-score estimation, a one-to-one nearest-neighbour matching without replacement was applied, meaning that each Private Equity transaction is attributed to a Strategic Buyer transaction that shows the closest estimated propensity score, subject to a caliper of 0.01 and the common-support restriction. The caliper prevents matches between observations with substantially different estimated treatment probabilities, while common support restricts the comparison to regions of the propensity-score distribution in which observations from both buyer groups are available. These controls are made to improve the quality of the resulting matches and reduce differences in observable characteristics between the treatment and control groups (Austin, 2011; Caliendo & Kopeinig, 2008). To assess the quality of the results and the success of the model application, covariate-balance diagnostics were performed by comparing the graphical distributions of the main variables before and after matching, using standardised differences and tests of equality (Caliendo & Kopeinig, 2008).

5. Results

5.1 Baseline Results

The baseline analysis examines whether the type of buyer is directly associated with the transaction multiples paid in acquisitions by Private Equity and Strategic Buyers. The results for EV/Total Assets, EV/EBITDA and EV/EBIT are reported in Tables 5 to 7, respectively, using four sequential specifications in which target and transaction characteristics are progressively introduced, together with sector and year fixed effects.

Table 5 - OLS Regression Results: EV/Total Assets

The table reports OLS estimates for EV/Total Assets with heteroskedasticity-robust standard errors in parentheses. Specifications (1) – (4) sequentially introduce Target Size, target financial characteristics, transaction controls, sector and year fixed effects. EV/Total Assets, Financial Autonomy and Operating Margin are winsorised at the 5th and 95th percentiles. Strategic Buyers constitute the reference category for PE Buyer. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

	(1) EV / Total Assets	**(2) EV / Total Assets**	**(3) EV / Total Assets**	**(4) EV / Total Assets**
PE Buyer	0.396	-0.233	-0.159	0.040
	(0.270)	(0.195)	(0.194)	(0.204)
Target Size		-0.692***	-0.660***	-0.694***
		(0.015)	(0.016)	(0.016)
Financial Autonomy			0.490***	0.269***
			(0.102)	(0.100)
Operating Margin			1.243***	1.889***
			(0.138)	(0.144)
Acquired Stake (%)				0.011***
				(0.001)
US Target				0.598***
				(0.046)
Sector fixed effects	No	No	No	Yes
Year fixed effects	No	No	No	Yes
Observations	7135	7135	7072	7071
Adjusted R-squared	0.000	0.303	0.303	0.358

The EV/Total Assets results show a considerable change in the PE Buyer coefficient once the differences in the target characteristics are incorporated into the regression models. In the unconditional specification, the coefficient is positive (0.396) but not statistically significant at conventional significance levels, whereas the introduction of Target Size changes its sign to −0.233 without increasing its statistical significance. The coefficient

remains negative when Financial Autonomy and Operating Margin are added in the third model and approaches zero in the complete specification (0.040), providing no statistically significant evidence of the negative buyer-type differential expected under the main hypothesis.

The change after controlling for the Target Size is particularly relevant given the differences identified in the first descriptive analysis, where PE investors are shown to acquire, on average, significantly smaller targets. Since this variable is measured as the natural logarithm of pre-deal Total Assets, its coefficient of −0.694 in the complete specification implies that, holding the remaining variables constant, a 10% increase in target assets is associated with an approximately 0.066 reduction in the main ratio, *ceteris paribus*. This inverse relationship is consistent with the *size effect* approach (Lie & Lie, 2002), whereby smaller firms tend to exhibit higher valuation multiples and with the literature that observed differences across buyer categories may partly reflect systematic differences in the targets they select rather than buyer identity itself (Fidrmuc et al., 2012).

Financial Autonomy and Operating Margin are positively and significantly associated with the multiple in the complete model, and an additional percentage point of ownership acquired is associated with an increase of approximately 0.011 in EV/Total Assets, *ceteris paribus*. The US targets exhibit an EV/Total Assets ratio approximately 0.598 higher than otherwise comparable non-US targets, holding the remaining variables constant, with the coefficient statistically significant at the 1% level. This result is in line with the cross-country evidence documented and highlights the importance of introducing geographical and market characteristics in acquisition valuation analysis (Alexandridis et al., 2017; Rossi & Volpin, 2004). The explanatory power of the model also considerably improves as the controls and fixed effects are incorporated, with the adjusted R^2 improving from approximately zero to 0.358.

Table 6 - OLS Regression Results: EV/EBITDA

The table reports OLS estimates for EV/EBITDA with heteroskedasticity-robust standard errors in parentheses. Specifications (1) – (4) sequentially introduce Target Size, target financial characteristics, transaction controls, sector and year fixed effects. EV/EBITDA, Financial Autonomy and Operating Margin are winsorised at the 5th and 95th percentiles. Strategic Buyers constitute the reference category for PE Buyer. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

	(1) EV / EBITDA	**(2) EV / EBITDA**	**(3) EV / EBITDA**	**(4) EV / EBITDA**
PE Buyer	3.832	-3.937	-2.545	0.322

	(6.622)	(6.235)	(6.378)	(6.450)
Target Size		-8.542***	-7.988***	-7.725***
		(0.384)	(0.404)	(0.453)
Financial Autonomy			11.902***	13.881***
			(2.764)	(2.838)
Operating Margin			-49.438***	-60.617***
			(3.676)	(4.132)
Acquired Stake (%)				0.104***
				(0.039)
US Target				-2.176*
				(1.186)
Sector fixed effects	No	No	No	Yes
Year fixed effects	No	No	No	Yes
Observations	7135	7135	7072	7071
Adjusted R-squared	-0.000	0.092	0.117	0.138

The regressions using EV/EBITDA as the main multiple show a similar pattern, with the PE Buyer coefficient positive in the first model specification (3.832), negative after the introduction of target-level controls and close to zero in the full regression model (0.322). These values are statistically insignificant in all four specifications, which contradicts the higher acquisition prices for corporate acquirers documented by Bargeron et al. (2008) but is more consistent with Fidrmuc et al. (2012), who show that differences between financial and strategic buyers become substantially weaker once target and transaction characteristics are taken into account.

Again, Target Size arises as an important determinant of the valuation multiple, with a coefficient of (−7.725) in the complete specification, implying that a 10% increase in target assets is associated with an approximately 0.736 reduction in EV/EBITDA, holding the remaining variables constant, *ceteris paribus*. Financial Autonomy is positively associated with the multiple, but conversely, Operating Margin shows a negative and statistically significant coefficient that needs to be carefully interpreted, as the dependent variable is also affected by operating earnings. Thus, firms with stronger operating performance may mechanically exhibit lower earnings-based transaction multiples for a given Enterprise Value.

Finally, Acquired Stake also remains positively and statistically significantly associated with the multiple, since a one-percentage-point increase in the ownership stake acquired is associated with an approximately 0.104 higher EV/EBITDA ratio, *ceteris paribus*. More

generally, the different behaviours of the control variables across the use of asset- or earnings-based ratios are consistent with some of the relative-valuation research that shows information conveyed by multiples depends on the accounting denominator used (Lie & Lie, 2002; Liu et al., 2002).

Table 7 - OLS Regression Results: EV/EBIT

The table reports OLS estimates for EV/EBIT with heteroskedasticity-robust standard errors in parentheses. Specifications (1)– (4) sequentially introduce Target Size, target financial characteristics, transaction controls, sector and year fixed effects. EV/EBIT, Financial Autonomy and Operating Margin are winsorised at the 5th and 95th percentiles, and EV/EBIT is calculated only for transactions with positive pre-deal EBIT. Strategic Buyers constitute the reference category for PE Buyers. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

	(1) **EV / EBIT**	**(2)** **EV / EBIT**	**(3)** **EV / EBIT**	**(4)** **EV / EBIT**
PE Buyer	4.720	-4.256	-4.378	0.160
	(9.318)	(8.924)	(9.090)	(9.069)
Target Size		-10.031***	-9.445***	-8.984***
		(0.597)	(0.627)	(0.700)
Financial Autonomy			13.537***	16.708***
			(4.207)	(4.368)
Operating Margin			-92.062***	-116.421***
			(5.601)	(6.572)
Acquired Stake (%)				0.322***
				(0.056)
US Target				-3.981**
				(1.888)
Sector fixed effects	No	No	No	Yes
Year fixed effects	No	No	No	Yes
Observations	6334	6334	6278	6277
Adjusted R-squared	-0.000	0.062	0.103	0.137

The EV/EBIT estimates provide an additional earnings-based assessment but do not materially alter the inferred results, as the PE Buyer coefficient changes from positive in the unconditional model (4.720) to negative once Target Size is introduced, before approaching zero in the complete specification (0.160), with none of these values being statistically significant. In the full specification model, Target Size remains negative and highly significant, implying that a 10% increase in target assets is associated with an approximately 0.856 reduction in EV/EBIT, *ceteris paribus*. Financial Autonomy and Acquired Stake remain

positively related to the multiple, while US targets exhibit an EV/EBIT ratio approximately 3.981 lower than that of other comparable non-US targets. The similarity of the PE Buyer estimates across EV/EBITDA and EV/EBIT indicates that the main inference regarding buyer type is not sensitive to whether operating earnings are measured before or after depreciation and amortisation. This evidence also supports the importance of using multiple transaction multiples rather than relying exclusively on a single ratio, as the literature emphasises that alternative accounting fundamentals can capture different dimensions of firm valuation (Liu et al., 2002; Shaffer, 2024).

Table 8 - Interaction Between PE Buyer and Target Size

The table reports OLS estimates from the full baseline specifications including an interaction between PE Buyer and mean-centred Target Size. The remaining target- and transaction-level controls include Financial Autonomy, Operating Margin, Acquired Stake and US Target, together with sector and year fixed effects. Strategic Buyers constitute the reference category. Since Target Size is mean-centred, the coefficient on PE Buyer represents the estimated buyer-type differential at the average Target Size. Heteroskedasticity-robust standard errors are reported in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively

	(1) **EV/Total Assets**	**(2)** **EV/EBITDA**	**(3)** **EV/EBIT**
PE Buyer	-0.400*	-5.278	-6.814
	(0.220)	(6.162)	(9.099)
Target Size	-0.690***	-7.680***	-8.921***
	(0.016)	(0.454)	(0.701)
PE Buyer*Target Size	-0.492***	-6.265	-7.868
	(0.154)	(5.112)	(7.765)
Controls	Yes	Yes	Yes
Sector fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Observations	7071	7071	6277
Adjusted R-squared	0.359	0.138	0.137

Table 8 examines whether the estimated association between buyer type and transaction valuation varies with Target Size. For EV/Total Assets, the coefficient on the PE Buyer × Target Size interaction is negative and statistically significant at the 1% level ($\beta = -0.492$, $p = 0.001$). Because EV/Total Assets is specified in levels and Target Size is measured as the natural logarithm of pre-deal Total Assets, the interaction coefficient captures how the estimated PE–Strategic Buyer differential in EV/Total Assets changes with target size. Specifically, holding the remaining variables constant, a 10% increase in target assets is associated with an approximately 0.047-unit reduction in the estimated PE–Strategic Buyer

differential in EV/Total Assets. Thus, the estimated differential becomes more negative as target size increases, *ceteris paribus*.

The mean-centring of Target Size also allows the PE Buyer coefficient to be interpreted at the average target size. At this point in the distribution, the estimated PE–Strategic Buyer differential in EV/Total Assets is −0.400 and is statistically significant only at the 10% level. The marginal estimates further indicate that the buyer-type differential varies across the Target Size distribution, moving from positive values among substantially smaller targets to increasingly negative values among larger targets. Accordingly, the results provide evidence of size-related heterogeneity for EV/Total Assets, but not for the two earnings-based multiples, and therefore do not alter the broader finding of no systematic average buyer-type differential across the three valuation measures.

5.2 Robustness Tests

Because the previous analysis did not identify a significant buyer-type association once observable target and transaction characteristics were progressively added to the models, two alternative empirical specifications are estimated to assess the robustness of this inference. The first re-estimates the baseline models using the natural logarithm of each transaction multiple, thereby reducing the influence of pronounced right-skewness and providing an alternative functional form. This is particularly relevant given that acquisition multiples can be highly dispersed and sensitive to firm characteristics, target information, and the valuation denominator used (Li & Tong, 2018; Liu et al., 2002; Officer, 2007). Moreover, in this specific case, the Ramsey RESET tests reported in the Appendix reject the null hypothesis of correct functional-form specification for the baseline regressions. The results for Log EV/Total Assets, Log EV/EBITDA, and Log EV/EBIT are shown in Tables 9 to 11.

Table 9 - Robustness Regressions: Log EV/Total Assets

The table reports OLS estimates using the natural logarithm of EV/Total Assets as the dependent variable, with heteroskedasticity-robust standard errors in parentheses. Financial Autonomy and Operating Margin are winsorised at the 5th and 95th percentiles. Specifications (1) – (4) follow the same sequential introduction of controls used in the baseline analysis, with sector and year fixed effects included in specification (4). Strategic Buyers constitute the reference category for PE Buyer. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

	(1) **Log EV / Total assets**	**(2)** **Log EV / Total assets**	**(3)** **Log EV / Total assets**	**(4)** **Log EV / Total assets**
PE Buyer	0.202*	-0.068	-0.024	0.072
	(0.110)	(0.080)	(0.078)	(0.082)

Target Size		-0.297***	-0.280***	-0.299***
		(0.005)	(0.005)	(0.006)
Financial Autonomy			0.456***	0.331***
			(0.041)	(0.038)
Operating Margin			0.489***	0.874***
			(0.058)	(0.057)
Acquired Stake (%)				0.011***
				(0.001)
US Target				0.340***
				(0.020)
Sector fixed effects	No	No	No	Yes
Year fixed effects	No	No	No	Yes
Observations	7135	7135	7072	7071
Adjusted R-squared	0.000	0.306	0.318	0.427

For the main transaction multiple (Log EV/Total Assets), the PE Buyer coefficient is positive and weakly significant at the 10% level (0.202, p = 0.065) in the first specification, although this association disappears once Target Size is introduced. In the complete specification, the PE Buyer coefficient equals 0.072 (p = 0.383), showing that, on average, PE Buyers have approximately 7.5% higher EV/Total Assets ratios than comparable Strategic Buyer acquisitions, *ceteris paribus*. However, this difference is not statistically different from zero, and its positive value does not correspond to the coefficient expected under the main synergy hypothesis. The logarithmic specification also allows the relationship between target size and valuation to be interpreted directly as an elasticity, so the coefficient of −0.299 in the complete model indicates that a 1% increase in target assets is associated with an approximately 0.299% decrease in EV/Total Assets, holding the remaining characteristics constant, *ceteris paribus*. The persistence of this significant inverse relationship under different functional forms reinforces the importance of target comparability in acquisition valuation (Eaton et al., 2022; Li & Tong, 2018; Officer, 2007).

Table 10 - Robustness Regressions: Log EV/EBITDA

The table reports OLS estimates using the natural logarithm of EV/EBITDA as the dependent variable, with heteroskedasticity-robust standard errors in parentheses. Financial Autonomy and Operating Margin are winsorised at the 5th and 95th percentiles. Specifications (1) – (4) follow the same sequential introduction of controls used in the baseline analysis, with sector and year fixed effects included in specification (4). Strategic Buyers constitute the reference category for PE Buyer. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

	(1)	**(2)**	**(3)**	**(4)**

	Log EV / EBITDA	Log EV / EBITDA	Log EV / EBITDA	Log EV / EBITDA
PE Buyer	0.092	-0.120	-0.079	0.036
	(0.132)	(0.122)	(0.127)	(0.128)
Target Size		-0.233***	-0.216***	-0.215***
		(0.007)	(0.007)	(0.008)
Financial Autonomy			0.435***	0.485***
			(0.056)	(0.056)
Operating Margin			-1.227***	-1.479***
			(0.081)	(0.087)
Acquired Stake (%)				0.010***
				(0.001)
US Target				0.050*
				(0.027)
Sector fixed effects	No	No	No	Yes
Year fixed effects	No	No	No	Yes
Observations	7135	7135	7072	7071
Adjusted R-squared	-0.000	0.132	0.164	0.223

The Log EV/EBITDA regressions provide an even more stable pattern for the buyer-type coefficient, which remains statistically insignificant across all alternative specifications and equals 0.036 ($p = 0.780$) in the complete model. Target Size remains highly significant, indicating that a 1% increase in target assets is associated with an approximately 0.215% decrease in EV/EBITDA, *ceteris paribus*. Thus, changing both the functional form and the economic interpretation of the dependent variable leaves the relationship with target size intact, while continuing to yield a statistically insignificant buyer-type differential. These results are consistent with the empirical evidence showing that firm fundamentals remain important determinants of observed multiples across alternative valuation specifications (Kaplan & Ruback, 1995; Liu et al., 2002).

Table 11 - Robustness Regressions: Log EV/EBIT

The table reports OLS estimates using the natural logarithm of EV/EBIT as the dependent variable, with heteroskedasticity-robust standard errors in parentheses. Financial Autonomy and Operating Margin are winsorised at the 5th and 95th percentiles, and the outcome is available only for transactions with positive pre-deal EBIT. Specifications (1) – (4) follow the same sequential introduction of controls used in the baseline analysis, with sector and year fixed effects included in specification (4). Strategic Buyers constitute the reference category for PE Buyer. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

	(1) Log EV /	(2) Log EV /	(3) Log EV /	(4) Log EV /

	EBIT	**EBIT**	**EBIT**	**EBIT**
PE Buyer	0.019	-0.143	-0.143	-0.037
	(0.143)	(0.138)	(0.141)	(0.140)
Target Size		-0.180***	-0.167***	-0.166***
		(0.008)	(0.008)	(0.009)
Financial Autonomy			0.339***	0.395***
			(0.060)	(0.060)
Operating Margin			-1.841***	-2.211***
			(0.087)	(0.096)
Acquired Stake (%)				0.012***
				(0.001)
US Target				0.051*
				(0.029)
Sector fixed effects	No	No	No	Yes
Year fixed effects	No	No	No	Yes
Observations	6334	6334	6278	6277
Adjusted R-squared	-0.000	0.080	0.145	0.227

The values presented in Table 11, using the Log EV/EBIT, show in the complete model a PE Buyer coefficient of −0.037 (p = 0.790), corresponding to an estimated EV/EBIT approximately 3.6% lower for PE acquisitions than for otherwise comparable Strategic Buyer transactions, which would be consistent with the main hypothesis of this dissertation, if it were statistically significant. As expected, Target Size continues to exhibit a statistically significant negative association with valuation, with an elasticity of −0.166, implying that a 1% increase in target assets is associated with an approximately 0.166% decrease in EV/EBIT, *ceteris paribus*.

Lastly, a different approach is applied by winsorising the main transaction multiples and two control variables, Financial Autonomy and Operating Margin, at the 10th and 90th percentiles to assess whether the estimates are sensitive to a restrictive treatment of observations in the tails of the distributions. In contrast to the logarithmic transformation, this test preserves the level interpretation of the transaction multiples while further limiting the influence of extreme observations (Li & Tong, 2018; Mason & Stegemoller, 2022; Officer, 2007).

Table 12 - Robustness Regressions: EV/Total Assets, W (10,90)

The table reports OLS estimates for EV/Total Assets using the alternative 10th–90th percentile winsorisation threshold, with heteroskedasticity-robust standard errors in parentheses. EV/Total Assets, Financial Autonomy and Operating Margin are winsorised at the 10th and 90th percentiles. Specifications (1)– (4) follow the baseline sequence of controls, with sector and year fixed effects included in specification (4). Strategic Buyers constitute the reference category for PE Buyer. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

	(1) EV / Total Assets	**(2) EV / Total Assets**	**(3) EV / Total Assets**	**(4) EV / Total Assets**
PE Buyer	0.378*	-0.058	0.005	0.153
	(0.199)	(0.150)	(0.147)	(0.151)
Target Size		-0.480***	-0.456***	-0.484***
		(0.009)	(0.009)	(0.010)
Financial Autonomy			0.586***	0.381***
			(0.075)	(0.072)
Operating Margin			1.217***	1.851***
			(0.115)	(0.117)
Acquired Stake (%)				0.011***
				(0.001)
US Target				0.487***
				(0.034)
Sector fixed effects	No	No	No	Yes
Year fixed effects	No	No	No	Yes
Observations	7135	7135	7072	7071
Adjusted R-squared	0.000	0.294	0.304	0.379

For the EV/Total Assets, a stricter winsorisation produces the same general pattern observed in the baseline analysis, as the PE Buyer coefficient is initially positive and weakly significant at the 10% level (0.378, p = 0.058), becomes −0.058 after controlling for Target Size, and remains statistically insignificant in the subsequent specifications, reaching 0.153 in the complete model. Target Size preserves a strong negative association with the valuation variable, implying that a 10% increase in target assets is associated with an approximately 0.046 reduction in EV/Total Assets, *ceteris paribus*. The remaining controls retain the same statistically significant associations, indicating that the explanatory relationships identified in the baseline model are not affected by extreme observations in the tails of the distributions.

Table 13 - Robustness Regressions: EV/EBITDA, W (10,90)

The table reports OLS estimates for EV/EBITDA using the alternative 10th–90th percentile winsorisation threshold, with heteroskedasticity-robust standard errors in parentheses. EV/EBITDA, Financial Autonomy and Operating Margin are winsorised at the 10th and 90th percentiles. Specifications (1) – (4) follow the baseline

sequence of controls, with sector and year fixed effects included in specification (4). Strategic Buyers constitute the reference category for PE Buyer. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

	(1) EV / EBITDA	(2) EV / EBITDA	(3) EV / EBITDA	(4) EV / EBITDA
PE Buyer	0.817	-3.212	-2.516	-0.659
	(2.818)	(2.663)	(2.732)	(2.748)
Target Size		-4.430***	-4.099***	-3.953***
		(0.150)	(0.157)	(0.175)
Financial Autonomy			8.461***	9.603***
			(1.318)	(1.334)
Operating Margin			-32.765***	-39.592***
			(2.004)	(2.168)
Acquired Stake (%)				0.108***
				(0.018)
US Target				-0.512
				(0.567)
Sector fixed effects	No	No	No	Yes
Year fixed effects	No	No	No	Yes
Observations	7135	7135	7072	7071
Adjusted R-squared	-0.000	0.107	0.141	0.179

Using EV/EBITDA as the main multiple, after controlling for Target Size, the PE Buyer coefficient becomes negative (−3.212) and remains so as controls are introduced, reaching (−0.659) in the complete model. Although this result is consistent with higher transaction multiples among Strategic Buyers, the estimate remains statistically insignificant at conventional significance levels and does not provide sufficient statistical evidence of any buyer-type association. The absence of an average buyer-type differential does not imply that Strategic and PE investors necessarily value individual targets in the same manner. Gorbenko and Malenko (2014) provide a theoretical basis for higher valuations by Strategic Buyers due to buyer-specific operating synergies, while showing substantial heterogeneity in bidder valuations, with financial buyers emerging as the highest-value bidders for a significant subset of targets.

Table 14 - Robustness Regressions: EV/EBIT, W (10,90)

The table reports OLS estimates for EV/EBIT using the alternative 10th–90th percentile winsorisation threshold, with heteroskedasticity-robust standard errors in parentheses. EV/EBIT, Financial Autonomy and Operating Margin are winsorised at the 10th and 90th percentiles, and the outcome is available only for

transactions with positive pre-deal EBIT. Specifications (1) – (4) follow the baseline sequence of controls, with sector and year fixed effects included in specification (4). Strategic Buyers constitute the reference category for PE Buyer. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

	(1) **EV / EBIT**	**(2)** **EV / EBIT**	**(3)** **EV / EBIT**	**(4)** **EV / EBIT**
PE Buyer	1.798	-2.811	-2.989	-0.269
	(4.748)	(4.650)	(4.628)	(4.540)
Target Size		-5.150***	-4.709***	-4.522***
		(0.256)	(0.265)	(0.289)
Financial Autonomy			10.584***	12.465***
			(2.137)	(2.157)
Operating Margin			-69.408***	-84.962***
			(3.257)	(3.608)
Acquired Stake (%)				0.238***
				(0.028)
US Target				-0.886
				(0.930)
Sector fixed effects	No	No	No	Yes
Year fixed effects	No	No	No	Yes
Observations	6334	6334	6278	6277
Adjusted R-squared	-0.000	0.063	0.127	0.182

Lastly, the EV/EBIT results complete this stricter winsorisation exercise and again provide no statistically significant association between buyer identity and the transaction multiple. The PE Buyer coefficient becomes negative after Target Size is incorporated and equals (−0.269) in the complete specification. As EV/EBIT is used primarily as an additional earnings-based robustness measure, the relevant result is that restricting the influence of extreme observations does not influence a possible buyer-type association that is absent from the two other principal valuation measures.

Table 15 - Robustness of the PE Buyer × Target Size Interaction

The table reports robustness estimates for the PE Buyer × Target Size interaction identified in the EV/Total Assets baseline specification. Column (1) uses the natural logarithm of EV/Total Assets as the dependent variable, while Column (2) uses EV/Total Assets and the relevant financial variables winsorised at the 10th and 90th percentiles. Target Size is mean-centred before constructing the interaction term. Both specifications include Financial Autonomy, Operating Margin, Acquired Stake and US Target, together with sector and year fixed effects. Strategic Buyers constitute the reference category. Heteroskedasticity-robust standard errors are reported in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

	(1) **Log EV/Total Assets**	**(2)** **EV/Total Assets W(10,90)**
PE Buyer	-0.068	-0.144

	(0.111)	(0.170)
Target Size	-0.298***	-0.481***
	(0.006)	(0.010)
PE Buyer*Target Size	-0.157***	-0.332***
	(0.053)	(0.091)
Controls	Yes	Yes
Sector fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Observations	7071	7071
Adjusted R-squared	0.427	0.380

Finally, Table 15 assesses whether the size-related heterogeneity identified for EV/Total Assets is sensitive to the alternative specifications used in the robustness analysis. In the logarithmic specification, the PE Buyer × Target Size interaction remains negative and statistically significant ($\beta = -0.157$, $p = 0.003$). Since both EV/Total Assets and Target Size are expressed in logarithmic form, the interaction coefficient indicates that the elasticity of EV/Total Assets with respect to Target Size is approximately 0.157 lower for PE acquisitions than for Strategic Buyer acquisitions, *ceteris paribus*.

The interaction also remains negative and statistically significant under the alternative 10th–90th percentile winsorisation threshold ($\beta = -0.332$, $p < 0.001$). In this level-log specification, a 10% increase in target assets is associated with an approximately 0.032-unit reduction in the estimated PE–Strategic Buyer differential in EV/Total Assets, *ceteris paribus*, holding the remaining variables constant. Although the magnitudes of the coefficients are not directly comparable across specifications because the dependent variable differs in functional form, both robustness exercises preserve the negative sign and statistical significance of the interaction. Thus, the evidence of size-related heterogeneity in EV/Total Assets is not specific to the baseline functional form or winsorisation threshold.

5.3 PSM Results

An important consideration when comparing the two buyer types in this research is the significant imbalance in sample composition, with Strategic Buyer transactions considerably outnumbering PE acquisitions. Given this disparity, comparisons based on the full sample may be influenced by differences in the characteristics of targets associated with each buyer type, rather than by differences in buyer identity (Fidrmuc et al., 2012).

Accordingly, the Propensity Score Matching (PSM) framework provides a more restrictive comparison by matching PE transactions to Strategic Buyer acquisitions that are similar in observable pre-acquisition characteristics (Caliendo & Kopeinig, 2008). Following Rosenbaum and Rubin (1983), the propensity scores are estimated using Target Size, Financial Autonomy, Operating Margin, US Target Status, Target Industry and Transaction Period. This procedure identifies 67 PE transactions and their corresponding Strategic Buyer acquisitions, yielding a matched sample of 134 deals. The substantially smaller number of Strategic Buyer observations reflects the one-to-one matching design, together with the caliper of 0.01, a common-support requirement and matching without replacement (Austin, 2011). Before analysing the transaction multiples estimates, the quality of the matched sample is assessed using propensity-score overlap and covariate-balance diagnostics. Figures 1 and 2 present the propensity-score distributions for PE and Strategic Buyer transactions before and after matching.

Figure 1 - Propensity Score Distributions Before Matching

Kernel density distributions of the estimated propensity scores for Private Equity and Strategic Buyer transactions before matching.

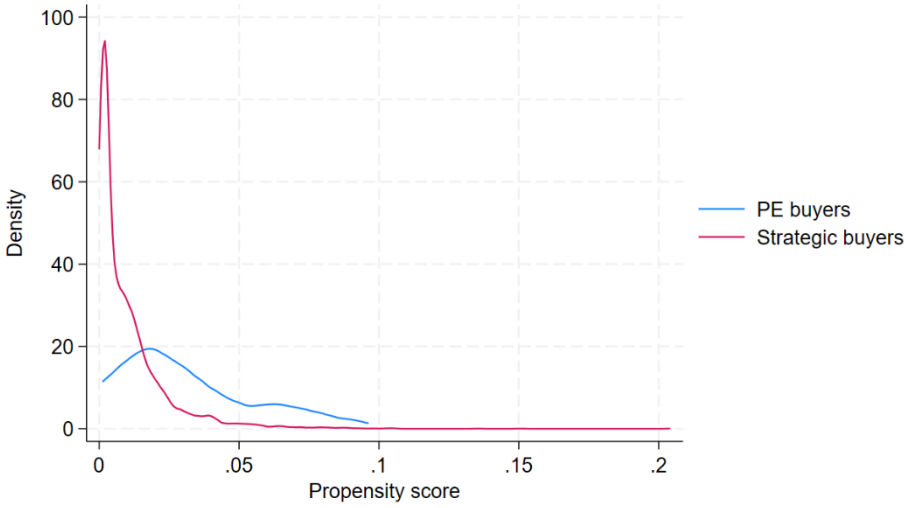
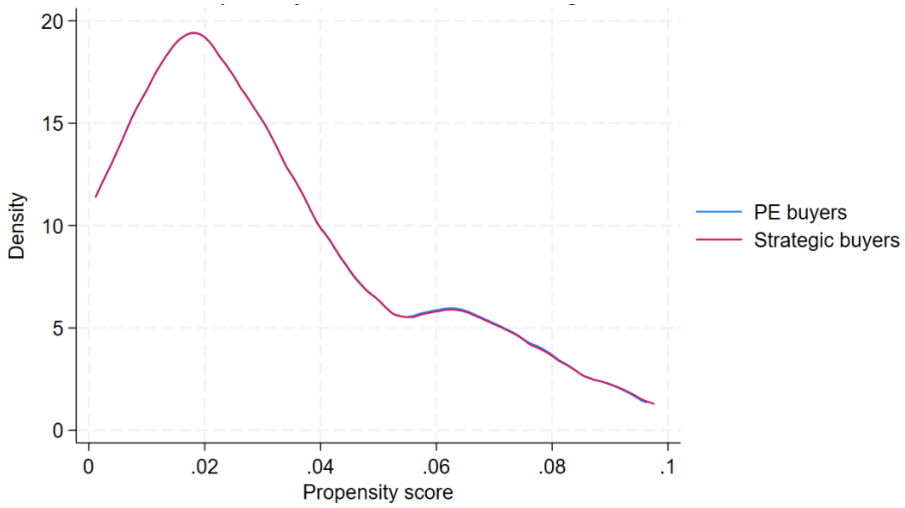


Figure 2 - Propensity Score Distributions After Matching

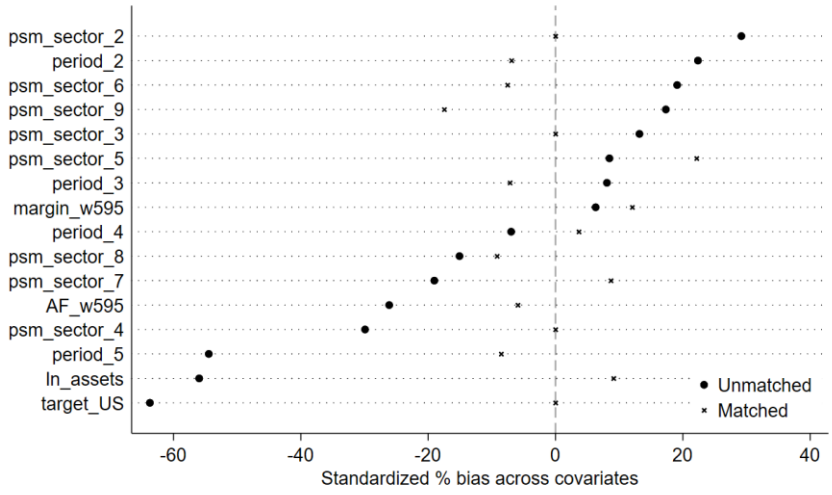
Kernel density distributions of the estimated propensity scores for the matched Private Equity and Strategic Buyer transactions after one-to-one nearest-neighbour matching.



Before the sample matching, the propensity-score distributions differ visibly between the two groups, with Strategic Buyer transactions concentrated at lower estimated probabilities and PE acquisitions settling towards higher propensity scores. Following matching, the distributions become substantially more aligned over their common support, providing initial evidence of improved comparability between the two groups. This type of *overlap assessment* is commonly used in the literature to evaluate whether the procedure improves the comparability between treatment and control observations (Caliendo & Kopeinig, 2008; Rosenbaum & Rubin, 1983). Since the propensity-score overlap alone is not sufficient to establish covariate balance, the underlying matching characteristics are examined separately.

Figure 3 - Standardised Covariate Bias Before and After Matching

The figure reports standardised percentage bias for the covariates included in the propensity-score model before and after matching. Values closer to zero indicate greater covariate balance between Private Equity and Strategic Buyer transactions.



The standardised bias diagnostics confirm a substantial improvement in balance, as the largest initial differences, particularly those associated with Target Size and US Target, are considerably reduced after matching. Financial Autonomy also becomes substantially more balanced. Conversely, Operating Margin is the main exception, with a residual imbalance after matching: the mean standardised bias decreases from 24.7% to 7.4% at the aggregate level, and the matching covariates are no longer jointly significant ($p = 0.965$). Rubin's B also declines but remains above the conventional threshold, at 46.7. Thus, the *matched sample* should be interpreted as materially more balanced than the original sample, although the diagnostics do not indicate perfect covariate balance (Austin, 2011; Caliendo & Kopeinig, 2008; Stuart, 2010). Figures 4 to 9 show the distribution of the main continuous covariates, such as Target Size, Financial Autonomy and Operating Margin, across PE and Strategic Buyer transactions before and after the procedure.

Figure 4 - Distribution of Target Size Before Matching

Kernel density distributions of Target Size for Private Equity and Strategic Buyer transactions before matching. Target Size is measured as the natural logarithm of pre-deal Total Assets.

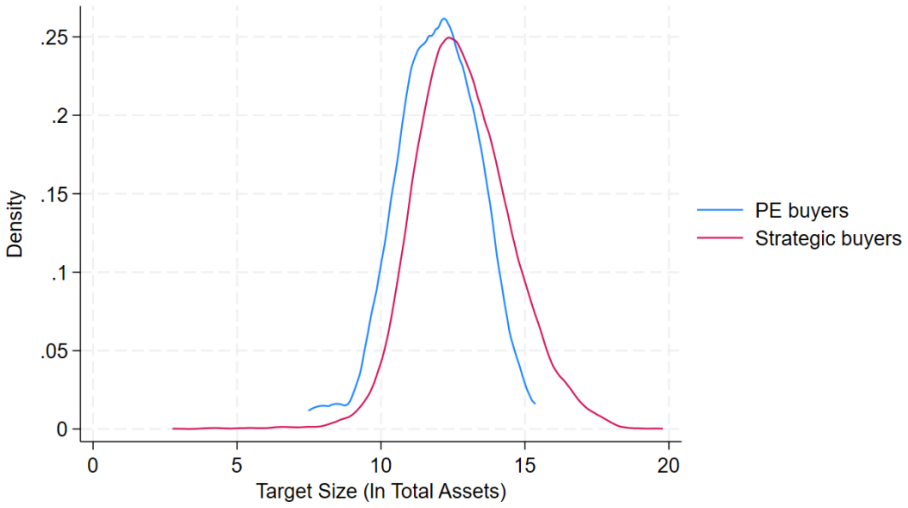
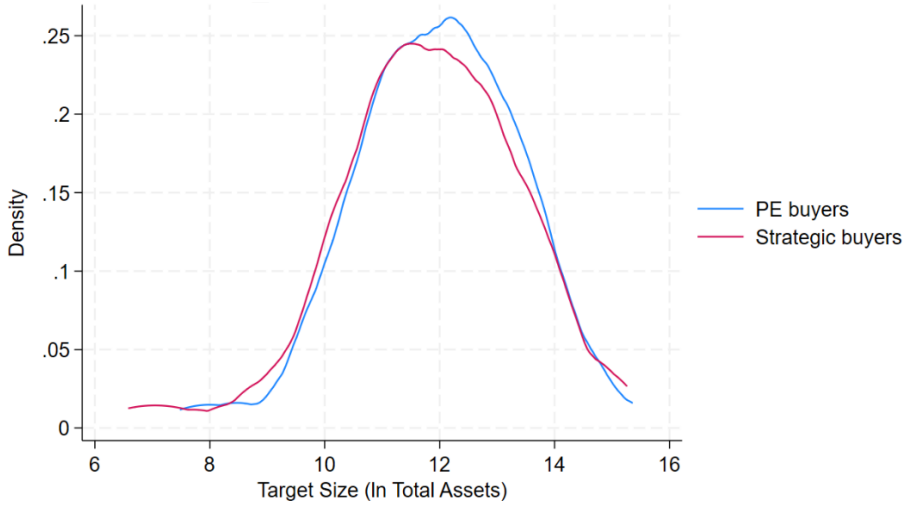


Figure 5 - Distribution of Target Size After Matching

Kernel density distributions of Target Size for the matched Private Equity and Strategic Buyer transactions. Target Size is measured as the natural logarithm of pre-deal Total Assets.



The Target Size distributions exhibit one of the clearest improvements: before matching, distributions show greater density of Strategic Buyers towards larger targets, and after matching, they become considerably more aligned across most of their range, with similar central mass and substantial overlap with the PE Buyer transactions. This graphical evidence is particularly relevant given that Target Size represents one of the strongest initial sources of imbalance and consistently emerges as an important determinant of transaction multiples in the previous regression analysis.

Figure 6 - Distribution of Financial Autonomy Before Matching

Kernel density distributions of Financial Autonomy for Private Equity and Strategic Buyer transactions before matching. Financial Autonomy is measured as shareholders' funds divided by Total Assets.

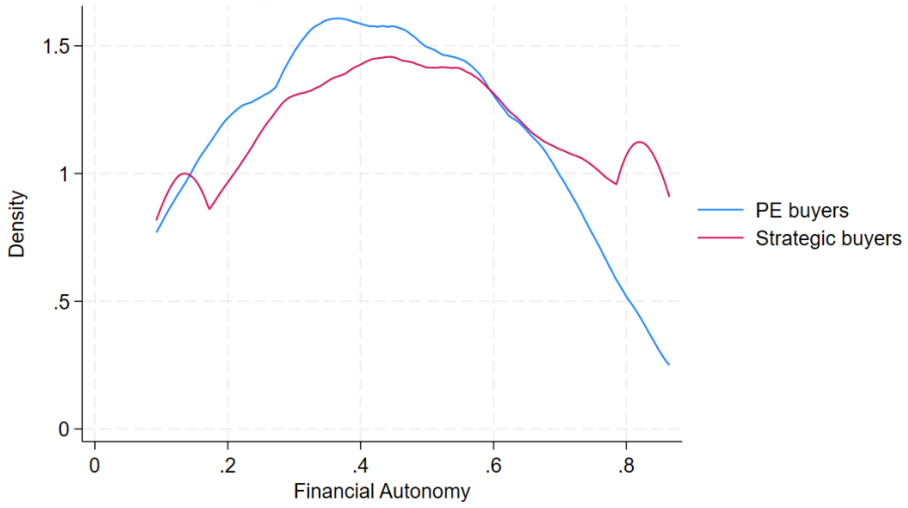
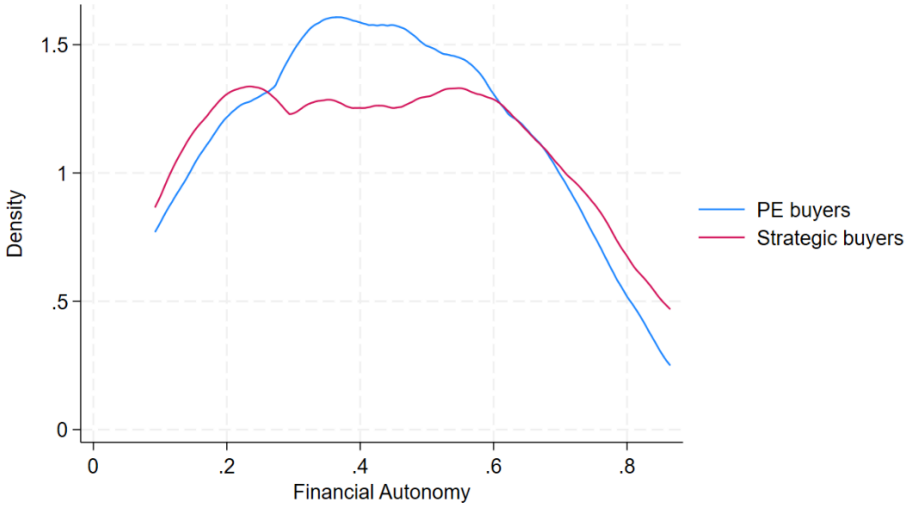


Figure 7 - Distribution of Financial Autonomy After Matching

Kernel density distributions of Financial Autonomy for the matched Private Equity and Strategic Buyer transactions. Financial Autonomy is measured as shareholders' funds divided by Total Assets.



The analysis of Financial Autonomy reaches a similar conclusion, with visible differences before matching across several parts of the distribution, particularly at higher values of the ratio, and after matching, the points become more aligned over their common support, consistent with the reduction in standardised bias from (−26.1%) to (−5.9%). Although some local differences remain, the overall degree of comparability between the two groups increases.

Figure 8 - Distribution of Operating Margin Before Matching

Kernel density distributions of Operating Margin for Private Equity and Strategic Buyer transactions before matching. Operating Margin is measured as EBIT divided by Operating Revenue.

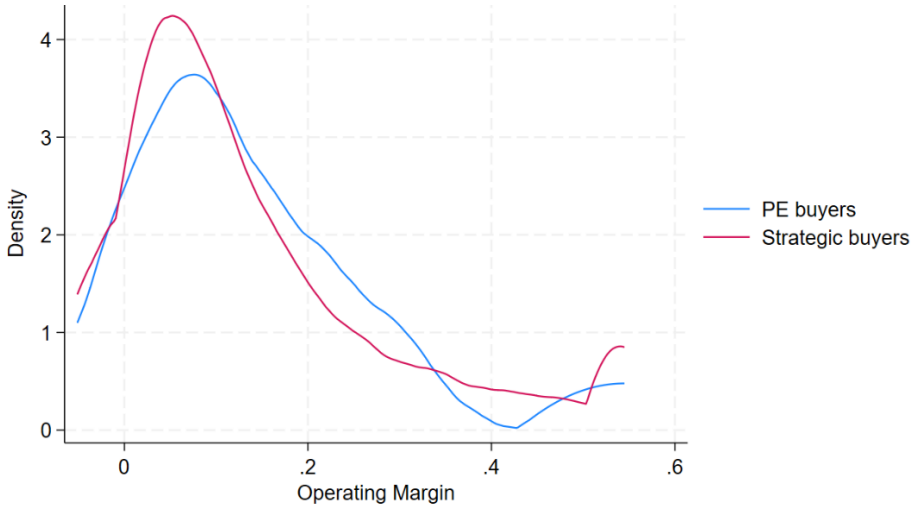
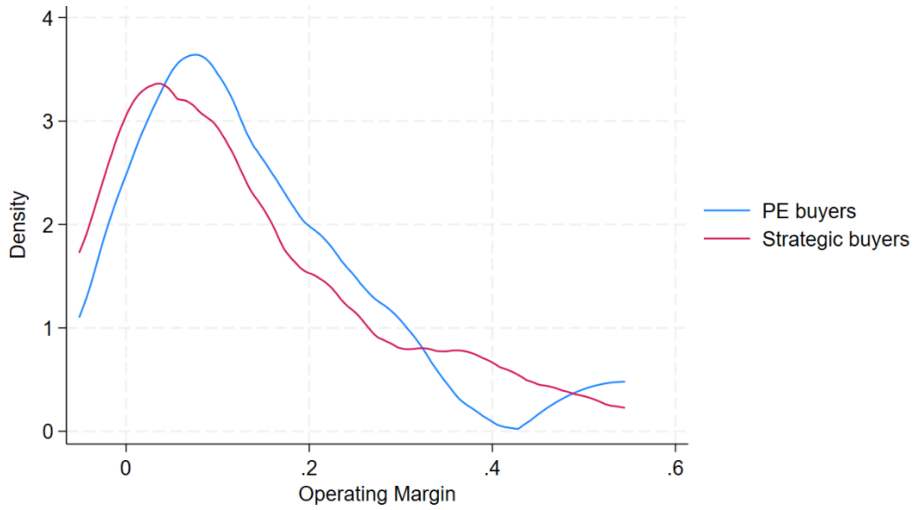


Figure 9 - Distribution of Operating Margin After Matching

Kernel density distributions of Operating Margin for the matched Private Equity and Strategic Buyer transactions. Operating Margin is measured as EBIT divided by Operating Revenue.



Operating Margin presents a rather different pattern, with the distributions already exhibiting a considerable overlap before the procedure and remaining relatively similar afterwards, despite some minimal differences in their shape and concentration. This observation is consistent with the registered increase in the standardised bias (6.3% to 12%) and implies that matching does not improve balance equally across all characteristics. However, given the overall propensity-score overlap and the substantial reductions in bias for the remaining covariates with higher initial imbalances, the matched sample nevertheless provides a substantially more comparable basis for the subsequent valuation analysis (Caliendo & Kopeinig, 2008). Table 16 summarises the changes in covariate balance before and after matching.

Table 16 - Covariate Balance Before and After Propensity Score Matching

Standardised bias is reported before and after propensity score matching for the main continuous and geographical covariates included in the propensity-score model. The reduction in absolute bias measures the percentage improvement in balance following matching. A negative value indicates a deterioration in balance after matching.

	Bias Before Matching (%)	**Bias After Matching (%)**	**Reduction in Bias (%)**
Target Size	-56.0	9.1	83.7
Financial Autonomy	-26.1	-5.9	77.4
Operating Margin	6.3	12.0	-90.9
US Target	-63.7	0.0	100.0

Based on this, the outcome regressions are re-estimated using the matched sample and the same target- and transaction-level controls employed in the baseline analysis. Sector and transaction-period characteristics are incorporated at the matching stage rather than

reintroduced as fixed effects in the post-matching outcome regressions, to provide an alternative analysis of the buyer-type coefficient, conditional on the improved similarity in observable transaction characteristics achieved through the Propensity Score Matching (PSM) approach (Stuart, 2010).

Table 17 - Post-Matching Regressions: EV/Total Assets

The table reports OLS estimates for EV/Total Assets using the propensity-score-matched sample, with heteroskedasticity-robust standard errors in parentheses. Propensity scores are estimated using Target Size, Financial Autonomy, Operating Margin, US Target, target industry and transaction period. One-to-one nearest-neighbour matching without replacement is implemented with a caliper of 0.01 and common support, resulting in 67 Private Equity and 67 matched Strategic Buyer transactions. EV/Total Assets, Financial Autonomy and Operating Margin are winsorised at the 5th and 95th percentiles. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

	(1) **EV / Total Assets**	**(2)** **EV / Total Assets**	**(3)** **EV / Total Assets**	**(4)** **EV / Total Assets**
PE Buyer	-0.521	-0.352	-0.355	-0.351
	(0.439)	(0.311)	(0.308)	(0.309)
Target Size		-1.197***	-1.187***	-1.209***
		(0.105)	(0.108)	(0.120)
Financial Autonomy			0.732	0.695
			(0.710)	(0.736)
Operating Margin			0.618	0.647
			(1.034)	(1.072)
Acquired Stake (%)				-0.003
				(0.012)
US Target				0.274
				(0.503)
Observations	134	134	134	134
Adjusted R-squared	0.003	0.506	0.504	0.497

For EV/Total Assets, the PE Buyer coefficient remains negative throughout the matched-sample specifications, moving from −0.521 in the unconditional regression to −0.351 in the complete model. Thus, holding the remaining characteristics constant, PE acquisitions exhibit an EV/Total Assets ratio approximately 0.351 lower than comparable Strategic Buyer transactions, *ceteris paribus*. Although this conclusion is consistent with the valuation differential expected under the main hypothesis, the coefficient is not statistically significant ($p = 0.258$), and the estimated difference cannot be distinguished from zero.

The limited variation in the PE Buyer coefficient as additional controls is introduced also suggests that, although the matching procedure has substantially reduced observable differences between the two groups, further covariate adjustment has comparatively little effect on the estimated buyer-type differential. By contrast, Target Size remains strongly and negatively associated with valuation, implying that a 10% increase in target assets is associated with an approximately 0.115 reduction in EV/Total Assets, *ceteris paribus*, and the relationship remains statistically significant at the 1% level. The persistence of this size effect after restricting the analysis to a more comparable set of transactions reinforces the relevance of firm characteristics in the relative valuation approach (Eaton et al., 2022; Kaplan & Ruback, 1995; Lie & Lie, 2002).

Table 18 - Post-Matching Regressions: EV/EBITDA

The table reports OLS estimates for EV/EBITDA using the propensity-score-matched sample, with heteroskedasticity-robust standard errors in parentheses. Propensity scores are estimated using Target Size, Financial Autonomy, Operating Margin, US Target, target industry and transaction period. One-to-one nearest-neighbour matching without replacement is implemented with a caliper of 0.01 and common support, resulting in 67 Private Equity and 67 matched Strategic Buyer transactions. EV/EBITDA, Financial Autonomy and Operating Margin are winsorised at the 5th and 95th percentiles. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

	(1) **EV / EBITDA**	**(2)** **EV / EBITDA**	**(3)** **EV / EBITDA**	**(4)** **EV / EBITDA**
PE Buyer	-10.119	-7.548	-6.388	-6.320
	(10.146)	(8.915)	(8.424)	(8.392)
Target Size		-18.118***	-18.995***	-19.330***
		(3.422)	(3.474)	(3.889)
Financial Autonomy			-17.660	-18.176
			(28.280)	(28.722)
Operating Margin			-71.297	-71.276
			(44.128)	(45.653)
Acquired Stake (%)				-0.070
				(0.308)
US Target				3.005
				(7.469)
Observations	134	134	134	134
Adjusted R-squared	-0.000	0.212	0.240	0.228

The EV/EBITDA regressions with the matched sample demonstrate a similar pattern. After controlling for Target Size, the PE Buyer coefficient equals −7.548 (p = 0.399) and remains

negative as additional controls are incorporated, reaching −6.320 in the complete specification. However, the coefficient remains statistically insignificant, meaning that the estimated difference cannot be statistically distinguished from zero. Once again, Target Size provides the strongest explanatory relationship, implying that a 10% increase in target assets is associated with an approximately 1.84 reduction in EV/EBITDA, holding the remaining variables constant (*ceteris paribus)*, and the relationship is statistically significant at the 1% level. Financial Autonomy, Operating Margin, Acquired Stake and US Target are not statistically significant in the matched sample. The lower precision of several estimates compared with the baseline regressions is consistent with the substantial reduction in sample size and the narrower range of observable characteristics resulting from the matching.

Table 19 - Post-Matching Regressions: EV/EBIT

The table reports OLS estimates for EV/EBIT using the propensity-score-matched sample, with heteroskedasticity-robust standard errors in parentheses. Propensity scores are estimated using Target Size, Financial Autonomy, Operating Margin, US Target, target industry and transaction period. One-to-one nearest-neighbour matching without replacement is implemented with a caliper of 0.01 and common support. The regression sample contains 121 matched transactions because EV/EBIT is available only for observations with positive pre-deal EBIT. EV/EBIT, Financial Autonomy and Operating Margin are winsorised at the 5th and 95th percentiles. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

	(1) **EV / EBIT**	**(2)** **EV / EBIT**	**(3)** **EV / EBIT**	**(4)** **EV / EBIT**
PE Buyer	0.287	1.844	0.964	0.823
	(14.050)	(12.892)	(12.854)	(12.915)
Target Size		-19.324***	-20.549***	-21.209***
		(5.510)	(5.684)	(6.350)
Financial Autonomy			-17.258	-19.629
			(41.553)	(42.085)
Operating Margin			-73.346	-67.703
			(65.745)	(67.044)
Acquired Stake (%)				0.104
				(0.327)
US Target				20.538
				(18.798)
Observations	121	121	121	121
Adjusted R-squared	-0.008	0.136	0.144	0.134

To conclude this analysis, the EV/EBIT specification requires a positive pre-deal EBIT, so the available sample decreases to 121 observations. In contrast to EV/Total Assets and EV/EBITDA, the PE Buyer coefficient is positive in the complete specification at 0.823,

but highly imprecise and statistically insignificant ($p = 0.949$), providing, once again, no evidence of a systematic buyer-type differential. As expected, Target Size remains the most persistent relationship in this model, with a coefficient of −21.209, implying that a 10% increase in target assets is associated with an approximately 2.02 reduction in the EV/EBIT multiple, *ceteris paribus*, and remains statistically significant at the 1% level. Given the smaller available sample and the complementary role of EV/EBIT in the empirical analysis, this specification provides only an additional check on the results obtained for the two principal valuation measures rather than a separate basis for inference.

6. Conclusions

This research investigates the extent to which Strategic Buyers and Private Equity investors systematically differ in the transaction multiples paid for acquisition targets. The study uses a database of 7,135 completed majority acquisitions between 2000 and 2026 and considers EV/Total Assets and EV/EBITDA as the primary valuation measures, with EV/EBIT used as a secondary robustness check. Although the initial descriptive analysis indicates higher multiples among PE acquisitions, these transactions involve systematically different targets, particularly in terms of firm size, and once observable target and transaction characteristics are introduced, the PE Buyer coefficient turns out to be statistically insignificant for all three valuation multiples and across alternative transformations and winsorisation thresholds, as well as after Propensity Score Matching, which restricts the comparison to transactions with more similar observable characteristics. Thus, the empirical evidence does not support H1 or the corresponding hypotheses H1a, H1b and H1c.

Given these findings, it should not be inferred that Private Equity and Strategic Buyers necessarily attach equal values to the companies they are buying. Rather, the results indicate that buyer identity alone does not account for the systematic differences in the observed transaction multiples. Target Size emerges as a significant factor, suggesting that who is acquired may be at least as relevant as who acquires the firm, and this conclusion is consistent with the empirical literature that states that differences between financial and corporate acquisitions are closely related to target selection and the sale process (Fidrmuc et al., 2012), as well as with the broader evidence that valuation multiples vary systematically with firm characteristics (Lie & Lie, 2002).

The additional interaction analysis indicates that the association between buyer type and valuation varies with Target Size for the main multiple EV/Total Assets. The negative and statistically significant coefficient of PE Buyer × Target Size implies that, *ceteris paribus*, the estimated PE–Strategic Buyer differential in EV/Total Assets becomes more negative as the economic scale of the target increases. This result remains negative and statistically significant under both the logarithmic specification and the alternative 10th–90th percentile winsorisation threshold. Conversely, the interaction terms for the other two multiples are not statistically significant, so the results should be interpreted as specific size-related heterogeneity in the asset-based valuation measure rather than as a general buyer-type valuation effect. Accordingly, despite the possibility that Strategic Buyers can incorporate

specific operational synergies that are less accessible to financial acquirers (Gorbenko & Malenko, 2014), the results do not indicate that this translates into systematically higher transaction multiples. This finding is also consistent with Hammer et al. (2022), who show that transaction multiples paid by PE investors for buy-and-build platforms are comparable to those paid by strategic acquirers for matched targets.

Several limitations arise when interpreting the study results, beginning with a substantial imbalance in the sample composition: only 67 of 7,135 transactions are PE acquisitions, which limits the statistical power to identify differences between buyer types. This imbalance can be attributable to the context of the relatively recent and cyclical nature of the modern PE market, which emerged as a significant form of corporate ownership considerably later than traditional corporate acquisition activity and expanded particularly from the 1980s onwards, with buyout activity subsequently developing through distinct waves (Kaplan & Stein, 1993; Kaplan & Strömberg, 2009). The volume and the type of PE activity have also been closely associated with the conditions in debt markets and the availability of acquisition financing (Axelson et al., 2013). In this study, the number of usable PE observations was constrained by the availability of transaction values and pre-acquisition financial information in Orbis M&A, as well as the criteria required to construct comparable transaction multiples.

Additionally, a substantial part of the existing literature comparing financial and strategic acquirers focuses on acquisition premiums for publicly listed targets (Bargeron et al., 2008; Boone & Mulherin, 2007), and extending the present analysis to this dimension would have required observable pre-acquisition market values and, consequently, a further restrictive sample of listed targets. Thus, the use of transaction multiples creates a broader set of available public and private acquisitions and allows the analysis of acquisition pricing from a relative-valuation perspective. Nevertheless, the underlying data remains conditional on the disclosure of transaction and accounting information, which is particularly relevant for private targets, where financial information is typically less accessible (Mason & Stegemoller, 2022).

A further limitation is that the regression analysis and the Propensity Score Matching use only observable characteristics, and deal values may also reflect expected synergies, bidder competition and bargaining dynamics that cannot be directly captured using the existing data. According to the literature, future research on this specific topic could include more detailed information on the acquisition process, particularly by distinguishing competitive auctions

from traditional negotiated transactions, since the sale mechanism can affect bidder participation and acquisition pricing (Boone & Mulherin, 2007; Fidrmuc et al., 2012). Information on bidder competition, advisor involvement and corporate strategy could provide insights into the circumstances under which differences between buyer types emerge, given the role of investment banks in transaction valuation (Eaton et al., 2022) and of product-market complementarities in determining potential acquisition synergies (Hoberg & Phillips, 2010).

Future studies could also examine whether the relationship between buyer type and transaction multiples is highly influenced by the broader market and financing conditions, which can be particularly important for PE investors, who, according to the literature, have their ability to use leverage as a way to finance acquisitions, closely linked to the conditions in debt markets (Axelson et al., 2013; Kaplan & Stein, 1993). Thus, analysing PE and SB valuations across different stages of the credit cycle or periods of elevated M&A activity could reveal differences that are not apparent in estimates across the full sample period. Instead of focusing on finding a universal difference between Strategic and Private Equity buyers, further research could help identify when, and under which transaction conditions, buyer identity becomes economically relevant.

Appendix

Table 20 - Global Descriptive Statistics After Winsorisation

The table reports descriptive statistics after winsorisation of EV/Total Assets, EV/EBITDA, EV/EBIT, Financial Autonomy and Operating Margin at the 5th and 95th percentiles. Target Size and Acquired Stake are not winsorised. EV/EBIT is calculated only for transactions with positive pre-deal EBIT.

	N	Mean	Std. Dev.	Median	Min	Max
EV/Total Assets	7135	2.17	2.12	1.42	0.27	8.60
EV/EBITDA	7135	31.42	47.42	13.62	2.82	198.34
EV/EBIT	6334	45.79	68.53	19.49	4.13	286.80
Target Size	7135	12.87	1.69	12.79	2.76	19.80
Financial Autonomy	7135	0.47	0.23	0.47	0.09	0.86
Operating Margin	7072	0.15	0.16	0.10	-0.05	0.54
Acquired Stake (%)	7135	93.38	14.42	100.00	50.00	100.00

Table 21 - Variance Inflation Factors (VIF)

The table reports Variance Inflation Factors (VIFs) for the explanatory variables included in the full baseline specification. VIF values are used to assess potential multicollinearity among the regressors.

Variable	VIF	1/VIF
US Target	1.24	0.8088
Target Size	1.20	0.8307
Acquired Stake	1.09	0.9211
Financial Autonomy	1.07	0.9327
Operating Margin	1.04	0.9639
PE Buyer	1.01	0.9949
Mean VIF	**1.11**	

Table 22 - Heteroskedasticity and Functional-Form Tests

The table reports diagnostic tests for the full baseline OLS specification estimated separately for EV/Total Assets, EV/EBITDA and EV/EBIT. The Breusch–Pagan/Cook–Weisberg and White tests evaluate the null hypothesis of homoskedasticity, while the Ramsey RESET test evaluates the null of correct functional-form specification. Reported p-values below 0.001 indicate rejection of the respective null hypotheses.

Diagnostic Test	EV/Total Assets	EV/EBITDA	EV/EBIT
Breusch–Pagan χ^2	1151.78	1521.34	1334.62
p-value	<0.001	<0.001	<0.001
White χ^2	1139.72	1338.04	1349.13

p-value	<0.001	<0.001	<0.001
Ramsey RESET F-statistic	400.69	210.40	185.82
p-value	<0.001	<0.001	<0.001

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