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Determinants of Valuation Multiples in European M&A Transactions

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Abstract

In this thesis, we examine the determinants of EV/EBITDA valuation multiples in Western European mergers and acquisitions (M&A) transactions. Although valuation multiples are widely used, the factors driving variation in transaction multiples are still subject to debate in the academic literature. To address this issue, we analyse a sample of 218 completed M&A transactions involving Western European target companies between 2015 and 2025. We are interested if firm size, profitability, leverage, and industry classification significantly influence EV/EBITDA multiples using Ordinary Least Squares (OLS) regression. The results of our analysis indicate that leverage is the most consistent determinant of valuation multiples across all model specifications. Firms with higher debt-to-EBITDA ratios tend to receive higher EV/EBITDA multiples. There were no statistically significant findings regarding profitability with respect to EV/EBITDA valuation multiples. Even though firm size was not statistically significant in explaining EV/EBITDA multiple in the baseline model, it did demonstrate a statistically significant association with the EV/EBITDA ratio when the model included outliers. After outlier removal, the results of our study suggest that smaller firms may command higher valuation multiples. Industry effects showed generally limited effects within our study, although firms in the Energy sector consistently receive lower valuation multiples than firms in the reference industry.

Keywords: mergers and acquisitions, valuation multiples, EV/EBITDA, relative valuation, leverage, firm size, profitability, Western Europe.

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1. Introduction

Mergers and acquisitions (M&A) represent one of the most important mechanisms through which firms seek growth, restructure operations, enter new markets and create shareholder value. Different from organic growth, which relies on expanding existing operations over time, acquisitions allow companies to rapidly obtain new technologies, customer bases, production capabilities, intellectual property, and market access. As a result, M&A activity has become a central feature of modern capital markets and corporate strategy.

Each year, globally, the mergers and acquisitions (M&A) market consists of trillions of dollars' worth of transactions across virtually every sector of the economy. The type of transaction can be as simple as a small company purchasing another, or as sophisticated as one multinational corporation making a purchase from another. The ultimate goal of the purchaser, however, will differ, depending on each situation. The success of a merger and/or acquisition will be based on whether or not the buyer has paid an acceptable amount for the selling company's shares.

The academic literature identifies a couple of motives that drive M&A activity. Trautwein (1990) explains that horizontal acquisitions allow firms operating within the same industry to increase market share, achieve economies of scale, and strengthen their competitive position. Vertical acquisitions enable firms to integrate different stages of the supply chain, reducing transaction costs and improving operations. Conglomerate acquisitions, although less common today, may provide diversification benefits and access to new markets. Gorbenko & Malenko (2014) note the strategic rationale also differs between financial buyers (private equity firms seeking returns through operational improvements and leverage) and strategic buyers (corporates targeting synergies, market access, or technology acquisition). These differences in motive can directly affect the price paid, and therefore the observed multiples.

Even if acquisitions can offer a wealth of advantages, numerous studies show that actual acquisitions do not achieve the anticipated outcomes that both parties had hoped for. One frequent cause of this failure has been cited numerous times: "overpaying" for the acquired company. If the acquisition's buyer purchases the target company at a price above its inherent (or 'true') value, then the associated expected synergies and operational benefits may not be substantial enough to support the overall cost of the acquisition. This makes accurate valuation of the target very important during the entire acquisition process.

The importance of valuation in M&A transactions extends beyond deciding a purchase price. Valuation serves as the foundation for negotiation, fairness opinions, and other financing decisions. Investment banks, private equity firms, and financial advisors devote significant resources to estimating the value of acquisition targets and assessing whether a proposed transaction creates value for shareholders. Taking into account the significant financial consequences associated with valuation errors, researchers and practitioners have devoted considerable attention to understanding how firm value is estimated and which factors influence valuation outcomes.

There are several approaches that are used in practice to determine the target firm's value, such as Income Approach (DCF valuation), the Market Approach (relative valuation), and the Cost (Asset) Approach. In practice, the market approach based on valuation multiples is among the most widely used by financial institutions, financial analysts and investment bankers for estimating the firm value.

Schueler (2020) explains that the market approach rests on the law of one price. The law being that identical assets should trade at identical prices. In practice, value is estimated by applying a valuation multiple drawn from a set of comparable companies or comparable transactions to the target firm's corresponding financial metric. Damodaran (2002) observes that 90% of all equity valuations, and approximately 50% of acquisition valuations use some combination of both multiples and comparable companies.

Shaffer (2023) gives a very detailed overview of the multiples used in M&A transactions. He notes that the EBITDA-based multiples are among the most common value-driver denominators. The author also finds that enterprise value multiples are chosen in 60% of the cases instead of equity value multiples. However, despite these findings, Shaffer recognized that the choice of the multiples used in the M&A transactions remain a mystery.

Moreover, the valuation multiples vary across different industries, geographic locations, and transactions. These variations raise an important question: why do valuation multiples vary so significantly across M&A transactions?

Existing literature suggests that profitability, leverage, firm size, potential growth opportunities, as well as industry segment are among the key factors that that influence valuation multiples used in the M&A transactions. Damodaran (2006) argues that each valuation multiples is a function of three variables: potential growth, risk, as well as cash generating ability. As a result, companies with less risk, more growth potential and more cash generating abilities should receive higher

valuation multiples. Despite these insights, the empirical studies show mixed results, as there is no clear consensus about the main factor influencing the valuation multiples.

Among the most consistently studied determinants is firm size. The size effect refers to the empirical observation that firm size influences valuation outcomes. Early evidence from US public equity markets was provided by Banz (1981), who found that smaller firms earned higher risk-adjusted stock returns than larger firms. In the context of private company transactions, Podškubka, Kohoutek and Skálová (2024) document a positive relationship between firm size and transaction multiples across 2,270 EU deals using three alternative size proxies. However, the evidence is not always consistent. While some studies report that larger firms command higher valuation multiples, Alexandridis et al. (2013) find a negative relationship between target size and acquisition premiums, showing that acquirers tend to pay lower premiums for larger targets.

Profitability is another contested determinant. Damodaran's theoretical framework predicts that more profitable firms with stable cash flows should command higher multiples, however, some empirical work (Guo, Hotchkiss & Song, 2011) indicates that operating performance gains explain only a modest portion of realized returns in buyouts, with industry multiple expansion and tax benefits playing a larger role.

Leverage yields similarly mixed predictions. Higher leverage increases financial risk and should theoretically compress valuation multiples. Yet Axelson et al. (2013) find that buyout pricing is more strongly associated with macroeconomic conditions than with target-firm leverage, and that time periods when the credit is cheap correlate with higher transaction prices.

Moreover, the majority of the existing research is focused on U.S. markets, while research on European and other regions remains limited. The European M&A market differs from the U.S. in several respects that are relevant to multiple determinants. The adoption of IFRS across the EU has increased accounting comparability between public and private firms in different member states, which Bourveau et al. (2022) show facilitates the spillover of valuation information from public peer firms to private transactions. At the same time, European markets remain more fragmented than the U.S. market, with persistent differences in legal systems, tax regimes, and capital market development across countries.

As mentioned above, the geographic region affects the multiples because of the differences in the accounting standards, tax policies, and market conditions, among others. This research gap is therefore important one to address. Moreover, the mixed findings across different studies,

specifically when it comes to the size, profitability and leverage, highlight the need for additional research.

The existing literature thus leaves several questions open. First, the majority of evidence on which firm characteristics drive multiples comes from U.S. public-company or U.S. buyout samples, with little work on Western European private transactions in comparison. Second, the mixed findings on size, profitability, and leverage suggest that the relationship between these variables and transaction multiples may be dependent on the context, and varies with market conditions, deal structure, as well as institutional environment. Third, while studies often document which multiples practitioners choose, they do not explain well the cross-sectional variation in those multiples.

Therefore, in this thesis, we aim to address these gaps by providing evidence on the determinants of valuation multiples in a Western European setting. To be precise, we aim to examine if profitability, firm size, leverage, as well as industry group significantly influence the EV/EBITDA multiples in the completed M&A transactions in Western Europe.

In order to do that, we employ the empirical approach that is based on the ordinary least squares (OLS) regression analysis using a sample of completed M&A deals in Western Europe obtained from the Bloomberg database. We begin our analysis with a baseline regression model, and we also conduct additional robustness checks using winsorization and outlier removal methods. Moreover, we include industry dummies to control for potential industry effects influencing the results. Our objective is to attempt to contribute to the understanding of how certain firm characteristics can influence valuation multiples, and thus also influence the pricing of the companies included in the transactions.

Our empirical analysis produces a number of interesting results. First, leverage was the most consistent predictor of EV/EBITDA multiples across all models tested and verified against robustness tests. In the original model, there was not a significant relationship between firm size and valuation but, after outlier treatments were applied, a significant relationship was found, with larger companies generally having lower valuations than their smaller peers. Profitability was consistently statistically insignificant, and as for industry, most results showed little correlation, with companies in the Energy Industry continuously being assigned lower valuations than their peer companies situated in other reference industries. The findings presented herein will add to the existing body of literature by providing additional research on the determinants of valuation multiples for M&A transactions in Western Europe and emphasising the importance of an outlier treatment for accurate estimate of empirical or market-based valuations.

2. Literature Review

2.1 Valuation in Mergers and Acquisitions

Valuation plays an important role in M&A, as both the target firm and the acquiring firm are interested in knowing whether the transaction represents a fair exchange of corporate value. In practice, valuation methodologies also support negotiation and strategic decisions during the takeover transactions. Traditional corporate finance theories often identify DCF method as theoretically coherent as it estimates the firm value based on the expected cash flows discounted at the cost of capital. However, despite its theoretical foundation, DCF requires numerous assumptions and thus carries a lot of uncertainty due to bias and managerial discretion.

Valuation in M&A extends beyond price-setting into strategic decision-making. Damodaran (2006) notes that *"valuation lies at the heart of much of what we do in finance,"* regardless of whether it is evaluating acquisition proposals or structuring deal financing. In practice, the valuation range produced by advisors informs not only whether a transaction proceeds but also how the consideration is allocated between cash and equity, how earn-out clauses are structured, and whether the combined entity can support the required financing. Given that even small differences in valuation multiples translate into large differences in absolute deal value, the accuracy of the valuation methodology greatly matters to both parties.

As discussed earlier, corporate finance has three general methods for valuing firms. In an income (DCF) method, the company will determine its projected future free cash flows and those free cash flows will be discounted at the company's weighted average cost of capital (WACC) as described by Modigliani and Miller (1958). The other two ways to determine valuation are through the use of a market approach (relative value) or an asset-based approach. In a market approach, the comparable companies and recent comparable transactions (also referred to as comparable transactions) are used to determine value for the company through the application of normalized multiples (i.e., price to earnings ratio, enterprise value to EBITDA). Finally, an asset-based valuation method puts a value on the company based on the fair market value of its net assets. This method is often used as a floor value in an M&A transaction or in a liquidation situation. As a result, M&A practitioners do not use one of the three approaches in isolation, rather they usually combine two or more to arrive at an appropriate range of defensible value.

The DCF method is often cited as holding the strongest theoretical foundation. This method derives directly from first principle of valuation: the value of any asset equals the present value of

its expected future cash flows, discounted at a rate that reflects their risk (Modigliani and Miller, 1958; Ohlson, 1995). Unlike relative valuation, DCF does not require the existence of comparable firms and can incorporate buyer-specific synergies directly into the cash flow projections. Kaplan and Ruback (1995) find that DCF valuations produce estimates very similar to those derived from EBITDA and EBIT multiples in a sample of 51 leveraged buyouts, supporting the combination of the two approaches when consistently applied.

Despite its theoretical appeal, DCF is subject to significant uncertainty in practice. DeAngelo (1990) argues that DCF valuations are *"sensitive to the cash flow and discount rate assumptions of insider-managers [and therefore] not a very credible means of convincing outside stockholders that those values are fair".* The inputs required, revenue growth rates, operating margins, capital expenditure requirements, working capital changes, discount rates, and terminal value assumptions, all carry significant managerial discretion. This subjectivity can create both estimation error and the potential for manipulation. Shaffer (2023) argues that providers of fairness-opinion valuations not uncommonly adjust discount-rate assumptions in ways consistent with ex post rationalization of negotiated deal prices, although these valuations also appear to contain economically relevant information about firm value. Mukhlynina and Nyborg (2018), based on a survey of European valuation professionals, show that under typical practitioner assumptions (including a five-year forecast horizon and Gordon growth terminal value), the terminal value accounts for approximately 69–77% of total DCF value. This dominance implies that valuation results are highly sensitive to assumptions about the discount rate, terminal growth rate, and forecast horizon.

The limitations of DCF help explain why practitioners rarely rely on a single valuation methodology when assessing acquisition targets. Instead, boards and advisors typically seek independent valuation evidence from multiple sources, often formalized through fairness opinions.

In M&A transactions involving public targets, independent third-party valuation has become an institutional requirement. Since the landmark Delaware case Smith v. Van Gorkom, target boards approving major mergers have commonly sought fairness opinions from independent financial advisors to demonstrate that they acted on an informed basis. Davidoff (2006) describes fairness opinions as *"virtually mandatory"* for target boards. Bartell and Janssen (2017) analyse more than 3,000 fairness opinions filed with the SEC and find that 91% employ more than one valuation methodology, while 75% use three or more. The authors argue that the widespread use of multiple approaches (which typically combines DCF analysis with market-based methods such as

comparable-company or comparable transaction analyses) help mitigate concerns that valuations are overly dependent on any single methodology or on management projections.

Figure 1. Valuation Methodologies Used in Fairness Opinions

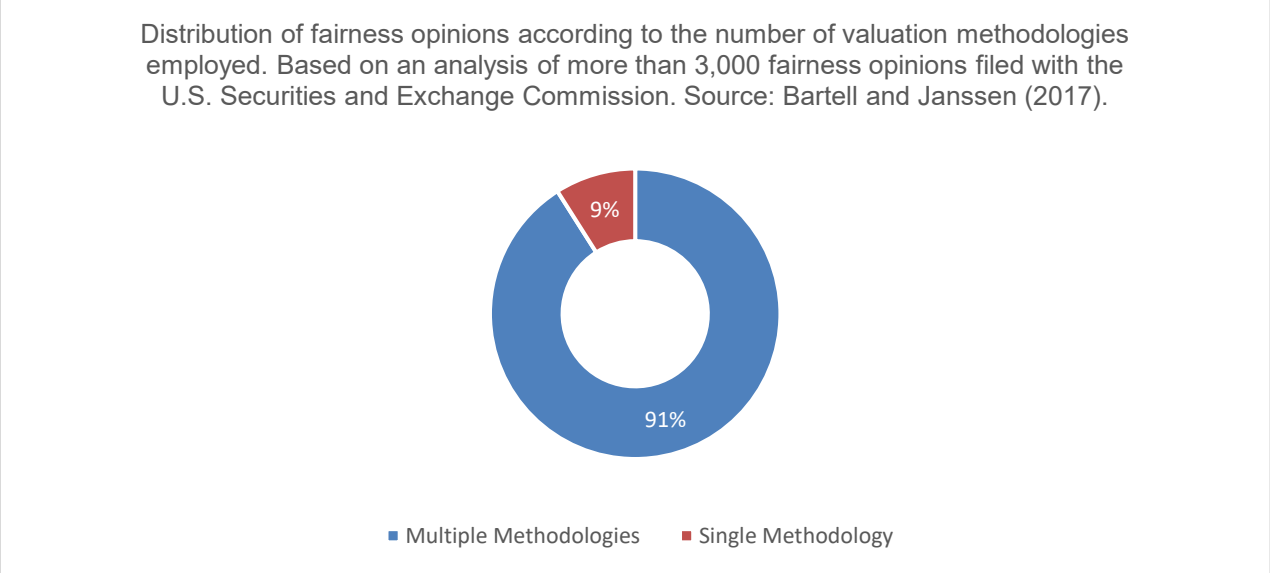
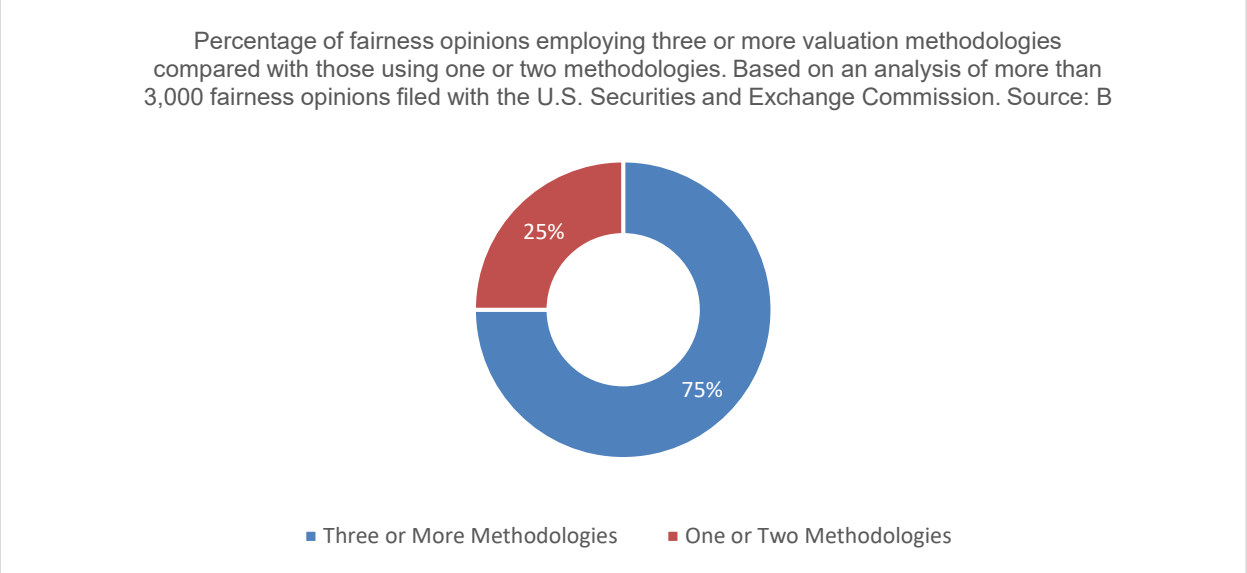


Figure 2.Use of Three or More Valuation Methodologies in Fairness Opinions



The fairness opinions are valuable for researchers because they provide a systematic, publicly observable record of how professional advisors value companies in real M&A transactions. As a consequence, fairness opinions provide a useful source of evidence regarding the valuation methodologies used in practice and the relative importance of different valuation multiples.

Again, while DCF is theoretically reasonable, the market approach based on valuation multiples has become the dominant valuation method in M&A practice. DeAngelo (1990) established that accounting multiples are the common valuation approach in corporate control transactions. More recently, Shaffer (2023) documents that valuation multiples are widely used in U.S. M&A valuation analyses and that there is substantial heterogeneity in their construction. In Shaffer's standardized sample, more than 25 distinct multiples each account for at least 1% of observations, with income statement and balance sheet measures dominating usage.

The widespread use of multiples reflects several practical advantages. Compared to DCF models, multiples are more transparent, easier to communicate to boards and shareholders, and less dependent on unobservable assumptions regarding future growth, discount rates, and terminal values.

Despite the popularity of valuation multiples, advisors rarely rely on them in isolation. Comparable company and precedent transaction analyses are commonly used alongside DCF valuations, allowing boards to compare valuation ranges generated by different methodologies and assess the consistency of the resulting estimates.

The production of valuations in M&A is typically delegated to third parties such as external investment banks, whose analyses are disclosed in regulatory filings. Cain and Denis (2013) examine the informativeness of these valuations and find evidence that they contain information incremental to publicly available data, suggesting they serve a genuine advisory function rather than being mere rubber stamps. However, the literature also documents systematic biases. Kisgen, Qian and Song (2008) find that target-sought fairness opinions are associated with lower deal premiums, consistent with the view that advisors may cater to management incentives. Eaton et al. (2022) show that target advisors select comparable peers with higher valuation multiples, potentially to argue for a higher deal price. However, in spite of these concerns, fairness opinions continue to play a meaningful role in M&A governance by providing an independent benchmark against which negotiated transaction prices can be assessed.

2.2 Relative Valuation and Valuation Multiples

Relative valuation functions by comparing the target firm with similar companies or comparable transactions by using standardized financial ratios. Damodaran consistently explains that valuation multiples help simplify the valuation process by relating market value to accounting or operational metrics such as earnings, sales, book value, or EBITDA. These financial ratios allow

the financial analysts to compare companies while also allowing for the incorporation of market expectations.

Relative valuation is built on a fundamentally different premise from DCF. Damodaran (2006) distinguishes the two approaches as follows: he explains the DCF method as a "quest" for intrinsic value, while *"In relative valuation, we have given up on estimating intrinsic value and essentially put our trust in markets getting it right, at least on average."*

Under this logic, the valuation of any asset is determined by how comparable assets are priced by the market, rather than by a standalone estimate of future cash flows. Damodaran (2002) estimates that nearly 90% of equity valuations, as well as over half of acquisition valuations employ a mixture of multiples and comparable companies, making relative valuation the dominant approach in practice. The assumption here is that while the market may misprice individual assets, pricing errors cancel out across a sufficiently large peer group, making the central tendency a reliable benchmark.

Damodaran (2006) outlines a four-step framework for relative valuation. First, multiples must be consistently defined so that the numerator and denominator correspond to the same claimholders and are measured uniformly. Second, analysts should understand the cross-sectional distribution of the multiple, including its median, dispersion, and outliers, to assess whether a given value is high or low. Third, multiples should be analysed in terms of their fundamental drivers (growth, risk, and cash flow characteristics) which are the same determinants underlying discounted cash flow valuation. Finally, multiples must be applied by selecting comparable firms and adjusting for differences in fundamentals, recognizing that no perfect comparables exist.

As the overwhelming amount of the literature showed, relative valuation is among the most widely used approaches in M&A practice. However, despite their widespread use, Shaffer (2023) argues that existing literature examining how investors choose the multiples used is *"surprisingly thin".* The author tries to fill this gap by analysing and documenting that *"over 25 distinct standardized multiples each comprise more than 1% of M&A advisory practice."*

European survey evidence strongly confirms the centrality of multiples in valuation practice. Mukhlynina and Nyborg (2016) survey 356 CFA charter holders across 10 European countries and find that approximately half of the respondents in this survey reported using both DCF and relative valuation with equal weight, while the other half expressed a preference for one method over the other. Importantly, the survey reveals wide variation in how the inputs to both methods are estimated: 65% of respondents use fewer than three years of historical data to estimate beta,

58% use ex-post market risk premiums, and respondents employ radically different approaches to terminal value estimation. This heterogeneity in implementation means that two valuation professionals applying the same method to the same firm can arrive at significantly different values, underscoring the importance of standardised empirical research on the determinants of multiples.

Given the widespread use of multiples, understanding how practitioners select and apply them is important. Shaffer (2023) provides comprehensive classification of valuation multiples used in M&A advisory, categorizing them along four elements. The first element is the valuation numerator: enterprise value versus equity value. Enterprise value multiples capture the total value of the firm, including both debt and equity claims, while equity value multiples reflect only the residual claim of shareholders. The second dimension is the value-driver denominator, where just five categories (EBITDA, net income, revenue, book equity, and EBIT) collectively account for over 95% of all multiples used in practice. The third dimension is the measurement period: the denominator can be based on past (trailing), current, or future (forward) financial data. The fourth dimension is the source of comparable data: either comparable trading firms (public company comps) or comparable transactions (precedent deals). Shaffer demonstrates that the modal standardised multiple (enterprise value to current EBITDA using trading comps) accounts for only 7.48% of the total sample, indicating substantial diversity in how advisors choose and apply multiples.

Despite the theoretical superiority of forward-looking measures, Shaffer (2023) documents that M&A advisors predominantly use trailing multiples. Only 25% of standardized multiples in his sample are based on forward (forecasted) data, while 42% are based on past data and 33% on current data. This is notable because Liu, Nissim and Thomas (2002) demonstrate empirically that forward earnings multiples substantially outperform trailing multiples in predicting stock prices, and valuation textbooks uniformly prescribe forward measures as more value-relevant (Koller, Goedhart and Wessels, 2020). Shaffer characterizes this disconnect as a "puzzle," noting that *"analyst forecasts are available for the large majority of these firms, and there is no legal proscription"* against using forward multiples. One interpretation is that trailing multiples serve as an anchoring device in negotiations, providing a backward-looking reference that both parties can verify independently, whereas forward multiples introduce reliance on subjective forecasts that can be disputed.

A further distinction in relative valuation practice is the choice between comparable trading multiples and comparable transaction multiples. Trading multiples are derived from the current

stock prices of publicly traded peer firms and reflect the standalone, minority-value perspective of the public market. Transaction multiples are derived from the prices paid in completed M&A deals and inherently include control premiums and expected synergies. Shaffer (2023) finds that advisors use trading comps in approximately 66% of cases and transaction comps in 34%, a split that has widened over time. Because the median takeover premium in his sample is 30%, the choice between these two reference sets has a first-order effect on the implied valuation. Eaton et al. (2022) study the selection of peer firms and find that the choice of comps is itself endogenous to deal characteristics, with target advisors tending to select peers that support a higher valuation range.

Despite its practical dominance, relative valuation carries well-documented limitations. Damodaran (2006) warns that the approach inherits any errors or biases present in the market pricing of the comparable firms: if the entire peer group is overvalued, the resulting estimate will be overvalued as well. Rodriguez-Valencia, Lamothe-Fernandez and Alaminos (2023) note that relative valuation can *"ignore key variables such as risk, growth, or cash flow potential"* if the peer firms are not carefully selected on these dimensions. The reliability of the approach therefore depends on the quality of the comparable universe. Industry membership is the most commonly used criterion for selecting peers, but it is a crude proxy as the firms in the same industry can differ dramatically in size, growth, profitability, and risk.

In a shell, the literature suggests that relative valuation remains the dominant valuation approach in M&A practice. According to the literature, this will continue to be the dominant method for evaluating firms in mergers and acquisitions. However, the accuracy of these multiples depends upon which comparable firms are chosen as well as the selection of the valuation metric, and the treatment of firm-specific characteristics. One type of multiple that is most commonly used by practitioners is the use of Enterprise Value divided by Earnings Before Interest, Taxes, Depreciation and Amortization (EV/EBITDA). Therefore, our goal in this study is to determine if EV/EBITDA is an appropriate benchmark for valuing a company when utilizing relative valuation.

2.3 Enterprise Value Multiples and EV/EBITDA

Among the available valuation multiples, EV/EBITDA is probably among the most widely used in M&A transactions. The reason is fairly simple. Companies can have very different debt levels, tax situations, and accounting policies, making direct comparisons difficult. EV/EBITDA attempts to reduce some of these differences. Shaffer (2023) supports this claim. The author documents the pervasive use of valuation multiples in M&A advisory practice. Using a large sample of fairness

opinion disclosures, the author finds that EBITDA-based multiples represent the most frequently used value-driver denominator, accounting for approximately 32% of all observed valuation multiples. Furthermore, EBITDA multiples appear in 25.9% of transactions where no DCF valuation is performed and in 33.34% of transactions where a DCF analysis is also included. This helps to demonstrate the central role of EBITDA-based valuation methods in contemporary M&A practice.

The choice between enterprise value and equity value multiples is governed by the matching principle, which states that the valuation numerator must correspond to the capital providers whose claim the denominator represents (Damodaran, 2007). Enterprise value multiples (EV/EBITDA, EV/EBIT, EV/Sales) pair with pre-financing income measures because enterprise value reflects the claim of both debt and equity holders. Equity value multiples (P/E, P/BV, P/EG) pair with post-financing measures such as net income, since equity value reflects only the residual claim of shareholders (Liu, Nissim & Thomas, 2002).

Shaffer (2023) documents that enterprise value multiples account for the majority of fairness-opinion valuations, a trend partly explained by the increasing dominance of EBITDA as a valuation metric. Shaffer (2022) further argue that advisors prefer EBITDA because it reduces distortions arising from non-recurring accounting items.

The benefit of using enterprise value multiples is their ability to provide analysts with a metric for valuing companies without regard to how debt is financed. For example, two companies that have the same operations, but different levels of debt (i.e., a highly leveraged company vs. a company with no debt) will have different P/E ratios (the levered company has a higher financial risk and, therefore, its expected equity return will be higher and increase the overall P/E ratio). On the other hand, EV/EBITDA multiples for these two companies will be directly comparable (Lie & Lie, 2002). This makes EV multiples the preferred tool for cross-company comparisons in M&A settings, where the target and its peer group may have different leverage profiles. Grbenic (2021) analysed 22,967 private-market technology transactions and he confirmed that EV-based multiples, specifically EV to total assets, consistently outperformed equity-based multiples (i.e., P/E ratios) across all peer configurations in determining the accurate valuation of the target company.

EV/EBITDA multiples do have a great deal of utility, but the utility of the use of EV/EBITDA multiples is also dependent on how closely the analyst has selected comparable firms and/or transactions to the target company. When an analyst selects comparable firms/transactions to the target, it is implicitly assumed that those firms have similar growth prospects, risk profiles, and

returns to the target company. In practice, analysts typically use industry classification to define a comparable firm, and there are limitations to using this methodology.

Eaton et al. (2022) analysed peer selection in M&A and find that the set of comparable firms used by advisors significantly affect the resulting valuation, and that peer selection is itself endogenous to deal characteristics. Schøler (2020) extends this to cross-country settings and demonstrates that valuation accuracy improves when comparables are selected not only by industry but also by accounting regime and cultural proximity. His finding has direct implications for European M&A, where IFRS adoption is mandatory for listed firms but private firms may report under local GAAP.

Geertsema and Lu (2022) introduce a machine-learning method that expresses predicted multiples as weighted averages of peer firm multiples, where the weights serve as a measure of peer-firm comparability. This approach substantially outperforms traditional industry-based peer selection and identifies profitability, growth, and efficiency as the most important dimensions of comparability.

This literature suggests that EV/EBITDA has become the dominant enterprise value multiple in contemporary M&A practice because it facilitates comparisons across firms with different capital structures and accounting policies. However, the accuracy of valuation based on EV/EBITDA remains dependent on the selection of comparable firms and the extent to which differences in growth, profitability, and risk are properly accounted for.

2.4 Theoretical Determinants of Valuation Multiples

The theoretical foundations of valuation multiples originate from discounted cash flow valuation models. Although relative valuation is frequently used in practice, valuation multiples ultimately derive their economic meaning from the same principles that underpin discounted cash flow analysis. Damodaran (2007) argues that every valuation multiple can be decomposed into a function of expected growth, risk, and cash flow generation.

At its most basic level, valuation can be viewed as a function of expected growth and required returns. A simplified representation of the relationship between valuation multiples, growth, and risk can be expressed as:

$$EV/EBITDA = (1 - g)/(r - g)$$

where *g* represents expected growth and *r* represents the required return. This simplified framework illustrates the fundamental intuition that higher growth expectations increase valuation multiples, while higher risk reduces them.

This intuition can be formalized through the Gordon Growth Model. Under the stable growth Gordon growth model, the forward P/E ratio equals the payout ratio divided by the difference between the cost of equity and the expected growth rate. For EV/EBITDA, the equivalent expression is:

$$\frac{EV}{EBITDA} = \frac{1 - \text{Reinvestment Rate}}{\text{WACC} - g}$$

where g represents the expected long-term growth rate of the firm (Damodaran, 2007). This makes clear that even small changes in growth expectations can produce large changes in multiples, especially when the cost of capital is low.

The simplified relationship between EV/EBITDA, growth (g), and required return (r) can be extended to incorporate reinvestment and profitability. Rodriguez-Valencia, Lamothe-Fernandez and Alaminos (2023) formalise the EV/EBITDA multiple as a function of four parameters: the return on invested capital (ROIC), the weighted average cost of capital (WACC or ko), the expected growth rate (g), and the tax rate (t). For a stable-growth firm, the enterprise value to EBITDA relationship can be expressed as:

$$\frac{EV}{EBITDA} = \frac{ROIC - g}{ROIC \times (ko - g) \times (1 - t)}$$

This expanded formula reveals that the multiple depends not only on the spread between growth and the cost of capital, but also on the efficiency with which the firm converts invested capital into earnings. A firm with high ROIC can sustain a given growth rate with less reinvestment, which increases the free cash flow available to investors and, all else equal, raises the justified multiple. Conversely, a firm with low ROIC must reinvest a larger proportion of its earnings to achieve the same growth, reducing free cash flow and compressing the multiple. This framework provides the theoretical link between operating profitability (ROIC) and valuation that underpins the empirical analysis of this thesis. More broadly, the theoretical valuation literature identifies several firm-specific characteristics through which growth, risk, and cash flow generation are reflected in observed valuation multiples.

Damodaran (2006) demonstrates that although all valuation multiples ultimately reflect growth, risk, and cash flow generation, the specific channels through which these factors influence valuation differ across multiples. His systematic mapping shows that the price-to-earnings (P/E) ratio is a function of expected growth, payout ratio, and risk (cost of equity). The price-to-book (P/B) ratio additionally depends on return on equity (ROE). The EV/EBITDA multiple is driven by expected growth, the reinvestment rate, the cost of capital, the return on capital (ROC), and the tax rate. This means that the EV/EBITDA multiple is more comprehensive than equity-level multiples because it must account for both operating efficiency (ROC) and capital structure effects (through the cost of capital and tax shield).

Thus, the differences in profitability, leverage, growth expectations, and other characteristics of firms should be reflected in the observed EV/EBITDA multiples. The literature also identifies several firm-specific and industry-specific characteristics that influence valuation multiples. The commonly examined determinants include firm size, profitability, leverage, and industry affiliation.

One of the most frequently examined determinants of valuation multiples is firm size. The theoretical link between risk and valuation multiples is grounded in asset pricing models. Banz (1981) and Fama and French (1993) demonstrate that firm size serves as a systematic risk factor in equity returns, with smaller firms commanding higher expected returns as compensation for bearing additional risk. Rowe, Barber and Chullen (2026) apply this risk-based framework to M&A valuation, arguing that the same logic applies to transaction multiples: acquirers apply higher discount rates to smaller, riskier targets, which mechanically reduces EV/EBITDA multiples through the denominator effect in the valuation formula. Conversely, larger firms exhibit lower systematic risk due to diversified revenue streams, enhanced market power, superior access to capital markets, and greater operational stability. Under this framework, larger firms are expected to command higher valuation multiples because their lower perceived risk translates into lower required returns and higher present values.

Profitability represents another important determinant of valuation multiples. Rowe et al. (2026) complement risk-based valuation theory with real options theory to explain the counterintuitive relationship between profitability and multiples. Under this framework, acquiring a low-profitability, high-growth target is analogous to purchasing a call option on future earnings: the acquirer pays for the potential upside rather than for current cash flows. This explains why firms with low current EBITDA margins (which are often young, high-growth companies) can command EV/EBITDA multiples that appear anomalously high relative to their current earnings. The value of these growth options is greatest when the target operates in an industry with significant expansion

opportunities, when the cost of capital is low, and when the acquirer can provide the resources needed to realise the growth trajectory. As Rowe et al. (2026) note, *"strategic acquisitions in pharma/biotech frequently involve targets with little current EBITDA but enormous growth potential; these deals often command very high multiples".* The real options perspective is particularly relevant for M&A, where acquirers routinely pay for expected future performance rather than historical results.

In addition to firm-specific characteristics, industry affiliation may influence valuation multiples. Industry membership acts as a systematic determinant of multiples because it captures baseline differences in growth prospects, risk profiles, capital intensity, and competitive dynamics that are not fully explained by firm-level characteristics. Damodaran (2006) notes that the usage of multiples "varies widely across sectors," with EV/EBITDA multiples dominating in heavy infrastructure businesses while price-to-book ratios are common in financial services. Rodriguez-Valencia et al. (2023) provide industry-specific beta estimates and growth assumptions that illustrate this variation: pharmaceutical and biotechnology firms in their Spanish sample carry an unlevered beta of 1.48 and an assumed growth rate of 2%, while manufacturing and assembly firms have a beta of 1.07. These differences in systematic risk directly translate into different discount rates and, consequently, different justified multiples.

Despite its analytical appeal, the theoretical framework that links multiples to a small set of fundamental determinants has important limitations in practice. Damodaran (2006) notes that the proxies used for risk (beta), growth (expected earnings growth), and cash flow (payout ratio) are inherently imperfect, and the relationships between these variables and multiples are often non-linear. Shaffer (2023) documents that even after standardising multiples along four dimensions, the most common standardised multiple accounts for only 7.48% of the total sample, suggesting that the choice of multiple is itself a source of substantial unexplained variation. Rowe et al. (2026) acknowledge that their model (despite including size, profitability, and industry effects) produces an R-squared of approximately 0.44, leaving more than half of the cross-sectional variation in multiples unexplained. Some of this residual variation reflects genuine differences in growth opportunities and risk that are difficult to capture with accounting-based proxies, while other parts may reflect negotiation dynamics, market timing, or strategic motives that fall outside the fundamental valuation framework. These limitations motivate the inclusion of additional determinants in empirical models of M&A valuation multiples.

Research indicates that the combination of various factors such as growth prospects, profitability, risk, and industry specific factors affect valuation multiples. The relative significance of each of

these components, however, is still a topic for debate amongst academics and practitioners alike. Some studies have shown that growth and profitability are the most important components influencing valuation; however, there are other competing factors that may have more or less magnitude based on the circumstance and their industry association. Therefore, these are reasons for conducting an empirical study to confirm or reject the results from prior research.

2.5 Empirical Evidence on Valuation Multiple Determinants

Firm size is among the most frequently examined determinants of valuation multiples in the empirical literature. Most studies report a positive association between firm size and EV/EBITDA multiples, although the strength of the relationship varies across samples and transaction contexts.

The Rowe et al. (2026) paper models 263 manufacturing M&A deals using the natural logarithm of net sales and finds that larger targets command significantly higher EV/EBITDA multiples after controlling for profitability and industry. Specifically, they note that every doubling of revenue increases the multiple by roughly 1 turn (e.g., 7.5x vs 6.5x), when considering two firms with the same EBITDA margin, profitability and industry. These findings are broadly consistent with practical valuation evidence. Menzies LLP (2015) report median EV/EBITDA multiples of approximately 16.4x for target companies above £500 million in enterprise value, compared with only 4.6x for micro-businesses valued below £2 million.

However, Rodriguez-Valencia et al. (2023) argues that the relationship between size and valuation is not always straightforward. They examined listed vs unlisted SMEs in Spain, which allowed them to conclude that private company discount is not always a valid assumption. They attributed this partly to size, as small private firms in their sample are newer and have high growth potential, which pushes enterprise value ratios up.

The empirical literature has a great deal of evidence supporting a positive correlation between company size and valuation multiples. However, there is evidence that growth potential has the ability to moderate that correlation allowing small companies in high-growth markets to have relatively high valuation multiples.

The profitability of a company is another common variable when looking at how a company will be valued. Typical logic regarding valuations would suggest that more profitable companies would have a higher valuation multiple, because of their capacity to create higher levels of earnings and cash flow. However, the empirical evidence is not completely consistent. Rowe et al. (2026) found

that the effect of profitability on valuation multiples is counterintuitive. The study notes that higher current EBITDA margins are associated with lower multiples once size is controlled for, because higher current EBITDA margins are related to lower multiples, as lower margins are associated with more established and lower growth potential. The logic is that acquirers pay a premium for growth potential, not current earnings. For example, strategic acquisitions of pharma/biotech targets with minimal current EBITDA often command multiples well above 10x, while a stable manufacturer at 20% margins trades at a modest multiple.

The net effect in their empirical analysis is negative: a 10-percentage point increase in EBITDA margin is associated with a decrease of approximately 2.38x in the EV/EBITDA multiple, controlling for size and industry. This finding aligns with the fundamental valuation logic: acquirers capitalise future earnings, not current earnings, and the firms with the greatest growth potential are often those that are temporarily depressing current margins through reinvestment. However, Rowe et al. (2026) use only EBITDA margin as a measure of profitability as they acknowledged in the limitations section of their paper. The authors also noted that other profitability measures may also influence multiples and that EBITDA margin was chosen because it directly ties to the multiple's denominator.

Other studies provide evidence that profitability is an important valuation driver. Gupta (2018) notes that return on capital employed (ROCE), which is closely connected to ROIC, is an important driver of EV/EBITDA multiples for Indian listed firms across the automobile and steel sectors. Moreover, Geertsema & Lu (2022) used machine learning to investigate the most important factors in the relative valuation. The authors found that profitability and efficiency ratios consistently ranked as the top determinants.

Empirical evidence regarding the effect of leverage on valuation multiples is also mixed. Rahman and Nazneen (2019) find evidence consistent with the trade-off theory of capital structure, arguing that moderate levels of debt may increase firm value through tax benefits and a lower weighted average cost of capital. However, they also note that excessive leverage can lead to financial distress costs that outweigh these benefits.

When it comes to M&A transaction, Axelson, Jenkinson, Stromberg and Weisberg (2013) offer the most detailed analysis of the correlation between leverage and the valuation pricing. The authors used a sample of 1,157 worldwide buyouts from 1980 to 2008, and they found a significant positive correlation between debt to EBITDA ratio and EV/EBITDA multiple paid in leveraged buyout (LBO) transactions. However, the authors also find that the relationship differs in public-market settings, where leverage is often associated with greater financial risk and lower valuation

multiples. This contrast highlights the importance of transaction context. In leveraged buyouts, debt is frequently used as a strategic financing tool, whereas in public-company valuations leverage may be viewed primarily as a source of risk.

There is no consensus in the empirical literature about whether leverage positively or negatively impacts valuation multiples. Whether the relationship is positive/negative and/or large/small will depend on market conditions, the structure of the transaction and whether capital is perceived as value-increasing or is associated with financial risk.

Industry affiliation is also one of the most common variables investigated with respect to valuation multiples. Different industry sectors have different opportunities for growth, competitive dynamics, and levels of risk and capital needed for business success. As a result, there is substantial variation in valuation multiples across sectors.

Rowe et al. (2026) demonstrate that there is a significant impact of the industry segment on the valuation multiples for EV/EBITDA multiples. The authors found that companies in the pharmaceutical industry have much higher valuations than traditional manufacturing companies, with the industry-specific characteristics accounting for the majority of the differences between transaction valuations. Similar patterns are observed in practice. Capstone Partners (2025) reports average transaction multiples exceeding 10x EBITDA in healthcare and fintech sectors, compared with approximately 5x–7x in traditional manufacturing industries. Rowe et al. (2026) confirm this empirically: including industry fixed effects in their regression increases the R-squared from approximately 0.29 to 0.44, demonstrating that industry membership alone explains a substantial portion of the cross-sectional variation in EV/EBITDA multiples.

Moreover, the industry differences are important when selecting comparable companies. It would make little sense to compare a software company to an automobile manufacturer. However, Eaton et al. (2022) discuss that companies are not always comparable simply because they share the same industry group. The authors note that there are other factors such as company size, growth potential and existing valuation levels that need to be taken into account when selecting peer companies. The existing empirical evidence suggests that industry affiliation plays an important role in explaining valuation multiples, although its effect interacts with other firm-specific characteristics such as growth potential and profitability.

In addition to industry characteristics, valuation multiples may vary across geographic regions due to differences in accounting standards, legal systems, tax regimes, and capital market structures. Koeplin, Sarin and Shapiro (2000) were among the first to document this: they find

that the private company discount is larger for foreign transactions (40% to 50%) than for domestic U.S. deals (20% to 30%), which they attribute to differences in accounting standards between countries.

Beyond firm level characteristics and industry memberships, broader factors also matter. Bond yields, stock market valuation levels, and policy uncertainty affect both M&A volume and pricing. Higher bond yields are associated with reduced M&A activity and lower multiples (the "perverse valuation effect"), and M&A waves cluster in periods of high equity market valuation.

The empirical literature suggests that valuation multiples are influenced by a combination of firm-specific, industry-specific, and macroeconomic factors. Firm size, profitability, leverage, growth expectations, and industry affiliation emerge as the most frequently examined determinants, although the magnitude and direction of their effects vary across studies. These mixed findings provide the basis for the hypotheses developed in the following chapter.

2.6 The European M&A Environment

The European M&A market is one of the largest and most active in the world, accounting for approximately one-third of global transaction volume. After peaking at over 23,500 deals in 2021, European M&A activity moderated to approximately 15,000 to 18,500 deals per year in 2023 and 2024, with total deal value ranging between €810 billion and €927 billion. While the post-pandemic boom receded as central banks raised interest rates to combat inflation, activity remained resilient relative to previous downturns. The mid-market segment (which is defined as targets with revenues between €1 million and €200 million) proved particularly robust, sustaining deal volumes above pre-pandemic levels even during the challenging macroeconomic conditions of 2023.

Transactions involving mergers and acquisitions in Europe occur within a variety of institutional environments due to differences in areas such as corporate governance, shareholder protection, and financial systems. These differences result in a variety of structures for transactions as well as different methods for valuing businesses across Europe.

Labor market regulations also differ markedly from the United States. Gugler and Yurtoglu (2004) analyse 646 mergers across Europe and find that European merging partners have labour productivity approximately 9% below their non-merging industry peers before the transaction but subsequently increase productivity by 10% to the industry average through post-merger layoffs, which is a pattern not often observed in the United States. This finding suggests that employment

restructuring is a more significant channel for value creation in European M&A than in U.S. deals, and it may affect the valuation multiples that acquirers are willing to pay.

European M&A transactions operate under a multi-layered regulatory framework that differs substantially from the U.S. system. At the supranational level, the European Commission (EC) has jurisdiction over large mergers that meet specified size thresholds, with the authority to block transactions directly, a power that contrasts with the U.S. system. In the U.S. system competition authorities must obtain a court order for a ban. Aktas, de Bodt and Roll (2004) analyse 290 merger cases investigated by the EC and find that the commission is more likely to block mergers where European companies are harmed by increased competition, particularly when the bidder is a foreign firm.

Transactions involving mergers and acquisitions in Europe occur within a variety of institutional environments due to differences in areas such as corporate governance, shareholder protection, and financial systems. These differences result in a variety of structures for transactions as well as different methods for valuing businesses across Europe.

Unlike the United States, there are different aspects concerning regulation in Europe. The goal of an integrated market for corporate control through the EU Takeover Directive is still considerably restricted by these countries' national implementation differences, as well as additional legislation such as FDI screening mechanisms and Foreign Subsidies Regulation that produce fragmentation and increased complexity in transactions. Therefore, when considering factors that may impact the timing of a transaction, the certainty of closing that transaction and the value of the transaction, all of these variables will have an effect.

Another important feature of the European M&A market is the coexistence of IFRS and local GAAP reporting standards. While listed companies report under IFRS, many private firms continue to use local accounting standards, creating comparability challenges when applying public-market valuation multiples to private targets.

Bourveau, Chen, Elfers and Pierk (2022) provide the most comprehensive analysis of this issue. Using a sample of 14,417 private M&A transactions across 23 European countries, they find that the financial reporting of private firms that voluntarily adopt IFRS has significantly higher value relevance (measured as the explanatory power of accounting variables for transaction prices) than the reporting of private firms that use local GAAP. The difference in adjusted R-squared values ranges from 8.1% to 8.3% across model specifications. This effect is stronger when the number of public peer firms in the same country and industry is larger, consistent with the view

that accounting comparability facilitates the application of public peer multiples to private targets. The authors further show that value relevance for private firms using local GAAP declined after 2005, when public firms in their countries switched to IFRS and thereby reduced comparability.

The IFRS adoption rate among European private firms varies considerably across countries. Bourveau et al. (2022) document rates ranging from 2.4% in the Czech Republic to approximately 40.5% in Greece, with the overall average across their sample at 12.4%. This variation implies that the degree of accounting comparability, and hence the reliability of valuation multiples derived from public peers, differs significantly across European jurisdictions.

Young and Zeng (2015) extend this analysis to cross-border peer selection and find that pricing accuracy for the market-to-book multiple improves following mandatory IFRS adoption in 2005. Their results support the view that enhanced accounting comparability across countries improves the quality of relative valuation by enabling more effective international peer comparisons. For a study of valuation multiples in Western European M&A, this finding implies that cross-country differences in accounting regimes are an important source of variation that should be accounted for in empirical analysis.

A further characteristic of the European M&A market relevant to this thesis is the high proportion of private targets. Unlike in the United States, where many target firms are publicly listed, a substantial majority of European M&A transactions involve privately held companies. This is partly because European stock markets are smaller relative to GDP than U.S. markets, and they tend to cater to larger, more mature firms. Degeorge and Maug (2006) note that smaller and younger firms are less likely to go public in Europe than in the United States, and the markets specifically created for such firms have had mixed success. As a result, many European M&A targets are private firms, for which public financial information is limited and valuation relies more heavily on multiples derived from public peer groups.

Institutional differences between European countries, as well as between Europe and the United States, remain significant. However, several trends point toward gradual convergence. The mandatory adoption of IFRS has harmonised financial reporting standards for public companies across the EU. The one-share-one-vote principle is becoming more prevalent as dual-class share structures decline. Payout policies and capital structure determinants in Europe are increasingly similar to those observed in the United States. Degeorge and Maug (2006) document that the factors driving capital structure and payout decisions in Europe are broadly similar to those in the U.S., with the influence of institutional differences being moderate rather than dominant.

Nevertheless, as Degeorge and Maug (2006) conclude, *"the ability of the law and finance approach to capture the relevant differences within Europe is often limited,"* and *"some separation of national markets and therefore institutional heterogeneity are likely to persist".* For empirical research on valuation multiples in Western European M&A, this heterogeneity is both a challenge and an opportunity as it introduces additional sources of cross-sectional variation that must be controlled for, but it also provides a rich setting for examining how institutional factors interact with the fundamental determinants of valuation multiples.

2.7 Research Gap and Contribution

The preceding review of the theoretical and empirical literature establishes that valuation multiples, particularly EV/EBITDA, are the dominant valuation tool in M&A practice. However, several significant gaps emerge when the existing evidence is assessed against the aim of this thesis: to analyse the simultaneous effects of firm size, profitability (ROIC), and leverage on EV/EBITDA multiples in Western European completed M&A transactions.

The most comprehensive empirical studies of valuation multiple determinants are overwhelmingly based on U.S. data. Shaffer (2023) examines over 25,000 fairness opinions from U.S. mergers, Rowe, Barber and Chullen (2026) model 263 U.S. manufacturing deals, and Lie and Lie (2002) analyse 8,621 U.S. firms. Officer (2007) and Axelson et al. (2013) likewise draw predominantly on U.S. or global samples in which U.S. transactions dominate. European evidence remains fragmented along national lines: Rodriguez-Valencia, Lamothe-Fernandez and Alaminos (2023) focus on Spanish SMEs, Bourveau et al. (2022) study accounting comparability across 23 European countries without modelling multiple determinants directly, and Goergen and Renneboog (2004) examine shareholder returns rather than the determinants of entry multiples. This geographic imbalance is problematic because the European M&A environment differs from the U.S. in several dimensions relevant to valuation: mandatory IFRS for listed firms with heterogeneous private-firm adoption rates, cross-border transactions representing approximately 40% of deal volume, concentrated ownership structures in Continental Europe, and a multi-layered regulatory framework that diverges materially from the U.S. system. A study that tests the determinants of EV/EBITDA multiples specifically on Western European transaction-level data therefore fills a clear gap in the literature.

The theoretical framework for EV/EBITDA, formalised by Rodriguez-Valencia et al. (2023), identifies ROIC as a direct driver of the justified multiple through its role in determining the free cash flow available to investors. Despite this theoretical centrality, very few empirical studies have

tested ROIC as an independent variable in a multiples regression on M&A transaction data. Rowe et al. (2026) use EBITDA margin as their profitability measure and explicitly acknowledge this as a limitation of their study, noting that alternative profitability measures may produce different results. Gupta (2018) examines ROCE but in the context of Indian listed firms rather than M&A transactions. The Rodriguez-Valencia et al. (2023) paper derives the ROIC-based EV/EBITDA formula but does not include ROIC as a regressor. This thesis aims to address that gap by using ROIC, measured as Net Operating Profit After Tax (NOPAT) divided by invested capital, as the primary profitability variable, thereby testing a direct implication of the valuation theory that the existing multiples literature has not examined empirically.

The empirical evidence on leverage and valuation multiples is both limited and depends on the context. Axelson et al. (2013) document a positive correlation between debt-to-EBITDA and EV/EBITDA in LBO transactions but find that this relationship does not hold in public-market settings. Kangas (2026) confirms that European buyout pricing still incorporates implicit risk discounts when leverage appears unsustainable. However, these studies examine leverage primarily as a value-creation or deal-structuring mechanism rather than as a cross-sectional determinant of the entry multiple itself. The trade-off theory literature ,including Rahman and Nazneen (2019), tests the effect of leverage on firm value using Tobin's Q or market-to-book ratios, not on transaction-level EV/EBITDA multiples. By including Total Debt to EBITDA as an independent variable alongside size and ROIC in a single regression framework, this thesis aims to provide evidence on whether leverage exerts a direct, systematic effect on the multiples paid in Western European M&A transactions, controlling for other fundamental determinants.

The existing literature also tends to isolate one or two determinants at a time. Rowe et al. (2026) model size and profitability but do not include leverage. Rodriguez-Valencia et al. (2023) examine size and industry effects but do not test ROIC as a regressor. Geertsema and Lu (2022) use machine learning to identify the most important value drivers in equity markets, but their study is not specific to M&A transactions. This thesis aims to contribute to the existing literature by testing firm size, ROIC, and leverage simultaneously within a multivariate regression model, thereby controlling for the confounding effects that have complicated the interpretation of prior univariate or bivariate analyses.

Much of the European evidence on M&A valuation is derived from surveys of practitioners or from studies that examine valuation indirectly through shareholder returns (Goergen and Renneboog, 2004). Studies that directly model transaction multiples on a pan-European sample are rare, and those that exist tend to focus on specific sub-samples. This thesis aims to provide direct empirical

evidence on the determinants of EV/EBITDA multiples in the region that accounts for approximately one-third of global M&A volume. We will do this by employing a sample of completed Western European M&A transactions sourced from the Bloomberg database.

This thesis aims to contribute to the literature by (1) extending the geographic scope of multiples determinants research to Western Europe; (2) testing ROIC as a profitability measure that is directly grounded in valuation theory; (3) examining leverage as a simultaneous determinant of entry multiples; and (4) modelling all three variables within a unified regression framework on transaction-level European data. In doing so, we aims to address the gaps identified by Rowe et al. (2026), who call for research on alternative profitability measures, by Rodriguez-Valencia et al. (2023), whose theoretical ROIC framework awaits empirical testing, and by Shaffer (2023), who notes that the literature on how investors select and apply valuation multiples remains *"surprisingly thin."*

3. Hypothesis Development

The literature reviewed in Chapter 2 suggests that valuation multiples are influenced by firm-specific, industry-specific, and market-specific factors. However, existing studies do not provide a consistent conclusion regarding the relative importance or direction of these relationships. Based on the theoretical and empirical evidence presented in the previous chapter, we developed and tested four hypotheses in the subsequent empirical analysis.

Firm size is among the most frequently examined determinants of valuation multiples in both corporate finance and M&A literature. Prior research suggests that firm size may influence valuation multiples through its effects on risk, financial stability, and growth expectations. Larger firms are generally associated with lower risk and greater operational diversification, while smaller firms may benefit from stronger growth prospects. Although the literature generally supports a positive relationship between firm size and valuation multiples, the evidence is not entirely consistent. Consequently, the direction and magnitude of the relationship between firm size and EV/EBITDA multiples remains an empirical question. Based on the reviewed literature, we proposed the following hypothesis:

H1: Firm size significantly affects EV/EBITDA multiples.

The characteristic of profitability has been often addressed in the literature on valuation. Research findings have provided conflicting evidence about how valuation multiples interact with profitability. In theory, high profitability will lead to higher valuations due to greater returns on investment and the greater value created by the company for its investors. However, more recent studies performed on M&As suggest that firms with high profitability may be assigned lower multiple valuations if profitability is a reflection of the maturity of the business and an indication that there aren't many growth opportunities remaining for the firm. Therefore, the relationship of profitability to EV/EBITDA multiples is still a mystery. Based on our analysis of the literature, we develop the following hypothesis:

H2: Profitability significantly affects EV/EBITDA multiples.

The relationship between leverage and valuation multiples has been a debated subject in the field of corporate finance. Unlike firm size or profitability, the impact that leverage can have on value is more difficult to explain since debt has the potential to affect the value of a company both positively (via tax benefits and lower cost of funds) and negatively (by increasing financial risk). There is conflicting evidence within the literature concerning whether leverage increases or

decreases valuation multiples. While some studies have shown that debt adds value to a firm through tax savings and cheaper financing options, others argue that high levels of debt lead to greater financial risk and decreased value. Additionally, past work suggests that the relationship between leverage and valuation could differ among transaction types (i.e. mergers and acquisition activity) and between market conditions. Thus, whether leverage impacts EV/EBITDA multiples remains an open empirical question. Based on this, we propose the following hypothesis:

H3: Leverage significantly affects EV/EBITDA multiples.

Industry affiliation is another factor frequently cited in the valuation literature as a determinant of valuation multiples. Companies do not operate in isolation. Rather, they are influenced by industry-specific growth opportunities, competitive conditions, and technological developments, among others. The literature consistently identifies industry affiliation as an important determinant of valuation multiples. Differences in growth opportunities, competitive dynamics, and capital intensity can lead to substantial variation in valuation across industries. Although prior studies generally find significant industry effects, the magnitude of these effects varies across samples and valuation settings. Accordingly, the impact of industry affiliation on EV/EBITDA multiples remains an empirical question. Based on the existing literature, we propose the following hypothesis:

H4: Industry affiliation significantly affects EV/EBITDA multiples.

4. Methodology and Variable Construction

In this study, we employ quantitative research design to examine the determinants of EV/EBITDA valuation multiples in Western European mergers and acquisitions. Specifically, we are trying to investigate whether firm size, profitability, leverage, and industry affiliation influence the valuation multiples observed in completed acquisition transactions.

Our analysis is based on transaction-level data obtained from the Bloomberg M&A database. We selected Bloomberg because it contains many details about the completed transactions, including the valuation multiples and financial characteristics of the companies, as well as the deal value and classification by industry. This study used a cross-section design in which each of the observations represents a completed M&A transaction. Our analysis focuses on explaining these differences in the valuation multiples between transactions. Our sample consists of completed M&A transactions with target companies located in Western Europe for the period of 2015 to 2025. A period of time in which to conduct this study was selected that would allow for completed transaction data that were under a broad regulatory and accounting environment and at the same time would have a large enough number of completed transactions across many different industries and financial market circumstances to be able to make a conclusion. Our decision to use only Western Europe addresses the significant gap in the literature on M&A transactions, which mostly focuses on U.S.-based M&A transactions.

Although our initial search of Bloomberg produced a total of 518 transactions, after we performed the screening procedures, only 218 of those transactions have proved to be valid data for the purpose of analysing EV/EBITDA multiples. We used the following filtering methods to validate our data set:

1) Data was excluded from the final sample if it was missing information required for the regression analysis of the data (i.e., EV/EBITDA, Revenue, Total Debt, EBITDA, ROIC, and Industry Classification).

2) Transactions having negative or zero values for EBITDA were removed from the final sample because they do not have economically relevant EV/EBITDA multiples that might affect the statistical analysis.

After we filtered out the transactions, we ended up with a final data set containing a total of 218 completed transactions.

In order to understand how valuation multiples, are related to the various independent variables we are looking at, we will use Ordinary Least Squares (OLS) regression analysis to do this. OLS regression analysis has been used as a common technique in finance and valuation research because it allows us to produce coefficient estimates that are easy to interpret, and then assess whether each of the independent variables has a statistically significant effect. OLS regression analysis also allows us to include industry control variables so that we can isolate the impact of firms' specific characteristics on the valuation of transactions.

However, several variables exhibited substantial skewness and the presence of extreme observations, a common feature of M&A datasets. In order to improve the distributional properties of the data, we transformed revenue variable using the natural logarithm. Moreover, we performed robustness tests by using winsorization and percentile-based outlier removal methods. These procedures are discussed in detail in Section 4.5.

4.1 Variable Construction

This section describes the variables included in the empirical analysis. Consistent with the hypotheses developed in Chapter 3, we examine whether firm size, profitability, leverage, and industry affiliation help explain variation in EV/EBITDA valuation multiples across Western European M&A transactions. Table 1 summarizes all variables used in the regression models.

Dependent Variable

We use the Enterprise Value to EBITDA (EV/EBITDA) multiple as the dependent variable. EV/EBITDA is one of the most widely used valuation metrics in mergers and acquisitions and serves as the primary measure of transaction valuation in this study.

There are a couple of reasons why we chose to use the EV/EBITDA multiple. Firstly, since enterprise value (EV) considers the complete value of the business and takes into account both debt and equity, it is especially relevant in an acquisition context where those who are purchasing the company essentially acquire all capital claims on it. Furthermore, as EBITDA measures the performance of the operating business alone, it removes the effects of financing decisions, taxes, depreciation and amortization, allowing for good comparisons between companies operating in various industries, countries and with different capital structures.

However, even if many practitioners have used EV/EBITDA in both practice and academic settings, it does still have some limitations. For example, EBITDA does not include capital expenditures, working capital needs and differences between companies in asset intensity. In

addition, because it does not include interest expense, it could potentially understate the economic consequence of leverage. However, regardless of these limitations, EV/EBITDA is still a useful tool to look at differences in valuations of M&A transactions.

Independent Variables

We measure firm size using the natural logarithm of annual revenue (Log Revenue). Revenue serves as a proxy for the scale of a firm's operations and is commonly used in valuation research. We apply a logarithmic transformation because revenue is highly skewed, with a small number of very large firms accounting for a disproportionate share of sales. The transformation reduces the influence of extreme observations and improves the distributional properties of the variable.

We measure leverage using the Total Debt-to-EBITDA ratio (Debt/EBITDA). This ratio captures the extent to which a company relies on debt financing relative to its operating earnings and is frequently used by lenders, investors, and acquirers when assessing financial risk. We selected Debt/EBITDA instead of alternative measures such as debt-to-assets or debt-to-equity because it directly relates debt obligations to the firm's earnings-generating capacity and is widely used in acquisition and leveraged buyout analysis. One limitation of this measure should be noted. Both the dependent variable (EV/EBITDA) and the leverage variable (Debt/EBITDA) contain EBITDA in the denominator, creating a potential mechanical relationship between the two variables. Nevertheless, similar specifications have been used in previous valuation studies and remain common in the literature.

As a measure of the profitability, we use the metric of return on invested capital (ROIC), which measures the efficiency with which a company produces returns from the capital used to run its business. ROIC incorporates elements from profit generation as well as capital allocation efficiency. We believe that ROIC is the best choice for evaluating company profitability due to its close relationship with enterprise value-based valuation methods and the fact that ROIC provides a broader assessment of operating performance than do common accounting ratios like return on assets (ROA) or return on equity (ROE). We also examined other potential measures of company profitability, especially EBITDA margin, which are often used in valuation studies; however, since EBITDA is already part of the calculation in the denominator of the dependent variable, including EBITDA margin could result in the introduction of additional mechanical relationships into the analysis and, therefore, we elect to use ROIC as our primary indicator of company profitability.

We measure profitability using Return on Invested Capital (ROIC). We selected ROIC because it is closely aligned with enterprise-value-based valuation frameworks and provides a broader

measure of operating performance than traditional accounting ratios such as Return on Assets (ROA) or Return on Equity (ROE). We considered alternative profitability measures, particularly EBITDA margin, which is frequently used in valuation research. However, because EBITDA already appears in the denominator of the dependent variable, using EBITDA margin could introduce additional mechanical relationships into the analysis. For this reason, we used ROIC as our measure of profitability.

Control Variables

We include industry controls to account for systematic differences in valuation multiples across sectors. Because firms operate under different competitive conditions, growth opportunities, risk profiles, and capital requirements, part of the variation in EV/EBITDA multiples may reflect industry effects rather than firm-specific characteristics.

We created an industry set of dummy variables for the analysis by using industry classifications found in Bloomberg. In order to have enough observations in each industry category, we have combined the original classifications into six broad industry groups: Technology, Industrials, Consumer, Financials, Energy, and Healthcare. However, many sectors have limited number of observations, so we grouped these into an "Other" category in our data preparation. In our regression model we use Healthcare as the reference category and hence exclude it from our regression analysis. Therefore, we can measure the coefficients of the remaining sectors as differences from the EV/EBITDA multiples of healthcare firms, after accounting for differences in firm size, leverage, and profitability.

Table 1 summarizes all variables included in the empirical analysis together with their definitions and expected relationships with EV/EBITDA multiples. The expected signs are based on the theoretical and empirical literature reviewed in Chapters 2 and 3. Because prior studies often report mixed findings, several variables do not have a clearly predicted direction of influence.

Table 1. Definitions of Dependent, Independent, and Control Variables Used in the Regression Analysis

Variable	Description	Expected Sign
EV/EBITDA Multiple	Enterprise Value divided by EBITDA	Dependent Variable
Firm Size (Log Revenue)	Natural logarithm of annual revenue	+/-
Debt-to-EBITDA Ratio	Total debt divided by EBITDA	+/-
Return on Invested Capital (ROIC)	Return on invested capital	+/-
Technology Industry	1 if target operates in technology sector, 0 otherwise	?
Industrial Industry	1 if target operates in industrial sector, 0 otherwise	?
Consumer Industry	1 if target operates in consumer sector, 0 otherwise	?
Financial Industry	1 if target operates in financial sector, 0 otherwise	?
Energy Industry	1 if target operates in energy sector, 0 otherwise	?

Note: Healthcare is omitted from the regression models and serves as the reference industry category. Expected signs are based on the theoretical and empirical literature reviewed in Chapters 2 and 3.

The final variable selection reflects both theoretical considerations and data availability. We include only variables that were consistently available across the final sample of transactions and that are supported by the valuation and M&A literature.

4.2 Regression Model Specification

In order to examine the relationship between firm characteristics and valuation multiples, we estimate a series of Ordinary Least Squares (OLS) regression models. OLS is well suited for this study because our objective is to examine cross-sectional variation in EV/EBITDA multiples across completed Western European M&A transactions.

The baseline regression model is specified as follows:

$$EV/EBITDA_i = \beta_0 + \beta_1 log(Revenue_i) + \beta_2 Leverage_i + \beta_3 ROIC_i + \varepsilon_i$$

where:

- $EV/EBITDA_i$ is the valuation multiple of transaction *i*
- $log(Revenue_i)$ represents firm size
- $Leverage_i$ represents total debt to EBITDA
- $ROIC_i$ represents profitability
- ε_i represents error term

The baseline specification allows us to evaluate whether firm size, leverage, and profitability explain variation in valuation multiples across transactions.

The intercept coefficient (β_0) represents the expected EV/EBITDA multiple when all explanatory variables equal zero. The coefficient on firm size (β_1) captures the relationship between the natural logarithm of revenue and valuation multiples. The leverage coefficient (β_2) measures the association between the Debt-to-EBITDA ratio and EV/EBITDA multiples, while the profitability coefficient (β_3) measures the relationship between ROIC and valuation multiples. Positive coefficients indicate that higher values of the corresponding variable are associated with higher valuation multiples, whereas negative coefficients indicate an inverse relationship.

Since the existing literature does not provide a clear consensus regarding the direction of these relationships, this study adopts non-directional hypotheses and focuses on testing whether the

variables significantly influence EV/EBITDA multiples rather than whether the effect is necessarily positive or negative.

Because valuation multiples often differ across sectors, we also estimate an extended specification that incorporates industry control variables. The industry-adjusted model is specified as follows:

$$EV/EBITDA_i = \beta_0 + \beta_1 log(Revenue_i) + \beta_2 Leverage_i + \beta_3 ROIC_i + \beta_4 Tech_i + \beta_5 Industrial_i + \beta_6 Consumer_i + \beta_7 Financial_i + + \beta_8 Energy_i + \varepsilon_i$$

Also, summarized as:

$$EV/EBITDA_i = \beta_0 + \beta_1 log(Revenue_i) + \beta_2 Leverage_i + \beta_3 ROIC_i + \sum_{\{j=1\}}^{\{k\}} \gamma_j IndustryDummy_{ij} + \varepsilon_i$$

where γ_j represents the coefficient associated with each industry dummy variable.

The inclusion of industry controls allows us to separate firm-specific effects from broader industry influences on transaction valuations. We report coefficient estimates, standard errors, t-statistics, and p-values for all model specifications. Standard errors are reported in parentheses beneath the coefficient estimates and are used to assess the statistical significance of each explanatory variable.

Because the existing literature provides mixed evidence regarding the expected direction of several relationships, we focus primarily on whether the explanatory variables significantly influence EV/EBITDA multiples rather than whether the effects are strictly positive or negative.

Ordinary Least Square (OLS) Assumptions

OLS regression relies on several assumptions to ensure that coefficient estimates and statistical inference are reliable. Although the objective of this study is not to conduct an extensive econometric diagnostic analysis, it is important to consider the main assumptions underlying the regression model and their relevance to the dataset.

The first assumption of OLS is linearity. This assumption requires that the relationship between the dependent variable and the explanatory variables can be adequately represented by a linear function. In other words, changes in the independent variables are assumed to produce proportional changes in the dependent variable while holding other variables constant.

The linear specification we adopted in this study is consistent with previous research examining valuation multiples and firm characteristics. Furthermore, we use the natural logarithm of revenue to help reduce skewness and improves the likelihood that the relationship between firm size and valuation multiples can be approximated by a linear model. Although the true relationship between valuation multiples and firm characteristics may not be perfectly linear, OLS provides a useful framework for identifying the average relationship between variables.

OLS also assumes that observations are independent from one another. This means that the value of one observation should not systematically influence the value of another observation. The dataset we used in this study consists of completed M&A transactions involving different target companies across multiple countries, industries, and years. Each transaction represents a separate valuation event and is therefore treated as an independent observation.

Another important assumption is homoscedasticity, which requires that the variance of the error term remains constant across all levels of the explanatory variables. When the variance of the residuals changes systematically, a condition known as heteroscedasticity arises. M&A datasets frequently contain substantial variation in financial characteristics, making heteroscedasticity a potential concern. In order to reduce the influence of extreme observations, we applied logarithmic transformation to revenue and conducted robustness checks.

Multicollinearity occurs when two or more explanatory variables are highly correlated between each another. High levels of multicollinearity can make it difficult to isolate the individual effect of each variable and may result in unstable coefficient estimates and inflated standard errors.

The final assumption concerns the normality of residuals. OLS estimation itself does not require residuals to be normally distributed in order to produce unbiased coefficient estimates. However, normality becomes important when conducting statistical inference, including hypothesis testing and confidence interval estimation. Financial and transaction-level datasets often contain extreme observations and non-normal distributions. To mitigate this issue, we employed logarithmic transformation, winsorization, and outlier removal as robustness checks.

Robustness Tests

M&A datasets frequently contain extreme observations that may disproportionately influence regression results. We will examine several alternative model options to see if our conclusions are based on a minority of outliers. For starters we will use both the 1% and 3% winsorization procedures to reduce the impact of extreme observations while keeping all other observations intact. Next, we will also create a 1% trimmed model in order to remove observations from less

than 1/100th or greater than 99/100th of the dataset. We will then compare our baseline models with the winsorized as well as the trimmed model results to evaluate if our results are still valid with different treatments of the extreme observations. If we see relative stability in our coefficient estimates across the three model configurations this bodes well that our results are not attributable to a minority of influential transactions.

Methodological Limitations

Although the methodology we use in this study follows established practices in empirical corporate finance research, we need to acknowledge some methodological limitations when considering the results.

One limitation relates to the construction of the leverage variable. Leverage is measured using the Total Debt to EBITDA ratio, while the dependent variable is EV/EBITDA. Consequently, both variables share EBITDA as a common denominator.

This could possibly create a mechanical relationship between the dependent and independent variables. Changes in EBITDA could influence both the leverage ratio and the valuation multiple at the same time, which could potentially affect the relationship between these variables. While there is a lack of research that has used debt to EBITDA ratio's in determining valuation multiples, there is some previous research that has looked at the determinants of valuation multiples and has used variables that are directly tied to components of the valuation ratio. For example, Rowe et al. (2026) have used EBITDA margin as a dependant variable when analysing EV/EBITDA multiples.

Another limitation concerns the classification of industries. The grouping of original Bloomberg industry categories into broader industry segments has produced significant differences between the two classes of industries in their distributions of the dependent variable by class.

This aggregation was necessary in order to maintain a sufficient number of observations within each category and avoid excessively fragmented industry classifications. However, firms operating within the same broad industry group may still differ substantially in terms of business models, growth opportunities, competitive environments, and risk profiles. For example, software companies and semiconductor manufacturers are both classified within the broader technology sector, despite operating under very different economic conditions. As a result, the industry dummy variables may not fully capture the underlying heterogeneity present within each sector. This may partially explain the relatively limited statistical significance of several industry coefficients.

The interpretation of dummy coefficients for industries is influenced by how the reference category is selected. We selected Healthcare as the baseline industry against which other sectors were compared. The choice of reference category does not affect the explanatory power of the regression model, but it can influence the interpretation of individual industry coefficients. Different reference industries may produce different coefficient estimates and significance levels for the industry dummy variables. Because of this, the results relating to industry effects should be interpreted as relative differences compared to the Healthcare sector.

The study relies exclusively on data obtained from the Bloomberg database. Bloomberg is often considered to have one of the largest collections of transaction level and financial information. However, data availability constraints influenced sample construction. Many completed transactions lacked information for one or more variables required for the analysis, resulting in the exclusion of a number of observations. Additionally, because companies that are privately held generally disclose less financial information than public companies, this limitation introduces potential for selection bias in the final sample. Therefore, the likelihood that transactions related to firms with greater levels of financial reporting are represented within the final sample is greater.

Despite these limitations, the methodology still provides us with useful framework for examining the determinants of valuation multiples in Western European M&A transactions.

5. Data and Summary Statistics

This chapter presents the characteristics of the final sample used in the empirical analysis. We constructed the dataset using completed M&A transactions obtained from the Bloomberg M&A database. After applying the selection criteria described in Chapter 4, the final sample contains 218 completed acquisitions involving target companies located in Western Europe between 2015 and 2025. For each transaction, Bloomberg provides information on valuation multiples, financial performance, capital structure, industry classification, and transaction characteristics.

Table 2.Selected Observations from the Final Sample of Western European M&A Transactions Used in the Empirical Analysis

Target Company	Acquirer	Year	EV/EBITDA	Country	Industry	Revenue (USD millions)	Total Debt to EBITDA	ROIC
Worldline Igsa SA	Worldline SA/France	2020	17.86	France	Tech Hardware & Semiconductors	$2,871	3.76	3.24
Meda AB	Mylan NV	2016	14.02	Sweden	Health Care	$321	4.53	3.92
Meggitt PLC	Parker-Hannifin Corp	2022	26.88	United Kingdom	Industrial Products	$1,733	3.62	1.04
DS Smith PLC	International Paper Co	2025	6.4	United Kingdom	Materials	$7,923	3.25	4.50
Zodiac Aerospace	Safran SA	2018	20.19	France	Industrial Products	$5,127	4.82	2.56
InterXion Holding NV	Digital Realty Trust Inc	2020	27.46	Netherlands	Software & Tech Services	$562	5.95	3.48
Rexam Ltd	Ball Corp	2016	10.13	United Kingdom	Materials	$5,407	3.33	6.80
Cable & Wireless Communications Ltd/Old	Liberty Global PLC	2016	24.64	United Kingdom	Telecommunications	$2,352	4.93	4.54
Atlantica Sustainable Infrastr	Energy Capital Partners LLC	2024	9.72	Spain	Utilities	$1,017	6.89	3.07
G4S Ltd	Allied Universal Security Services LLC	2021	14.52	United Kingdom	Industrial Services	$7,831	5.52	5.55
Sunrise Communications Group AG	Liberty Global PLC	2021	11.31	Switzerland	Telecommunications	$1,696	3.34	1.68
Atotech Ltd	MKS Inc	2022	15	United Kingdom	Materials	$1,268	2.84	5.62
Gemalto Holding BV	Thales SA	2019	9.99	Netherlands	Software & Tech Services	$2,969	2.04	2.76
ContourGlobal PLC	KKR & Co Inc	2022	7.78	Spain	Utilities	$1,660	4.81	6.20
HomeServe PLC	Brookfield Corp	2023	14.57	United Kingdom	Industrial Services	$1,681	2.90	10.61
RPC Group Ltd	Berry Global Group Inc	2019	7.74	United Kingdom	Materials	$4,249	2.65	8.37
Micro Focus International PLC	Open Text Corp	2023	7.14	United Kingdom	Software & Tech Services	$2,429	4.60	-1.05
Dialog Semiconductor Ltd	Renesas Electronics Corp	2021	25.74	United Kingdom	Tech Hardware & Semiconductors	$1,207	0.34	5.16
BUWOG Group GmbH	Vonovia SE	2018	8.97	Austria	Real Estate	$529	4.43	6.82
Greene King Ltd	CK Asset Holdings Ltd	2019	10.67	United Kingdom	Consumer Discretionary	$2,732	4.97	4.57
JLT Group Holdings Ltd	Marsh & McLennan Cos Inc	2019	16.61	United Kingdom	Insurance	$1,626	4.99	9.96
NEX Group Ltd	CME Group Inc	2018	17.05	United Kingdom	Financial Services	$670	2.48	8.80

**Note: The table reports selected observations from the final sample of 218 completed Western European M&A transactions. Financial variables were obtained from Bloomberg and are reported as available at the time of the transaction.*

Table 2 presents a selection of transactions included in the final dataset. The complete sample of 218 observations serves as the basis for the regression analysis conducted in the following chapter.

The transactions span a broad range of industries, including technology, industrials, healthcare, consumer, financial services, energy, and utilities. They also originate from multiple Western European countries, allowing us to examine valuation multiples across different economic and industry environments.

To account for industry differences, we grouped Bloomberg's detailed industry classifications into eight broader categories. This approach simplifies the analysis while preserving meaningful distinctions between sectors with different growth opportunities, competitive dynamics, and risk profiles.

Table 3. Distribution of the Final Sample Across Industry Groups (N = 218)

Industry Group	Transactions	Percentage
Consumer	39	17.89%
Energy	13	5.96%
Financial	31	14.22%
Healthcare	15	6.88%
Industrial	61	27.98%
Other	10	4.59%
Tech	45	20.64%
Utilities	4	1.83%
Grand Total	**218**	**100.00%***

**Note: Industry classifications are based on Bloomberg industry group definitions. Percentages may not sum exactly to 100% due to rounding.*

Table 3 reports the industry composition of the sample. Industrial firms represent the largest category, accounting for 61 transactions (28.0%), followed by Technology (20.6%), Consumer (17.9%), and Financials (14.2%). Healthcare and Energy account for smaller shares of the sample, while Utilities and Other sectors represent only a limited number of observations. The broad industry coverage reduces the likelihood that the empirical results are driven by the characteristics of a single sector.

The final sample includes transactions from twenty Western European jurisdictions. Table 4 summarizes the geographic distribution of target companies. The United Kingdom represents the largest share of the sample, accounting for 97 transactions (44.5%). The remaining observations are distributed across a diverse group of countries, particularly the Nordic region, the Netherlands, Italy, Spain, France, and Switzerland.

Table 4. Geographic Distribution of Target Companies in the Final Sample (N = 218)

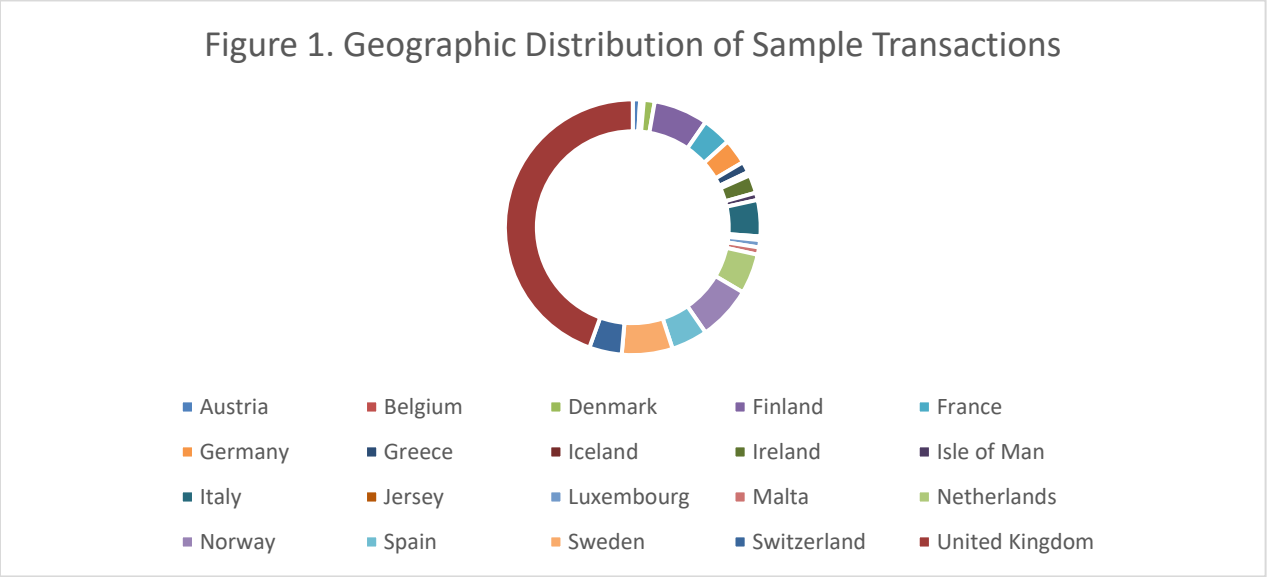
Country	Transactions	Percentage
Austria	2	0.92%
Belgium	1	0.46%
Denmark	3	1.38%
Finland	15	6.88%
France	8	3.67%
Germany	7	3.21%
Greece	3	1.38%
Iceland	1	0.46%
Ireland	5	2.29%
Isle of Man	2	0.92%
Italy	10	4.59%
Jersey	1	0.46%
Luxembourg	2	0.92%
Malta	2	0.92%
Netherlands	11	5.05%
Norway	15	6.88%
Spain	10	4.59%
Sweden	14	6.42%
Switzerland	9	4.13%
United Kingdom	97	44.50%
Total	**218**	**100.00%**

Note: The table reports the country of the target company in each transaction. The sample consists of 218 completed Western European M&A transactions obtained from Bloomberg.

Although some countries contribute only a small number of observations, the overall geographic diversity of the sample improves the generalizability of the analysis and helps ensure that the results are not driven by conditions specific to a single national market.

Figure 1 provides a visual representation of the geographic distribution of transactions included in the final sample.

Figure 3. Geographic Distribution of the 218 Western European M&A Transactions Included in the Final Sample



The geographic distribution demonstrates that the dataset captures transactions across a broad range of Western European markets. This diversity increases the external validity of the analysis and helps ensure that the findings are not driven by the characteristics of a single national market.

Descriptive Statistics

Table 5 and Figures 2–5 below summarize the distributional properties of the variables used in the empirical analysis. Examining both the numerical statistics and graphical distributions allows us to identify potential outliers, assess the degree of skewness, and evaluate whether additional data treatment is necessary before estimating the regression models.

Table 5. Descriptive Statistics for the Variables Used in the Regression Analysis (N = 218)

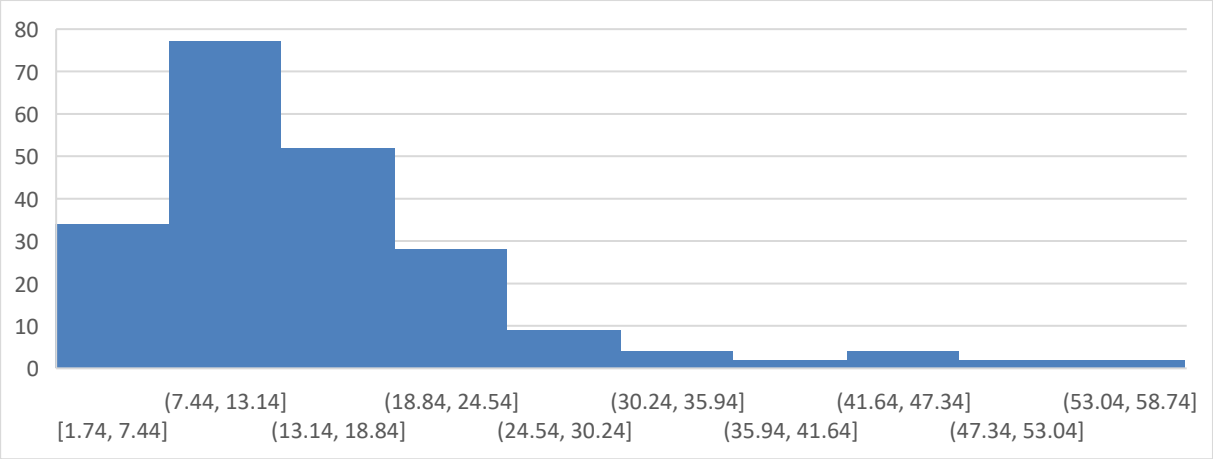
Variable	Mean	Median	Std. Dev.	Min	Max
EV/EBITDA Multiple	17.66	13.01	27.98	1.74	385.33
Firm Size (Log Revenue)	5.95	5.99	1.29	2.63	8.98
Debt-to-EBITDA Ratio	3.96	2.82	5.12	0.03	49.23
Return on Invested Capital (ROIC)	6.53	5.52	7.71	-19.41	47.68

Note: *The sample consists of 218 completed Western European M&A transactions. EV/EBITDA is the transaction multiple. Firm Size is measured as the natural logarithm of revenue. ROIC denotes Return on Invested Capital.*

The dependent variable, EV/EBITDA, exhibits substantial dispersion across transactions. The average multiple equals 17.66x, while the median is considerably lower at 13.01x. Figure 2 confirms that most observations are concentrated at lower valuation levels, with a long right tail driven by a relatively small number of transactions receiving exceptionally high multiples. The

maximum observed multiple reaches 385.33x. Such extreme observations are common in M&A datasets, particularly when acquisitions involve high-growth firms, strategic assets, or companies operating in sectors with strong future growth expectations. The distribution therefore provides an initial justification for the robustness tests performed later in the chapter.

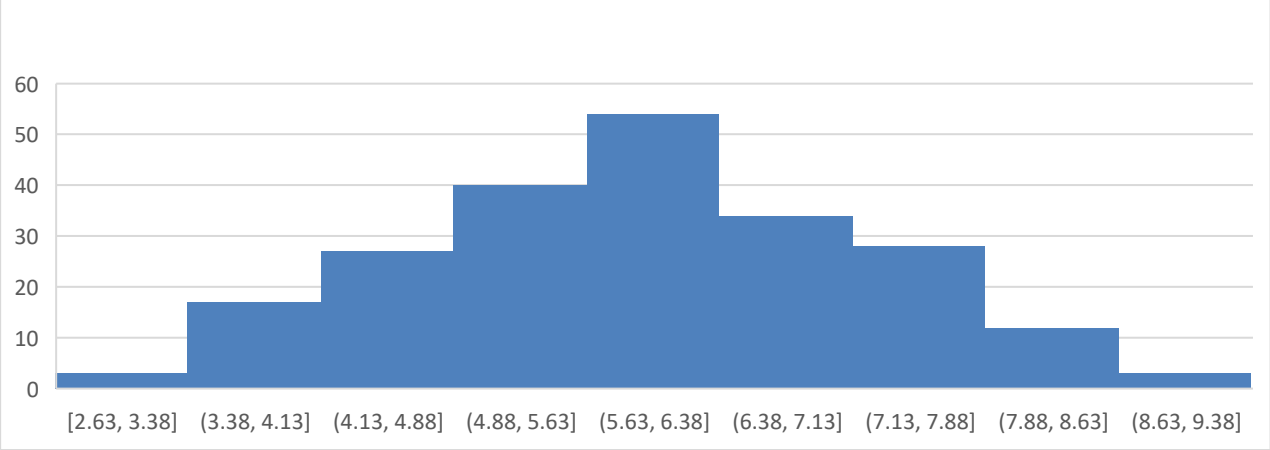
Figure 4. Distribution of Enterprise Value-to-EBITDA (EV/EBITDA) Multiples in 218 Western European M&A Transactions (2015–2025)



Note: The histogram displays the distribution of EV/EBITDA multiples for the final sample of 218 transactions. Observations above 60x EV/EBITDA are excluded from the figure to improve readability but remain included in all statistical analyses and regression models.

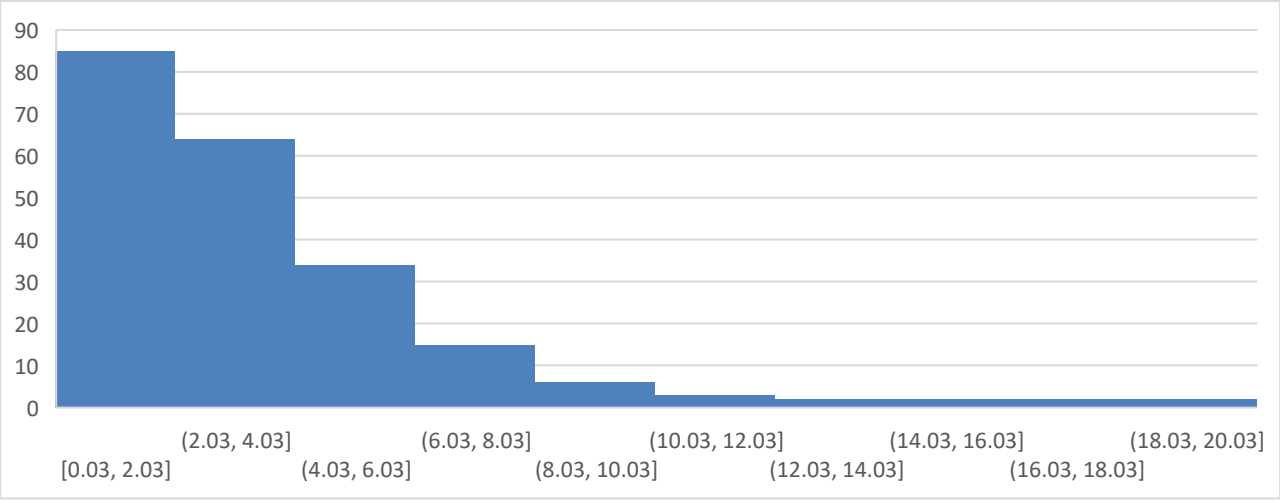
As shown in Table 5 and Figure 3, the distribution of log revenue is considerably more balanced than that of EV/EBITDA. The mean (5.95) and median (5.99) are nearly identical, and the histogram exhibits a relatively symmetric shape. This suggests that the logarithmic transformation successfully reduced the influence of extremely large firms and produced a variable suitable for regression analysis.

Figure 5. Distribution of Firm Size (Natural Logarithm of Revenue) in 218 Western European M&A Transactions (2015–2025)



Leverage, measured by the Debt-to-EBITDA ratio, also displays substantial variation across transactions. The average leverage ratio equals 3.96x EBITDA, compared with a median of 2.82x. Figure 4 shows that most firms cluster at lower leverage levels, while a limited number of observations exhibit very high debt burdens. The maximum value of 49.23x EBITDA highlights the diversity of financing structures represented in the sample. Given the importance of leverage as an explanatory variable, these extreme observations further support the need for robustness testing.

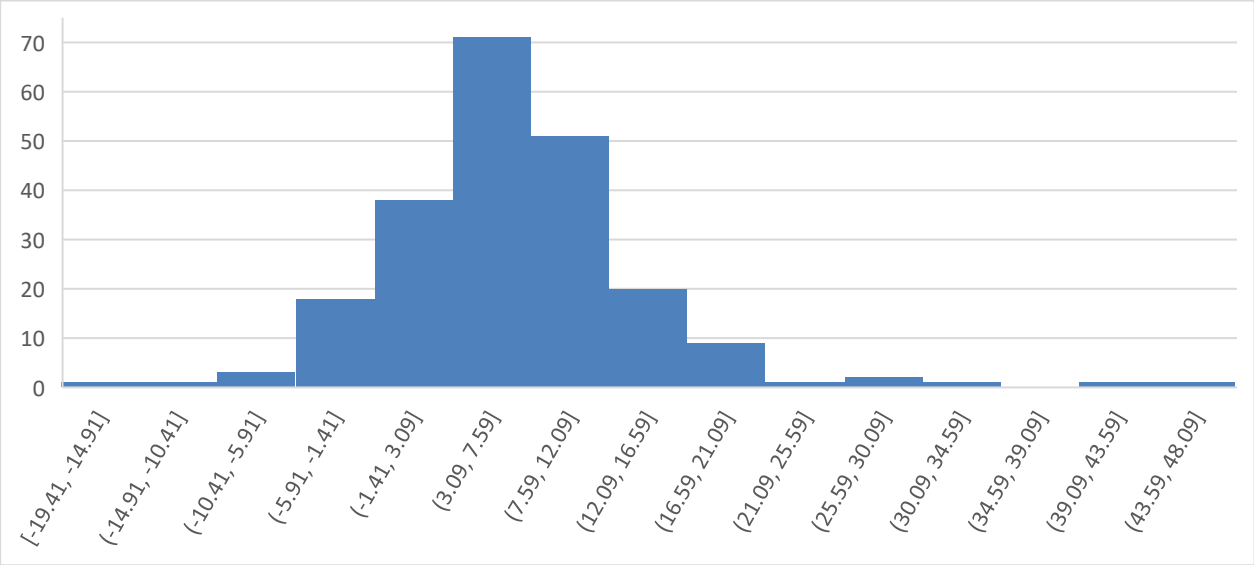
Figure 6. Distribution of Leverage Measured by the Debt-to-EBITDA Ratio in 218 Western European M&A Transactions (2015–2025)



Note: The histogram displays leverage measured by the Debt-to-EBITDA ratio. Observations above 20x are excluded from the figure to improve readability but remain included in all empirical analyses.

Profitability is measured using Return on Invested Capital (ROIC). The average ROIC equals 6.53%, while the median is 5.52%. Figure 5 indicates a relatively concentrated distribution compared with EV/EBITDA and leverage. Although several firms generate exceptionally high returns and a small number report negative ROIC values, profitability appears substantially more balanced than the other financial variables included in the analysis.

Figure 7. Distribution of Return on Invested Capital (ROIC) in 218 Western European M&A Transactions (2015–2025)



The descriptive statistics and graphical analysis reveal considerable heterogeneity across the sampled transactions. EV/EBITDA multiples and leverage exhibit the greatest dispersion and contain several extreme observations, whereas firm size and profitability display more stable distributions. These findings are consistent with the characteristics of transaction-level M&A data and support the use of winsorization and trimming procedures in the robustness analysis.

Correlation Analysis

Table 6 presents the Pearson correlation coefficients among the variables used in the empirical analysis. We use the correlation matrix for two purposes. First, it provides an initial indication of the direction and strength of the relationships between the variables. Second, it allows us to identify potential multicollinearity issues before estimating the regression models.

Table 6. Pearson Correlation Matrix for the Variables Used in the Regression Analysis

Variable	EV/EBITDA	Firm Size	Debt-to-EBITDA	ROIC
EV/EBITDA	1			
Firm Size	-0.113	1		
Debt-to-EBITDA	0.327	-0.096	1	
ROIC	-0.113	-0.019	-0.415	1

Note: Pearson correlation coefficients are reported. Correlations above 0.80 may indicate potential multicollinearity concerns.

According to Table 6, the relationship between the firm's EV/EBITDA and Leverage ratios is positive with moderate strength (0.327). This could suggest that companies with higher Debt to EBITDA ratios will have higher valuations than companies with lower Debt/EBITDA ratios in this study's sample, and this also aligns with some portions of the literature that suggest that debt can enable firms to achieve growth through expansion projects leading to increases in enterprise value. At the same time, this correlation should be viewed carefully, because it represents only a bivariate relationship and does not control for the influence of other firm characteristics.

The correlation between EV/EBITDA and firm size, measured as the logarithm of revenue, is relatively weak and negative (-0.113). This indicates that larger firms in the sample tend to receive slightly lower valuation multiples. Although the relationship is weak, it is interesting because it contrasts with the traditional argument that larger firms should command higher multiples due to greater stability, diversification, and lower perceived risk. One possible explanation is that smaller firms in the sample may possess stronger growth prospects, causing investors and acquirers to assign them higher valuation multiples.

Similarly, profitability exhibits a weak negative correlation with EV/EBITDA (-0.113). The magnitude of this relationship is small, suggesting that profitability alone is unlikely to explain a substantial portion of variation in valuation multiples. Nevertheless, the negative sign is consistent with some studies arguing that highly profitable firms may be viewed as more mature businesses with fewer growth opportunities, resulting in lower valuation multiples relative to high-growth firms.

Among the independent variables used in the regression model, the strongest relationship is observed between leverage and profitability (-0.415). The negative coefficient suggests that firms with higher debt burdens tend to generate lower returns on invested capital. This is also consistent with financial theory, which says that excessive leverage could reduce profitability because of higher interest obligations and higher risk.

The remaining pairs of correlations are relatively weak. Firm size and leverage exhibit a correlation of approximately -0.096, while the relationship between firm size and profitability is

close to zero. These low correlations suggest that the explanatory variables capture different dimensions of firm characteristics.

The correlation analysis does not indicate the presence of severe multicollinearity among the explanatory variables. According to commonly used guidelines in empirical finance research, pairwise correlation coefficients above approximately 0.80 may indicate potential multicollinearity concerns. None of the correlations among the independent variables approach this threshold.

However, it is important to note that correlation analysis alone cannot establish causality. The coefficients presented in Table 6 merely describe pairwise linear relationships and do not account for the simultaneous influence of multiple variables. Therefore, we employ regression analysis in order to determine whether these relationships remain statistically significant after controlling for other firm-specific characteristics and industry effects.

Multicollinearity Assessment

While pairwise correlations provide a useful initial assessment, they do not fully capture multicollinearity. To evaluate this issue, we calculated Variance Inflation Factors (VIFs) for each explanatory variable. The VIF measures how much the variance of a coefficient increases because of its correlation with the remaining explanatory variables. Values above 5 are commonly viewed as indicating moderate multicollinearity, while values above 10 suggest a more serious problem.

We calculated VIF values by running a series of additional regressions in which each independent variable was regressed on the remaining explanatory variables. The resulting coefficient of determination (R^2) from each auxiliary regression was then used to calculate the VIF according to the following formula:

$$VIF = \frac{1}{1 - R^2}$$

Table 7 presents the resulting VIF values for the independent variables included in the regression model.

Table 7. Variance Inflation Factor (VIF) Results

Variable	VIF
Firm Size (Log Revenue)	1.014
Debt-to-EBITDA Ratio	1.224
Return on Invested Capital (ROIC)	1.213

The results indicate that all VIF values are substantially below the commonly accepted thresholds of 5 and 10. The highest VIF is observed for Total Debt to EBITDA (1.224), while firm size exhibits the lowest value (1.014). These results suggest that the explanatory variables provide largely distinct information and do not exhibit problematic levels of linear association.

Consequently, multicollinearity does not appear to represent a significant concern in this study. The regression coefficients can therefore be interpreted with reasonable confidence, as the estimated relationships are unlikely to be distorted by excessive correlation among the explanatory variables.

6. Empirical Results

6.1 Baseline Regression

In order to examine the determinants of valuation multiples, we estimate an OLS regression model with EV/EBITDA as the dependent variable. We include three explanatory variables: firm size, measured as the natural logarithm of revenue; leverage, measured as Debt-to-EBITDA; and profitability, measured as ROIC.

Table 8 reports the baseline regression results based on 218 completed Western European M&A transactions. The model produces an R^2 of 0.114 and an adjusted R^2 of 0.101, indicating that the included variables explain approximately 10% of the cross-sectional variation in EV/EBITDA multiples. The explanatory power of the model is modest, however this result is in large consistent with the reviewed literature. Transaction pricing reflects numerous factors that are difficult to observe or quantify. As a result, relatively low R^2 values are common in cross-sectional studies of valuation multiples.

The baseline model is statistically significant. The F-statistic equals 9.16 ($p < 0.001$), allowing us to reject the null hypothesis that all slope coefficients are jointly equal to zero. This indicates that at least one of the explanatory variables contributes to explaining variation in EV/EBITDA multiples.

Table 8. Baseline OLS Regression Results for EV/EBITDA Multiples in 218 Western European M&A Transactions (2015–2025)

Variables	Model 1
Intercept	20.57**
	(9.23)
Firm Size (Log Revenue)	-1.76
	(1.40)
Debt-to-EBITDA Ratio	1.79***
	(0.39)
Return on Invested Capital (ROIC)	0.08
	(0.26)
Observations	218
R^2	0.114
Adjusted R^2	0.101
F-statistic	9.16***

*Notes: The dependent variable is EV/EBITDA Multiple. The sample consists of 218 completed Western European M&A transactions between 2020 and 2025. Ordinary least squares standard errors are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.*

Among the explanatory variables, leverage is the only variable that is statistically significant at conventional levels. The estimated coefficient of 1.79 suggests that a one-turn increase in the Debt-to-EBITDA ratio is associated with an increase of approximately 1.79 turns in the EV/EBITDA valuation multiple. From an economic perspective, this effect is substantial. For example, a company with a Debt-to-EBITDA ratio of 5x would, on average, be expected to receive an EV/EBITDA multiple approximately 5.37 turns higher than an otherwise comparable company with a leverage ratio of 2x.

At first glance, the positive relationship may appear counterintuitive because more debt increases financial risk. However, the finding is broadly consistent with Axelson et al. (2013), who document a positive relationship between leverage and transaction pricing in leveraged buyouts. One possible explanation is that leverage reflects access to financing and expectations of future cash-flow generation. However, the result should be interpreted cautiously because both EV/EBITDA and Debt-to-EBITDA share EBITDA as a common denominator, creating the possibility of a partially mechanical relationship.

Firm size, measured as the natural logarithm of revenue, exhibits a negative coefficient (-1.76), but the estimate is not statistically significant ($p = 0.210$). The negative sign would suggest that larger firms may receive lower valuation multiples. However, the lack of statistical significance indicates that the relationship is not sufficiently strong to be distinguished from random variation within the sample. As a result, the baseline specification does not provide support for a systematic size effect in Western European M&A transactions.

Profitability (ROIC) also fails to reach statistical significance ($p = 0.764$). The coefficient is positive but relatively small economically, suggesting that profitability provides limited explanatory power once firm size and leverage are taken into account. This result is consistent with literature arguing that acquirers often place greater emphasis on growth expectations than on current profitability.

The baseline results provide support for H3, which predicts a significant relationship between leverage and EV/EBITDA multiples. In contrast, we find no evidence supporting H1 or H2, as neither firm size nor profitability is statistically significant in the baseline specification. Because the sample contains several extreme observations, we will also examine whether these conclusions remain robust under alternative model specifications.

6.2 Expanded Regression Model

In order to examine whether industry affiliation influences valuation multiples, we extend the baseline model by including industry dummy variables. We group transactions into Technology, Industrial, Consumer, Financial, and Energy sectors, while Healthcare serves as the reference category. This specification allows us to separate firm-specific effects from broader industry-level influences on transaction pricing.

Table 9. OLS Regression Results with Industry Controls for EV/EBITDA Multiples in 218 Western European M&A Transactions (2015–2025)

Variables	Model 1	Model 2
Intercept	20.57**	23.35**
	(9.23)	(10.64)
Firm Size (Log Revenue)	-1.76	-2.13
	(1.40)	(1.52)
Debt-to-EBITDA Ratio	1.79***	1.85***
	(0.39)	(0.40)
Return on Invested Capital (ROIC)	0.08	0.04
	(0.26)	(0.26)
Technology Industry	-	4.18
		(6.42)
Industrial Industry	-	1.79
		(6.13)
Consumer Industry	-	-2.91
		(6.59)
Financial Industry	-	-5.69
		(6.93)
Energy Industry	-	-10.6
		(8.87)
Observations	218	218
R^2	0.114	0.135
Adjusted R^2	0.101	0.102
F-statistic	9.16***	4.08***

*Notes: The dependent variable is EV/EBITDA Multiple. The sample consists of 218 completed Western European M&A transactions between 2020 and 2025. Healthcare is omitted and serves as the reference industry category. Ordinary least squares standard errors ate reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.*

After we included industry control, the R^2 increased from 0.114 to 0.135, while the adjusted R^2 remains virtually unchanged. This could suggest that industry classification only explains a limited portion of the variation in EV/EBITDA multiples beyond the firm-specific variables already included in the baseline model. The model remains significant ($F = 4.08$, $p < 0.001$), indicating that the explanatory variables continue to provide meaningful explanatory power.

The relatively modest improvement in explanatory power could suggest that industry affiliation explains only a limited portion of the variation in EV/EBITDA multiples within the sample. Although valuation theory frequently emphasizes industry differences, the results indicate that firm-specific characteristics may be more important than broad industry classifications in explaining transaction multiples. Another possible explanation is that the industry groups employed in the analysis are relatively broad and may not fully capture differences between firms operating in more specialized sub-sectors (for example, software companies and semiconductor manufacturers are both included within the technology category despite potentially exhibiting different valuation profiles).

The inclusion of industry controls does not alter the baseline results fundamentally. Leverage is still the only statistically significant determinant of EV/EBITDA multiples. The coefficient increased slightly from 1.79 to 1.85 and remains significant at the 1% level. Firm size remains negative but statistically insignificant, while ROIC remains close to zero and insignificant. Consequently, the extended model continues to provide support only for the leverage hypothesis.

Although none of the industry dummy variables achieve statistical significance at conventional levels, the coefficients reveal economically intuitive patterns. For example, the Technology sector shows the highest positive coefficient of all industries (4.18), suggesting that technology firms receive valuation multiples almost 4.2 turns higher than healthcare firms, all else equal. This finding is consistent with the premise behind how valuations are determined (i.e., that high valuation multiples are a reflection of high growth expectations, innovation potential, and extreme scalability). Industrial firms also exhibit a positive coefficient (1.79), although the magnitude is considerably smaller than that observed for technology companies. This suggests that industrial firms are valued similarly to healthcare firms once firm-specific characteristics are taken into account.

In contrast, Consumer and Financial firms display negative coefficients of -2.91 and -5.69, respectively. Neither of these coefficients is statistically significant but combined with the fact that the coefficients are negative they suggest that the consumer and financial sectors have a relatively lower valuation multiple than that of the healthcare sector. The Energy sector exhibits the largest negative coefficient (-10.60). Economically, this implies that energy firms receive valuation multiples approximately 10.6 turns lower than comparable healthcare firms. This finding is broadly consistent with valuation theory and prior literature, which often associates energy companies with lower growth expectations, and increased exposure to risk due to price fluctuations.

Although these differences are not statistically significant, the direction of the coefficients generally aligns with expectations derived from the literature. Technology companies are often associated with stronger growth opportunities and scalability, whereas energy firms tend to face lower growth expectations, higher capital intensity, and greater exposure to commodity-price volatility. The absence of statistical significance could be because of the use of broad industry groupings.

6.3 Robustness Checks

The baseline results indicated that leverage was the only statistically significant determinant of EV/EBITDA multiples. However, the descriptive statistics revealed substantial skewness and several extreme observations, particularly in the valuation multiple and leverage variables. To evaluate whether the baseline findings were sensitive to outliers, we estimated three additional specifications: (1) a 1% winsorized model, (2) a 1% trimmed sample model, and (3) a 3% winsorized model. Together, these tests allow us to assess the stability of the results under alternative treatments of extreme observations.

Robustness Check 1

We first applied winsorization method to all variables at the 1st and 99th percentiles and replaced extreme values with the values at the lower and upper bound, respectively. This method allowed us to retain all 218 observations while removing the outliers. The model remains statistically significant ($F = 4.56$, $p < 0.001$), and explanatory power improves modestly ($R^2 = 0.149$). In addition, the standard error of the regression decreases substantially compared to the previous specification. This suggests that a relatively small number of extreme observations contributed disproportionately to the unexplained variation in the baseline sample.

Table 10. OLS Regression Results Using a 1% Winsorized Sample for EV/EBITDA Multiples (N = 218)

Variables	Model 1	Model 2	Model 3
Intercept	20.57**	23.35**	26.46***
	(9.23)	(10.64)	(4.89)
Firm Size (Log Revenue)	-1.76	-2.13	-1.42**
	(1.40)	(1.52)	(0.70)
Debt-to-EBITDA Ratio	1.79***	1.85***	0.56***
	(0.39)	(0.40)	(0.18)
Return on Invested Capital (ROIC)	0.08	0.04	-0.1
	(0.26)	(0.26)	(0.12)
Technology Industry	-	4.18	1.16
		(6.42)	(2.95)
Industrial Industry	-	1.79	-4.67*
		(6.13)	(2.82)
Consumer Industry	-	-2.91	-4.98*
		(6.59)	(3.03)
Financial Industry	-	-5.69	-4.8
		(6.93)	(3.19)
Energy Industry	-	-10.6	-11.41***
		(8.87)	(4.08)
Observations	218	218	218
R^2	0.114	0.135	0.149
Adjusted R^2	0.101	0.102	0.116
F-statistic	9.16***	4.08***	4.56

Note: *The dependent variable is EV/EBITDA Multiple. Model 1 reports the baseline regression. Model 2 includes industry control variables, with Healthcare serving as the reference category. Model 3 reports results using a 1% winsorized sample to reduce the influence of extreme observations. The sample consists of 218 completed Western European M&A transactions between 2020 and 2025. Ordinary least squares standard errors are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.*

The results differ from the baseline specification in two interesting ways. First, leverage remains positive and statistically significant, although its coefficient declines from 1.85 to 0.56, suggesting that extreme observations partially inflated the baseline estimate. Nevertheless, the persistence of statistical significance indicates that the positive relationship between leverage and valuation multiples is strong and not entirely driven by outliers.

The biggest difference we observe is that firm size becomes statistically significant at 5% level (p = 0.043) with negative coefficient of -1.42, after controlling for outliers. Which means that a 1-unit increase in ln(revenue) is associated with a 1.42-point decrease in the EV/EBITDA multiple, holding all other variables constant. In other words, doubling of the revenue is associated with approximately a 1.0-turn lower EV/EBITDA multiple. The emergence of statistical significance

after winsorization suggests that extreme observations masked the underlying relationship between size and valuation multiples.

Profitability remains statistically insignificant. Among the industry controls, only the Energy sector exhibits a significant negative coefficient relative to Healthcare. The coefficient of -11.41 implies that firms operating in the Energy sector receive valuation multiples approximately 11.4 turns lower than comparable Healthcare firms. This finding is economically intuitive and consistent with the literature reviewed. Energy firms generally operate in mature and capital-intensive markets and often face lower long-term growth expectations than healthcare or technology companies. As a result, investors may be less willing to pay premium valuation multiples for these firms.

Robustness Check 2

Unlike with the winsorization model, in the second robustness test we removed observations outside the 1st and 99th percentiles and thus reduced the sample size to 212 observations. Among all estimated specifications, the trimmed-sample model exhibits the highest explanatory power (R^2 = 0.184; Adjusted R^2 = 0.152). The increase in both R^2 and adjusted R^2 suggests that a relatively small number of extreme observations contributed disproportionately to the unexplained variation in the original sample.

Table 11. OLS Regression Results Using a 1% Outlier-Trimmed Sample for EV/EBITDA Multiples (N = 212)

Variables	Model 1	Model 2	Model 3	Model 4
Intercept	20.57**	23.35**	26.46***	24.11***
	(9.23)	(10.64)	(4.89)	(3.88)
Firm Size (Log Revenue)	-1.76	-2.13	-1.42**	-1.29**
	(1.40)	(1.52)	(0.70)	(0.55)
Debt-to-EBITDA Ratio	1.79***	1.85***	0.56***	0.42***
	(0.39)	(0.40)	(0.18)	(0.15)
Return on Invested Capital (ROIC)	0.08	0.04	-0.1	-0.08
	(0.26)	(0.26)	(0.12)	(0.09)
Technology Industry	—	4.18	1.16	2.93
		(6.42)	(2.95)	(2.32)
Industrial Industry	—	1.79	-4.67*	-4.81**
		(6.13)	(2.82)	(2.23)
Consumer Industry	—	-2.91	-4.98*	-3.12
		(6.59)	(3.03)	(2.37)
Financial Industry	—	-5.69	-4.8	-2.54
		(6.93)	(3.19)	(2.50)
Energy Industry	—	-10.6	-11.41***	-8.42**
		(8.87)	(4.08)	(3.37)
Observations	218	218	218	212
R^2	0.114	0.135	0.149	0.184
Adjusted R^2	0.101	0.102	0.116	0.152
F-statistic	9.16	4.08	4.56	5.74

*Notes: The dependent variable is EV/EBITDA Multiple. Model 1 reports the baseline specification. Model 2 includes industry control variables, with Healthcare serving as the reference category. Model 3 reports results using a 1% winsorized sample. Model 4 reports results after trimming the upper and lower 1% of observations. Ordinary least squares standard errors are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.*

Importantly, the main findings remain unchanged. Leverage continues to exhibit a positive and significant relationship with valuation multiples at the 1% level. Firm size also continues to exhibit negative and significant relationship at the 5% level. ROIC remains insignificant.

The industry coefficients provide more explanation in the trimmed-sample specification. Unlike the previous model, both the Energy and Industrial sectors exhibit statistically significant negative coefficients relative to the Healthcare reference category.

The Energy dummy is still statistically significant and has a large negative coefficient (-8.42). The Industrial dummy also becomes statistically significant, with a coefficient of -4.81. This implies that industrial firms receive valuation multiples approximately 4.8 turns lower than comparable healthcare firms, holding all other variables constant. Like energy companies, industrial firms often operate in mature markets characterized by slower growth rates and lower expected future

expansion. Although the remaining industry dummies remain statistically insignificant, the overall pattern of coefficients remains economically intuitive.

Robustness Check 3

Finally, we applied a more aggressive winsorization procedure at the 3rd and 97th percentiles while retaining the full sample.

Table 12. OLS Regression Results Using a 3% Winsorized Sample for EV/EBITDA Multiples (N = 218)

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	20.57**	23.35**	26.46***	24.11***	24.51***
	(9.23)	(10.64)	(4.89)	(3.88)	(3.89)
Firm Size (Log Revenue)	-1.76	-2.13	-1.42**	-1.29**	-1.21**
	(1.40)	(1.52)	(0.70)	(0.55)	(0.55)
Debt-to-EBITDA Ratio	1.79***	1.85***	0.56***	0.42***	0.43***
	(0.39)	(0.40)	(0.18)	(0.15)	(0.14)
Return on Invested Capital (ROIC)	0.08	0.04	-0.1	-0.08	-0.10
	(0.26)	(0.26)	(0.12)	(0.09)	(0.10)
Technology Industry	—	4.18	1.16	2.93	1.71
		(6.42)	(2.95)	(2.32)	(2.34)
Industrial Industry	—	1.79	-4.67*	-4.81**	-4.70**
		(6.13)	(2.82)	(2.23)	(2.24)
Consumer Industry	—	-2.91	-4.98*	-3.12	-3.96
		(6.59)	(3.03)	(2.37)	(2.41)
Financial Industry	—	-5.69	-4.8	-2.54	-3.49
		(6.93)	(3.19)	(2.50)	(2.53)
Energy Industry	—	-10.6	-11.41***	-8.42**	-9.90***
		(8.87)	(4.08)	(3.37)	(3.24)
Observations	218	218	218	212	
R^2	0.114	0.135	0.149	0.184	
Adjusted R^2	0.101	0.102	0.116	0.152	
F-statistic	9.16	4.08	4.56	5.74	

*Notes: The dependent variable is EV/EBITDA Multiple. Model 1 reports the baseline specification. Model 2 includes industry control variables, with Healthcare serving as the reference category. Model 3 reports results using a 1% winsorized sample. Model 4 reports results after trimming the upper and lower 1% of observations. Ordinary least squares standard errors are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.*

The results remain highly consistent with the previous robustness specifications. Leverage remains positive and statistically significant, firm size remains negative and significant, and ROIC remains insignificant. Energy and Industrial firms continue to receive significantly lower valuation multiples than Healthcare firms. The stability of both coefficient signs and significance levels

provides additional evidence that the results are not driven by a small number of influential observations.

Comparative Discussion of Robustness Results

Robustness tests allow us to determine if the results from the baseline analysis can survive the elimination of extreme values. In general, we find that the main conclusions remain largely unchanged across all specifications, although several relationships become clearer once we reduce the influence of outliers.

Firstly, we find that leverage is the most consistent determinant of EV/EBITDA multiples throughout our analysis. We find a positive and statistically significant relationship between Debt-to-EBITDA and valuation multiples in every model specification. Although the coefficient declines from 1.85 in the baseline industry model to around 0.42 to 0.56 in the robustness models, the direction and statistical significance of the coefficient do not change. This could mean that extreme observations somewhat increased the magnitude of the relationship in the original sample, but they do not alter the conclusion that more highly leveraged firms tend to receive higher valuation multiples.

Next, firm size shows the greatest amount of variation between the specifications of the models tested. The log of the revenue generated by a company has no statistically significant effect on firm valuation in either of the two baseline models. However, this coefficient was found to be statistically significant across all three robustness tests and had a consistently negative value (-1.21 to -1.42) in each test.

The significance of this negative correlation indicates that the outlier cases previously discussed may have hidden the underlying relationship between firm size and valuation multiples. The negative correlation suggests that, all other things being equal, smaller firms tend to receive a higher valuation as compared to larger firms. This could be explained by acquiring companies placing higher value on the growth opportunities that are sometimes associated with smaller (or newer) firms.

Profitability across all specifications remains statistically insignificant regardless of the method used to remove them from the dataset. The results of this analysis suggest that there is no evidence to support the assertion that the return on invested capital (ROIC) is useful in explaining the variability of EV/EBITDA multiples. This finding indicates that acquirers are likely to rely more

on anticipated future growth and strategic factors than current operating profitability when determining acquisition prices.

Lastly, when extreme observations are removed from analysis, we begin to see industry effects. Energy dummy variable is statistically significant across all robustness specifications with the Industrial dummy variable being significant for two of the three specifications. Both industries have relatively lower valuation multiples compared to their Healthcare counterparts. This is consistent with the literature as Healthcare Companies are seen in general as having higher growth potential and therefore higher expected future earnings, whereas Energy Companies and Industrial Companies tend to be more mature and capital intensive industries.

Table 13. Summary of Regression Models Results

Variable	Baseline	Industry	Winsor 1%	Trim 1%	Winsor 3%
Log Revenue	No	No	Yes (-)	Yes (-)	Yes (-)
Debt/EBITDA	Yes (+)	Yes (+)	Yes (+)	Yes (+)	Yes (+)
ROIC	No	No	No	No	No
Energy	No	No	Yes (-)	Yes (-)	Yes (-)
Industrial	No	No	No	Yes (-)	Yes (-)
Other Industry Dummy	No	No	No	No	No

Table 23 summarizes the results across all model specifications. Three conclusions emerge from the robustness analysis. First, leverage remains the most robust determinant of EV/EBITDA multiples, retaining a positive and statistically significant coefficient in every model. Second, firm size becomes statistically significant once we control for extreme observations, suggesting that smaller firms command higher valuation multiples than larger firms. Third, profitability remains insignificant throughout the analysis. In addition, the robustness tests reveal consistent negative valuation effects for Energy firms and, to a lesser extent, Industrial firms relative to Healthcare companies.

The findings indicate that the main conclusions of the study are not driven by a small number of influential observations. The consistency of the results across alternative model specifications increases confidence in the empirical evidence and suggests that the observed relationships are reasonably robust within the sample of Western European M&A transactions.

6.4 Discussion of Findings

The purpose of this study was to examine whether firm size, profitability, leverage, and industry affiliation influence EV/EBITDA valuation multiples in Western European M&A transactions. Drawing on the theoretical and empirical literature reviewed in Chapters 2 and 3, we developed

four hypotheses and tested them using a series of OLS regression models and robustness checks. The results provide mixed support for the proposed determinants and suggest that some factors play a more important role than others in explaining transaction multiples.

The first hypothesis we developed was:

H1: Firm size significantly affects EV/EBITDA multiples.

In the baseline specifications, firm size does not exhibit a statistically significant relationship with valuation multiples. However, the robustness checks paint a different picture. Once we control for extreme observations through winsorization and trimming procedures, firm size becomes statistically significant across all robustness specifications. Interestingly, the estimated coefficient is consistently negative, suggesting that larger firms tend to receive lower EV/EBITDA multiples than smaller firms.

This finding contrasts with the positive size effect reported by Rowe et al. (2026), who find that larger manufacturing firms command higher valuation multiples. One possible explanation is the composition of our sample. Unlike Rowe et al., whose analysis focuses exclusively on manufacturing transactions, our sample consists of 6.88% healthcare companies and 20.64% tech companies, which are consistently throughout literature considered as high-growth companies. Investors are commonly willing to pay higher valuation multiples for smaller companies with greater perceived growth opportunities. Consequently, our research provides only partial support for the first hypothesis (H1).

The second hypothesis we developed was:

H2: Profitability significantly affects EV/EBITDA multiples.

The empirical results do not support this hypothesis, and we reject it. Across all model specifications, ROIC remains statistically insignificant. Neither the baseline regressions nor the robustness tests provide evidence that current profitability explains variation in transaction multiples within the sample. One possible explanation is that investors do not place much emphasis on the current returns on invested capital, but are more interested in future opportunities and returns. Our findings are broadly consistent with the existing literature that argues that companies with stronger potential growth receive higher valuation multiples irrespective of the current profitability levels. Accordingly, the second hypothesis (H2) is not supported.

The third hypothesis we developed was:

H3: Leverage significantly affects EV/EBITDA multiples.

The results from our regression models strongly support this hypothesis. Across all model specifications, leverage remains consistently positive and statistically significant. Although the magnitude of the coefficient declines after controlling for extreme observations, the direction and significance of the relationship remain unchanged.

The positive relationship suggests that firms with higher leverage tend to receive higher valuation multiples. This finding may initially appear counterintuitive because debt increases financial risk. However, it is consistent with studies such as Axelson et al. (2013), which show that favourable credit conditions and greater access to debt financing can contribute to higher transaction valuations. In acquisition settings, leverage may also reflect expectations of future growth, financing flexibility, or confidence in the target firm's ability to generate future cash flows. Given the consistency of the coefficient across all specifications, the evidence strongly supports H3.

The fourth and final hypothesis we proposed was:

H4: Industry segment significantly affects EV/EBITDA multiples.

The results of our empirical research present partial support for the H4 hypothesis. The baseline industry model did not identify any statistically significance across sectors industry groups. However, after winsorization and outlier adjustments, the effects of the industry group became slightly clearer. In particular, the Energy sector consistently showed significantly lower valuation multiples relative to the reference category. Moreover, in certain robustness scenarios, Industry sector also became statistically significant and negatively correlated, in addition to the Energy sector.

These empirical results suggest that industry classification could influence valuation multiples, however the exact effect appears to be concentrated in specific industries rather than applied broadly across all industries. The findings are consistent with valuation theory, which suggests that mature and capital-intensive industries tend to trade at lower valuation multiples due to lower expected growth rates. Consequently, our research provides only partial support for H4.

Taken together, the findings suggest that leverage is the most consistent determinant of EV/EBITDA valuation multiples in Western European M&A transactions. Firm size also appears to influence valuation, although its effect only becomes visible after controlling for extreme observations. In contrast, profitability does not appear to play a significant role in explaining transaction multiples within the sample.

The results further indicate that industry effects exist, but are concentrated in specific sectors rather than broadly distributed across all industries. This suggests that transaction valuations are driven primarily by firm-level characteristics and growth expectations rather than by current profitability alone.

At the same time, the relatively modest explanatory power of the regression models indicates that a substantial portion of valuation variation remains unexplained. This is consistent with the nature of M&A transactions, where valuation depends not only on observable financial characteristics but also on factors such as expected synergies, strategic fit, competitive bidding, negotiation dynamics, and prevailing market conditions. Consequently, while the variables examined in this study contribute to explaining transaction multiples, they represent only part of the broader valuation process.

7. Limitations of the Study

Although this study provides new evidence on the determinants of EV/EBITDA valuation multiples in Western European M&A transactions, several limitations should be considered when interpreting the findings.

Firstly, our analysis uses a sample of 218 completed M&A transactions occurring in Western Europe from 2015 through 2025. While this sample is large enough for the statistical techniques used in the study, it represents a small proportion of all M&A activity in Europe. Therefore, the findings from these analyses should be viewed as findings from this sample only and not as conclusions that can be automatically applied to all transactions or to other geographic areas.

The study also only examines a limited number of possible explanatory variables: firm size, leverage, profitability, and industry classification. Although these variables capture many important elements of a firm's value, valuation multiples are also influenced by a number of other factors not measured in the regression models such as expected growth, type of transaction, acquisition premiums, information asymmetries, market conditions, among others. Many of these variables are difficult (or impossible) to observe or measure at the transaction level, so we did not include them in the analysis. This limitation can be seen in the relatively modest explanatory power of the estimated models. Although a number of variables were found to have statistically significant effects on the EV/EBITDA multiple, much of the variation in the EV/EBITDA multiple is not explained. This is not unusual in M&A research, where transaction prices often incorporate qualitative and deal-specific considerations that are not captured by accounting-based measures.

Third, we rely on historical transaction data obtained from Bloomberg. While transaction multiples provide useful information about observed market valuations, they represent outcomes negotiated between specific buyers and sellers under particular market conditions. In other words, it should be taken into account that the estimated relationships may be sensitive to the economic environment, financing conditions, and acquisition trends during the sample period.

As a last point, the results should be considered from the perspective of M&A in Western Europe only. Future research may increase geographic scope by including additional countries, as well as retrospectively compare factors that influence valuation multiples across countries, or add more variables related to factors affecting valuation multiple. By expanding the scope of past research, it would expand our understanding about what drives valuation multiples in acquisition transactions.

Despite these limitations, the study aims to contribute to the valuation literature by providing evidence from a cross-industry sample of Western European M&A transactions and by examining the robustness of the results across multiple model specifications. The findings offer some additional insights into the role of firm characteristics and industry effects in explaining transaction valuation multiples.

8. Conclusion

The purpose of this thesis was to examine the determinants of EV/EBITDA valuation multiples in Western European M&A transactions. Specifically, we investigated whether firm size, profitability, leverage, and industry affiliation influence the valuation multiples observed in completed acquisitions. We addressed this question because EV/EBITDA remains one of the most widely used valuation multiples in both academic research and corporate finance practice, while the existing literature provides mixed evidence regarding the factors that drive valuation differences across transactions.

To investigate these relationships, we constructed a sample of 218 completed Western European M&A transactions announced between 2015 and 2025 using data obtained from Bloomberg. We employed Ordinary Least Squares (OLS) regression analysis and supplemented the baseline model with industry controls, winsorization procedures, and outlier-removal tests to assess the robustness of the results.

The findings suggest that leverage is the most consistent determinant of EV/EBITDA valuation multiples within the sample. Across all model specifications, firms with higher Debt-to-EBITDA ratios tended to receive higher valuation multiples. Firm size became statistically significant only after controlling for extreme observations and exhibited a negative relationship with valuation multiples, suggesting that smaller firms may command higher multiples due to stronger perceived growth opportunities. In contrast, profitability, measured by ROIC, did not significantly influence valuation multiples. Industry effects were limited overall, although firms operating in the Energy sector consistently received lower valuation multiples than firms in the reference industry.

This study tries to contribute to the valuation literature in several ways. First, we provide evidence from a Western European setting, a market that has received less attention than the extensively studied United States. Second, we focus directly on acquisition pricing by using transaction-level data rather than public market valuations. Third, our analysis attempts to highlight the importance of robustness testing when examining valuation multiples, as several relationships only emerged after controlling for extreme observations.

Future research could extend this analysis by incorporating larger samples, additional geographic regions, and forward-looking measures such as expected growth or analyst forecasts. Researchers may also find it useful to examining more detailed industry classifications and transaction-specific characteristics to better understand the drivers of acquisition pricing.

In conclusion, the results of our analysis suggest that capital structure plays a more important role in explaining variation in EV/EBITDA multiples than current profitability, while industry effects appear concentrated in specific sectors. Although the models of our analysis do not explain all variation in transaction valuations, they attempt to provide some insights into the factors associated with acquisition pricing and contribute to a broader understanding of valuation multiples in European M&A markets.

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10. Appendix

Appendix A. Detailed Descriptive Statistics

Table 14 presents the complete descriptive statistics for the variables used in the empirical analysis. In addition to the summary measures reported in Chapter 5, the table includes information on skewness, kurtosis, variance, and range in order to provide a more comprehensive overview of the distributional properties of the data.

Table 14. Detailed Descriptive Statistics for Variables Used in the Analysis (N = 218)

Statistic	EV/EBITDA	Log Revenue	Debt-to-EBITDA	ROIC
Mean	17.66	5.95	3.96	6.53
Standard Error	1.89	0.09	0.35	0.52
Median	13.01	5.99	2.82	5.52
Mode	10.13	N/A	N/A	N/A
Standard Deviation	27.98	1.29	5.12	7.71
Variance	782.66	1.67	26.17	59.49
Kurtosis	138.86	-0.42	31.25	5.92
Skewness	10.79	0.01	4.57	1.29
Range	383.59	6.35	49.2	67.1
Minimum	1.74	2.63	0.03	-19.41
Maximum	385.33	8.98	49.23	47.68
Sum	3,850.38	1,297.29	862.6	1,423.58
Observations	218	218	218	218

Note: EV/EBITDA denotes the transaction valuation multiple. Firm size is measured as the natural logarithm of revenue. Debt-to-EBITDA is calculated as total debt divided by EBITDA. ROIC denotes Return on Invested Capital.

Appendix B. Complete Correlation Matrix

Table 15 reports the complete Pearson correlation matrix for the variables used in the empirical analysis. The matrix includes all variables considered during the model development process and provides additional information beyond the simplified correlation table presented in Chapter 5.

Table 15. Complete Pearson Correlation Matrix

Variable	EV/EBITDA	Log EBITDA	Log Revenue	Debt-to-EBITDA	ROIC
EV/EBITDA	1				
Log EBITDA	-0.322	1			
Log Revenue	-0.113	0.753	1		
Debt-to-EBITDA	0.327	-0.126	-0.096	1	
ROIC	-0.113	0.071	-0.019	-0.415	1

Note: Pearson correlation coefficients are reported. EV/EBITDA denotes the transaction valuation multiple. Log Revenue is the natural logarithm of annual revenue. Debt-to-EBITDA is calculated as total debt divided by EBITDA. ROIC denotes Return on Invested Capital. Correlations should not be interpreted as evidence of causality.

Appendix C. Detailed Regression Outputs and ANOVA Tables

This appendix reports the complete regression and ANOVA outputs for all model specifications estimated in the study. These tables supplement the summarized regression results presented in Chapter 6 and provide additional information regarding model fit, statistical significance, and coefficient estimation.

Table 16. Baseline Regression Statistics

Statistics	Value
Multiple R	0.337
R Square	0.114
Adjusted R Square	0.101
Standard Error	26.520
Observations	218

Table 17. Baseline Analysis of Variance (ANOVA) Results

Source	Degrees of Freedom	Sum of Squares	Mean Square	F-statistic	P-Value
Regression	3	19334.845	6444.948	9.164	<0.001
Residual	214	150503.030	703.285		
Total	217	169837.874			

Table 18. Baseline Regression Coefficients

Variable	Coefficient	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	20.57	9.23	2.23	0.03	2.38	38.75	2.38	38.75
Log Revenue	-1.76	1.40	-1.26	0.21	-4.53	1.00	-4.53	1.00
Debt-to-EBITDA	1.79	0.39	4.60	0.00	1.02	2.56	1.02	2.56
ROIC	0.08	0.26	0.30	0.76	-0.43	0.58	-0.43	0.58

Table 19. Industry-Control Regression Statistics

Statistics	Value
Multiple R	0.367
R Square	0.135
Adjusted R Square	0.102
Standard Error	26.513
Observations	218

Table 20. Industry-Control ANOVA Results

Source	Degrees of Freedom	Sum of Squares	Mean Square	F-statistic	P-Value
Regression	8	22925.700	2865.712	4.077	<0.001
Residual	209	146912.200	702.929		
Total	217	169837.900			

Table 21. Industry-Control Regression Coefficients

Variable	Coefficient	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	23.35	10.64	2.19	0.03	2.37	44.32	2.37	44.32
Log Revenue	-2.13	1.52	-1.41	0.16	-5.12	0.86	-5.12	0.86
Debt-to-EBITDA	1.85	0.4	4.68	0	1.07	2.63	1.07	2.63
ROIC	0.04	0.26	0.16	0.87	-0.47	0.56	-0.47	0.56
Technology	4.18	6.42	0.65	0.52	-8.47	16.83	-8.47	16.83
Industrial	1.79	6.13	0.29	0.77	-10.3	13.88	-10.3	13.88
Consumer	-2.91	6.59	-0.44	0.66	-15.91	10.08	-15.91	10.08
Financial	-5.69	6.93	-0.82	0.41	-19.35	7.97	-19.35	7.97
Energy	-10.6	8.87	-1.2	0.23	-28.08	6.88	-28.08	6.88

Table 22. 1% Winsorized Regression Statistics

Statistics	Value
Multiple R	0.386
R Square	0.149
Adjusted R Square	0.116
Standard Error	12.194
Observations	218

Table 23. 1% Winsorized ANOVA Results

Source	Degrees of Freedom	Sum of Squares	Mean Square	F-statistic	P-Value
Regression	8	5425.725	678.216	4.561	<0.001
Residual	209	31076.223	148.690		
Total	217	36501.948			

Table 24. 1% Winsorized Regression Coefficients

Variable	Coefficient	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	26.46	4.89	5.41	0	16.81	36.1	16.81	36.1
Log Revenue	-1.42	0.7	-2.04	0.04	-2.8	-0.05	-2.8	-0.05
Debt-to-EBITDA	0.56	0.18	3.06	0	0.2	0.92	0.2	0.92
ROIC	-0.1	0.12	-0.83	0.41	-0.34	0.14	-0.34	0.14
Technology	1.16	2.95	0.39	0.69	-4.66	6.98	-4.66	6.98
Industrial	-4.67	2.82	-1.66	0.1	-10.23	0.89	-10.23	0.89
Consumer	-4.98	3.03	-1.64	0.1	-10.95	1	-10.95	1
Financial	-4.8	3.19	-1.51	0.13	-11.08	1.49	-11.08	1.49
Energy	-11.41	4.08	-2.8	0.01	-19.45	-3.38	-19.45	-3.38

Table 25. 1% Trimmed Regression Statistics

Statistics	Value
Multiple R	0.429
R Square	0.184
Adjusted R Square	0.152
Standard Error	9.454
Observations	212

Table 26. 1% Trimmed ANOVA Results

Source	Degrees of Freedom	Sum of Squares	Mean Square	F-statistic	P-Value
Regression	8	4102.374	512.797	5.737	<0.001
Residual	203	18143.532	89.377		
Total	211	22245.906			

Table 27. 1% Trimmed Regression Coefficients

Variable	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	24.11	3.88	6.21	0	16.46	31.77	16.46	31.77
Log Revenue	-1.29	0.55	-2.34	0.02	-2.38	-0.2	-2.38	-0.2
Debt-to-EBITDA	0.42	0.15	2.8	0.01	0.12	0.71	0.12	0.71
ROIC	-0.08	0.09	-0.86	0.39	-0.27	0.11	-0.27	0.11
Technology	2.93	2.32	1.26	0.21	-1.65	7.51	-1.65	7.51
Industrial	-4.81	2.23	-2.16	0.03	-9.2	-0.43	-9.2	-0.43
Consumer	-3.12	2.37	-1.31	0.19	-7.8	1.56	-7.8	1.56
Financial	-2.54	2.5	-1.02	0.31	-7.47	2.39	-7.47	2.39
Energy	-8.42	3.37	-2.5	0.01	-15.06	-1.78	-15.06	-1.78

Table 28. 3% Winsorized Regression Statistics

Statistics	Value
Multiple R	0.418
R Square	0.175
Adjusted R Square	0.143
Standard Error	9.685
Observations	218

Table 29. 3% Winsorized ANOVA Results

Source	Degrees of Freedom	Sum of Squares	Mean Square	F-statistic	P-Value
Regression	8	4155.408	519.426	5.538	<0.001
Residual	209	19603.270	93.796		
Total	217	23758.677			

Table 30. 3% Winsorized Regression Coefficients

Variable	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	24.51	3.89	6.31	0	16.85	32.17	16.85	32.17
Log Revenue	-1.21	0.55	-2.18	0.03	-2.3	-0.11	-2.3	-0.11
Debt-to-EBITDA	0.43	0.14	2.96	0	0.14	0.71	0.14	0.71
ROIC	-0.1	0.1	-1.01	0.32	-0.28	0.09	-0.28	0.09
Technology	1.71	2.34	0.73	0.47	-2.91	6.33	-2.91	6.33
Industrial	-4.7	2.24	-2.1	0.04	-9.12	-0.28	-9.12	-0.28
Consumer	-3.96	2.41	-1.64	0.1	-8.71	0.79	-8.71	0.79
Financial	-3.49	2.53	-1.38	0.17	-8.48	1.5	-8.48	1.5
Energy	-9.9	3.24	-3.06	0	-16.29	-3.52	-16.29	-3.52

Note: All regressions were estimated using Ordinary Least Squares (OLS). Standard errors reported in Chapter 6 are conventional OLS standard errors. Healthcare serves as the omitted reference category in all specifications that include industry controls.

Declaration on the Use of Artificial Intelligence (AI) Tools

The undersigned, Andela Zdravkovic, student ID number 882647, enrolled at Ca' Foscari in the Master's Degree Programme in Economics, Finance and Sustainability, author of the final paper/degree thesis Determinants of Valuation Multiples in European M&A Transactions, thesis supervisor Professor Stefano Colonnello, aware of the penalties provided for in Article 76 of the Consolidated Act set out in Presidential Decree no. 445 of 28 December 2000, and of the loss of benefits provided for in Article 75 of the same Consolidated Act in the event of false or misleading statements, under his/her own responsibility pursuant to Articles 46 and 47 of Presidential Decree no. 445 of 28 December 2000,

DECLARES

that she HAS used generative artificial intelligence technologies to support various aspects of the research and writing of her final paper/degree thesis, in particular:

- ChatGPT (OpenAI, standard version available during 2025–2026)
- Grammarly

The AI tools were used exclusively to support language editing, proofreading, and text revision. AI-assisted proofreading was applied to various sections of the thesis during the drafting and revision process.

The tools were not used to generate the research topic, literature review, dataset, statistical analysis, empirical results, conclusions, or references.

DECLARES FURTHER

that all material generated by AI has been carefully checked, reviewed and reworked by the author, who assumes full responsibility for the quality, accuracy and scientific integrity of the work.