A Work Project, presented as part of the requirements for the Award of a Master's degree in Management from the Nova School of Business and Economics.

AN EMPIRICAL INVESTIGATION OF THE DETERMINANTS OF ACQUISITION PREMIA ON THE EUROPEAN MERGER MARKET

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11/01/2023

Abstract

This study examines how variables proposed by related literature affect the acquisition premium on the European merger market. In particular, the determinants of premia were investigated from several viewpoints based on a sample of 493 transactions. Results (i) confirm recent findings to a large extent; however, some variables lose explanatory power when controlling for external influences. (ii) The value of control and stock market momentum statistically explain the European acquisition premium best. (iii) The European acquisition premium is slightly higher than in the US, despite similar determinants.

Keywords

Mergers and acquisitions
European M&A
Acquisition premium
Target and acquirer characteristics
Merger momentum
Deal characteristics

This work used infrastructure and resources funded by Fundação para a Ciência e a Tecnologia (UID/ECO/00124/2013, UID/ECO/00124/2019 and Social Sciences DataLab, Project 22209), POR Lisboa (LISBOA-01-0145-FEDER-007722 and Social Sciences DataLab, Project 22209) and POR Norte (Social Sciences DataLab, Project 22209).

1. Introduction

This research paper provides a holistic empirical explanation of the acquisition premium in acquisitions of European targets using six different subsets of variable categories: financial characteristics, organizational indicators, value and size-related measures, stock and merger market metrics, motive and diversification specifics, and deal structure attributes. The acquisition, deal, or merger premium phenomenon refers to the sum of all offer constituents paid by the acquirer compared to the target's market value before the announcement (Gaspar, Massa, and Matos 2005). Specifically, this study examines 493 mergers and acquisitions (hereafter M&A) targeting European firms between 2002 and 2019. Regression analyses are conducted to test hypotheses premised on related literature, presented in *Section 2*.

This paper complements an extensive list of literature in an attempt to explain the acquisition premium. A bulk of research, however, concentrates on how acquisition premia are related to subsequent target returns and merger performance in general. In contrast, this research paper emphasizes the determinants of the premium. More specifically, it investigates how target and acquirer attributes, motives, stock and merger market performance, and main deal structure affect the acquisition premium while controlling for undesired influences of macroeconomic events and inherent industry dissimilarities. Additionally, since recent literature mainly concentrates on the US merger market, this work contributes to academic literature from a different but equally crucial geographical perspective. The European focus may elucidate different aspects of the merger market that might foster alternating explanations for the premium.

Several concepts are examined, which try to explain the acquisition premium. The most prominent determinant of an acquisition premium – the market value of synergies (Damodaran 2005) – can be of various natures. To provide an exhaustive overview of possible explanations of the premium paid, variables related but not limited to synergy

sources are used, as explained below.

The results of this study reach consent with related empirical studies in that operational factors, value of control, size and valuation, and merger momentum are all observed to influence the acquisition premium. However, a particular finding contradicts recent literature. When controlling for the industrial environment and yearly macroeconomic influences, overvalued targets require a higher premium than undervalued ones, contradicting recent related empirical studies. This may be because targeted firms are inherently smaller and thus more likely to be influenced by macroeconomic factors. A more detailed discussion of this observation is presented in *Section 5*.

As just noted, the main findings of this research paper are mainly in line with recent literature. Hence, the acquisition premium on the European merger market is defined by similar characteristics reported in earlier research; however, some aspects differ in the European merger environment, causing the acquisition premium to be slightly higher than in the US. Moreover, it is observed that macroeconomic influences and industry differences, when not controlled for, can distort empirical findings regarding the acquisition premium. When comparing the variables separately, stock market momentum and control value have the highest explanatory power. Nevertheless, explaining the acquisition premium holistically is still impossible; this is a venue for future research.

This research paper is structured as follows: *Section 2* reviews related literature. Hypotheses are developed based on the economic mechanisms of the individual premium determinants. *Section 3* defines the sample formation, explains the intuition behind the used variables, and presents the relevant descriptive statistics of the dependent and independent variable(s). In *Section 4*, the test procedure and results are described. Afterward, the study's results are discussed in *Section 5*. To conclude, *Section 6* provides an outlook on future research and describes this empirical work's limitations.

2. Literature review and testing hypotheses

Before particularizing every potential indicator of the acquisition premium examined in this paper, the main findings of recent empirical studies will briefly be outlined. Starting with financial factors, liquidity (debt) influences the premium positively (negatively). Continuing with operational factors, operational efficiency and profitability negatively impact the acquisition premium, while competitive advantage, growth, and control value affect the premium positively. There is contrasting evidence regarding the size and valuation of the target and the acquirer: overvalued targets receive lower premia, while overvalued acquirers pay elevated premia. Additionally, smaller targets require higher premia and larger acquirers reimburse higher premia. Concerning stock and merger momentum, high stock returns adversely impact the acquisition premium; however, the recent number of mergers and average acquisition premia affect the premium positively. Strategic acquirers pay a higher premium, and diversifying acquisitions' effect is ambiguous. Lastly, cash and tender offers exhibit a higher acquisition premium than stock considerations or merger bids.

When reviewing related literature, it is noteworthy that most of the merger-related literature focuses on the US market, which is also the case for most of the research cited in this paper. However, due to differences in ownership concentration, merger control laws, the market for corporate control, and preferred payment methods (Faccio and Masulis 2005) inter alia, one can expect different results when investigating the European continent. Potential explanations for dissimilarities in the observations of this paper are illustrated in *Section 5*.

The determinants used in the empirical analysis of this research paper are segmented into the abovementioned different groups of determinants for the acquisition premium. Based on economic mechanisms, hypotheses for each category are developed (*Appendix I*).

2.1. Financial characteristics

In the following, potential financial explanations for the premium are investigated. On the one hand, Damodaran (2005) explains that acquisitions are often motivated by financial synergies, thus improving the acquirer's financial situation, especially its liquidity and debt capacity. On the other hand, Opler et al. (1999) and Harford (2002) argue that cash reserves of acquiring firms used to complete acquisitions reduce the problem of underinvestment and the occurring cost of external financing when structuring the financing with debt. Hence, the acquirer's and the target's cash reserves are expected to correlate positively to the premium.

Also, debt is likely to affect the acquisition premium as a change in capital structure is a common motive for M&A activity (Bruner 1988). For acquirers with substantial amounts of debt, Uysal (2011) finds a significant negative relationship between overleveraged acquirers and their premium paid, as they are most likely to experience financial constraints at the time of the announcement. For the target, however, debt worsens the acquirer's capital structure (Arzac 2008) and increases the target's default probability (Morton 1974). Consequently, the target's and acquirer's amount of debt is expected to correlate negatively with the acquisition premium. To summarize the literature findings concerning financial motives, the following hypothesis will be tested:

Hypothesis 1 (financial characteristics): *(a) The liquidity of both the acquirer and the target affects the acquisition premium positively, while (b) debt negatively affects the premium.*

2.2. Operational characteristics

Regarding operational characteristics, literature expects operational efficiency and profitability to impact the acquisition premium negatively. Research suggests that relatively inefficient firms demand a higher premium (Nguyen and Swanson 2009), mainly because mergers are motivated by unlocking value through replacing inefficacious management

(Jensen and Ruback 1983). In contrast, profitable companies are likely to be overvalued (Novy-Marx 2013), thus resulting in a lower premium (see *Hypothesis 3*).

Additionally, Hall (1993) states that intellectual properties play a significant role in obtaining a sustainable competitive advantage, thus serving as a motive for acquisitions. Consequently, intellectual capital enhances future competitiveness. Huyghebaert and Luypaert (2010) observed this phenomenon in studies related to the European market. Also, acquiring companies pay a higher premium for high-growth targets (Kim, Haleblian, and Finkelstein 2011). As the principal cause, Morck et al. (1990) argue that higher growth targets have superior longevity as a separate entity. Lastly, the value of control is anticipated to affect the acquisition premium. The economic reasoning behind this is that increasing voting rights (Zingales 1994), long-term stewardship to reorganize the target (Jensen and Ruback 1983), and higher target resistance (Huang and Walkling 1987) may all cause the acquisition premium to be higher. The assumed findings are outlined in Hypothesis 2.

Hypothesis 2 (operational characteristics): *(a) Operating efficiency and (b) profitability of the target affect the acquisition premium negatively. (c) Competitive advantage and (d) growth of the target, as well as (e) ownership stake acquired affect the premium positively.*

2.3. Valuation and size characteristics

The acquirer and target size are expected to impact the takeover premium. Moeller et al. (2004), Gorton et al. (2009), and Uysal (2011) document a robust positive correlation between acquirer size and premium paid. The main reasons large firms pay a higher premium are that large firms tend to use acquisitions to signal further growth to shareholders when their internal growth capabilities are exhausted (Jovanovic and Braguinsky 2004). Further, managers of large firms are prone to experience excessive overconfidence, supporting the hubris hypotheses of Roll (1986) and Morck et al. (1990). Examining the target size related

to the acquisition premium, Schwert (2002) finds a significant negative relationship due to the higher chance of complications regarding post-merger integration topics and the increasing value at risk, both leading to management inefficiencies and, consequently, lower acquisition premia. Deal size, like target size, is therefore also assumed to be negatively correlated to the acquisition premium, mainly because of productivity loss post-integration (Beckman and Haunschild 2002) and less bidding competition in highly valued deals (Aktas, Bodt, and Roll 2010). However, this variable was dismissed because of the high intercorrelation between deal and target size, thus leading to multicollinearity.

Undervaluation of the target is expected to correlate negatively to the acquisition premium. As an economic explanation, recent research suggests that merger bids already account for the undervaluation of targets. Furthermore, undervalued targets fight more vigorously to maintain a higher premium to preserve their intrinsic value (Dong, Hirshleifer, Richardson, and Teoh 2006; Bargeron, Schlingemann, Stulz, and Zutter 2008). Examining the valuation of the acquirer, related literature finds a significant positive correlation between acquirer overvaluation and acquisition premia. This is mainly because of their abundant growth ambitions (Officer 2003), easier access to additional capital requirements, and use of their bloated valuation as the main component of their bid, thus being able to pay a higher price in nominal terms (Shleifer and Vishny 2003; Dong, Hirshleifer, Richardson, and Teoh 2006). The predicted effect of valuation and size factors are summarized as follows:

Hypothesis 3 (valuation and size characteristics): *(a) Increased firm size and overvaluation of the acquirer affect the acquisition premium positively. (b) Increased firm size and overvaluation of the target affect the premium negatively.*

2.4. Stock and merger-market-related characteristics

Additionally, the dependence of the acquisition premium on the global market return and

merger market performance is investigated. Consistent with the predictions in *Hypothesis 3*, acquisition premia are presumed to have a negative dependence on market overvaluation. Simonyan (2014) poses another possible economic mechanism behind this phenomenon in predicting the acquisition premium to be correlated to merger waves driven by higher M&A activity during market misvaluation phases (Rhodes-Kropf and Viswanathan 2004; Bouwman, Fuller, and Nain 2009). This, in turn, may lead to the perception that premia are already reflected in firm valuations, thus lowering relative acquisition premia. Besides the assumed interdependence between stock market returns and acquisition premia, Rosen (2006) finds evidence that merger momentum exists. The anchoring heuristic might explain this phenomenon: acquiring firms are inclined to adapt their premiums to similar, preceding transactions (Malhotra, Zhu, and Reus 2014). Investment banks possibly reinforce this effect, as this behavior was also observed in transaction advisory (Haunschild 1994). Hypothesis 4 outlines the predictions consistent with previous literature illustrated above.

Hypothesis 4 (stock and merger-market-related characteristics): *(a) Stock market return affects the acquisition premium negatively. The (b) average acquisition premium and (c) number of recent acquisitions affect the acquisition premium positively.*

2.5. Motive and diversification-related characteristics

When comparing strategic acquisitions to financial ones, recent literature proposes that financial investors pay, on average, a lower acquisition premium. Reasonable explanations for this observation are that strategic investors are prone to pay more because they expect synergies to realize (Bargeron, Schlingemann, Stulz, and Zutter 2008). Additionally, Gorbenko and Malenko (2014) state that the target characteristics of financial investors differ as they tend to prefer more mature and declining firms, which are generally less attractive to strategic investors. Furthermore, there is conflicting evidence regarding diversifying

acquisitions and their relation to the acquisition premium. Servaes (1996) documents a significant discount for diversified firms. Furthermore, Berger and Ofek (1996) claim that diversifying mergers destroy value, which can be explained by the fact that diversification targets perform poorly as part of a conglomerate and are eventually sold for a discount. However, more recent literature suggests that diversification activities, on average, do not destroy value (Graham, Lemmon, Wolf 2002), and acquisitions motivated by diversification aspects are expected to be positively correlated to the acquisition premium (Villalonga, 2004). This is mainly due to higher expected long-term returns (Shleifer and Vishny 2003), risk reduction (Amihud and Lev 1981), and a lower cost of capital (Koller, Goedhart, and Wessels 2020). Hypothesis 5 sums up the predictions concerning motive and diversification.

Hypothesis 5 (motive & diversification-related characteristics): *(a) Strategic acquisitions lead to a higher premium than financially motivated acquisitions. (b) There is a significant impact of diversifying acquisitions on the acquisition premium.*

2.6. Deal characteristics

Deal characteristics are deemed to affect the acquisition premium. For instance, tender offers were observed to imply higher acquisition premia due to faster and more likely executions (Offenberg and Pirinsky 2015). Additionally, Huang and Walkling (1987) document a higher premium for deals that use cash as a payment method, as target shareholders must immediately pay taxes on cash payments (Ayers, Lefanowicz, and Robinson 2003). Transactions are subsequently categorized into their primary payment method: stock or cash considerations. The effects of general deal characteristics were hypothesized as follows:

Hypothesis 6 (deal characteristics): *(a) Tender offers and (b) acquisitions using cash as the primary payment method lead to a higher acquisition premium.*

3. Data sample, proxy variables, and descriptive statistics

3.1. Sample Formation

The sample consists of deals announced between 2002 and 2019 with European public target firms and their associated acquisition premium. Since there are several ways of computing the acquisition premium, the definition used in this paper follows a commonly used approach in related literature. It is described as follows: (1) $Acquisition\ Premium = \frac{Sum\ of\ all\ offer\ constituents}{Market\ Value\ 4\ weeks\ before\ announcement} - 1$, mainly to prevent any stock effects of information leakage (Beckman, Haunschild 2002). One year of extra data before the first transaction was used to compute the corresponding trailing stock market returns, acquisition premia, and the global number of mergers and acquisitions.

The following paragraph presents an overview of the filters used to construct the sample. The data sample contains all M&A activities involving at least a significant minority stake of the target's shares (>10%) being acquired. Subsequent increases in ownership stakes of the target firms were not included as they would have distorted the empirical analysis of first-time acquisition bids. Small mergers with a deal value below 25 million US-dollar were disregarded to ensure data quality. Only completed deals with disclosed values and public targets were examined. Exclusively acquisitions with data entries for all variables were included to ensure the statistical tests' explanatory quality.

After applying all filters to the data sample, 493 acquisitions remain. Most of the data points were retrieved from Refinitiv Workspace. Additional data were collected from the MSCI and the Institute of Mergers, Acquisitions and Alliances. It is essential that the variables explained in *Section 3.2* are observed before the announcement (last twelve months, hereafter LTM) since it is assumed that the acquirers performed extensive due diligence beforehand to determine an appropriate premium. Absolute numbers are noted in tens of millions of US dollars for easier readability.

3.2. Variables used to proxy the determinants

Starting with potential financial explanations of the acquisition premium, cash and cash equivalents (hereafter C&CE), and net debt of both the acquirer and target are used to proxy liquidity and debt of the involved parties. C&CE of the target was chosen as it directly transfers to the acquirer's balance sheet; hence it immediately impacts the acquirer's liquidity. Net debt was selected to represent the debt of both parties because it adversely affects the acquirer's profitability and capital structure.

Return on assets (hereafter ROA), the margin of earnings before interest and taxes (hereafter EBIT), intangible assets, and growth of net sales of the target, as well as ownership stake obtained by the acquirer, are used to represent operational variables. ROA of the target serves as a robust indicator of operating efficiency as it signals how efficiently the firm uses its assets to generate revenue. The earnings before interest and taxes (hereafter EBIT) margin represents a firm's operating profitability while accounting for depreciation and amortization in the case of asset-heavy business models. Intangible assets are a suitable indicator for intellectual property as they incorporate aspects such as patents, capitalized research and development expenses, and goodwill. Following the approach of Harford et al. (2008), the target's three-year sales growth rate is a valid indicator to depict a firm's top-line growth and growth ambitions. The ownership stake acquired in the transaction is the best fit to stipulate the value of control because the bigger the acquired stake, the more voting rights and board control but also target resistance materialize. In this study, market value is used because it best depicts firm size of publicly-trading companies. It also incorporates public perception of growth opportunities. Valuation is represented by the book value per share (hereafter BVPS) for the target and acquirer, as it only reflects the intrinsic value of a firm. A higher BVPS generally suggests undervaluation, so the correlation between BVPS and valuation is inherently negative. This must be noted when consulting *Table 4*, *Table 5*, and *Appendix I.*

To approximate global stock market return, the 1-year trailing return of MSCI ACWI IMI is used because it represents about 99 percent of worldwide equity investment opportunities (MSCI, 2021). **T**he 1-year trailing average premium paid indicates merger momentum. A global data set of M&A transactions was used to calculate a comprehensive, global trailing average of deal premia. The 1-month trailing number of takeovers, computed using official global merger data, serves as an ancillary variable to identify the merger momentum.

Strategic and financial investors were distinguished by the Refinitiv classification; cross-continent and cross-industry transactions, compared to their main operations, were regarded as diversifying and investigated separately. Lastly, the transactions were categorized into tender offers or merger bids and separated by their primary payment method (cash versus stock). As these indicators are categorical variables and seem to influence acquisition premia, they are used as dummy variables in the regression analysis to account for their effect.

3.3. Control variables

Firstly, the different industry characteristics are controlled for in the second regression because the target industry is also expected to influence takeover premia due to the distinct attributes of each sector. Industry fragmentation, especially the number of similarly sized companies (Gorton, Kahl, and Rosen 2009), industry attractiveness for investors (Haunschild 1994), and bidding competition (Morellec and Zhdanov 2005), are assumed to affect the acquisition premium. Additionally, controlling for the year eliminates year-specific macroeconomic effects, which might cause the premium paid to be higher or lower. A prominent example would be the Global Financial Crisis from 2007 until 2009, which altered global interest, unemployment, and GDP growth rates. Consequently, the premium might have been influenced by an unstable political environment (Bonaime, Gulen, and Ion 2018) and impeded access to cheap capital (Kahle and Stulz 2013), amongst other things.

3.4. Descriptive statistics (acquisition premium and proxy variables)

Starting with *Table 1*, the statistical characteristics of the acquisition premium by the year of announcement are compared. The average acquisition premium for the observed period of the constructed sample is 33.85 percent. The year with the highest average premium is 2009 (54.04 percent), while the lowest average premium was recorded in 2013 (19.73 percent). The median lies at 25.75 percent, with a peak in 2011 (45.57 percent) and a low in 2002 (16.67 percent). The positive extreme, with an acquisition premium of 331.03 percent, was the acquisition of Plethora Solutions Holdings PLC, a pharmaceuticals provider from the United Kingdom, by Regent Pacific Group Ltd. Conversely, the acquisition of the deeply in debt Tesco Kipa was completed at a discount of 92.81 percent by Migros Ticaret AS. In combination with the high standard deviation for most periods, the results depict that premia are very volatile and differ widely across industries and years.

Table 1
Descriptive statistics of the acquisition premium, categorized by year.

	Acquisition Premium by year (in %)				
	N	Mean	Median	Min	Max
2002	11	41.14	16.67	-41.09	187.61
2003	34	37.31	34.37	-12.75	183.30
2004	43	28.87	19.61	-58.67	105.63
2005	48	27.43	22.82	-29.23	111.19
2006	42	23.94	19.50	-19.27	100.60
2007	50	31.05	23.92	-15.99	137.34
2008	23	37.36	34.44	-10.83	177.78
2009	20	54.04	34.28	-12.16	176.32
2010	20	32.94	29.67	5.66	83.06
2011	26	42.30	45.57	-57.52	112.59
2012	19	37.24	20.02	13.87	196.42
2013	12	19.73	21.30	-50.51	84.25
2014	23	34.24	28.27	-23.46	168.48
2015	29	34.76	24.82	-35.29	331.03
2016	24	44.19	38.34	-92.81	321.62
2017	21	32.29	30.48	-7.80	86.67
2018	25	34.49	16.61	-10.17	148.16
2019	23	35.31	26.52	2.81	159.39
Total	493	33.85	25.75	-92.81	331.03

Table 2 depicts the acquisition premium by the macro industry of the acquirer. Two sectors stand out with notably high premia above 40 percent: healthcare (48,41 percent) and Financials (43,13 percent). On the contrary, the average premium of the Retail industry is considerably lower (14,40 percent) compared to the other sectors. Again, the differences between the industries and the volatility are noteworthy.

Table 2
Descriptive statistics of the acquisition premium, categorized by target industry.

	Acquisition Premium by industry (in %)				
	N	Mean	Median	Min	Max
Real Estate	45	25.96	15.96	-19.27	321.62
Financials	27	43.13	38.72	-8.71	165.72
Energy and Power	31	19.49	10.61	-50,51	148.16
Media & Entertainment	26	24.64	15.94	-49.3	198.67
Industrials	79	32.20	26.67	-23.46	180.12
Materials	38	31.89	29.20	-29.23	191.94
Consumer Products	37	39.62	37.80	-7.80	123.17
Telecommunications	25	35.89	24.03	-12.75	154.16
Healthcare	46	48.41	30.71	-58.67	331.03
Retail	21	14.40	12.92	-92.81	50.00
High Technology	91	38.47	30.72	-57.52	177.78
Consumer Staples	27	35.66	24.5	-41.09	183.30
Total	493	33.85	25.75	-92.81	331.03

The variables used in the regression, plus their descriptive statistics, are presented in *Table 3*. To begin with, the financial characteristics of both the target and acquirer are very distinct and widespread. The average target has around 220 million US dollars in cash and cash equivalents and slightly below 534 million US dollars in net debt. However, acquirers have more prominent liquidity positions on their balance sheets, with Volkswagen AG having the highest net debt with about 80 billion US dollars. Highlighting the operating factors, one notices the wide range of sales growth ratios, Return on Assets ratios, and EBIT margins of the target firms, indicating distinct preferences in the targeted firms. The equity values of the acquirers and targets reinforce the size differences between the two parties, while there are also highly overvalued and undervalued firms. The trailing average of the stock market return

lies at 8.92 percent, while the average trailing premium corresponds closely (32.29 percent) to our sample's observed mean average premium. The average trailing monthly number of acquisitions is around 3,400 transactions. Further descriptive statistics can be found in *Appendix II*, *III*, and *IV*.

Table 3
Descriptive statistics of the included variables.

	Coefficients of the regression				
	N	Mean	Median	Min	Max
Target Cash & Equivalents	493	22.00	3.52	0.00	521.78
Acquirer Cash & Equivalents	493	143.19	23.51	0.00	6360.56
Target Net Debt	493	53.37	2.35	-99.90	1918.78
Acquirer Net Debt	493	253.81	25.33	-961.74	7973.83
Target ROA (%)	493	1.65	3.49	-276.10	37.39
Target EBIT (%)	493	-87.24	6.80	-432.66	141.00
Target Sales Growth (%)	493	15.00	7.75	-46.80	257.61
Target Intangible Assets	493	61.72	3.85	0.00	4693.99
Stake Acquired (%)	493	81.21	100.00	10.18	100
Acquirer Market Value	493	1096.84	230.52	0.35	21199.05
Acquirer BVPS	493	2.92	0.64	-0.03	490.55
Target Market Value	493	223.53	33.48	0.03	8370.43
Target BVPS	493	2.71	0.36	-0.42	319.18
Stock Market Return (%)	493	8.93	12.74	-46.09	50.82
Premium Paid (%)	493	32.29	30.41	21.12	50.67
Number of Acquisitions	493	3.40	3.47	2.28	4.49
Motive of Acquisition	493	0.06	0.00	0	1
Industrial Diversification	493	0.26	0.00	0	1
Geographical Diversification	493	0.20	0.00	0	1
Tender Offer	493	0.53	1.00	0	1
Method of Payment	493	0.40	0.00	0	1

Notes:
All variables LTM before announcement unless indicated otherwise. Absolute numbers in $10m.

Target Sales Growth: Target's 3-year sales growth rate prior to the announcement (%).
Acquirer Market Value: Acquirer Market Value 4 weeks prior to the announcement.
Acquirer BVPS: Acquirer Book Value per Share (in $).
Target Market Value: Target Market Value 4 weeks prior to the announcement.
Target BVPS: Target Book Value per Share (in $).
Stock Market Return: 1-year trailing average stock market (MSCI ACWI IMI) return (%).
Premium Paid: 1-year trailing average acquisition premium of a transaction sample (%).
Number of Acquisitions: 1-month trailing average number of acquisitions total (in thousands).
Motive of acquisition: 1 = strategic, 0 = financial.
Industrial Diversification: 1 = yes, 0 = no.
Geographical diversification: 1 = yes, 0 = no.
Tender Offer: 1 = yes, 0 = no.
Method of Payment: 1 = Stock, 0 = Cash.

4. Explanation and results of the tests

4.1. Explanation of the tests

Section 4 provides a holistic overview of the tests conducted, the variables' significance, and their impact on the acquisition premium. To include a robustness check, two regression analyses using the same variables were conducted: the first ((2), *Table 4*) without control variables, and the second ((3), *Table 5*) fixing the effects for industries and years. The common level of significance used in the empirical analysis is $\alpha = 0.10$. The z-scaled effects in *Table 4* and *Table 5* essentially make the effect of the coefficients comparable. Before the empirical analysis was conducted, heteroskedasticity was observed when testing the prerequisites of linear regressions, resembling an imbalanced dispersion of standard errors (Stock and Watson 2008). As a result, t-statistics and p-values of the regression coefficients would have been distorted. To account for that, heteroskedasticity-robust standard errors are incorporated. The plausibility of extreme outliers was checked, and the corresponding tests for normally distributed residuals, multicollinearity (*Appendix V*), and autocorrelation confirmed the practicability of the proposed regressions. The following equations depict the two regressions, with β_0 being the constant, $\beta_{i,j}$ the factor variables, and ε_i the error term.

$$(2)\ Acquisition\ Premium_i = \beta_0 + \sum_1^j \beta_{i,j}\, x_{i,j} + \varepsilon_i$$

$$(3)\ Acquisition\ Premium_i = \beta_0 + \sum_1^j \beta_{i,j}\, x_{i,j} + Industry\ Control\ Variable + Year\ Control\ Variable + \varepsilon_i$$

4.2. Results of the tests

The regression results without fixed effects will be presented first (*Table 4*), followed by the controlled regression (*Table 5*) to compare the results and the impact of control variables in hindsight. It is vital to state that the indicators significantly impact the acquisition premium (F-statistic = 6.724, significant at 1 percent level, adjusted $R^2 = 0.196$).

Starting with the liquidity characteristics, the effects of target cash and net debt on the

acquisition premium are of the in *Hypothesis 1(b)* predicted signs; however, financial characteristics do not play a significant role in determining acquisition premia from either perspective. Hence, the evidence suggests discarding the influence of financial factors.

The impact of operational factors and the value of control generally align with *Hypothesis 2*. Operational efficiency (ROA) is statistically significant at the 10 percent level, affecting the acquisition premium negatively: a one percentage point increase in ROA causes the acquisition premium to decline by 0.755 percentage points with a low standard deviation (0.102). The premium also behaves as expected when affected by the value of control. Per additional percentage point of ownership, the premium paid increases by 0.304 percentage points on a 1 percent significance level. On the contrary, the null hypothesis that sales growth, profitability, and intangible assets do not affect the acquisition premium cannot be rejected. Hence, the empirical evidence confirms *Hypotheses 2(a)* and *(e)* but rejects *2(b)*, *(c)*, and *(d)*.

Continuing with the valuation and size-related indicators, there is supporting evidence regarding the effect of the acquirer characteristics. Overvalued and larger acquirers tend to pay higher premia, as predicted in *Hypothesis 3(a)*. Smaller and overvalued targets receive higher premia, although statistically insignificant, thus not supporting *Hypothesis 3(b)*.

Additionally, the merger momentum indicators underline the prognosis of *Hypothesis 4(a) and (b),* as recent stock market performance alters the acquisition premia negatively. The average trailing premium affects the acquisition premium positively. For every percentage point increase of the 1-year trailing return (average) of stock market performance (acquisition premia), the premium paid decreases (increases) by 0.370 (0.440) percentage points at a 1 percent (10 percent) level of significance and low level of standard deviation of 0.112 (0.269). Only the impact of the average number of recent takeovers is insignificant, but its sign also points toward a current merger momentum. The dictate of the motive of acquisition and diversification potential strikes as the acquisition premium negatively correlates with

Table 4

Regression 1: Coefficients of the variables without controls

	Acquisition Premium	
	Normal (1)	Z-Standardized (2)
Target C&CE	0.004	0.237
	(0.038)	(2.132)
Acquirer C&CE	-0.000	-0.079
	(0.006)	(2.335)
Target Net Debt	-0.006	-1.079
	(0.014)	(2.685)
Acquirer Net Debt	-0.002	-1.789
	(0.003)	(2.147)
Target ROA (%)	-0.755*	-12.649*
	(0.102)	(1.704)
Target EBIT (%)	0.001	1.559
	(0.001)	(1.675)
Target Sales Growth (%)	-0.040	-1.237
	(0.055)	(1.712)
Target Intangible Assets	0.001	0.362
	(0.009)	(2.524)
Stake Acquired (%)	0.304***	7.980***
	(0.068)	(1.783)
Acquirer Market Value	0.002*	4.992*
	(0.001)	(2.269)
Acquirer BVPS	-0.080**	-1.831**
	(0.074)	(1.686)
Target Market Value	-0.005	-3.482
	(0.004)	(3.210)
Target BVPS	-0.079	-1.506
	(0.089)	(1.693)
Stock Market Return (%)	-0.370***	-5.772***
	(0.112)	(1.743)
Premium Paid (%)	0.440*	2.825*
	(0.269)	(1.729)
Number of Acquisitions	1.589	0.958
	(2.811)	(1.694)
Motive of Acquisition	-7.688	-1.840
	(7.092)	(1.697)
Industrial Diversification	-3.606	-1.575
	(3.889)	(1.698)
Geo. Diversification	7.422*	2.942*
	(4.455)	(1.766)
Tender Offer	2.564	1.281
	(3.592)	(1.794)
Method of Payment	-8.502**	-4.161**
	(3.949)	(1.933)
Constant	-3.244	33.852***
	(14.090)	(1.653)
Observations	493	493
R^2	0.231	0.231
Adjusted R^2	0.196	0.196
Residual Std. Error	36.712	36.712
F Statistic (df = 21; 471)	6.724***	6.724***

Notes:

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Standard deviation in parenthesis.

Dependent variable is the acquisition premium.

All variables LTM before announcement unless indicated otherwise.

Absolute numbers in $10m.

Target Sales Growth: Target's 3-year sales growth rate prior to announcement (%).

Acquirer Market Value: Acquirer Market Value 4 weeks prior to announcement.

Acquirer BVPS: Acquirer Book Value per Share (in $).

Target Market Value: Target Market Value 4 weeks prior to announcement.

Target BVPS: Target Book Value per Share (in $).

Stock Market Return: 1-year trailing average stock market (MSCI ACWI IMI) return (%).

Premium Paid: 1-year trailing average acquisition premium of a transaction sample (%).

Number of Acquisitions: 1-month trailing average number of acquisitions total (in thousands).

Motive of Acquisition: 1 = strategic, 0 = financial.

Industrial Diversification: 1 = yes, 0 = no.

Geographical Diversification: 1 = yes, 0 = no.

Tender Offer: 1 = yes, 0 = no.

Method of Payment: 1 = Stock, 0 = Cash.

industrial diversification but positively correlates with geographical expansion. Additionally, financially motivated acquisitions have a 7.688 percentage points lower acquisition premium than strategically driven ones. However, besides geographical expansion potential (7.422 percentage points higher premium at a 10 percent level of significance), these findings are statistically insignificant, only providing partial evidence for *Hypothesis 5(b)*.

Lastly, deal characteristics pose supporting evidence for *Hypothesis 6(b)*: Stock payment results in a significantly lower acquisition premium (8.502 percentage points at the 5 percent significance level). Although tender offers lead to a 2.564 percentage points higher premium, this finding is statistically insignificant, thus not able to confirm *Hypothesis 6(a)*.

However, the results are to be treated with caution as differences in macroeconomics and industries may impact the results of Regression 1. Hence, regression 2 accounts for these effects, and their impact on the outcomes is observed. When doing so, the regression outcome (F-statistic = 3.355, significant at 1 percent level, adjusted $R^2 = 0.190$) and the significance of variables change. While acquirer valuation, the trailing average premium paid, and geographical diversification lose significance, the acquisition motive and target valuation become statistically significant on a 10 percent level. Financially driven transactions lead to a 13.394 percentage points lower premium than those strategically motivated, representing about 40 percent of the sample mean (33.85 percent). In addition, against the assumptions made in *Hypothesis 3(b)*, target overvaluation positively correlates to the deal premium. The target's ROA and payment method also become statistically insignificant, although only slightly (p-values of < 0.103). These observations suggest that the varying impacts on the premium caused by the dissimilarities of industries and year-specific macroeconomic influences are so high that they become statistically significant when included in a regression.

Given the comparability of the variables through z-standardizing them, the control value and the stock market are observed to be the most dominant sources of influence.

Table 5

Regression 2: Coefficients of the variables with controls

	Acquisition Premium	
	Normal (1)	Z-Standardized (2)
Target C&CE	0.009	0.499
	(0.040)	(2.265)
Acquirer C&CE	-0.000	-0.004
	(0.006)	(2.424)
Target Net Debt	-0.006	-1.097
	(0.015)	(2.790)
Acquirer Net Debt	-0.003	-2.106
	(0.003)	(2.232)
Target ROA (%)	-0.778	-13.035
	(0.107)	(1.788)
Target EBIT (%)	0.001	1.979
	(0.001)	(1.730)
Target Sales Growth (%)	-0.048	-1.487
	(0.058)	(1.811)
Target Intangible Assets	-0.000	-0.027
	(0.009)	(2.631)
Stake Acquired (%)	0.309***	8.117***
	(0.071)	(1.866)
Acquirer Market Value	0.002*	4.619*
	(0.001)	(2.361)
Acquirer BVPS	-0.069	-1.571
	(0.077)	(1.749)
Target Market Value	-0.004	-3.078
	(0.005)	(3.294)
Target BVPS	-0.077*	-1.461*
	(0.093)	(1.764)
Stock Market Return (%)	-0.559***	-8.716***
	(0.164)	(2.560)
Premium Paid (%)	0.517	3.318
	(0.861)	(5.529)
Number of Acquisitions	1.014	0.611
	(2.887)	(1.740)
Motive of Acquisition	-13.394*	-3.205*
	(7.606)	(1.820)
Industrial Diversification	-4.874	-2.128
	(4.233)	(1.848)
Geo. Diversification	3.176	1.259
	(4.789)	(1.898)
Tender Offer	1.780	0.889
	(3.708)	(1.852)
Method of Payment	-7.805	-3.820
	(4.131)	(2.022)
Yr&Ind. jointly signif.?	Yes**	-
Constant	-46.201	33.852***
	(34.130)	(1.660)
Observations	493	493
R^2	0.271	0.271
Adjusted R^2	0.190	0.190
Residual Std. Error	36.857	36.857
F Statistic (df = 21; 471)	3.355***	3.355***

Notes:

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Standard deviation in parenthesis.

Dependent variable is the acquisition premium.

All variables LTM before announcement unless indicated otherwise.

Absolute numbers in $10m.

Target Sales Growth: Target's 3-year sales growth rate prior to announcement (%).

Acquirer Market Value: Acquirer Market Value 4 weeks prior to announcement.

Acquirer BVPS: Acquirer Book Value per Share (in $).

Target Market Value: Target Market Value 4 weeks prior to announcement.

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Stock Market Return: 1-year trailing average stock market (MSCI ACWI IMI) return (%).

Premium Paid: 1-year trailing average acquisition premium of a transaction sample (%).

Number of Acquisitions: 1-month trailing average number of acquisitions total (in thousands).

Motive of Acquisition: 1 = strategic, 0 = financial.

Industrial Diversification: 1 = yes, 0 = no.

Geographical Diversification: 1 = yes, 0 = no.

Tender Offer: 1 = yes, 0 = no.

Method of Payment: 1 = Stock, 0 = Cash.

Yr&Ind. jointly signif.? = Indicator if the control variables (Year and Industry) are jointly significant.

5. Discussion of the results and conclusion

Section 5 evaluates the empirical results in light of previously conducted empirical analyses. The average acquisition premium of the examined European targets is close to the long-term average of global acquisitions, around 30,6 percent (BCG 2019). Here, similarities to the average acquisition premium of publicly traded companies are found (about 30 percent) in Schwert's study (1996). In addition, literature documented wide ranges of premia (Beckman and Haunschild 2002), congruent to the sample. The target's different financial, operational, and valuation characteristics represent the distinct preferences of investors: From startups to mature, declining companies (Gorbenko and Malenko 2014). Lastly, considering the industry and yearly extremes we observed, Bain (2022) also finds a highly active and costly Healthcare industry, while Kearney's M&A report (2021) documents lower premia for the Retail sector. A possible explanation for the low average acquisition premium in 2013 (19.73 percent) may be the unstable political and financial environment caused by the Euro Crisis. A crisis also marked the year with the highest average acquisition premium (2009); however, the circumstances differed. Corporate borrowing interest rates fell for the first time since the beginning of the crisis (ECB, n.d.), and companies across industries were undervalued due to financial distress, both in combination increasing takeover premia.

The results of the variables' effects in the first regression (*Table 4*) generally correspond with the empirical findings of *Section 2*. Significant influences of the target's ROA, acquirer valuation, and size, as well as the value of control, are documented. Furthermore, mergers gain momentum from merger activity while being slowed down by stock overvaluation; geographical diversification potential and payment type also affect the premium. All these variables confirm empirical findings about their influence on the premium paid, thus providing evidence for the validity of the developed hypotheses.

When comparing the results of the fixed-effect regression with the regression without

control variables, one can notice that many of the used variables and the regression itself lose significance, explanatory power, and increase variance while others increase their significance. As explained in *Section 3.3*, the reason for that is the inclusion of industry and year dummies. Firstly, the differences among the distinct industries are jointly significant, causing variations in the acquisition premium. This is in conformity with the literature to explain the reasoning behind the control variables. Industries with lower concentrations, according to the ECB (2018) and subsequently higher bidding competition, lead to higher acquisition premia, confirming the findings of Gorton et al. (2009) and Morellec and Zhdanov (2005). These intrinsic disparities of different industries may cause the geographical expansion aspect and the average trailing premium paid to be insignificant, as depicted in *Table 5*. What supports this theory is that, when controlling for industry-related characteristics, the motive of the acquisition becomes significant. In line with empirical findings, financial investors pay significantly lower premiums than strategically motivated buyers (Bargeron, Schlingemann, Stulz, and Zutter 2008; Gorbenko and Malenko 2014).

Secondly, macroeconomics might impact the valuations of both the target and the acquirer. While the valuation of the target becomes significant, the acquirer's valuation no longer has significant explanatory power. This phenomenon might occur because target companies are smaller (see *Table 3*) and thus have higher risk exposure (Chan, Chen 1991). Smaller firms experience higher demand fluctuations in times of crisis, for example, which consequently causes their valuation to be a pivotal factor when excluding external economic effects. However, indeed there are reciprocal influences of both control variables on the significance of the regression coefficients, as in changing industry valuations given year-specific macroeconomics. Hence, it seems reasonable to examine their effect jointly. Even so, as explained above, it is striking that overvalued targets receive higher premia, counter to *Hypothesis 3* and Dong et al. (2006). A reasonable explanation is that a growth signaling

effect drives the overvaluation of targets. Rapidly growing, public firms demand higher premia as they demonstrate trustworthiness toward potential investors by meeting financial targets (Graham, Harvey, and Rajgopal 2005). This, in turn, reinforces bidding competition but also causes stock valuations to surge (Martynova and Renneboog 2011).

However, even if the determinants are homogeneous, there are dissimilarities between European and global observations of the acquisition premium, as the European premium seems slightly higher. Possible reasons, mentioned at the beginning of *Section 2,* are delineated as follows. The first possible explanation is that shareholder protection in Europe is more pronounced than in the US (Lele and Siems 2007), consequently leading to higher premia (Bris and Cabolis 2008). Moreover, corporate governance and the market for control differ. Compared to the US, European public companies principally have fewer controlling shareholders (Enriques and Volpin 2007), which may hinder an acquisition more severely (Wruck 1989). These factors outweigh the effect of higher employment protection in Europe (Banker, Byzalov, and Chen 2013), adversely affecting the acquisition premium due to less expected synergy gains (Dessaint, Golubov, Volpin 2017). Lastly, assuming similar value ranges of the significant variables, their effects differ geographically. Comparing this paper's findings to the above-cited, US-related research, acquirer size (Moeller, Schlingemann, and Stulz 2004) and merger momentum (Simonyan 2014) exert less influence, while different payment methods (Uysal 2011) affect the European premium more intensively.

Moreover, it is vital to mention that the value of control, operational factors, and merger-stock-market relations are the most dominant variables in the considered sample, regardless of industry differences and macroeconomic influences. However, previous literature has contradictory findings regarding the explanatory power of the different subsets. On the one hand, research suggests that financial factors dominate operational benefits in explaining premia (Chatterjee 1986). Conversely, this paper favors the findings of Nielsen and Melicher

(1973), as non-financial factors better explain the acquisition premium.

This paper uses a comprehensive sample of 493 transactions focusing on European target firms. Based on related literature, hypotheses regarding various potential determinants are developed, and their predictions are tested by conducting regression analyses. Overall, the impact of firm and deal characteristics, merger momentum, diversification potential, and motive can explain up to 20 percent of the variability of European acquisition premia.

6. Limitations and outlook on future research

After discussing the results, the limitations of the empirical findings of this research paper are essential to mention. It is acknowledged that simplifying assumptions were made that may not be completely accurate. Also, the sample is very specific because of the many filters used to construct it due to limited data resources. Additionally, since the explanatory power of our regressions is, at best, moderate (Adjusted R-squared: 0.196 and 0.190), it is not recommended to conduct projections using the described model. The determination of the acquisition premium is also error-prone since it comprises many different consideration components. Moreover, there are certainly more influences to control for; however, to make this empirical analysis more practicable, only the two most important are included: year and industry. Nevertheless, the sample serves as a good proxy for bigger, public European transactions; hence, valid conclusions can be drawn from the results of this empirical study.

Even though this research paper provides an extensive overview of the determinants of acquisition premia, future research should address an even more holistic approach to explain this phenomenon with additional explanatory power. In future inquiries, including a broad set of external factors besides deal-related information might yield an even better result and a model capable of predicting future acquisition premia. However, only so many relevant areas of the acquisition premium could be tapped into due to time and data limitations,

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Appendix:

Appendix I

Overview of the established hypotheses, associated variables, and predicted correlation to the premium.

	Hypotheses, associated variables, and predicted correlation		
Subset of variables	Hypotheses	Variables	Predicted correlation
Financial characteristics	*Hypothesis 1(a)*	Target Cash & Equivalents	+
	Hypothesis 1(a)	Acquirer Cash & Equivalents	+
	Hypothesis 1(b)	Target Net Debt	-
	Hypothesis 1(b)	Acquirer Net Debt	-
Operational characteristics	*Hypothesis 2(a)*	Target ROA (%)	-
	Hypothesis 2(b)	Target EBIT (%)	-
	Hypothesis 2(c)	Target Sales Growth (%)	+
	Hypothesis 2(d)	Target Intangible Assets	+
	Hypothesis 2(e)	Stake acquired (%)	+
Size & Valuation characteristics	*Hypothesis 3(a)*	Acquirer Market Value	+
	Hypothesis 3(a)	Acquirer BVPS	-
	Hypothesis 3(b)	Target Market Value	-
	Hypothesis 3(b)	Target BVPS	+
Merger Momentum characteristics	*Hypothesis 4(a)*	Stock Market Return (%)	-
	Hypothesis 4(b)	Premium Paid (%)	+
	Hypothesis 4(c)	Number of Acquisitions	+
Motive & Diversification characteristics	*Hypothesis 5(a)*	Motive of Acquisition	+
	Hypothesis 5(b)	Industrial Diversification	~
	Hypothesis 5(b)	Geographical Diversification	~
Deal characteristics	*Hypothesis 6(a)*	Tender Offer	+
	Hypothesis 6(b)	Method of Payment	+

Notes:
+ Positive Correlation, **-** Negative correlation, **~** Ambiguous correlation.
By default, every dummy variable in Appendix I is set to 1 to explain its correlation.

Target Sales Growth: Target's 3-year sales growth rate prior to the announcement (%).
Target Market Value: Target Market Value 4 weeks prior to the announcement.
Target BVPS: Target Book Value per Share (in $).
Acquirer Market Value: Acquirer Market Value 4 weeks prior to the announcement.
Acquirer BVPS: Acquirer Book Value per Share (in $).
Stock Market Return: 1-year trailing average stock market (MSCI ACWI IMI) return (%).
Premium Paid: 1-year trailing average acquisition premium of a transaction sample (%).
Number of Acquisitions: 1-month trailing average number of acquisitions total (in thousands).
Motive of acquisition: 1 = strategic, 0 = financial.
Industrial Diversification: 1 = yes, 0 = no.
Geographical diversification: 1 = yes, 0 = no.
Tender Offer: 1 = yes, 0 = no.
Method of Payment: 1 = Stock, 0 = Cash.

Appendix II

Advanced descriptive statistics of the acquisition premium, categorized by year.

	Acquisition Premium by year (in %)				
	N	Standard Deviation	Q1	Q3	IQR
2002	11	62.06	10.69	50.06	39.36
2003	34	36.23	8.53	53.39	45.06
2004	43	32.68	8.34	44.08	35.74
2005	48	26.15	7.83	41.08	33.24
2006	42	26.33	8.76	30.92	22.16
2007	50	29.19	11.59	44.68	33.09
2008	23	43.14	4.91	54.16	49.25
2009	20	52.60	18.70	70.56	51.85
2010	20	22.45	16.68	42.27	25.60
2011	26	41.29	19.66	74.07	54.41
2012	19	56.60	-2.95	54.55	57.49
2013	12	41.92	3.33	42.29	38.96
2014	23	37.21	16.83	44.58	27.75
2015	29	62.06	13.72	39.16	25.44
2016	24	71.20	10.98	58.38	47.40
2017	21	25.63	14.22	48.28	34.06
2018	25	46.90	4.62	42.41	37.79
2019	23	36.00	10.41	50.95	40.55
Total	493	33.85	25.75	-92.81	331.03

Appendix III

Advanced descriptive statistics of the acquisition premium, categorized by industry.

	Acquisition Premium by industry (in %)				
	N	Standard Deviation	Q1	Q3	IQR
Real Estate	45	53.74	3.55	27.18	23.63
Financials	27	40.31	12.84	67.42	54.58
Energy and Power	31	42.12	-1.41	30.56	31.96
Media & Entertainment	26	34.99	8.97	32.94	23.97
Industrials	79	31.97	8.64	45.22	36.58
Materials	38	30.98	4.93	55.51	50.57
Consumer Products	37	30.72	19.58	53.26	33.68
Telecommunications	25	41.91	14.25	46.15	31.90
Healthcare	46	60.35	20.29	64.65	44.36
Retail	21	30.11	3.45	29.44	25.99
High Technology	91	36.36	14.69	54.01	39.32
Consumer Staples	27	41.43	9.32	48.66	39.34
Total	493	33.85	25.75	-92.81	331.03

Notes:

Q1: 25% quantile.
Q3: 75% quantile.
IQR: Interquartile range (Q3-Q1).

Appendix IV

Advanced descriptive statistics of the included variables.

	Coefficients of the regression				
	N	Standard Deviation	Q1	Q3	IQR
Target Cash & Equivalents	493	56.35	0.97	15.65	14.68
Acquirer Cash & Equivalents	493	422.72	5.57	101.53	95.96
Target Net Debt	493	188.7	-1.12	27.88	29.00
Acquirer Net Debt	493	792.75	-1.82	185.19	187.01
Target ROA (%)	493	16.76	-0.63	7.36	7.99
Target EBIT (%)	493	1950.03	1.20	14.40	13.20
Target Sales Growth (%)	493	31.11	1.04	20.07	19.02
Target Intangible Assets	493	278.28	0.47	19.25	18.78
Stake Acquired (%)	493	26.27	63.10	100	36.90
Acquirer Market Value	493	2464.35	51.80	907.21	855.41
Acquirer BVPS	493	22.81	0.19	1.66	1.46
Target Market Value	493	725.13	10.68	133.85	123.17
Target BVPS	493	19.06	0.12	1.23	1.11
Stock Market Return (%)	493	15.59	-1.63	17.81	19.44
Premium Paid (%)	493	6.42	28.70	35.83	7.13
Number of Acquisitions	493	0.6	2.85	3.88	1.02
Motive of Acquisition	493	0.24	0	0	0
Industrial Diversification	493	0.44	0	1	1
Geographical Diversification	493	0.4	0	0	0
Tender Offer	493	0.5	0	1	1
Method of Payment	493	0.49	0	1	1

Notes:
All variables LTM before announcement unless indicated otherwise. Absolute numbers in $10m.

Target Sales Growth: Target's 3-year sales growth rate prior to the announcement (%).
Acquirer Market Value: Acquirer Market Value 4 weeks prior to the announcement.
Acquirer BVPS: Acquirer Book Value per Share (in $).
Target Market Value: Target Market Value 4 weeks prior to the announcement.
Target BVPS: Target Book Value per Share (in $).
Stock Market Return: 1-year trailing average stock market (MSCI ACWI IMI) return (%).
Premium Paid: 1-year trailing average acquisition premium of a transaction sample (%).
Number of Acquisitions: 1-month trailing average number of acquisitions total (in thousands).
Motive of acquisition: 1 = strategic, 0 = financial.
Industrial Diversification: 1 = yes, 0 = no.
Geographical diversification: 1 = yes, 0 = no.
Tender Offer: 1 = yes, 0 = no.
Method of Payment: 1 = Stock, 0 = Cash.

Appendix V

Spearman correlation matrix of the metric variables.

	TRCash	AcqCash	TRDebt	AcqDebt	TRROA	TREBIT	TRSales	TRINT	AcqShares	AcqMV	AcqBV	TRMV	TRBV	StockMkt	AvgPrem	AvgNo
TRCash	1	0.489	0.203	0.225	0.033	0.131	-0.117	0.511	-0.100	0.472	0.330	0.780	0.364	-0.034	-0.007	-0.035
AcqCash	0.489	1	0.099	0.306	0.059	0.041	0.029	0.370	-0.178	0.784	0.363	0.511	0.212	-0.119	0.051	-0.015
TRDebt	0.203	0.099	1	0.384	-0.109	0.164	-0.062	0.287	-0.081	0.137	0.164	0.375	0.221	-0.081	0.060	0.039
AcqDebt	0.225	0.306	0.384	1	0.041	0.163	-0.024	0.117	-0.177	0.433	0.304	0.346	0.274	-0.062	0.005	-0.026
TRROA	0.033	0.059	-0.109	0.041	1	0.595	0.038	0.003	0.028	0.160	0.061	0.222	0.173	0.073	-0.051	-0.067
TREBIT	0.131	0.041	0.164	0.163	0.595	1	0.048	0.056	-0.041	0.157	0.129	0.323	0.229	-0.013	-0.011	-0.030
TRSales	-0.117	0.029	-0.062	-0.024	0.038	0.048	1	-0.015	-0.058	0.021	0.035	-0.032	-0.052	0.056	0.104	-0.013
TRINT	0.511	0.370	0.287	0.117	0.003	0.056	-0.015	1	0.057	0.383	0.140	0.554	0.139	-0.054	0.042	0.005
AcqShares	-0.100	-0.178	-0.081	-0.177	0.028	-0.041	-0.058	0.057	1	-0.106	-0.183	-0.110	-0.253	0.046	0.051	0.021
AcqMV	0.472	0.784	0.137	0.433	0.160	0.157	0.021	0.383	-0.106	1	0.387	0.593	0.294	-0.039	-0.038	-0.013
AcqBV	0.330	0.363	0.164	0.304	0.061	0.129	0.035	0.140	-0.183	0.387	1	0.357	0.474	-0.048	0.069	-0.052
TRMV	0.780	0.511	0.375	0.346	0.222	0.323	-0.032	0.554	-0.110	0.593	0.357	1	0.436	-0.035	-0.054	-0.027
TRBV	0.364	0.212	0.221	0.274	0.173	0.229	-0.052	0.139	-0.253	0.294	0.474	0.436	1	0.028	-0.085	-0.000
StockMkt	-0.034	-0.119	-0.081	-0.062	0.073	-0.013	0.056	-0.054	0.046	-0.039	-0.048	-0.035	0.028	1	-0.237	-0.030
AvgPrem	-0.007	0.051	0.060	0.005	-0.051	-0.011	0.104	0.042	0.051	-0.038	0.069	-0.054	-0.085	-0.237	1	0.037
AvgNo	-0.035	-0.015	0.039	-0.026	-0.067	-0.030	-0.013	0.005	0.021	-0.013	-0.052	-0.027	-0.000	-0.030	0.037	1

Notes:

Different variable abbreviations due to space limitations. Variables in the same order as in previous tables, however.

All variables LTM before announcement unless indicated otherwise.

Absolute numbers in $10m.

TRCash: Target cash & cash equivalent.
AcqCash: Acquirer cash & cash equivalent.
TRDebt: Target net debt.
AcqDebt: Acquirer net debt.
TRROA: Target's return on assets (%).
TREBIT: Target's EBIT margin (%).
TRSales: Target's 3-year sales growth rate prior to the announcement (%).
TRINT: Target's intangible assets.
AcqShares: Stake acquired in the transaction (%).
AcqMV: Acquirer Market Value 4 weeks prior to the announcement.
AcqBV: Acquirer Book Value per Share (in $).
TRMV: Target Market Value 4 weeks prior to the announcement.
TRBV: Target Book Value per Share (in $).
StockMkt: 1-year trailing average stock market (MSCI ACWI IMI) return (%).
AvgPrem: 1-year trailing average acquisition premium of a transaction sample (%).
AvgNo: 1-month trailing average number of acquisitions total (in thousands).