UNIVERSITÀ
DI PAVIA

Department of Economics and Management

Master's Degree in International Business and Entrepreneurship

---

M&A Announcement Returns: Empirical Evidence on Acquirer Performance

Supervisor:

Prof. Mario Alessandro Maggi

Master's Thesis

of Alessandro Bertè

Matr. n. 529744

Academic Year 2024-2025

Rendimenti all'annuncio di operazioni di fusione e acquisizione (M&A): evidenza empirica sulla performance delle imprese acquirenti

M&A Announcement Returns: Empirical Evidence on Acquirer Performance

Degree Dissertation

for the

Master Examination in European Management

at the

Faculty of Economics and Social Sciences

of the

Eberhard Karls Universität

Tübingen

Examiner:

Professor Dr. Christian Koziol

Submitted by:

Alessandro Bertè

Born in Milazzo, 21/05/1999

Date of submission: 09/03/2026

Table of contents

Table of figures

List of tables

List of abbreviations

ADR refers to Abnormal Dollar Returns.

CAR stands for Cumulative Abnormal Returns.

CPD is explained by Cents-Per-Dollar.

ESG stands for Environmental, Social, and Governance.

FRED refers to Federal Reserve Economic Data.

GDP is explained by Gross Domestic Product.

GDPDEF stands for Gross Domestic Product Implicit Price Deflator.

LSEG is explained by London Stock Exchange Group.

M&A refers to Mergers and Acquisitions.

MVA is explained by Market Value of Assets.

NYSE indicates New York Stock Exchange.

NASDAQ refers to the National Association of Securities Dealers Automated Quotations.

OLS refers to Ordinary Least Squares.

RIC is explained by Reuters Instrument Code.

SDC Platinum indicates Securities Data Company Platinum.

SPXTR stands for Standard and Poor's 500 Total Return Index.

TRBC is explained by Thomson Reuters Business Classification.

USD stands for United States Dollars.

List of symbols

i is explained by the index identifying the firm or acquisition event considered in the analysis.

t is explained by the trading day relative to the acquisition announcement date.

τ_1 is explained by the beginning of the event window used to measure announcement returns.

τ_2 is explained by the end of the event window used to measure announcement returns.

$R_{i,t}$ is explained by the stock return of firm i on trading day t.

$R_{m,t}$ is explained by the market return on trading day t.

$E(R_{i,t})$ is explained by the expected return of firm i on trading day t implied by the market model.

α_i is explained by the intercept parameter of the market model for firm i.

β_i is explained by the market beta of firm i, which measures the sensitivity of the firm's return to market movements.

$\varepsilon_{i,t}$ is explained by the idiosyncratic error term of the market model, capturing firm-specific return shocks not explained by market movements.

$AR_{i,t}$ is explained by the abnormal return of firm i on trading day t.

$CAR_i(\tau_1, \tau_2)$ is explained by the cumulative abnormal return of acquisition event i computed over the event window $[\tau_1, \tau_2]$.

$\sum$ is explained by the summation operator used to aggregate abnormal returns across the event window.

$MCAP_{i,t}$ is explained by the market capitalization of the acquiring firm i at time t, computed using the stock closing price.

$\Delta MCAP_i$ is explained by the change in market capitalization of the acquirer between trading day −2 and trading day +1 around the announcement.

ADR_i is explained by the abnormal dollar return associated with acquisition event i, computed by multiplying CAR [-1,+1] by the pre-announcement market capitalization.

$TotalDealValue_i$ is explained by the total deal value paid by the acquirer for transaction i, excluding advisory fees and other transaction-related expenses.

CPD is explained by the cents-per-dollar measure, representing the abnormal dollar return generated for each dollar spent on acquisitions.

H_0 is explained by the null hypothesis stating that the expected announcement outcome equals zero.

H_1 is explained by the alternative hypothesis stating that the expected announcement outcome differs from zero.

$E[Y_i]$ is explained by the expected value of the outcome variable across acquisition events.

$\bar{Y}$ is explained by the sample mean of the outcome variable across deals.

s_Y is explained by the sample standard deviation of the outcome variable across deals.

t is explained by the test statistic of the one-sample t-test used to evaluate whether the mean announcement outcome differs from zero.

Y_i is explained by the dependent variable in the cross-sectional regression model.

β_j is explained by the regression coefficient associated with explanatory variable j.

u_i is explained by the regression error term capturing the part of announcement performance not explained by the explanatory variables included in the model.

$\gamma_{year(i)}$ is explained by the year fixed effects controlling for time-specific shocks affecting all acquisitions announced in the same year.

$\delta_{industry(i)}$ is explained by the industry fixed effects controlling for sector-specific heterogeneity based on TRBC economic sectors.

ESG_i is explained by the ESG Combined Score of the acquiring firm.

$ESGZ_i$ is explained by the standardized ESG Combined Score used in the regression analysis.

$E\bar{S}G$ is explained by the sample mean of ESG Combined Scores across the ESG subsample.

s_{ESG} is explained by the sample standard deviation of ESG Combined Scores used to standardize the ESG variable.

N is explained by the number of acquisition events included in the considered sample partition.

* is explained by statistical significance at the 10% level.

** is explained by statistical significance at the 5% level.

*** is explained by statistical significance at the 1% level.

Abstract

This thesis examines acquiring-firm announcement performance in U.S. domestic mergers and acquisitions between 2002 and 2024, combining traditional percentage abnormal returns with dollar-based wealth measures. The analysis follows a standard event study design, where announcement outcomes are measured using cumulative abnormal returns (CAR [−1,+1]), abnormal dollar returns (ADR), changes in market capitalization (ΔMCAP), and cents-per-dollar (CPD) metrics. Across the full sample, announcement CAR remain small (0.6%) and are not statistically different from zero. This finding suggests that short-term market reactions do not provide strong evidence of systematic value creation or destruction in percentage terms. In contrast, dollar-based measures reveal economically relevant effects: the average announcement is associated with a positive change in market capitalization of 312.5 million USD (expressed in constant 2024 USD), while the cents-per-dollar metric indicates modest but positive aggregate wealth effects (17.35 cents per USD spent on acquisitions). However, abnormal dollar returns are not statistically significant, highlighting a highly dispersed distribution of outcomes, largely driven by firm size and a limited number of large transactions. Subperiod analyses show considerable heterogeneity over time, with economically meaningful dollar-based effects concentrated in specific phases of the sample. Comparative tests between crisis and non-crisis periods do not provide statistical evidence that announcement performance systematically deteriorates during periods of economic distress. Cross-sectional regressions further indicate that deal characteristics, particularly relative deal size, private target status, and firm scale, are more strongly associated with CAR [-1,+1] than ESG measures. Within the 2021–2024 subsample, ESG scores do not display a statistically significant relationship with short-window cumulative abnormal returns. Overall, the evidence suggests that bidder announcement performance is highly dispersed rather than consistently value creating or value destroying. While percentage returns remain modest on average, dollar-based metrics offer an additional perspective that captures economically meaningful effects linked to transaction scale and deal characteristics.

Abstract (Italian)

Questo elaborato esamina la performance all'annuncio delle imprese acquirenti nelle operazioni di fusione e acquisizione domestiche negli Stati Uniti tra il 2002 e il 2024, combinando le tradizionali misure di rendimenti anomali percentuali con misure di ricchezza espresse in dollari. L'analisi segue un approccio standard di event study, in cui gli effetti dell'annuncio sono misurati tramite i rendimenti anomali cumulati (CAR [−1,+1]), i rendimenti anomali in dollari (ADR), le variazioni della capitalizzazione di mercato (ΔMCAP) e la metrica cents-per-dollar (CPD).

Nell'intero campione, i CAR all'annuncio rimangono contenuti (0,6%) e non risultano statisticamente differenti da zero. Questo risultato suggerisce che le reazioni di mercato nel breve periodo non forniscono evidenze solide di una creazione o distruzione sistematica di valore in termini percentuali. Al contrario, le misure basate sui valori in dollari rivelano effetti economicamente rilevanti: in media, un annuncio è associato a un aumento della capitalizzazione di mercato pari a 312,5 milioni di dollari (espressi in dollari costanti del 2024), mentre la metrica cents-per-dollar indica effetti aggregati di ricchezza modesti ma positivi (17,35 centesimi per ogni dollaro speso in acquisizioni).

Tuttavia, i rendimenti anomali in dollari non risultano statisticamente significativi, evidenziando una distribuzione degli esiti altamente dispersa, in gran parte determinata dalla dimensione delle imprese e da un numero limitato di operazioni di grande entità. Le analisi per sottoperiodi mostrano una notevole eterogeneità nel tempo, con effetti economicamente significativi nelle misure in dollari concentrati in specifiche fasi del campione.

I test comparativi tra periodi di crisi e periodi non di crisi non forniscono evidenze statistiche che la performance all'annuncio peggiori sistematicamente durante fasi di difficoltà economica. Le regressioni cross-section indicano inoltre che le caratteristiche delle operazioni, in particolare la dimensione relativa della transazione, lo status di target privato e la scala dell'impresa, sono maggiormente associate ai CAR [-1,+1] rispetto alle misure ESG.

Nel sottocampione 2021–2024, i punteggi ESG non mostrano una relazione statisticamente significativa con i rendimenti anomali cumulati nel breve intervallo temporale. Nel complesso, i risultati suggeriscono che la performance all'annuncio delle imprese acquirenti è altamente dispersa piuttosto che sistematicamente generatrice o

distruttrice di valore. Sebbene i rendimenti percentuali risultino mediamente modesti, le metriche basate sui valori in dollari offrono una prospettiva aggiuntiva che consente di cogliere effetti economicamente rilevanti legati alla scala delle operazioni e alle caratteristiche delle transazioni.

1. Introduction

Mergers and acquisitions (M&A) have long been considered one of the central strategic options available to corporate managers. Firms engage in acquisitions not only to expand their market share, but also to achieve vertical and horizontal integration. In many cases, acquisitions provide access to technologies or capabilities that would be costly or time-consuming to build internally. They can accelerate growth in ways that traditional capital investments alone may not achieve. Over the past decades, both the frequency and the average size of M&A transactions have increased considerably. This trend reflects increasing competitive dynamics and the growing relevance of corporate restructuring within financial markets. Yet, despite their prominence, acquisitions continue to raise a fundamental question: do they actually create value for acquiring-firm shareholders?

Assessing acquisition performance is not a simple task. One immediate complication concerns timing, as financial markets react quickly to announcements but short-term price movements do not necessarily coincide with long-term economic outcomes. Acquisitions are typically justified through anticipated synergies, efficiency gains, or strategic repositioning. However, empirical research often documents abnormal returns for bidders that are small, close to zero in percentage terms, and statistically weak around announcement dates. Moreover, percentage returns may not tell the full story. Especially when acquirers differ substantially in size, a modest percentage change can imply considerable dollar gains or losses (see Moeller et al. 2004). In particular, for large firms, even a minor price movement may translate into hundreds of millions of dollars. To complement this perspective, considering dollar-based wealth effects alongside percentage returns can therefore provide a more informative picture of the value generated or destroyed by the transaction.

This debate motivates this thesis to revisit bidder announcement performance in the U.S. over the period 2002-2024. The years considered were highly unstable as they include the aftermath of the dot-com downturn, the Global Financial Crisis, the COVID-19 pandemic, and more recent geopolitical tensions related to the war in Ukraine as well as the subsequent supply-chain disruption that partially stem from it. Furthermore, in these years analyzed, financial markets, monetary conditions, and macroeconomic environments shifted repeatedly and adjusted to the evolving global scenarios. Therefore, it seems necessary to consider whether acquirers' performance changed in accordance with these turbulent times.

Accordingly, the empirical analysis combines cumulative abnormal returns (CAR) with real-dollar measures of shareholder wealth, measured in real 2024 USD to account for inflation-driven distortions. Methodologically, it follows established event study approaches and builds on prior work that jointly evaluates percentage and dollar-based metrics (see Moeller et al. 2005). Additionally, two other motivations shape the design of the study. The first one concerns the fact that market conditions matter as periods of economic distress can alter expectations, perceived risk, and financing constraints. Under such circumstances, investors may interpret acquisition announcements differently. Therefore, a comparison between crisis and non-crisis periods offers a structured way to examine whether announcement outcomes worsen systematically during turbulent times. The second reason regards environmental, social, and governance (ESG) considerations as these aspects have gained increasing attention in corporate strategy and decision-making. This raises a related question: are sustainability-related characteristics reflected in short-term market reactions to acquisitions? The issue is particularly relevant in the more recent 2021-2024 subsample.

Against this background, the thesis addresses three research questions:

1. Do acquisitions announced between 2002 and 2024 create shareholder wealth when performance is evaluated using announcement-period cumulative abnormal returns (CAR) and dollar-based measures?

   H1: In line with prior financial research, CAR are expected to be close to zero on average in percentage terms, while dollar-based measures may reveal economically meaningful effects.
2. Does acquiring-firm announcement performance deteriorate during crisis periods compared with more stable market conditions?

   H2: Given more adverse economic and financial environments, acquisition announcements are expected to generate weaker short-term performance during periods of distress.
3. In the 2021-2024 subsample, are stronger pre-transaction ESG characteristics associated with more favorable announcement outcomes?

   H3: Firms with higher ESG combined scores are expected to experience more favorable short-term announcement reactions, as stronger social and governance attributes may influence managerial discretion in acquisition decisions.

The contribution of this thesis can be summarized along several dimensions. The first focuses on updating the evidence on bidder announcement performance by examining both percentage abnormal returns and dollar-valued wealth effects. Considering these measures jointly allows for a broader and more complete assessment of acquisition value creation or destruction. The second important contribution concerns the comparison analysis between crisis and non-crisis periods using both parametric and non-parametric inference, thereby examining not only mean effects but also the distribution of outcomes. The third point of the study regards the analysis of ESG characteristics, which are incorporated into a cross-sectional regression in order to investigate whether sustainability-related factors help explain variations in bidder returns. Finally, the study attempts to shed light on firm- and deal-level characteristics that may be associated with bidders announcement performance, contributing to the ongoing debate on what drives acquisition success.

The thesis is structured as follows. Section 2 reviews the relevant literature on M&A event studies, announcement effects, and ESG-related considerations. Section 3 describes the data sources and the construction of the sample. Section 4 focuses on the methodological framework used, including the event study design and regression models. Section 5 presents the empirical results. Section 6 discusses the economic interpretation of the results. Section 7 reports robustness checks. Section 8 highlights the limitations of the study and directions for future research. Section 9 concludes.

2. Literature review

The academic debate on M&A has developed over several decades. Throughout this time, researchers have tried to understand how financial markets respond to corporate investment decisions. Early empirical contributions established the event study as the main methodology for evaluating announcement effects.

Over time, the focus of the literature has shifted. Initially, most studies concentrated on average abnormal returns around announcement dates as the primary metric for assessing M&A performance. Later research moved beyond simple percentage returns and started considering the mechanisms that may shape acquisition outcomes. These include firm size, deal structure, payment method, financing choices, and prevailing market conditions. Despite the large number of studies produced, there is still no clear consensus

on whether acquisitions systematically create or destroy value for bidders. Part of this disagreement stems from differences in how performance is measured and interpreted.

Against this background, the following sections review four main aspects of the literature. The first and most important is the methodological foundations of event studies. Then it focuses on the evidence on bidder announcement returns and their determinants. After having clarified these aspects, it moves to the debate between percentage and dollar-based measures of value creation, and the emerging role of ESG characteristics in explaining announcement-period outcomes.

2.1 Event study methodology in finance

The event study has become one of the most widely used empirical tools in modern finance. Its purpose is to evaluate how financial markets react to new information. Event studies "focus on the impact of particular types of firm-specific events on the prices of the affected firms' securities" (see Mackinlay 1997, p. 13). Although the methodology is mainly associated with finance, it has also been applied in accounting, law, and economics. In practice, common equity is typically used as the main object of analysis to isolate the specific effects produced by an event on security prices. Stock prices provide an appropriate market-based measure of how investors update firm value when new information becomes public (see MacKinlay 1997). The core intuition behind event studies relies on semi-strong market efficiency as, once new information is released, prices should quickly incorporate it. Therefore, any value-relevant implications of an event should be reflected in stock returns around the announcement date. The methodology has been applied to many types of corporate events, including earnings announcements and mergers and acquisitions (see MacKinlay 1997). One of the earliest empirical contributions dates back to the 1930s, when a study examined the price effects of common stock splits. In that sample, 57 out of 95 stock splits were associated with price increases, while only 26 cases showed price decreases (see Dolley 1933). Since then, the methodology has evolved considerably. Later developments focused on improving the ability to isolate the informational content of announcements. Researchers introduced methods to control for broad market movements and refined event selection procedures to reduce contamination from confounding events, such as overlapping corporate announcements, that might bias abnormal return estimates (see Myers/Bakay 1948; Barker 1956, 1957, 1958; Ashley 1962). Subsequent research established the main building blocks of modern event studies. Studies on earnings announcements and stock

splits demonstrated that stock prices adjust rapidly to firm-specific information, supporting the use of abnormal returns as a proxy for investors' assessment of value effects (see Ball/Brown 1968; Fama et al. 1969). In particular, price adjustments occur quickly after announcements, which reinforces the relevance of short-window event studies (Fama et al. 1969). At the same time, methodological refinements continued. Some contributions addressed statistical issues related to data frequency and inference. One study examined the use of monthly data in event studies (see Brown/Warner 1980). A subsequent contribution showed that daily-return event studies generally perform well in practice and that conventional test statistics remain reliable even when returns depart from strict normality assumptions (see Brown/Warner 1985). Researchers also observed that return volatility often increases around corporate announcements and this phenomenon, known as event-induced variance, can distort traditional statistical tests if not properly accounted for (see Boehmer et al. 1991). Other studies complemented these developments by proposing a non-parametric approach that reduce sensitivity to outliers and distributional assumptions, particularly useful when return distributions deviate from normality (see Corrado 1989). A comprehensive overview of the methodology explains that event studies isolate the effect of a specific announcement by comparing realized returns to model-based expected returns within clearly defined estimation and event windows (see Mackinlay 1997). This contribution also demonstrates that repeated firm observations or clustered events may affect inference and require careful research design (see Mackinlay 1997). On an aggregate level, these contributions form the econometric foundation of event studies and later research builds directly on them. Over time, the methodology has become a flexible and widely accepted framework for analyzing corporate events, including takeover announcements and acquisition performance.

2.2 M&A acquirers' announcement returns

The finance literature has extensively examined the process of value creation in M&A, especially from the perspective of acquiring-firm shareholders. Bidder performance is typically measured through CAR around announcement dates. Despite the large number of studies, the evidence remains mixed as some contributions document value creation, while others report neutral or negative announcement effects.

A cross-border study reports statistically insignificant announcement returns for U.S. bidders acquiring Canadian firms (see Eckbo/Thorburn 2000). Other influential evidence suggests that bidder announcement returns are often close to zero or slightly negative.

This study documents that for public target acquisitions between 1973 and 1998, average acquirers' announcement abnormal returns equal -0.7%, although these returns are not statistically significant (see Andrade et al. 2001). On the other hand, another study reports positive bidder announcement performance for U.S. acquisitions during the 1990s (see Bradley/Sundaram 2004). This variation suggests that market conditions may influence acquisition outcomes. Beyond average returns, a large part of the literature examines the determinants of bidder performance. One of the most frequently analyzed factors is the method of payment. Stock-financed acquisitions of public firms are associated with significantly weaker bidder returns, whereas cash offers tend to generate stronger or less negative reactions (see Travlos 1987). Other aspects considered in the literature concern hubris and overvaluation, which have also been proposed as explanations for bidder returns (see Roll 1986; Jensen 2004; Shleifer/Vishny 2003). Other studies focus on the role of organizational structure, target nationality, and firm size in shaping announcement outcomes (see Faccio et al. 2006; Fuller et al. 2002; Moeller et al. 2004, 2005).

In contrast to short-term event studies, some research focuses on long-term abnormal performance, typically over three to five years after deal completion. A study argues that "investors systematically fail to assess quickly the full impact of corporate announcements" (see Andrade et al. 2001, p. 112). For example, long-term abnormal returns for stock-financed M&A between 1970 and 1989 equal -24.2% over five years, while cash-financed deals generate +18.5% over the same period (see Loughran/Vijh 1997). This evidence reinforces the importance of payment method, even over longer horizons. Other long-term studies document differences based on valuation measures. Firms with high book-to-market equity ratios ("value" firms) tend to outperform "growth" firms with low book-to-market equity ratios in post-transaction performance (see Rau/Vermaelen 1998). However, long-term abnormal return methodologies have been subject to criticism. Concerns relate to benchmark specification, model dependence, and statistical inference (see Barber/Lyon 1997; Kothari/Warner 1997; Fama 1998; Mitchell/Stafford 2000; Brav 2000). The broader market efficiency literature emphasizes that abnormal performance tests depend on both the assumption of market efficiency and the asset-pricing model used to estimate expected returns (see Fama 1970). It has also been noted that this issue is less problematic in short-window event studies, where expected returns over a few days are close to zero regardless of the model employed (see Andrade et al. 2001, p. 113). Another line of research suggests that small announcement returns do not necessarily imply the absence of value creation. If part of the information

is anticipated before the official announcement, measured abnormal returns may underestimate the true effect. Studies on partially anticipated events argue that abnormal returns around the announcement date may not capture the full impact of the transaction (see Malatesta/Thompson 1985). More recent evidence shows that bidder returns are weaker when acquisitions are widely expected by the market (see Tunyi 2021). This suggests that short event windows may capture only part of the information process. These considerations have led researchers to question whether percentage abnormal returns alone provide a complete picture of acquisition performance. This has motivated the use of alternative measures that focus on the economic magnitude of wealth effects.

2.3 Value creation debate: CAR and dollar-value measures

An important debate in the M&A literature concerns whether percentage abnormal returns are sufficient to assess value creation. Small percentage changes can still correspond to large dollar effects when the acquirer is very large (see Moeller et al. 2005). For this reason, several studies complement percentage-based measures with dollar-based metrics.

One influential study documents a strong size effect in bidder announcement returns. Specifically, using a large U.S. sample, it shows that small acquirers earn significantly higher abnormal returns than large acquirers (see Moeller et al. 2004). The same study also points out that value-weighted abnormal returns can turn negative even when equally weighted averages remain close to zero, because large firms mechanically dominate aggregate dollar calculations (see Moeller et al. 2004). This insight shifts the focus from percentage returns alone to the economic magnitude of wealth effects. In addition, another study of the same authors analyzes the late-1990s merger wave and compares it to the 1980s, showing that the 1998–2001 period generated exceptionally large dollar losses for acquiring-firm shareholders, despite average CAR not appearing dramatically negative (see Moeller et al. 2005). In particular, shareholders lost around 12 cents for every dollar spent on acquisitions, amounting to approximately 240 billion USD (in 2001 dollars) in aggregate wealth losses (see Moeller et al. 2005). This evidence reinforces the idea that looking only at percentage abnormal returns can mask economically substantial wealth effects and distributional features appear important, especially extreme observations. Related research further emphasizes the relevance of dollar-based measures. One study analyzes acquisitions associated with large announcement dollar gains and finds that these transactions tend to be relatively small compared to the bidder and linked to deal-specific

characteristics (see Fich et al. 2018). This suggests that large wealth effects are concentrated in specific types of transactions rather than evenly distributed. More recent evidence indicates that value creation patterns may vary across time and economic regimes. One study documents changes in acquisition wealth effects for acquiring firms after the Global Financial Crisis, particularly for public target acquisitions (see Alexandridis et al. 2017)

Conclusively, this literature supports analyzing bidder performance using both CAR and dollar-based measures as well as considering how results differ across economic conditions.

2.4 ESG and M&A acquirers' announcement returns

Recently, the finance literature has examined whether environmental, social, and governance (ESG) characteristics help explain cross-sectional variation in bidder announcement returns. The direction of this relationship is not obvious. On the one hand, a strong ESG profile may signal better governance, stronger risk management, and improved stakeholder relations. On the other hand, ESG activities may be perceived as costly or not directly aligned with shareholder value, which could generate mixed reactions.

The empirical findings in this context remain inconclusive. One study reports a negative value effect of ESG performance for acquiring shareholders, with the effect becoming stronger around the onset of the COVID-19 crisis (see Tampakoudis et al. 2021). In this setting, higher ESG scores do not translate into more favorable announcement returns (see Tampakoudis et al. 2021). Another study focuses on ESG distance between acquirer and target firms, and it finds that larger differences in ESG profiles are associated with lower bidder CAR (see Tang et al. 2024). This suggests that integration challenges and lack of strategic alignment may be priced by the market at announcement. A newer contribution presents a more positive view. It shows that bidders with stronger ESG standards may experience more favorable governance outcomes (see Hussain et al. 2024).

Overall, it is still unclear whether stronger ESG characteristics are consistently associated with higher bidder announcement performance. This open question motivates the empirical analysis in the present study, which examines the association between ESG measures and acquisition outcomes in a recent subsample (2021-2024).

3. Data and sample construction

All the relevant data used to assess acquiring-firm shareholders' performance are obtained from the LSEG platform (Refinitiv Workspace). In terms of study design and sample construction, the analysis takes inspiration from a previous study (see Moeller et al. 2005). The estimation window design, event windows, abnormal dollar return construction, dollar-based measures, and most of the sample selection criteria closely follow its empirical implementation. Only minor adjustments are introduced in the statistical inference procedures and cross-sectional regression framework, which are discussed in the methodological section.

This study focuses on acquisitions completed by public acquirers primarily listed on major U.S. exchanges (NYSE and NASDAQ). All available acquisitions are retrieved from the M&A database of Refinitiv Workspace. Moreover, all the deals considered satisfy the following criteria:

1. The announcement date is between 2002 and 2024;
2. The acquisitions are material to the bidder; therefore, the transaction's deal value is equal to or greater than 1% of the market value of assets of the acquirer, calculated as book value of assets minus book value of equity plus market value of equity at the fiscal year end date preceding the announcement date.
   This definition follows prior literature and aims to capture firm size more consistently by reducing distortions arising from differences in capital structure and leverage.
3. The acquiring firm controls less than 50% of the shares of the target at the announcement date and obtains 100% of the target's shares after the transaction;
4. The deal value is equal to or greater than 1 million USD;
5. The target is a U.S. public firm, private firm, or subsidiary;
6. Acquirers' data are available from Refinitiv Workspace;
7. The deal is effectively completed in less than 1,000 days in order to exclude stale transactions and maintain comparability with prior empirical settings.

Furthermore, acquisitions of partial or remaining interest, buybacks, exchange offers, mergers, and recapitalizations are excluded. All financial data refer to publicly released values at the fiscal year end date prior to the announcement. Thus, all values used to compute market values of assets and financial ratios such as the book-to-market equity

ratio are aligned with firm-specific fiscal calendars rather than the calendar year. However, many firms' fiscal year end dates coincide with the calendar year end. 7 firm-specific fiscal year end adjustments were manually verified for companies operating under a 53-week fiscal structure to ensure consistency across observations.

From a methodological standpoint, additional data retrieved from Refinitiv include trading-day calendars, acquirers' common stock prices, and market index returns.

The initial sample extraction consisted of 898 valid acquisitions. However, further methodological issues arose, which required a subsequent sample cleaning process. Out of the initial deals, only 418 RIC identifiers were retained after matching deal information with trading data. The RIC represents the firm trading instrument used to retrieve financial and price information. Firms whose trading history could not be reconstructed due to delistings, mergers, or privatizations were excluded from the sample. After this initial filtering, 20 additional deals were removed due to missing fiscal year end information. Further exclusions followed the application of the materiality threshold, the elimination of multiple acquisitions announced by the same acquirer on the same day, and the enforcement of non-overlapping event windows with a minimum separation of 10 trading days. This restriction reduces event-window overlap and allows for a cleaner identification of announcement effects, while partial overlaps in estimation windows may still occur and are acknowledged as a methodological limitation. Additional filters removed observations with negative book value of equity or insufficient trading prices to estimate model parameters. Although the final sample size decreased substantially, these exclusions were required to preserve the identification assumptions of the event study design.

The final analysis sample consists of 225 valid deals that satisfy both selection criteria and estimation window requirements. After applying all selection and data availability filters, this dataset serves as the basis for constructing announcement variables, financial ratios, and dollar-based wealth measures. Monetary variables such as deal values, market value of assets (MVA), abnormal dollar returns (ADR), market capitalization changes (ΔMCAP), and cents-per-dollars (CPD) are deflated to constant 2024 USD to guarantee comparability across time and to avoid inflation-driven distortions. The deflation data used in the calculations of such monetary variables are taken from the Gross Domestic Product Implicit Price Deflator (GDPDEF) from the Federal Reserve Economic Data (FRED) of the St. Louis Federal Reserve Bank. However, for deflation timing reasons,

the adjustment procedure differs depending on the nature and timing of the variables considered. For all announcement-based monetary variables, including ADR, ΔMCAP, aggregate dollar values, and CPD measures, a common deflation benchmark is applied. Specifically, the numerator of the deflation factor is computed as the average GDPDEF value across the four quarters of 2024, which represents the constant-price reference level used throughout the analysis. Each monetary observation is then scaled by dividing this benchmark value by the GDP deflator corresponding to the quarter of the announcement date. In particular, the market capitalization values used to compute both the ΔMCAP and ADR are deflated using the GDPDEF associated with the announcement quarter. This choice reflects the fact that these variables rely on stock price information measured in a narrow window around the announcement (from day −2 to day +1), and therefore their real value adjustment must be aligned with the timing of market reactions rather than accounting reporting periods. A different deflation convention is applied to the market value of assets (MVA). Since MVA is constructed using accounting information measured at the fiscal year end preceding the announcement, the corresponding monetary values are deflated using the GDPDEF of the quarter associated with the fiscal year end date. This distinction is necessary because announcement dates can occur substantially later than the fiscal reporting period for some firms, while for others they may be relatively close. Aligning the deflation timing with the fiscal year end ensures internal consistency between accounting data and price-level adjustments. After defining the inflation adjustment procedure applied to all monetary variables, the following considerations describe the composition of the final sample and its main descriptive characteristics. The final dataset includes 225 completed acquisitions announced between 2002 and 2024. From a temporal perspective, deal activity appears unevenly distributed across the sample period, especially across subperiods. A relatively small fraction of transactions belongs to the early years of the sample, whereas the majority of deals are concentrated after 2011. In particular, Table 1 (in the appendix) reports the distribution of acquisitions. Only 21 deals belong to the 2002–2010 period, whereas 117 transactions are observed between 2011 and 2019, and 87 deals are completed during the 2020–2024 interval. This pattern is in line with post-2009 recovery of M&A activity documented in prior research (see Alexandridis et al. 2017). Deal activity remains more concentrated in later years of the sample. Table 17 (in the appendix) reports the yearly distribution of transactions. The data shows that deal activity varies across years, with several peak years characterized by a higher number of acquisitions. For instance, 2018, 2021, and 2023 display the highest

transaction intensity in the full sample. From a sectoral perspective, Table 2 (in the appendix) shows that acquisitions are mainly concentrated in a limited number of TRBC economic sectors. The largest share of deals belongs to the industrial sector, which represents 21.33% of the full sample. The second most populated sector is real estate with 20%, and the third is technology with 14.67% across the full sample. Other sectors such as consumer cyclicals, healthcare, and financials appear with lower frequency. The economic magnitude of the transactions is described through aggregate deal value statistics in 2024 USD, which are reported in Table 18 (in the appendix). The total transaction value of the full sample, excluding advisory fees and non-related expenses, also varies across years, subperiods, and sectors. The subperiod 2011–2019 is the one with the highest dollar amount spent on acquisitions and equals a total of approximately 179.05 billion USD. This is also the most populated subperiod in terms of deals. However, at a year level, despite not being the most concentrated year in terms of deal activity, 2017 represents the highest spending year in total, amounting to approximately 42.32 billion USD with only 15 deals. Similarly, Table 17 shows that 2019, with 11 deals, represents the second highest year in terms of total deal value, which equals to around 33.85 billion USD. The third year with the highest dollars spent for acquisitions is 2021, with about 29.79 billion USD across 28 deals. The sample composition in terms of deal characteristics also varies across the full sample and the subperiods considered as reported in Table 1. Across the full-period analysis, subsidiary targets represent 56% of the transactions, whereas private targets account for 44%. Table 1 also shows that no public target acquisitions were obtained from the Refinitiv Workspace database. With respect to the consideration structure, 83.56% of the deals were completed using exclusively cash and only 16.44% of the targets were acquired via stock-only or cash-and-stock combinations. Across subperiods, the composition of target type changes. From the first subperiod to the third, a larger portion of deals involves private targets, from 28.57% in 2002–2010 to 50.57% in 2020–2024. Along with this change, subsidiary targets decrease from 71.43% of the first subperiod to 49.43% of the last one. Payment methods remain relatively stable across subperiods, with cash-only as the main consideration. Cash-only goes from 90.48% in 2002–2010 to 85.06% in 2020–2024. The use of stock increases modestly, with the highest share in 2011–2019 (18.80%). These dimensions are relevant because payment method and target status have been shown to influence bidder announcement returns.

Moreover, in order to investigate whether acquirers' announcement performance differs under stressed market conditions, two crisis periods are constructed. The identification of crisis periods follows a macroeconomic logic and aims at capturing phases of increased uncertainty and changing monetary policy environments. The first crisis window spans from 2007 to 2009 and corresponds to the Global Financial Crisis. Only 5 transactions fall within this interval, which coincides with lower observed deal activity in that period. Despite the relatively small number of deals observed, this subsample is retained to compare announcement effects under distinct macroeconomic conditions. The second crisis period covers the years from 2020 to 2022. This interval captures the disruption generated by the COVID-19 pandemic and subsequent economic shocks, including supply-chain interruptions and the increase in commodity prices following geopolitical tensions related to the Ukraine war. Compared to the earlier crisis window, this period includes a larger number of transactions that allow a more meaningful comparison between crisis and non-crisis environments. Specifically, it entails 53 deals, and 2021 represents the year with the highest concentration of acquisitions (28 deals). All data mentioned in this paragraph refers to Table 18 (in the appendix).

Furthermore, a specific ESG subsample from 2021 to 2024 is constructed to address the third research question of this study. Out of the valid acquisitions that fall within this period, 7 were excluded due to ESG data unavailability. The final ESG subsample includes 65 transactions for which the ESG Combined Score is available from Refinitiv Workspace. The ESG Combined Score aggregates environmental, social, and governance pillars into a single metric designed to capture a firm's overall sustainability profile and ranges from 0 to 100. ESG data are matched at the observation level and refer to the most recently available score prior to the announcement date. The average ESG Combined Score across the subsample is 43.53 and the median equals 44.35. These values are shown in Figure 11 (in the appendix).

Descriptive statistics of the main firm-level variables are reported to provide an overview of the acquiring firms' and deals' characteristics. Summary statistics are presented using both mean and median values in order to account for potential skewness in firm and deal characteristics and are reported in Table 1. Market value of assets is measured in 2024 USD millions, while its logarithmic transformation (ln (MVA)) is unit-free. The natural logarithm of market value of assets is intended to capture firm size. Across the full sample, the median value of ln (MVA) is 8.57, while its mean is 8.48. The book-to-market equity

ratio reflects valuation differences across bidders. In the full dataset of acquisitions, the average book-to-market equity ratio is 0.53, while the median is 0.39, indicating variation between value and growth profiles across acquirers. The relative deal size variable, which corresponds to the materiality threshold applied during the sample selection stage, measures the economic relevance of each acquisition relative to the acquirer's scale.

On average, across all the deals considered, acquisitions correspond to approximately 10% of MVA, while the median is closer to 5%. As Table 1 shows, subperiod descriptive statistics indicate changes in firm and deal characteristics across time. In particular, book-to-market ratios decrease across subperiods (e.g., mean and median values move from 0.60 and 0.58 to 0.49 and 0.36). Deal size relative to MVA also decreases across subperiods in mean and median terms (from 0.12 and 0.07 to 0.08 and 0.03). These descriptive elements outline the structural features of the dataset.

4. Methodology

The methodology follows the standard event study approach established in the literature (see Brown/Warner 1985). The empirical design closely follows prior studies in terms of the estimation window, event windows, cumulative abnormal returns (CAR), and the dollar-based measures used to assess the wealth effects of acquisition announcements on acquiring-firm shareholders (see Moeller et al. 2005). Some adjustments were introduced to further contribute to the finance literature and update the results obtained with respect to the different time horizons considered in the analysis. The main modifications concern inference procedures and regression implementation. All performance measures are initially constructed at the deal level and are subsequently summarized and aggregated across different temporal partitions of the sample (full period, calendar years, and predefined subperiods). Further details of the empirical setting are presented in the following subsections.

4.1 Event study design

The core objective of this event study is to isolate the stock market reaction to a well-defined event by comparing realized returns to expected returns in a short event window around the announcement date. In this case, the event analyzed is the acquisition announcement disclosed by a U.S. publicly traded firm that respects the sampling criteria. Therefore, for each acquisition i, the event date, denoted by $t = 0,$ is the announcement date reported by Refinitiv Workspace. If the announcement date falls on a non-trading

day, the event day is defined as the first subsequent trading day. Daily stock returns are computed using adjusted close prices (i.e., adjusted for dividends and stock splits) and are measured as simple returns rather than logarithmic returns.

The expected-returns parameters are estimated over a pre-event period, called estimation period, which is designed to be close enough to reflect the firm's current return behavior but far enough to reduce contamination from the announcement itself. The estimation window used is from 205 trading days before the announcement date to 6 days before the announcement: $t \in [-205, -6]$. This estimation window length is aligned with standard practice in the event study literature and provides a sufficiently long period to estimate expected-return parameters while leaving a short buffer before the event to mitigate potential information leakage (see Moeller et al. 2005).

The event window represents the time horizon around which the effects of the event are computed. In this study, abnormal performance is measured over three announcement windows: [-1,+1], [-2,+2], and [-5,+5]. The first is the main event window, while the other two serve as robustness checks. All event-study outcomes are initially computed at the individual deal level and later analyzed both for the full sample and for subsamples defined by announcement year and predefined subperiods. These event-windows are carefully chosen to isolate the immediate announcement effects of the acquisitions, as abnormal returns in such short windows are assumed to be informative about the value effects generated since prices incorporate new public information quickly.

Other main assumptions of the event study are based on the correct event timing, so that the announcement date accurately reflects when the market receives the information, the limited contamination, hence no major confounding events related to each specific firm occur in the event window that would influence the announcement effects, and the stability of the return-generating process, at least locally, between the estimation and the event window of firm returns and market returns. In practice, acquisition announcements may coincide with other firm-specific disclosures (e.g., earnings releases, guidance updates, analyst revisions), and such confounding news cannot be fully ruled out. Accordingly, event-window effects are interpreted as the market reaction to the acquisition announcement and any contemporaneous information released around the same time. These assumptions can also be challenged (e.g., partial anticipation, confounding news, event-induced volatility). The sample construction reduces the most severe issues (e.g., overlapping event windows for the same acquirer), and remaining

concerns are acknowledged in the limitations and robustness discussion. In addition, abnormal returns may be cross-sectionally dependent when many firms announce acquisitions in close temporal proximity or when common market-related or sector-related shocks affect several acquirers simultaneously. With respect to this issue, the use of short event windows mitigates its practical impact but statistical inference is interpreted cautiously as cross-sectional correlation may remain.

4.2 Market model and expected returns estimation

The expected returns are estimated using the market model. For each acquirer *i*, the daily return $R_{i,t}$ is modeled as:

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t}$$

$R_{i,t}$ is the stock return of acquirer i on day t, $R_{m,t}$ is the market return on day t, and α_i and β_i are the firm-specific parameters estimated in the estimation window, while $\varepsilon_{i,t}$ is the idiosyncratic disturbance term.

In this study, market returns are computed using the SPXTR, which is a value-weighted U.S. equity market index obtained from Refinitiv Workspace. This index represents the S&P 500 Total Return index, which also accounts for reinvested dividends and offers broad sectoral coverage. At the same time, using a total return market index ensures consistency with the firm-level returns used in the analysis, which are also based on adjusted prices that consider dividends and stock splits. In addition, using a value-weighted index is aligned with standard practice and with the goal of capturing broad market movements.

Regarding the estimation method, the parameters $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated by OLS over the estimation window [-205, -6] with respect to the announcement date, which is defined as day t = 0. The estimation is performed separately for each acquisition event (i.e., at the deal level), where each observation is defined by the acquirer-announcement date pair. This choice allows the return-generating process to vary across different acquisition events, even when the same acquirer completes multiple deals over time. The market model relies on several standard assumptions. The first concerns linearity, meaning that the conditional expectation of firm returns is linear in market returns within the estimation window. Moreover, α_i and β_i are assumed to remain approximately stable between the estimation window and the short event window. This assumption is commonly adopted

in short-horizon event studies, where the limited length of the event window reduces the likelihood of substantial changes in the return-generating process. The disturbance term $\varepsilon_{i,t}$ captures the firm-specific component of returns that is not explained by market movements and is assumed to have zero conditional mean. Other assumptions include the absence of perfect multicollinearity, meaning that the market return $R_{m,t}$ varies within the estimation window, and that the disturbance term has finite variance. Homoskedasticity is not strictly required for the computation of abnormal returns but deviations from this assumption may affect standard inference procedures. Finally, although the market model is a simplified representation of the return-generating process, it is widely used in event-study analyses because short-window abnormal returns are generally robust to reasonable alternative benchmarks (e.g., constant mean return models or multifactor models).

4.3 Abnormal returns and cumulative abnormal returns

After $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated, the abnormal returns for firm i on day t are calculated as follows:

$$AR_{i,t} = R_{i,t} - \left(\hat{\alpha}_i + \hat{\beta}_i R_{m,t}\right)$$

Therefore, once the abnormal returns (AR) for each firm are computed, such values can be aggregated into cumulative abnormal returns (CAR). For an event window $[\tau_1, \tau_2]$, the cumulative abnormal return is:

$$CAR_i[\tau_1, \tau_2] = \sum_{t=\tau_1}^{\tau_2} A\,R_{i,t}$$

The primary research outcome used throughout the thesis is $CAR_i\ [-1, +1]$ expressed in percentage terms, aligned with prior empirical designs used in the literature (see Moeller et al. 2005). The wider windows $CAR_i\ [-2, +2]$ and $CAR_i\ [-5, +5]$ are calculated to assess robustness and potential information leakage.

All CAR-based measures are computed at the individual deal level and subsequently summarized and aggregated across the full sample, individual calendar years, and predefined subperiods based on the announcement date.

4.4 Dollar-based wealth measures

To complement percentage CAR, the analysis uses several dollar-based measures that assess the economic magnitude of the announcement effect.

All dollar measures are expressed in constant 2024 USD across this study and are first constructed at the deal level before being aggregated across different temporal subsets of the sample.

The first dollar-based wealth measure is the change in market capitalization around the announcement:

$$\Delta MCAP_i = MCAP_{i,+1} - MCAP_{i,-2}$$

$MCAP_{i,-2}$ and $MCAP_{i,+1}$ denote the acquirer's market capitalization at the closing price two trading days before and one trading day after the announcement. This measure represents the raw change in equity market value around the announcement window. As such, it accounts for both firm-specific announcement effects and broader market or sector movements affecting the acquirer's stock price. For this reason, ΔMCAP is interpreted as a raw wealth effect rather than a purely abnormal performance measure.

The second dollar-based wealth measure is abnormal dollar returns at the deal level:

$$ADR_i = CAR_i\,[-1,+1] \times MCAP_{i,-2}$$

The $CAR_i\,[-1,+1]$ is expressed in decimal form. Multiplying CAR by the pre-announcement market capitalization converts abnormal returns into dollar terms and provides a measure of the abnormal change in shareholder wealth attributable to the announcement.

The third and fourth metrics used are aggregate dollar returns and cents-per-dollar. Aggregate wealth effects across a set S of deals are computed as:

$$Aggregate\ ADR(S) = \sum_{i \in S} AD\,R_i$$

The set S may correspond to the full sample period, a specific calendar year, or one of the predefined subperiods.

To relate aggregate wealth effects to acquisition spending, and obtain a measure of how many cents acquiring-firm shareholders either gained or lost for each dollar spent on acquisitions, the cents-per-dollar metric is defined as:

$$CPD(S) = 100 \times \frac{\sum_{i \in S} AD\,R_i}{\sum_{i \in S} TotalDealValu\,e_i}$$

The variable TotalDealValue_i refers to the value of consideration paid by the acquirer, excluding advisory fees and other transaction-related expenses. Both the numerator and denominator are aggregated over the same temporal subset S, ensuring that the metric consistently measures shareholder wealth creation per dollar spent within each horizon (full sample, yearly analysis, or subperiod analysis).

4.5 Statistical inference on announcement outcomes

This section explains how the study tests whether announcement outcomes are statistically different from zero and whether they differ across economic periods, particularly between crisis and non-crisis periods previously identified. The reason for performing such tests is that announcement outcomes in M&A settings may be skewed, heavy-tailed, or affected by extreme observations; therefore the analysis combines both parametric and non-parametric statistical tests.

4.5.1 One-sample t-test

The one-sample t-test examines whether the mean announcement outcome across deals is statistically different from zero. In this study, the outcome variable Y_i represents a deal-level measure such as cumulative abnormal returns CAR_i, the change in market capitalization $\Delta MCAP_i$, or abnormal dollar returns ADR_i.

All outcomes are first computed at the deal level. The test is then applied to the set of deal observations within each sample partition considered in the analysis (full sample, predefined subperiods, and individual calendar years).

The test compares the sample mean of Y_i to zero under the null hypothesis that there is no average announcement effect.

Formally, the hypotheses are:

$$H_0: E[Y_i] = 0$$

$$H_1: E[Y_i] \neq 0$$

The corresponding test statistic is:

$$t = \frac{\bar{Y}}{\frac{s_Y}{\sqrt{N}}}$$

$\bar{Y}$ is the mean outcome across deals, s_Y is the sample standard deviation of the outcome variable, and N is the number of observations in the considered sample partition. The denominator $s_Y/\sqrt{N}$ represents the standard error of the sample mean.

4.5.2 Wilcoxon signed-rank test

The Wilcoxon signed-rank test evaluates whether the median announcement outcome differs from zero, thus it complements the one-sample t-test. Unlike the t-test, it does not rely on normality assumptions and is therefore more robust when the distribution of announcement outcomes is skewed or influenced by extreme values.

The test is applied to the deal-level outcomes within each sample partition and serves as a non-parametric robustness check for the t-test results.

The test works by ranking the absolute values of the observations and taking into account their signs, which reduces the influence of extreme observations.

4.6 Comparison tests between crisis and non-crisis periods

In order to assess whether announcement outcomes differ across economic conditions, the study compares deals announced during crisis periods with deals announced outside those periods.

The group C denotes deals announced during a crisis period. For each crisis window, the comparison group includes all deals announced outside that specific crisis period and is defined as non-crisis.

The crisis periods identified refer to 2007-2009 and 2020-2022, while the remaining observations in the sample represent deals announced outside those crisis windows.

4.6.1 Welch two-sample t-test

The Welch two-sample t-test examines whether the mean announcement outcome differs between crisis-period deals and deals announced outside the crisis period.

This test is used instead of the standard two-sample t-test because it does not require the assumption that the two groups have equal variances.

Formally, the hypotheses are:

$$H_0: E[Y_i \mid C] = E[Y_i \mid N]$$

$$H_1: E[Y_i \mid C] \neq E[Y_i \mid N]$$

The test therefore evaluates whether announcement outcomes during crisis periods differ from those observed in the rest of the sample.

4.6.2 Mann–Whitney U test

The Mann–Whitney U test is a non-parametric test that compares the distributions of announcement outcomes between crisis-period deals and deals announced outside the crisis period.

The test evaluates whether outcomes in one group tend to be systematically higher or lower than those observed in the other group.

This non-parametric approach complements the Welch t-test results and provides an additional robustness check when announcement outcomes are skewed or affected by extreme observations.

4.7 Cross-sectional regression models

This section analyzes which factors are associated with announcement outcomes. To do so, the study estimates OLS regressions of announcement performance on deal and acquirer characteristics. OLS is widely used in M&A event studies because it provides a simple and transparent way to relate announcement outcomes to observable deal and firm characteristics. The regression coefficients are interpreted as conditional associations rather than causal effects. Statistical inference allows for heteroskedasticity and within-

acquirer dependence and is based on standard errors clustered at the acquirer (RIC) level. All the details regarding the specific regressions are explained as follows.

For each deal i, the baseline model is:

$$Y_i = \beta_0 + \beta_1 \ln(MVA_i) + \beta_2 BTM_i + \beta_3 RelDealSize_i + \beta_4 PrivateTarget_i + \beta_5 StockPayment_i + \gamma_{year(i)} + \delta_{industry(i)} + u_i$$

Across the full sample analysis, the dependent variables Y_i considered are CAR [-1,+1], CAR [-2,+2], CAR [-5,+5], ΔMCAP, and ADR. The main regression includes a set of firm and deal characteristics used as control variables. Specifically, firm size is captured by the natural logarithm of market value of assets (ln (MVA_i)), while the book-to-market equity ratio (BTM_i) and relative deal size ($RelDealSize_i$) are considered for valuation and transaction scale. In addition, two indicator control variables are included and refer to a private target dummy and a stock payment dummy, which account for differences in target status and payment structure. The private target dummy ($PrivateTarget_i$) takes the value of 1 when the target of the deal is private, and takes the value of 0 for subsidiaries. In parallel, the stock payment dummy ($StockPayment_i$) takes the value of 1 when the consideration includes stock (stock-only or cash-and-stock combination) and 0 when the consideration is cash-only. Year and industry fixed effects are added to absorb time-specific and sector-specific heterogeneity. Industry fixed effects ($\delta_{industry(i)}$) are based on TRBC economic sectors and due to limited observations in some sectors, academic and educational services and utilities are grouped into an "Other" category, resulting in a total of 9 sector categories. Year fixed effects ($\gamma_{year(i)}$) control for year-specific shocks common to all deals (e.g., macroeconomic conditions, market sentiment, regulatory changes). These adjustments were necessary as the time period analyzed is long and includes crisis periods as well as expansion periods. Standard errors are clustered at the acquirer level (RIC), to account for correlations across multiple deals completed by the same acquirer. Such clustering corrects for underestimation of standard errors, which would come from assuming independence of observations. This main regression model is used for all the dependent variables mentioned above regarding the full sample. When it comes to dollar-based outcomes (ΔMCAP and ADR), results are interpreted with care because these measures scale, by construction, with firm size, even after controlling for ln (MVA_i). On the other hand, to evaluate whether acquirers' ESG combined score pre-announcement, obtained at the fiscal year end date, are associated with announcement

returns, the analysis estimates a separate model on the ESG subsample (2021-2024). The specification is similar to the baseline model but excludes industry fixed effects due to the limited ESG subsample size, while maintaining year fixed effects and clustered standard errors.

$$Y_i = \beta_0 + \beta_1 ESGZ_i + \beta_2 \ln(MVA_i) + \beta_3 BTM_i + \beta_4 RelDealSize_i + \beta_5 PrivateTarget_i + \beta_6 StockPayment_i + \gamma_{year(i)} + u_i$$

$ESGZ_i$ is the standardized ESG Combined Score:

$$ESGZ_i = \frac{ESG_i - \bar{ESG}}{s_{ESG}}$$

In the ESG subsample analysis, the dependent variable is CAR [-1,+1]. Moreover, since ESG scores are often correlated with industry characteristics, excluding industry fixed effects means that the estimated ESG association may partially reflect sectoral composition and therefore results for this subsample are interpreted as aggregate associations rather than sector-adjusted effects.

Robustness checks include larger event windows and an alternative ESG dummy control variable. These additional specifications do not alter the baseline empirical design but are implemented to verify the stability of the main findings under alternative modeling choices. The detailed results are presented in the dedicated robustness section.

5. Empirical results

This section reports the main empirical results of the analysis. The following findings are first presented for the full sample, and then at the yearly and subperiod levels. The section then turns to the crisis versus non-crisis comparisons and, finally, to the cross-sectional regressions.

5.1 CAR and dollar-value measures: full sample evidence

The first set of results concerns acquirers' announcement performance over the full sample period (2002–2024), which includes 225 deals. On average, acquisition announcements generate a small positive market reaction. The mean CAR [-1,+1] equals 0.60%, and the median equals 0.27% (see Figure 1). However, statistical tests indicate that these values are not significantly different from zero. The one-sample t-test yields a p-value of 0.15, and the Wilcoxon signed-rank test also fails to reject the null hypothesis

(p-value = 0.11). This implies that, although announcement-period returns are slightly positive, acquisitions do not systematically create shareholder value in percentage terms across the full sample.

Turning to dollar-based measures, the evidence is different. Both average and median ΔMCAP around the announcement are positive and statistically significant. The mean ΔMCAP equals approximately 312 million USD, whereas the median change is considerably smaller, and is around 14 million USD. As Figure 2 illustrates, the difference between mean and median indicates a highly skewed distribution driven by large deals. Both parametric and non-parametric tests point to clear statistical evidence (p-value = 0.04; p-value < 0.01). This finding shows that acquisitions generate positive raw wealth effects in absolute dollar terms. ADR also display positive average values, with a mean of approximately 225 million USD and a median close to 2.6 million USD. Nevertheless, these effects are not statistically significant according to either the t-test (p-value = 0.15) or the Wilcoxon test (p-value = 0.15). Moreover, across the entire sample, acquiring-firm shareholders obtain about 17.35 cents for every USD spent on acquisitions (see Figure 7). The CAR based on larger event windows are reported in the robustness section and do not show different results. Therefore, dollar-based measures underscore a remarkable dispersion across deals, with large transactions that drive average outcomes.

5.2 CAR and dollar-value measures: yearly evidence

On a year-by-year basis, the results also show a substantial variation in performance over time, as displayed by Table 12 (CAR [-1,+1]), Table 13 (ΔMCAP), and Table 14 (ADR). Although several years report positive average CAR [-1,+1], statistical significance is not consistent across years. In many cases, mean CAR [-1,+1] remains close to zero and the median value is typically smaller. These results suggest that the general market reaction to acquisitions, in percentage, is modest.

Some years show stronger positive reaction measured through CAR. For instance, the average CAR [-1,+1] in 2013 is positive and reaches statistical significance at the 10% threshold (p-value=0.06). However, the strongest yearly evidence is reported by 2015, with positive mean and median values, respectively 4.98% and 4.3%. Both statistics reach significance thresholds (p-value = 0.04; p-value =0.03). Moreover, 2017 shows an average negative reaction of the market (-1.5%) which is weakly significant (p-value= 0.09). Another year showing median significance at the 10% level is 2018, with 1.39%

(p-value =0.09). Using larger event windows, the results do not substantially change and are reported in Table 15 (CAR [-2,+2]) and Table 16 (CAR [-5,+5]). 2015 represents the most significant year in mean and median values when measured through CAR [-5,+5] and CAR [-2,+2]. Both values are positive and remain statistically significant in the wider event windows. Also, 2018 reports positive values across larger event windows. However, only the values generated in CAR [-5,+5] provide statistical support at the 5% level (p-value= 0.01; p-value =0.04). More broadly, the t-test and Wilcoxon signed-rank statistics indicate that only a limited number of years reach statistically significant levels. The comparison between mean and median CAR suggests some dispersion in outcomes but does not indicate extreme asymmetry in the distribution.

Looking at absolute wealth effects, the yearly evidence becomes more heterogeneous**.** Several years show large positive average changes in ΔMCAP around the announcement and often such changes are driven by a limited number of large transactions. This consideration appears evident and is reflected in the substantial differences between mean and median values observed in multiple years. For instance, 2013 and 2015 are the most significant years, not only in mean but also in median values. These measures are significant at the 5% level in both years analyzed and show pronounced differences. The average ΔMCAP for 2013 amounts to 287.13 million USD, while the median is 33.15 million USD. The same applies to 2015, with an average ΔMCAP of 449.20 million USD (p-value= 0.03) and a median value of 112.33 million USD (p-value =0.01). Other years that show median significance at the 5% level are 2021 and 2023. The statistical tests confirm that significance in dollar-based measures is more likely to emerge in periods characterized by large deals or strong market conditions. In contrast, years with smaller transactions tend to display weaker or non-significant wealth effects despite positive average values.

When it comes to ADR the pattern does not change. While several years indicate positive average ADRs, the distribution remains highly skewed. In fact, median values are often much smaller than the mean. The only year that approaching conventional significance is 2015, with mean ADR of 397.07 million USD (p-value= 0.06), and median value of 201.35 million USD (p-value =0.03). This again suggests that a small number of large acquisitions contribute disproportionately to ADRs. Additionally, the CPD metric also shows substantial variation across years. As Table 17 reports, some years display extremely high values. For instance, 2018 represents the year that generated the most

gains for acquiring-firm shareholders with 126.67 cents per USD spent on transactions. Other relevant years are 2013 and 2015 with 34.11 and 34.38 cents respectively. However, these results also appear to be driven by single large transactions and confirm the dispersion observed in ADR measures.

The year-by-year analysis reveals that announcement outcomes fluctuate substantially over time. Particularly, periods of stronger economic activity or higher deal volume tend to display larger dollar-based wealth effects, whereas CAR remain relatively stable and close to zero. Furthermore, although some years reach statistically significant levels, the yearly evidence does not support strong conclusions, as the limited sample size constrains statistical inference.

5.3 CAR and dollar-value measures: subperiod evidence

Moreover, to examine whether acquisition performance varies across distinct phases of economic cycles, the sample is divided into three predefined subperiods. However, the empirical framework remains the same as in the full-sample and yearly analysis. The data presented refer to Figure 4 (CAR [-1,+1]), Figure 5 (ΔMCAP), Figure 6 (ADR), and Figure 7 (CPD).

Across the three subperiods considered, CAR [-1,+1] are relatively small in magnitude and do not display statistical significance. The only subperiod that shows median significance at the 10% level is the 2011-2019 period, in which the median value is 0.33%. Nonetheless, no other subperiods are statistically significant in the main event window. Similar results also apply to wider event windows, in which the only statistically significant subperiod remains 2011-2019. In particular, mean and median CAR [-2,+2] are positive, respectively 1.26% and 0.78%, and reach statistical significance at the 5% level. In addition, in the other wider event window [-5,+5], the same subperiod shows positive mean and median values and statistical significance in CAR (p-value = 0.09; p-value = 0.04). Although short-term market reactions may vary slightly across economic conditions, the subperiods analysis does not display strong evidence of systematic value creation or destruction at the aggregate level, when performance is measured in CAR.

In contrast to CAR, dollar-based measures report more pronounced differences across subperiods. The results obtained through ΔMCAP reveal larger gaps between mean and median values, especially in periods characterized by stronger deal activity and higher market valuations. Moreover, the influence of a limited number of large transactions

remains stable. Specifically, in terms of statistical significance, the most relevant subperiods are 2011-2019 and 2020-2024. Both subperiods exhibit positive values and reach a strong median significance at the 1% level (p-value < 0.01). The former subperiod presents a median value of 13 million USD and the latter subperiod reveals a median of 19.61 million USD. Statistical tests indicate that positive wealth effects in dollar terms are more likely to emerge in certain subperiods, although dispersion remains high. This pattern reinforces the idea that the economic magnitude of acquisition announcements depends strongly on firm size and transaction scale. ADR also fluctuate across subperiods and follow a similar trend to ΔMCAP. Mean values are often positive and median values remain considerably smaller. For instance, in 2002-2010 mean ADR equals -38.19 million USD, while the median value amounts to 8.91 million USD. Similar gaps are documented in 2011-2019 with mean and median value of respectively 389.73 and 3.40 million USD. Such findings are even more pronounced in 2020-2024 with mean and median values shifting from 66.15 to -0.09 million USD. Even so, none of these measures show statistical evidence different from zero. These results reveal how skewed the distribution of dollar-based measures might be, and it is often driven by large deals which generate the majority of wealth effects. Also, ADR appear concentrated in specific transactions rather than representing a uniform effect across time. The CPD metric reinforces this pattern. The 2011–2019 subperiod records the highest aggregate value creation, which equals approximately 25.47 cents generated per USD spent. On the other hand, the early period (2002–2010) shows slightly negative aggregate performance of -3.54 cents. The most recent period (2020–2024) remains positive but more moderate, with a total of 6.42 cents per USD.

Considered jointly, the full sample, yearly, and subperiods evidence show that CAR remain relatively stable across different economic phases, whereas dollar-based wealth measures fluctuate more strongly. However, the overall empirical evidence does not provide consistent statistical support for systematic positive announcement performance.

5.4 Crisis and non-crisis periods: comparative results

This section assesses whether acquiring-firm announcement performance deteriorates during crisis periods relative to non-crisis market conditions. The analysis considers two crisis windows (2007-2009 and 2020-2022) and compares announcement outcomes with the remaining observations classified as non-crisis deals. All data referenced in this

section are reported in Table 6 (descriptive comparison) and Table 7 (Welch t-test and Mann-Whitney U test).

From a descriptive perspective, announcement outcomes during crisis periods do not show a clear deterioration relative to non-crisis years. For instance, the average CAR [-1,+1] during the 2020-2022 period equals 0.08%, which is lower than the average of 0.77% observed in calmer periods. However, both values remain close to zero. Median values also display modest differences, with values respectively of 0.34% for less turbulent years and -0.17% for the 2020-2022 period. Nonetheless, the market reactions during crisis periods are not markedly weaker in magnitude, and a similar pattern in percentage terms emerges across wider event windows. When the focus shifts to dollar-based measures, the descriptive evidence becomes more heterogeneous, largely because large transactions also occur in crisis environments. ΔMCAP and ADR reveal noticeable dispersions across deals, yet they do not show a consistent downward pattern. Specifically, the 2020–2022 period presents positive dollar-based performance that is not uniformly weaker than those generated by those identified as non-crisis, both in mean and median values. The 2007–2009 crisis period displays more volatile values, but the extremely limited number of observations (N = 5) reduces the reliability of descriptive comparisons and, especially, inference. As a consequence, differences observed in this early crisis period should be interpreted with caution. Overall, descriptive statistics indicate only minor differences between crisis and non-crisis announcement performance, not only in CAR but also in dollar-based metrics. Using the Welch two-sample t-test, such differences between periods, assessed across all the measures considered, are not statistically significant. For CAR [-1,+1], the comparison between non-crisis deals and the 2020–2022 crisis period yields a p-value of 0.49. These results suggest no significant difference in average announcement performance, also concerning wider event windows. For ΔMCAP and ADR measures, similar conclusions are documented as the p-values remain well above conventional significance thresholds. These findings indicate that mean wealth effects, whether expressed in percentage or dollar terms, do not systematically deteriorate during crisis periods. Using the non-parametric Mann–Whitney U tests to account for the skewed distribution of dollar-based variables, the results do not display statistically significant differences between groups. For CAR [-1,+1], the p-value equals 0.62 and similar non-significant results are observed for wider event windows as well as for dollar-based measures when comparing non-crisis deals to the 2020–2022 crisis period. The same conclusions apply to the other crisis period identified. In general,

the empirical findings do not support the hypothesis that acquiring-firm announcement performance appears to systematically deteriorate during crisis periods. Descriptive statistics show some variation across economic environments, particularly in dollar-based measures, yet neither Welch t-tests nor Mann–Whitney U tests provide statistical evidence of meaningful differences.

5.5 Cross-sectional regressions

This section presents the results of the cross-sectional regressions aimed at identifying which deal and acquirer characteristics are associated with announcement performance. The main regressions consider as dependent variables, for the full-sample analysis, CAR [-1,+1], ΔMCAP, and ADR. In addition, this section introduces the ESG-based regressions used to address the third research question, which examines whether stronger ESG characteristics are associated with more favorable announcement outcomes, measured through CAR [-1,+1], within the recent 2021–2024 subsample. All coefficients should therefore be interpreted as conditional associations rather than causal effects, and the following results are enclosed in Table 8 (baseline regressions), Table 9 (robustness windows), Table 10 (ESG z-score), and Table 11 (ESG dummy robustness).

Across the baseline specification, CAR [-1,+1] do not appear to be strongly associated with most firm-level characteristics. The coefficient on firm size remains generally small, and valuation measures, such as the book-to-market ratio, do not display a consistent relationship with short-term announcement performance. Relative deal size and the private target indicator show positive coefficients although they remain statistically insignificant. Therefore, none of the control variables reach conventional levels of statistical significance in the main CAR [-1,+1] regression. However, using wider windows in the robustness regressions, firm size (ln (MVA)) and the private target indicator become statistically significant at the 5% level only on CAR [-5,+5].

Turning to dollar-based outcomes, the estimated coefficients are larger in magnitude, which reflects the scale of the dependent variables. Relative deal size and firm size display positive coefficients as well as the private target and the stock payment indicator. None of these regressors reach conventional levels of statistical significance in the ΔMCAP specification as these associations remain statistically weak. The results based on ADR follow a comparable trend to ΔMCAP. Even though the coefficients remain economically larger in magnitude compared to CAR regressions (e.g., relative deal size, firm size, and

target characteristics), they are statistically weak. Thus, the regression results on dollar-based outcomes display high dispersion across observations, which limits the precision of cross-sectional estimates.

On the other hand, the results of the ESG regression, which includes the standardized ESG Combined Score (ESG z-score) as a control variable alongside the same control variables, show some differences in the estimated associations relative to the baseline specification. Although the ESG z-score coefficient is negative, it does not reach statistical significance. Therefore, stronger ESG characteristics do not appear to be systematically associated with higher announcement-period abnormal returns within the recent subsample. In contrast, relative deal size shows a positive and highly statistically significant association ($\beta = 0.3767$***). Moreover, the private target indicator also remains positive and significant at conventional levels ($\beta = 0.0329$**). The same applies to firm size, which displays a smaller positive coefficient yet significant ($\beta = 0.0106$**). However, the book-to-market equity ratio remains statistically weak. Looking at the ESG robustness model, which replaces the ESG z-score with an ESG dummy variable that captures high-ESG firms (ESG combined score $\geq$ 50), the overall pattern remains unchanged. Specifically, the ESG dummy coefficient is not statistically significant, while relative deal size continues to display a strong positive association ($\beta = 0.3722$***). In addition, firm size becomes only weakly significant at the 10% level, and the private target indicator remains positive and statistically significant ($\beta = 0.0302$**). Therefore, the robustness specification yields similar results.

6. Discussion

This section aims not only at providing a comprehensive picture of acquiring-firm announcement performance but also interpreting the economic implications of the empirical results presented above. These considerations combine both percentage-based abnormal returns with dollar-valued wealth measures. It also aims to shed light on associations between deal and firm characteristics and announcement performance. Thus, throughout this section, all the regression coefficients are interpreted as conditional associations rather than causal effects, as deal characteristics and firm attributes may be endogenous and correlated with unobserved determinants of announcement performance. Starting from the first research question, the empirical evidence suggests that bidders' announcement performance measured through CAR [-1,+1] is modest on average. Across

the full sample, mean and median CAR remain close to zero, and are statistically insignificant, which points to the fact that short-window market reactions do not appear to provide strong evidence of systematic value creation in percentage terms. These findings are consistent with the idea that, in percentage terms, bidder announcement reactions are often small and not systematically positive across deals. However, only looking at CAR can be misleading when acquirers differ substantially in size. In this regard, the dollar-based measures provide an additional and economically relevant perspective, because they convert the market reaction into an absolute wealth change. In the full sample (2002–2024), both mean and median ΔMCAP are positive and statistically different from zero, while the distribution is highly skewed. This combination of results seems to be largely driven by firm scale and by a subset of larger transactions, rather than by uniform gains across all acquisitions. This interpretation is aligned with prior M&A evidence showing that wealth effects are better assessed in dollar terms when firm size varies widely across bidders. In particular, some researchers document that even small percentage reactions can translate into substantial dollar gains or losses for large acquirers, reinforcing the importance of scale when interpreting announcement performance (see Moeller et al. 2005). At the same time, the empirical evidence of this study does not support strong conclusions that acquisitions comprehensively generate positive bidder wealth at the announcement in a systematic way. ADR are also positive on average but do not reach conventional statistical significance and present substantially dispersed values. This is also in line with prior literature, which emphasizes that ADR are a relevant measure of shareholder wealth effects and that aggregation in dollars can reveal patterns that are not visible in percentage returns (see Malatesta 1983). The yearly and subperiod results appear to strengthen this interpretation. A small number of years show statistically detectable CAR effects, but these are not persistent across time, pointing to heterogeneity rather than a stable announcement-return pattern. On the other hand, aggregated dollar-based measures capture more visible fluctuations over time, emphasizing the role of deal size. In particular, in the entire sample, the CPD metric is positive (17.35 cents per USD spent on acquisitions) and varies meaningfully across subperiods. For instance, this measure turns slightly negative in the early years (−3.54 cents per USD in 2002–2010) and peaks in the mid sample (25.47 cents per USD in 2011–2019), before remaining positive but more moderate in the recent period (6.42 cents per USD in 2020–2024). This time variation supports a cautious interpretation of the results, as aggregate value creation is not constant across phases and appears sensitive to the

composition of deals and the presence of large transactions. Overall, these findings suggest that bidder announcement performance is better described as "highly dispersed" rather than uniformly value-creating or value-destroying. Specifically, CAR remain close to zero on average, whereas dollar-based measures highlight economically meaningful effects that are concentrated in specific periods and driven by scale.

Turning to the second research question, the comparative tests between crisis and non-crisis periods do not support a systematic deterioration in bidder announcement performance. Although descriptive differences emerge, especially in dollar-valued outcomes, neither Welch t-tests nor Mann–Whitney U tests indicate statistically significant changes in announcement performance between crisis and non-crisis periods. This consideration applies to both crisis periods identified and especially drawing conclusions concerning the 2007–2009 period appears difficult as the number of deals completed, which respects the sampling criteria, is limited. These results reveal that short-term market reactions may remain relatively stable even during turbulent economic environments, indicating that announcement reactions are not systematically amplified or penalized during crisis periods within this sample.

Shifting the attention to the cross-sectional regressions, the evidence seems to support some associations between firm and deal characteristics with announcement performance. Particularly, considering CAR [-1,+1], ΔMCAP, and ADR as dependent variables, the coefficients estimated do not exhibit significant associations even though they appear positive. On the other hand, in the ESG z-score regression, relative deal size displays the strongest association with CAR [-1,+1]. The estimated coefficient is 0.3767, which means that a 0.10 increase in relative deal size corresponds to approximately +3.77 percentage points in CAR [-1,+1], conditional on the other controls. Moreover, the private target dummy is positive and statistically significant and its coefficient of 0.0329 indicates that private-target acquisitions are associated with about +3.29 percentage points higher CAR [-1,+1] compared to subsidiary targets, holding other variables constant. Lastly, firm size (ln (MVA)) is also positively associated with CAR [-1,+1] and its coefficient equals 0.0106, which implies that a one-unit increase in ln (MVA) (approximately a doubling of firm size) is associated with about +1.06 percentage points in CAR [-1,+1], still conditional on the other controls. Nonetheless, the ESG z-score, which represents the main object of investigation of the third research question, shows a negative but statistically insignificant coefficient. Therefore, the empirical evidence suggests, within

this study design, that a high ESG Combined Score pre-deal, referred to the fiscal year end date prior to the announcement, does not seem to be significantly associated with higher CAR [-1,+1].

7. Robustness checks

Robustness analyses are conducted to verify whether the core results remain stable under alternative event windows and ESG specifications. The main robustness check regards CAR recomputed using wider event windows, specifically CAR [-2,+2] and CAR [-5,+5]. The general interpretation of descriptive statistical results stays unchanged, concerning not only the full sample, but also the yearly and subperiod evidence. The only minor descriptive results that deserve to be highlighted as they reached statistical significance are already reported in the empirical results section.

Focusing on the cross-sectional regressions that use CAR [-2,+2] and CAR [-5,+5] as dependent variables, the results obtained indicate that the overall interpretation does not materially change. Only a limited number of coefficients are significant in the largest event window. In particular, firm size (ln (MVA)) and the private target indicator become statistically significant at the 5% level only in the CAR [-5,+5] specification. These results suggest that some cross-sectional associations become statistically detectable when announcement reactions are measured over a slightly longer horizon. However, the general absence of strong and persistent associations remains consistent with the baseline CAR [-1,+1] results. Turning the attention to the ESG robustness check, the regression model is re-estimated using an ESG dummy variable that identifies high-ESG firms rather than the ESG z-score. This dummy still uses the ESG Combined Score obtained from Refinitiv Workspace as a reference but assigns the value of 1 to firms whose score is ≥ 50, and 0 otherwise. The findings confirm the same conclusion, indicating that stronger ESG characteristics pre-transaction do not appear to be systematically associated with higher short-window announcement returns within the recent subsample of 2021-2024. At the same time, relative deal size continues to display the strongest association with CAR [-1,+1] ($\beta \approx 0.3722$***), while the private target indicator remains positive and statistically significant at conventional levels ($\beta \approx 0.0302$**). Firm size becomes only weakly significant at the 10% level, while the overall pattern of associations remains broadly unchanged.

Broadly, robustness checks confirm that the main findings remain largely unchanged. The only notable difference emerges in the CAR [-5,+5] specification, where firm size and the private target indicator become statistically significant. These results suggest that some associations appear more clearly over slightly longer horizons. Nevertheless, the ESG conclusion also holds when using the dummy variable, indicating no robust association with short-term market reactions.

8. Limitations and future research

Considering the empirical design adopted in this study, several limitations should be acknowledged when interpreting the results.

The first and most relevant limitation concerns the relatively limited number of deals included in the final sample. The analysis relies on 225 valid observations. This sample size is smaller than that used in many large-scale M&A event studies in the prior literature, from which this investigation takes inspiration. Although the sample allows for descriptive and regression analyses, a larger dataset would increase statistical power and improve the reliability of cross-sectional inference. This issue becomes particularly relevant not only in the ESG subsample but also in the crisis versus non-crisis comparison, where the 2007–2009 subsample includes only 5 observations. As a consequence, statistical tests such as the Welch t-test and the Mann–Whitney U test should be interpreted with caution, as the limited number of deals reduces the statistical power to detect economically meaningful differences. A similar consideration applies to the yearly wealth effects reported in the analysis. Although some annual estimates appear statistically significant, the limited number of deals in several years may affect the reliability of statistical inference. In addition, no deals satisfying the sampling criteria were identified in 2004 and 2007. The second limitation relates to the composition of the sample, in which public-target deals are not present. This limitation may affect the generalizability of the results, especially when comparing findings with prior literature that often distinguishes strongly between public, private, and subsidiary acquisitions. Moreover, from a methodological perspective, abnormal returns are computed using the SPXTR value-weighted market index, which is a total return index with a broad sectoral composition. Although this benchmark is commonly adopted in empirical finance research, an equally weighted market index could capture more accurately the dynamics of small and mid-sized firms. Future studies could therefore explore whether using a CRSP equally weighted index leads to different abnormal return estimates. At the same

time, prior research shows that the main conclusions regarding bidder wealth effects are generally robust to alternative market benchmarks, suggesting that this choice is unlikely to alter the core findings (see Moeller et al. 2005). Another methodological limitation concerns the event-study design for acquirers that complete multiple deals over time. While event-windows are required to be non-overlapping, estimation windows may partially overlap for some acquirers who announce more than one acquisition within the [-205,-6] estimation period. In these cases, part of the return history used to estimate market model parameters may be shared across deals, which can introduce dependence across observations and should be considered when interpreting inference.

Another limitation regards data collection. Financial and deal information extracted from Refinitiv Workspace occasionally required manual adjustments, particularly with respect to fiscal year-end dates and ESG Combined Scores. Although these corrections were implemented carefully, small measurement inaccuracies may still affect some accounting-based variables, especially the market value of assets (MVA). In addition, the regression analysis relies primarily on OLS specifications for dollar-based outcomes such as ΔMCAP and ADR. These variables exhibit highly skewed distributions, and although the baseline models provide useful insights, other transformations of the dependent variables could offer a more robust representation of extreme values. Moreover, these dollar-based measures are mechanically related to firm size, and strongly influence the wealth changes observed in the analysis; as a consequence, the dollar-based results should be interpreted with caution, as they may partly capture scale effects rather than pure value creation. The scope of the analysis also represents an important limitation. The study focuses on short-term announcement performance, whereas the long-term integration phase of acquisitions may significantly influence realized shareholder value. Future research could extend the framework by examining long-run performance measures or post-acquisition operating outcomes, in order to evaluate whether announcement reactions reflect subsequent synergy realization. Furthermore, the analysis considers only bidder-side announcement effects; thus, including target-firm returns could provide a more complete picture of wealth redistribution across transaction participants and help assess whether value creation differs between bidders and targets.

Looking ahead, several opportunities for future research emerge. The most impactful one concerns expanding the dataset through alternative databases such as SDC Platinum, which would increase deal coverage and improve comparability with prior M&A

literature. Moreover, future studies could focus on narrower subperiods rather than long multi-decade samples. The main reasons regard changing macroeconomic conditions, interest-rate regimes, and sectoral rotations that may influence acquisition activity and announcement reactions over time. Another relevant aspect is incorporating additional firm-level variables, such as Tobin's Q, operating cash flow, or other deal characteristics. These additions may help capture firm-related and deal-specific dimensions that are not fully reflected in the current specification. Finally, analyzing wider event windows could help evaluate potential information leakage or market anticipation effects prior to deal announcements.

Yet, these limitations do not invalidate the main empirical findings, but they point to the fact that the results should be interpreted as conditional on the sample, methodology, and data choices adopted in this study.

9. Conclusion

This thesis examines acquiring-firm announcement performance in U.S. domestic acquisitions between 2002 and 2024 by combining percentage abnormal returns with real-dollar wealth measures. This analysis aims to provide a broader view of bidder performance around acquisition announcements, to examine whether wealth effects change during crisis periods, and to evaluate whether deal-specific conditions and ESG characteristics are associated with announcement outcomes.

The first research question investigates whether acquisitions create shareholder wealth when measured through announcement-period CAR and dollar-based metrics. The empirical evidence shows that, consistent with the initial hypothesis, short-window CAR remain small and statistically indistinguishable from zero on average. Therefore, announcement reactions measured in percentage terms do not seem to provide strong evidence of systematic value creation or destruction. However, dollar-based metrics provide a more nuanced picture. ΔMCAP are positive and statistically significant in the full sample, while abnormal dollar returns remain positive but statistically weak. These findings suggest that wealth effects are highly dispersed and largely driven by firm size and large transactions, rather than by uniform gains across all deals.

The second research question evaluates whether bidders' announcement performance deteriorates during crisis periods. Contrary to the initial expectation, the empirical analysis does not provide statistical evidence that acquisitions announced in crisis

environments generate weaker outcomes. Both Welch t-tests and Mann–Whitney U tests indicate that announcement reactions remain broadly similar between crisis and non-crisis periods. Although descriptive differences appear in dollar-based measures, these do not translate into statistically meaningful changes in average and median performance. Therefore, these results do not support a systematic deterioration in bidder announcement performance during crisis periods.

The third research question focuses on whether stronger ESG characteristics pre-deal, measured with the ESG Combined Score, are associated with more favorable short-term announcement outcomes within the 2021–2024 subsample. The empirical results do not provide statistical support for this hypothesis, as the ESG z-score and the alternative ESG dummy specification display an insignificant association with CAR [−1,+1]. Instead, cross-sectional regressions show that deal-level characteristics, particularly relative deal size, private target status, and firm size, show stronger associations with announcement returns than ESG measures. These findings point to the fact that transaction-specific factors remain more relevant determinants of short-window announcement performance within this empirical setting.

From a comprehensive perspective, the findings suggest that bidder announcement performance is best described as heterogeneous and highly dispersed, rather than consistently value-creating or value-destroying. CAR remain modest on average, while dollar-based measures highlight economically meaningful wealth changes. Lastly, this study shows that such performance is influenced more by deal structure and firm scale than by broader sustainability metrics in the short run. By jointly considering crisis comparisons, ESG analysis, and dollar-valued measures, this thesis provides updated evidence on bidder announcement performance and contributes to the discussion on how acquisition value effects should be interpreted in modern M&A markets.

Bibliography

Alexandridis, G., Antypas, N. and Travlos, N.G. (2017) ‘Value creation from M&As: New evidence’, *Journal of Corporate Finance*, 45, pp. 632–650.

Andrade, G., Mitchell, M. and Stafford, E. (2001) ‘New evidence and perspectives on mergers’, *Journal of Economic Perspectives*, 15(2), pp. 103–120.

Ashley, J.W. (1962) ‘Stock prices and changes in earnings and dividends: Some empirical results’, *Journal of Political Economy*, 70(1), pp. 82–85.

Ball, R. and Brown, P. (1968) ‘An empirical evaluation of accounting income numbers’, *Journal of Accounting Research*, 6(2), pp. 159–178.

Barber, B.M. and Lyon, J.D. (1997) ‘Detecting long-run abnormal stock returns: The empirical power and specification of test statistics’, *Journal of Financial Economics*, 43(3), pp. 341–372.

Barker, C.A. (1956) ‘Effective stock splits’, *Harvard Business Review*, 34(1), pp. 101–106.

Barker, C.A. (1957) ‘Stock splits in a bull market’, *Harvard Business Review*, 35(3), pp. 72–79.

Barker, C.A. (1958) ‘Evaluation of stock dividends’, *Harvard Business Review*, 36(4), pp. 99–114.

Boehmer, E., Musumeci, J. and Poulsen, A.B. (1991) ‘Event-study methodology under conditions of event-induced variance’, *Journal of Financial Economics*, 30(2), pp. 253–272.

Bradley, M. and Sundaram, A.K. (2004) ‘Do acquisitions drive performance or does performance drive acquisitions?’, *Journal of Corporate Finance*, 10(4), pp. 617–643.

Brav, A. (2000) ‘Inference in long-horizon event studies: A Bayesian approach with application to initial public offerings’, *Journal of Finance*, 55(5), pp. 1979–2016.

Brown, S.J. and Warner, J.B. (1980) ‘Measuring security price performance’, *Journal of Financial Economics*, 8(3), pp. 205–258.

Brown, S.J. and Warner, J.B. (1985) ‘Using daily stock returns: The case of event studies’, *Journal of Financial Economics*, 14(1), pp. 3–31.

Corrado, C.J. (1989) ‘A nonparametric test for abnormal security-price performance in event studies’, *Journal of Financial Economics*, 23(2), pp. 385–395.

Dolley, J.C. (1933) ‘Characteristics and procedure of common stock split-ups’, *Harvard Business Review*, 11(3), pp. 316–326.

Eckbo, B.E. and Thorburn, K.S. (2000) ‘Gains to bidder firms revisited: Domestic and foreign acquisitions in Canada’, *Journal of Financial and Quantitative Analysis*, 35(1), pp. 1–25.

Faccio, M., McConnell, J.J. and Stolin, D. (2006) ‘Returns to acquirers of listed and unlisted targets’, *Journal of Financial and Quantitative Analysis*, 41(1), pp. 197–220.

Fama, E.F. (1970) ‘Efficient capital markets: A review of theory and empirical work’, *Journal of Finance*, 25(2), pp. 383–417.

Fama, E.F. (1998) ‘Market efficiency, long-term returns, and behavioral finance’, *Journal of Financial Economics*, 49(3), pp. 283–306.

Fama, E.F., Fisher, L., Jensen, M.C. and Roll, R. (1969) ‘The adjustment of stock prices to new information’, *International Economic Review*, 10(1), pp. 1–21.

Fich, E.M., Nguyen, T. and Officer, M.S. (2018) ‘Large wealth creation in mergers and acquisitions’, *Financial Management*, 47(4), pp. 953–991.

Fuller, K., Netter, J.M. and Stegemoller, M. (2002) ‘What do returns to acquiring firms tell us? Evidence from firms that make many acquisitions’, *Journal of Finance*, 57(4), pp. 1763–1793.

Hussain, T., Tunyi, A.A. and Agyemang, J. (2024) ‘Corporate governance transfers: The case of mergers and acquisitions’, *International Journal of Disclosure and Governance*, 21, pp. 543–567.

Jensen, M.C. (2004) ‘The agency costs of overvalued equity and the current state of corporate finance’, *European Financial Management*, 10(4), pp. 549–565.

Jensen, M.C. and Ruback, R.S. (1983) ‘The market for corporate control: The scientific evidence’, *Journal of Financial Economics*, 11(1–4), pp. 5–50.

Kothari, S.P. and Warner, J.B. (1997) ‘Measuring long-horizon security price performance’, *Journal of Financial Economics*, 43(3), pp. 301–339.

Loughran, T. and Vijh, A.M. (1997) ‘Do long-term shareholders benefit from corporate acquisitions?’, *Journal of Finance*, 52(5), pp. 1765–1790.

MacKinlay, A.C. (1997) ‘Event studies in economics and finance’, *Journal of Economic Literature*, 35(1), pp. 13–39.

Malatesta, P.H. (1983) ‘The wealth effect of merger activity and the objective functions of merging firms’, *Journal of Financial Economics*, 11(1–4), pp. 155–181.

Malatesta, P.H. and Thompson, R. (1985) ‘Partially anticipated events: A model of stock price reactions with an application to corporate acquisitions’, *Journal of Financial Economics*, 14(2), pp. 237–250.

Mitchell, M.L. and Stafford, E. (2000) ‘Managerial decisions and long-term stock price performance’, *Journal of Business*, 73(3), pp. 287–329.

Moeller, S.B., Schlingemann, F.P. and Stulz, R.M. (2004) ‘Firm size and the gains from acquisitions’, *Journal of Financial Economics*, 73(2), pp. 201–228.

Moeller, S.B., Schlingemann, F.P. and Stulz, R.M. (2005) ‘Wealth destruction on a massive scale? A study of acquiring-firm returns in the recent merger wave’, *Journal of Finance*, 60(2), pp. 757–782.

Myers, J.H. and Bakay, A.J. (1948) ‘Influence of stock split-ups on market price’, *Harvard Business Review*, 26(2), pp. 251–255.

Rau, P.R. and Vermaelen, T. (1998) ‘Glamour, value and the post-acquisition performance of acquiring firms’, *Journal of Financial Economics*, 49(2), pp. 223–253.

Roll, R. (1986) ‘The hubris hypothesis of corporate takeovers’, *Journal of Business*, 59(2), pp. 197–216.

Shleifer, A. and Vishny, R.W. (2003) ‘Stock market driven acquisitions’, *Journal of Financial Economics*, 70(3), pp. 295–311.

Tampakoudis, I., Noulas, A., Kiosses, N. and Drogalas, G. (2021) ‘The effect of ESG on value creation from mergers and acquisitions: What changed during the COVID-19 pandemic?’, *Corporate Governance: The International Journal of Business in Society*, 21(6), pp. 1117–1141.

Tang, N., Xu, X., Hsu, Y.-T. and Lin, C.-Y. (2024) ‘The impact of ESG distance on mergers and acquisitions’, *International Review of Financial Analysis*, 96, 103677.

Travlos, N.G. (1987) ‘Corporate takeover bids, methods of payment, and bidding firms’ stock returns’, *Journal of Finance*, 42(4), pp. 943–963.

Tunyi, A.A. (2021) ‘Revisiting acquirer returns: Evidence from unanticipated deals’, *Journal of Corporate Finance*, 66(3), 101789.

Appendix

Figure 1. Mean and median CAR by event window (Full sample)

CAR are cumulative abnormal returns computed using the market model. Values are reported in percentage (%).

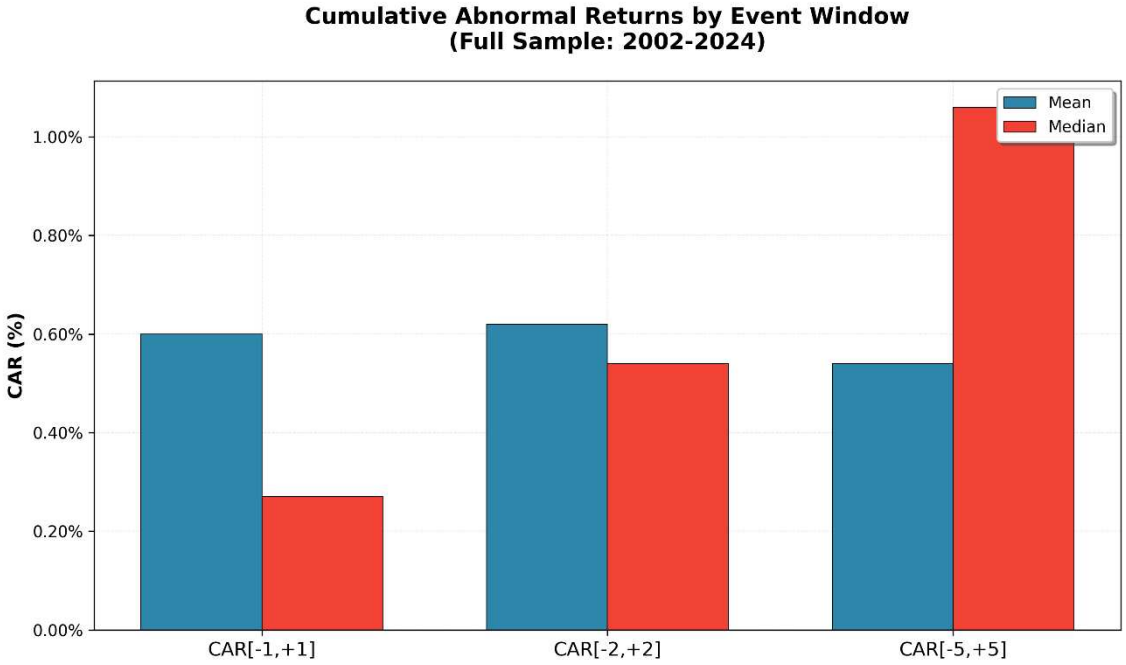

Figure 2. Mean and median ΔMCAP and ADR (Full sample)

ΔMCAP represents the raw change in market capitalization between trading day −2 and +1 around the announcement, using closing prices. ADR denotes abnormal dollar returns computed using CAR [-1,+1]. Monetary values are expressed in constant 2024 USD millions.

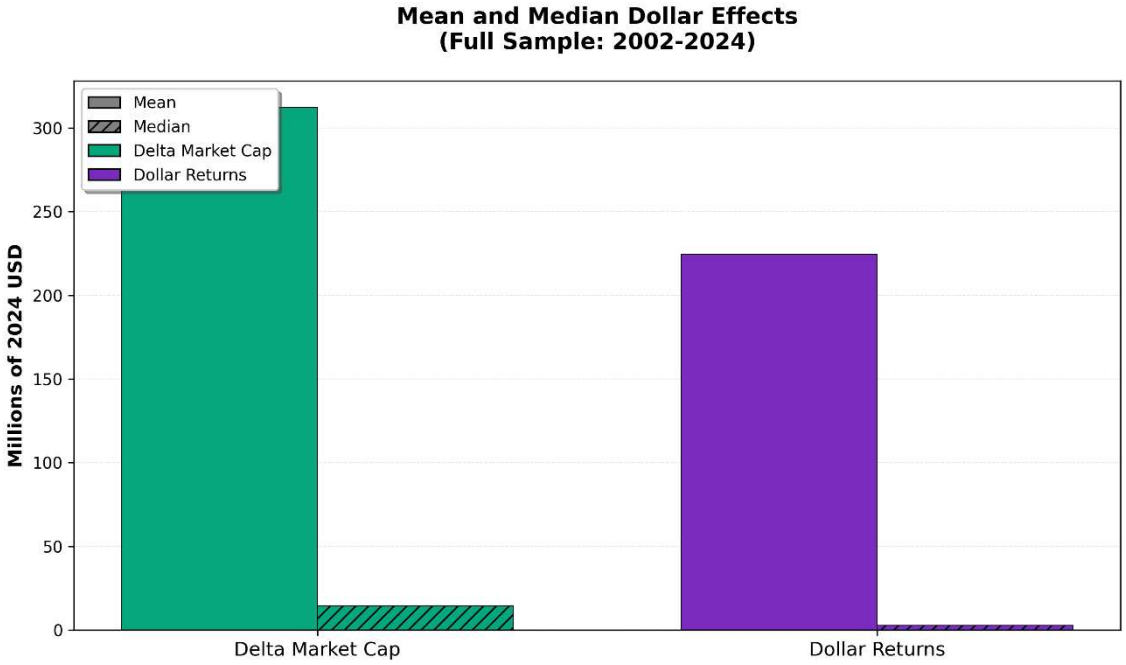

Figure 3. Distribution of announcement ΔMCAP (Full sample)

ΔMCAP represents the raw change in market capitalization between trading day −2 and day +1 around the announcement, using closing prices. Monetary values are expressed in constant 2024 USD millions.

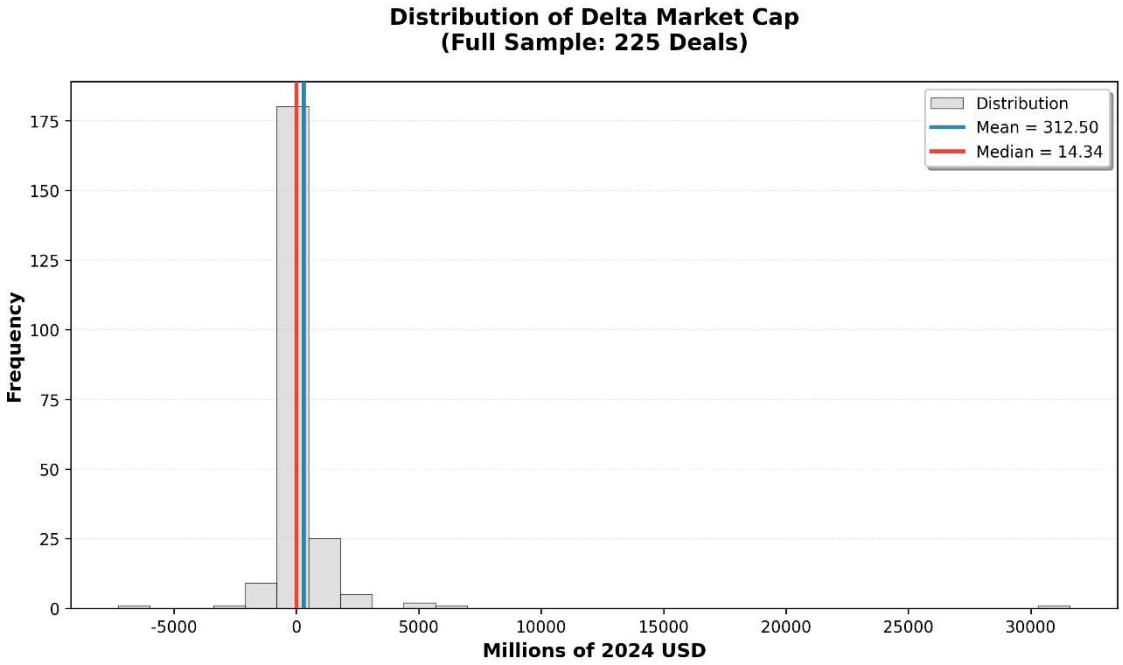

Figure 4. Mean and median CAR [-1,+1] by subperiod

CAR are cumulative abnormal returns computed using the market model. Values are reported in percentage (%).

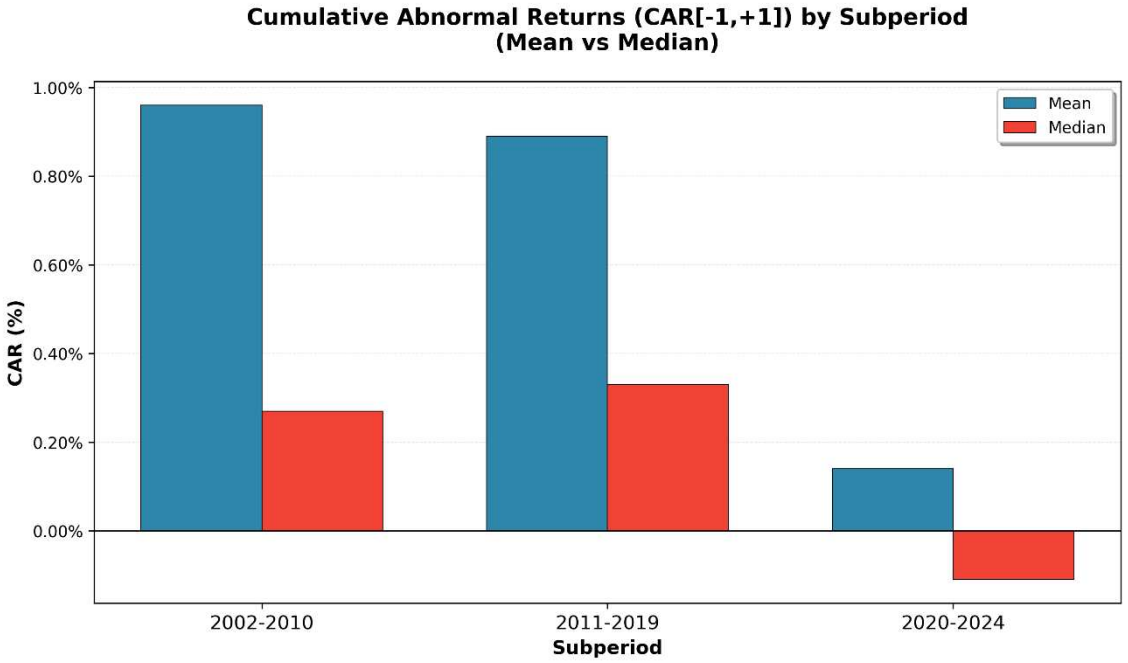

Figure 5. Mean and median ΔMCAP by subperiod

ΔMCAP represents the raw change in market capitalization between trading day −2 and day +1 around the announcement, using closing prices. Monetary values are expressed in constant 2024 USD millions.

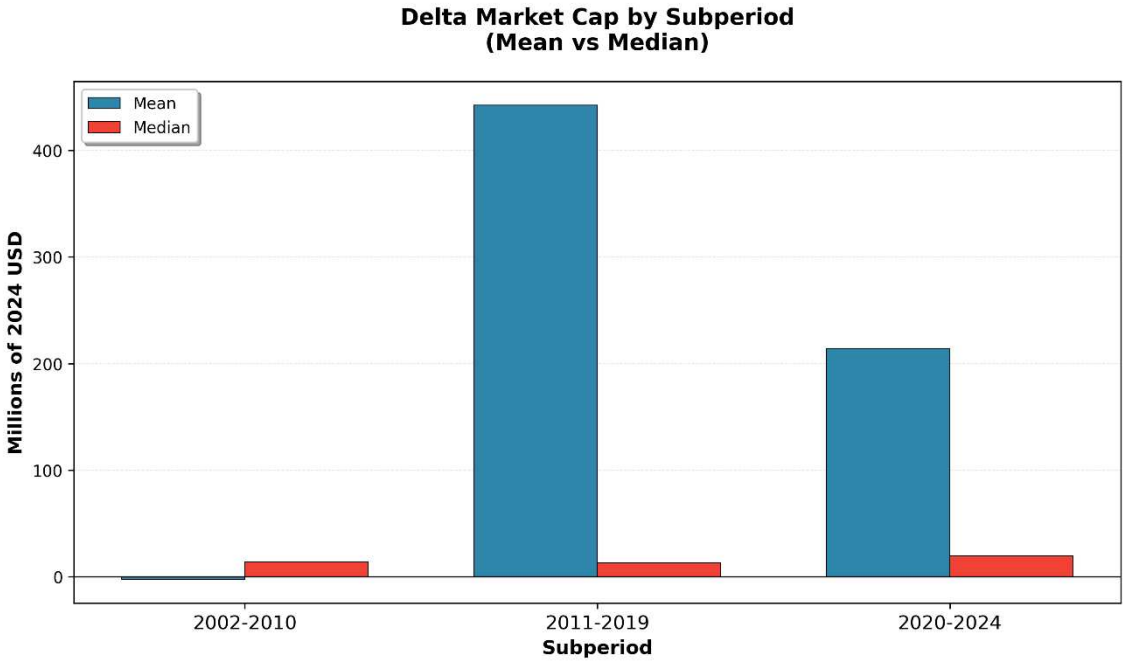

Figure 6. Mean and median ADR by subperiod

ADR denotes abnormal dollar returns computed using CAR [-1,+1]. Monetary values are expressed in constant 2024 USD millions.

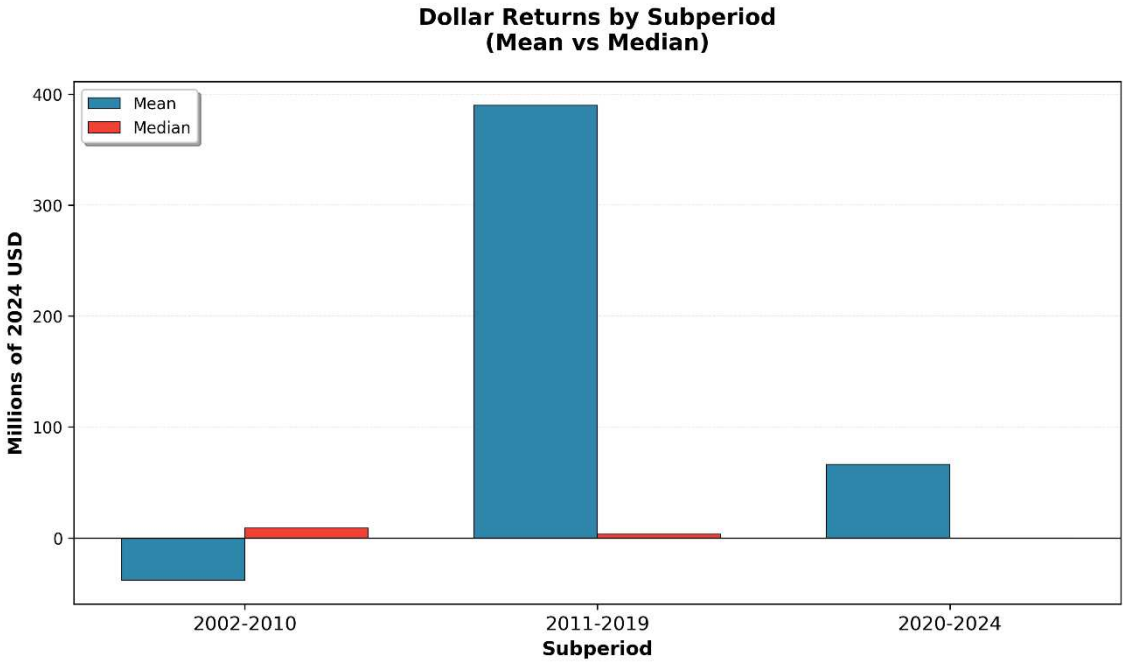

Figure 7. Cents-per-dollar (CPD) across sample periods

CPD measures the aggregate abnormal dollar return generated per dollar spent on acquisitions within each sample period. CPD is expressed in cents per dollar of acquisition spending (constant 2024 USD).

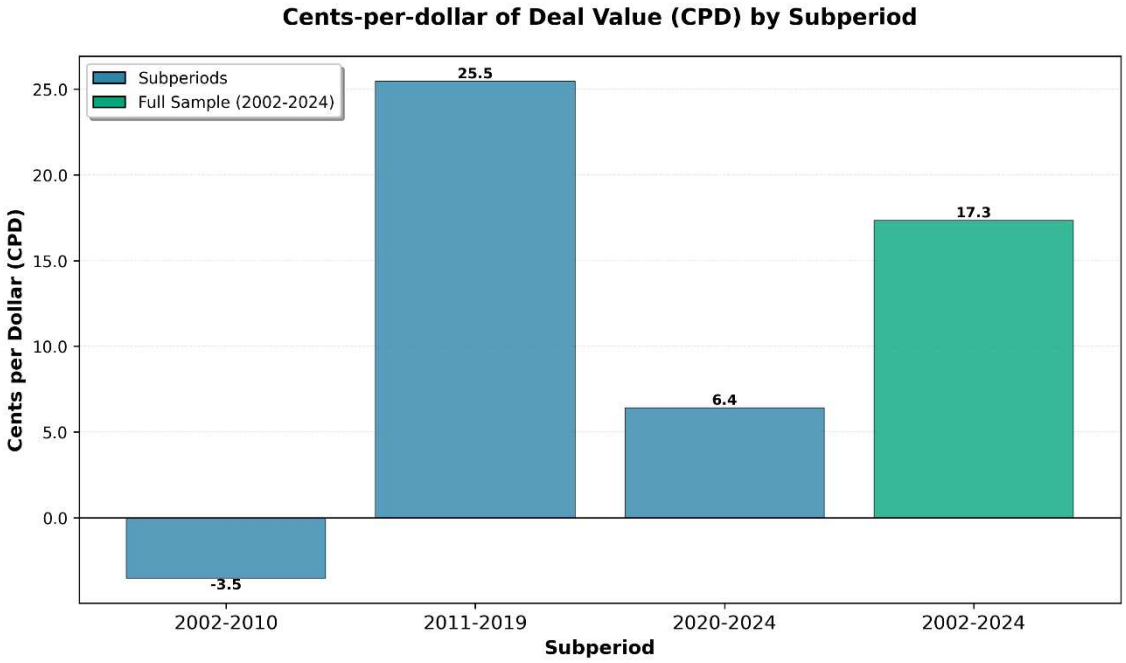

Figure 8. Mean and median CAR [-1,+1] in crisis and non-crisis periods

CAR are cumulative abnormal returns computed using the market model. Values refer to the comparison between the crisis period 2020-2022 and the other deals in the sample, identified as calm. CAR are reported in percentage (%).

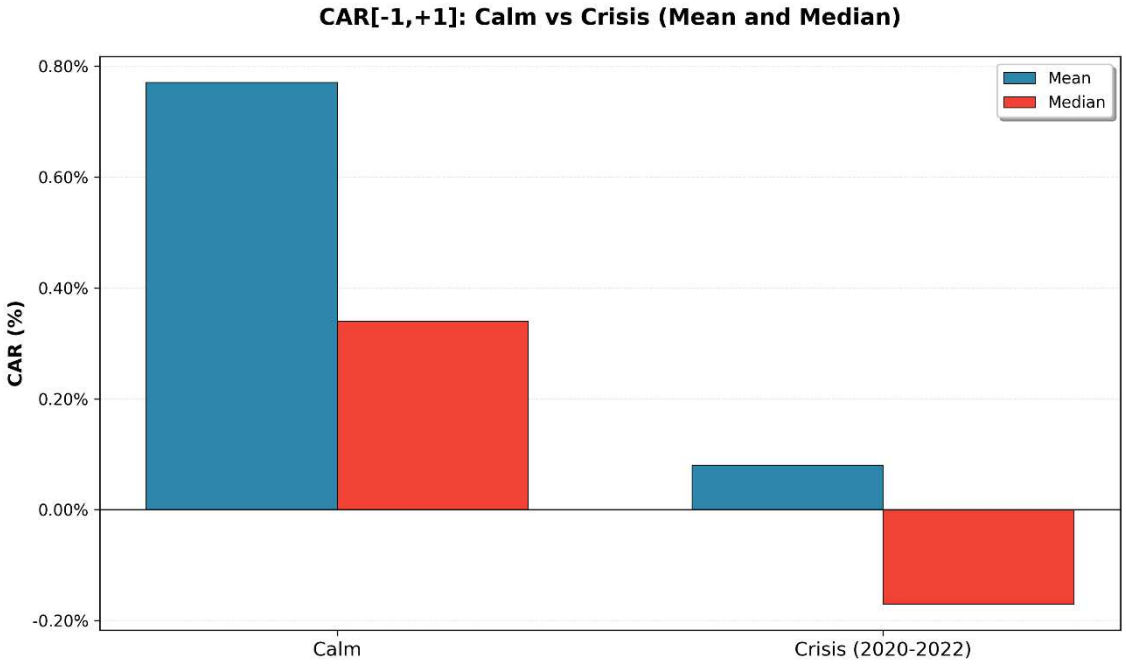

Figure 9. Mean and median ΔMCAP in crisis and non-crisis periods

ΔMCAP represents the raw change in market capitalization between trading day −2 and day +1 around the announcement, using closing prices. Values refer to the comparison between the crisis period 2020-2022 and the other deals in the sample, identified as calm. Monetary values are expressed in constant 2024 USD millions.

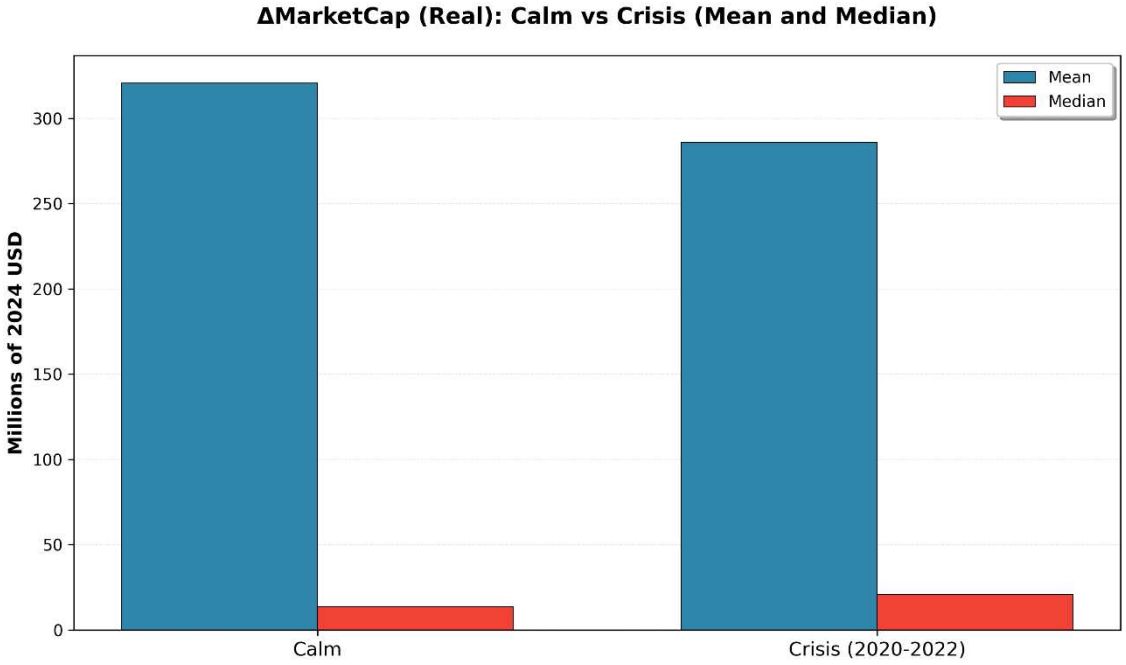

Figure 10. Mean and median ADR in crisis and non-crisis periods

ADR denotes abnormal dollar returns computed using CAR [-1,+1]. Values refer to the comparison between the crisis period 2020-2022 and the other deals in the sample, identified as calm. Monetary values are expressed in constant 2024 USD millions.

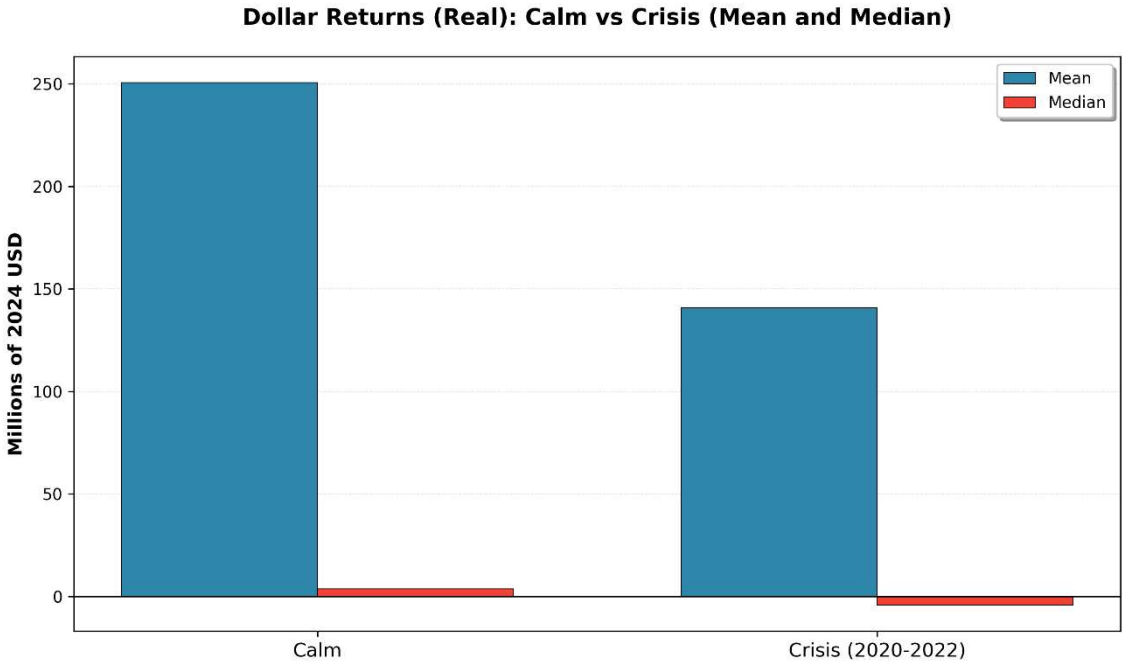

Figure 11. Distribution of ESG Combined Scores (2021–2024 subsample)

ESG Combined Score data are obtained from Refinitiv and refer to the most recently available score prior to the announcement date. The ESG combined score ranges from 0 to 100 and accounts for environmental, social, and governance characteristics.

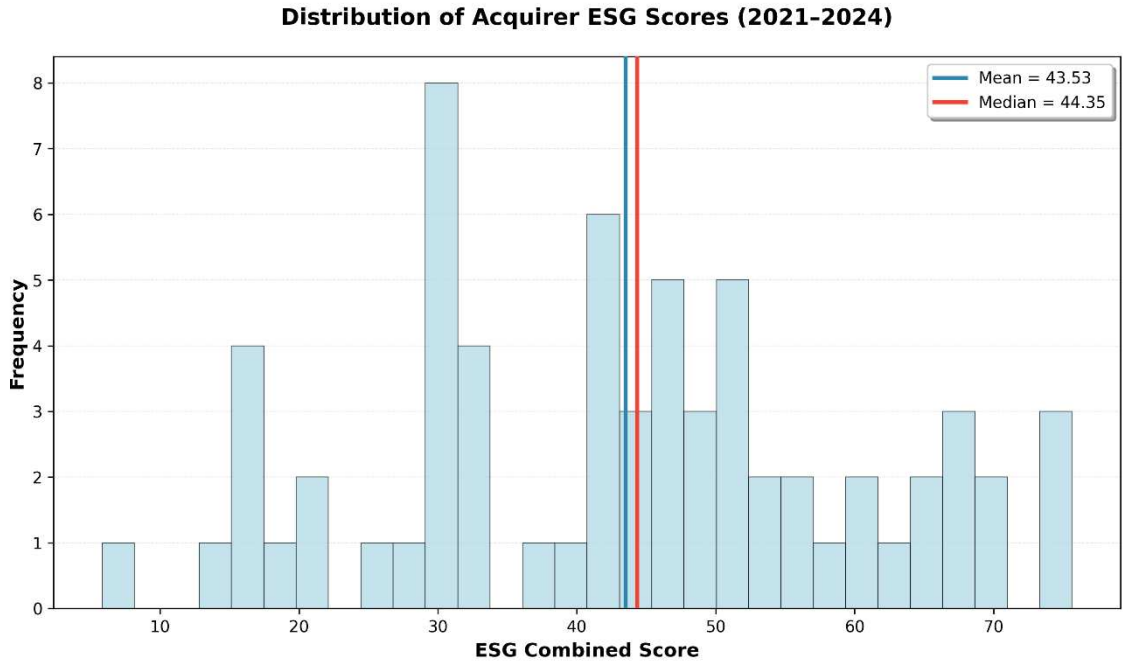

Table 1. Firm and deal characteristics: full sample and subperiods

Summary statistics are reported as mean and median values across the full sample and subperiods.

Category	Variable	Full Sample	2002-2010	2011-2019	2020-2024
Full Sample	**N**	225	21	117	87
Firm & Deal Size	**ln(MVA) - Mean**	8.48	8.01	8.48	8.61
Firm & Deal Size	**ln(MVA) - Median**	8.57	7.66	8.42	8.69
Firm & Deal Size	**B/M - Mean**	0.53	0.60	0.55	0.49
Firm & Deal Size	**B/M - Median**	0.39	0.58	0.43	0.36
Firm & Deal Size	**Relative Deal Size - Mean**	0.10	0.12	0.11	0.08
Firm & Deal Size	**Relative Deal Size - Median**	0.05	0.07	0.06	0.03
Target Status	**% Private targets**	44.00%	28.57%	41.88%	50.57%
Target Status	**% Subsidiary targets**	56.00%	71.43%	58.12%	49.43%
Payment Method	**% Stock-only or Stock-and-cash payment**	16.44%	9.52%	18.80%	14.94%
Payment Method	**% Cash-only payment**	83.56%	90.48%	81.20%	85.06%

Table 2. TRBC sector composition: full sample

The table reports the distribution of acquisitions across TRBC economic sectors in the full sample.

TRBC_Sector	N_deals	Percentage (%)
Industrials	48	21.33
Real Estate	45	20.00
Technology	33	14.67
Consumer Cyclicals	22	9.78
Healthcare	17	7.56
Financials	15	6.67
Basic Materials	15	6.67
Energy	12	5.33
Consumer Non-Cyclicals	12	5.33
Other	6	2.67

Table 3. TRBC sector composition: 2002-2010 subsample

The table reports the distribution of acquisitions across TRBC economic sectors in the 2002–2010 subsample.

TRBC_Sector	N_deals	Percentage (%)
Industrials	7	33.33
Basic Materials	3	14.28
Real Estate	3	14.28
Financials	2	9.52
Healthcare	2	9.52
Consumer Cyclicals	1	4.76
Technology	1	4.76
Energy	1	4.76
Other	1	4.76

Table 4. TRBC sector composition: 2011-2019 subsample

The table reports the distribution of acquisitions across TRBC economic sectors in the 2011–2019 subsample.

TRBC_Sector	N_deals	Percentage (%)
Real Estate	28	23.93
Industrials	22	18.80
Technology	16	13.67
Consumer Cyclicals	12	10.25
Financials	10	8.54
Healthcare	9	7.69
Consumer Non-Cyclicals	8	6.83
Basic Materials	5	4.27
Energy	4	3.41
Other	3	2.56

Table 5. TRBC sector composition: 2020-2024 subsample

The table reports the distribution of acquisitions across TRBC economic sectors in the 2020–2024 subsample.

TRBC_Sector	N_deals	Percentage (%)
Industrials	19	21.83
Technology	16	18.39
Real Estate	14	16.09
Consumer Cyclicals	9	10.34
Energy	7	8.04
Basic Materials	7	8.04
Healthcare	6	6.89
Consumer Non-Cyclicals	4	4.59
Financials	3	3.44
Other	2	2.29

Table 6. CAR and wealth effects: crisis and non-crisis periods

The table reports mean and median announcement outcomes in crisis and non-crisis periods. Announcement outcomes refer to the comparison between the crisis period 2020-2022 and the other deals in the sample, identified as calm. Crisis period 2020-2022 entails 53 deals, while calm 172. CAR are cumulative abnormal returns computed using the market model. ΔMCAP represents the raw change in market capitalization between trading day −2 and day +1 around the announcement, using closing prices. ADR denotes abnormal dollar returns computed using CAR [-1,+1]. CAR are reported in decimal form. Monetary values are expressed in constant 2024 USD millions.

Variable	Mean_Calm	Mean_Crisis	Median_Calm	Median_Crisis
CAR[-1,+1]	0.0077	0.0008	0.0034	-0.0017
CAR[-2,+2]	0.0082	-0.0003	0.0074	0.0043
CAR[-5,+5]	0.0096	-0.0082	0.0127	0.0016
Delta Market Cap	320.73	285.78	135.709	209.024
Abnormal Dollar Returns	250.50	140.87	36.403	-40.731

Table 7. Welch t-test and Mann-Whitney U test: crisis and non-crisis periods

The table reports Welch two-sample t-tests and Mann–Whitney U tests comparing announcement outcomes between crisis (2020-2022) and non-crisis periods. *** p<0.01, ** p<0.05, * p<0.10.

Variable	Welch_pvalue	MannWhitney_pvalue
CAR[-1,+1]	0.4986	0.6268
CAR[-2,+2]	0.5081	0.5568
CAR[-5,+5]	0.2994	0.5217
Delta Market Cap	0.8913	0.5846
Abnormal Dollar Returns	0.6619	0.4984

Table 8. Cross-sectional regressions: CAR, ΔMCAP, and ADR

The dependent variables are CAR [-1,+1], ΔMCAP, and ADR. Robust standard errors clustered at the acquirer level (RIC) are reported in parentheses. Year and industry fixed effects are included. *** p<0.01, ** p<0.05, * p<0.10.

Variable	CAR[-1,+1]	Delta Market Cap	Abnormal Dollar Returns
Ln_mva_real	0.002 (0.003)	497.194 (320.087)	455.052 (329.737)
Btm	0.003 (0.011)	345.231 (380.972)	336.283 (386.087)
Rel_deal_size_real	0.062 (0.054)	585.935 (765.820)	491.700 (695.911)
Target_private_dummy	0.002 (0.011)	832.958 (699.034)	949.266 (718.554)
Stock_payment_dummy	-0.006 (0.013)	1110.393 (815.647)	1050.141 (833.121)
N_deals	225	225	225
R^2	0.1427	0.1938	0.1751
Year fixed effects	Yes	Yes	Yes
Sector fixed effects	Yes	Yes	Yes
SE_clustered	Yes (RIC)	Yes (RIC)	Yes (RIC)

Table 9. Robustness regressions: alternative CAR windows

The dependent variables are CAR [-2,+2] and CAR [-5,+5]. Robust standard errors clustered at the acquirer level (RIC) are reported in parentheses. Year and industry fixed effects are included. *** p<0.01, ** p<0.05, * p<0.10.

Variable	CAR[-5,+5]	CAR[-2,+2]
Ln_mva_real	0.008** (0.004)	0.004 (0.003)
Btm	0.026 (0.017)	0.023 (0.014)
Rel_deal_size_real	0.033 (0.068)	0.056 (0.053)
Target_private_dummy	0.034** (0.017)	0.008 (0.014)
Stock_payment_dummy	-0.003 (0.020)	-0.011 (0.017)
N_deals	225	225
R^2	0.1733	0.1460
Year fixed effects	Yes	Yes
Sector fixed effects	Yes	Yes
SE_clustered	Yes (RIC)	Yes (RIC)

Table 10. ESG z-score regressions on CAR [-1,+1]

The dependent variable is CAR [-1,+1]. Robust standard errors clustered at the acquirer level (RIC) are reported in parentheses. Year fixed effects are included. *** p<0.01, ** p<0.05, * p<0.10.

Variable	CAR [-1,+1]
Ln_mva_real	0.0106** (0.0052)
Btm	0.0017 (0.0152)
Rel_deal_size_real	0.3767*** (0.1108)
Target_private_dummy	0.0329** (0.0155)
Stock_payment_dummy	-0.0333 (0.0261)
Esg_combined_score_z	-0.0071 (0.0059)
N_deals	65
R^2	0.2736
Year fixed effects	Yes
SE_clustered	Yes (RIC)

Table 11. Robustness check: ESG dummy regression on CAR [-1,+1]

The dependent variable is CAR [-1,+1]. Robust standard errors clustered at the acquirer level (RIC) are reported in parentheses. Year fixed effects are included. *** p<0.01, ** p<0.05, * p<0.10.

Variable	CAR [-1,+1]
Ln_mva_real	0.0097* (0.0053)
Btm	-0.0012 (0.0153)
Rel_deal_size_real	0.3722*** (0.1093)
Target_private_dummy	0.0302** (0.0152)
Stock_payment_dummy	-0.0318 (0.0255)
Esg_dummy	-0.0135 (0.0117)
N_deals	65
R^2	0.2739
Year fixed effects	Yes
SE_clustered	Yes (RIC)

Table 12. Yearly CAR [-1,+1] (Mean, median and significance)

The table reports yearly announcement outcomes measured through CAR [-1,+1]. CAR are reported in decimal form. The p-values in column t_pvalue refer to the one-sample t-test for the mean, whereas the p-values in column Wilcoxon_pvalue refer to the Wilcoxon signed-rank test for the median. Statistical significance levels are denoted by * for 10%, ** for 5%, and *** for 1%.

Variable	Period	N_deals	Mean	Median	t_pvalue	Wilcoxon_pvalue
CAR [-1,+1]	2002	1	0.0587	0.0587	N/A	1.00
CAR [-1,+1]	2003	2	-0.0065	-0.0065	0.6562	1.00
CAR [-1,+1]	2005	1	0.1332	0.1332	N/A	1.00
CAR [-1,+1]	2006	3	0.0311	0.0401	0.5858	0.7500
CAR [-1,+1]	2008	2	0.0435	0.0435	0.7694	1.00
CAR [-1,+1]	2009	3	-0.0191	-0.0058	0.8116	0.7500
CAR [-1,+1]	2010	9	-0.0112	0.0023	0.5845	1.00
CAR [-1,+1]	2011	7	-0.0509	-0.0248	0.1602	0.2188
CAR [-1,+1]	2012	13	0.0247	0.0114	0.2521	0.3396
CAR [-1,+1]	2013	16	0.0188	0.0019	0.0603*	0.1928
CAR [-1,+1]	2014	15	0.0064	0.0094	0.6862	0.3894
CAR [-1,+1]	2015	9	0.0498	0.0430	0.0457**	0.0391**
CAR [-1,+1]	2016	12	0.0071	0.0029	0.7316	0.6772
CAR [-1,+1]	2017	15	-0.0150	-0.0099	0.0994*	0.1205
CAR [-1,+1]	2018	19	0.0175	0.0139	0.1716	0.0955*
CAR [-1,+1]	2019	11	0.0034	-0.0006	0.7542	0.8984
CAR [-1,+1]	2020	15	-0.0030	0.0069	0.8903	0.9341
CAR [-1,+1]	2021	28	-0.0011	-0.0019	0.9179	0.8314
CAR [-1,+1]	2022	10	0.0118	-0.0141	0.5820	1.00
CAR [-1,+1]	2023	18	0.0107	0.0133	0.4181	0.4683
CAR [-1,+1]	2024	16	-0.0072	-0.0087	0.7030	0.4037

Table 13. Yearly ΔMCAP (Mean, median and significance)

The table reports yearly announcement outcomes measured through ΔMCAP. ΔMCAP represents the raw change in market capitalization between trading day −2 and day +1 around the announcement, using closing prices. Values are expressed in constant 2024 USD millions. The p-values in column t_pvalue refer to the one-sample t-test for the mean, whereas the p-values in column Wilcoxon_pvalue refer to the Wilcoxon signed-rank test for the median. Statistical significance levels are denoted by * for 10%, ** for 5%, and *** for 1%.

Variable	Period	N_deals	Mean	Median	t_pvalue	Wilcoxon_pvalue
Delta Market Capitalization	2002	1	4.45	4.45	N/A	1.00
Delta Market Capitalization	2003	2	-59.10	-59.09	0.5358	1.00
Delta Market Capitalization	2005	1	769.52	769.52	N/A	1.00
Delta Market Capitalization	2006	3	120.44	169.30	0.2694	0.5000
Delta Market Capitalization	2008	2	0.25	0.25	0.9887	1.00
Delta Market Capitalization	2009	3	60.39	28.31	0.3761	0.5000
Delta Market Capitalization	2010	9	-138.90	15.04	0.3474	0.9102
Delta Market Capitalization	2011	7	-24.69	-33.57	0.2910	0.4375
Delta Market Capitalization	2012	13	172.63	0.44	0.2380	0.4548
Delta Market Capitalization	2013	16	287.13	33.15	0.0338**	0.0131**
Delta Market Capitalization	2014	15	162.76	12.43	0.0639*	0.1070
Delta Market Capitalization	2015	9	449.20	112.33	0.0387**	0.0195**
Delta Market Capitalization	2016	12	57.45	86.57	0.6478	0.5693
Delta Market Capitalization	2017	15	-54.01	-9.11	0.6484	0.6387
Delta Market Capitalization	2018	19	1,676.25	12.81	0.3278	0.1688
Delta Market Capitalization	2019	11	623.00	7.05	0.1816	0.3652
Delta Market Capitalization	2020	15	371.58	4.62	0.4815	0.4212
Delta Market Capitalization	2021	28	257.65	52.74	0.0689*	0.0232**
Delta Market Capitalization	2022	10	235.83	5.84	0.3424	0.4316
Delta Market Capitalization	2023	18	173.43	21.39	0.1747	0.0268**
Delta Market Capitalization	2024	16	22.78	9.09	0.9704	0.7436

Table 14. Yearly ADR (Mean, median and significance)

The table reports yearly announcement outcomes measured through ADR. ADR denotes abnormal dollar returns computed using CAR [-1,+1]. Values are expressed in constant 2024 USD millions. The p-values in column t_pvalue refer to the one-sample t-test for the mean, whereas the p-values in column Wilcoxon_pvalue refer to the Wilcoxon signed-rank test for the median. Statistical significance levels are denoted by * for 10%, ** for 5%, and *** for 1%.

Variable	Period	N_deals	Mean	Median	t_pvalue	Wilcoxon_pvalue
Abnormal Dollar Return	2002	1	8.91	8.91	N/A	1.00
Abnormal Dollar Return	2003	2	-26.66	-26.66	0.5619	1.00
Abnormal Dollar Return	2005	1	744.13	744.13	N/A	1.00
Abnormal Dollar Return	2006	3	115.97	192.31	0.3040	0.5000
Abnormal Dollar Return	2008	2	1.12	1.12	0.9803	1.00
Abnormal Dollar Return	2009	3	-19.89	-33.52	0.5113	0.5000
Abnormal Dollar Return	2010	9	-199.13	9.89	0.2399	0.7344
Abnormal Dollar Return	2011	7	-51.48	-37.35	0.1958	0.2188
Abnormal Dollar Return	2012	13	197.58	11.46	0.2677	0.4973
Abnormal Dollar Return	2013	16	437.58	13.64	0.1142	0.2744
Abnormal Dollar Return	2014	15	97.72	8.40	0.2946	0.4212
Abnormal Dollar Return	2015	9	397.07	201.36	0.0615*	0.0391**
Abnormal Dollar Return	2016	12	-39.10	14.49	0.7357	0.9697
Abnormal Dollar Return	2017	15	-71.42	-13.79	0.5015	0.2293
Abnormal Dollar Return	2018	19	1,688.55	23.26	0.3318	0.1688
Abnormal Dollar Return	2019	11	73.45	-0.9	0.7469	0.8984
Abnormal Dollar Return	2020	15	104.41	24.92	0.8231	0.4887
Abnormal Dollar Return	2021	28	119.36	-11.06	0.2923	0.9375
Abnormal Dollar Return	2022	10	255.80	-17.15	0.4577	0.4922
Abnormal Dollar Return	2023	18	175.35	4.60	0.1801	0.1415
Abnormal Dollar Return	2024	16	-304.17	-70.92	0.6322	0.8999

Table 15. Yearly CAR [-2,+2] (Mean, median and significance)

The table reports yearly announcement outcomes measured through CAR [-2,+2]. CAR are reported in decimal form. The p-values in column t_pvalue refer to the one-sample t-test for the mean, whereas the p-values in column Wilcoxon_pvalue refer to the Wilcoxon signed-rank test for the median. Statistical significance levels are denoted by * for 10%, ** for 5%, and *** for 1%.

Variable	Period	N_deals	Mean	Median	t_pvalue	Wilcoxon_pvalue
CAR [-2,+2]	2002	1	-0.0078	-0.0078	N/A	1.00
CAR [-2,+2]	2003	2	0.0024	0.0024	0.8634	1.00
CAR [-2,+2]	2005	1	0.0705	0.0705	N/A	1.00
CAR [-2,+2]	2006	3	0.0414	0.0507	0.5717	0.7500
CAR [-2,+2]	2008	2	0.0247	0.0247	0.8853	1.00
CAR [-2,+2]	2009	3	-0.0263	0.0279	0.8009	1.00
CAR [-2,+2]	2010	9	-0.0395	-0.0320	0.1515	0.2031
CAR [-2,+2]	2011	7	-0.0430	-0.0417	0.3253	0.4688
CAR [-2,+2]	2012	13	0.0238	0.0080	0.3218	0.4548
CAR [-2,+2]	2013	16	0.0186	0.0080	0.0620*	0.1167
CAR [-2,+2]	2014	15	0.0221	0.0227	0.2149	0.1514
CAR [-2,+2]	2015	9	0.0622	0.0697	0.0200**	0.0195**
CAR [-2,+2]	2016	12	0.0038	0.0044	0.8605	0.7334
CAR [-2,+2]	2017	15	-0.0123	-0.0157	0.1862	0.1876
CAR [-2,+2]	2018	19	0.0260	0.0338	0.0727*	0.1134
CAR [-2,+2]	2019	11	-0.0067	-0.0088	0.7151	0.5771
CAR [-2,+2]	2020	15	-0.0188	-0.0113	0.4646	0.5245
CAR [-2,+2]	2021	28	0.0060	0.0046	0.6699	0.4380
CAR [-2,+2]	2022	10	0.0098	0.0014	0.7437	1.00
CAR [-2,+2]	2023	18	0.0188	0.0148	0.3566	0.2288
CAR [-2,+2]	2024	16	-0.0135	-0.0254	0.5342	0.2522

Table 16. Yearly CAR [-5,+5] (Mean, median and significance)

The table reports yearly announcement outcomes measured through CAR [-5,+5]. CAR are reported in decimal form. The p-values in column t_pvalue refer to the one-sample t-test for the mean, whereas the p-values in column Wilcoxon_pvalue refer to the Wilcoxon signed-rank test for the median. Statistical significance levels are denoted by * for 10%, ** for 5%, and *** for 1%.

Variable	Period	N_deals	Mean	Median	t_pvalue	Wilcoxon_pvalue
CAR [-5,+5]	2002	1	0.0179	0.0179	N/A	1.00
CAR [-5,+5]	2003	2	0.0248	0.0248	0.5789	1.00
CAR [-5,+5]	2005	1	0.1160	0.1160	N/A	1.00
CAR [-5,+5]	2006	3	0.0800	0.1466	0.3664	0.5000
CAR [-5,+5]	2008	2	0.0833	0.0833	0.3924	0.5000
CAR [-5,+5]	2009	3	-0.0971	-0.0423	0.4850	0.7500
CAR [-5,+5]	2010	9	-0.0377	-0.0775	0.1883	0.1641
CAR [-5,+5]	2011	7	-0.0329	0.0260	0.5622	0.8125
CAR [-5,+5]	2012	13	0.0211	0.0029	0.4333	0.5417
CAR [-5,+5]	2013	16	0.0120	-0.0057	0.5294	0.7057
CAR [-5,+5]	2014	15	0.0199	0.0252	0.2911	0.2769
CAR [-5,+5]	2015	9	0.0754	0.0702	0.0266**	0.0273**
CAR [-5,+5]	2016	12	0.0007	0.0120	0.9789	0.7910
CAR [-5,+5]	2017	15	-0.0220	-0.0004	0.2629	0.5614
CAR [-5,+5]	2018	19	0.0317	0.0096	0.0163**	0.0446**
CAR [-5,+5]	2019	11	-0.0016	0.0146	0.9389	0.8984
CAR [-5,+5]	2020	15	-0.0121	-0.0208	0.7441	1.00
CAR [-5,+5]	2021	28	-0.0131	0.0011	0.5465	0.9553
CAR [-5,+5]	2022	10	0.0112	0.0112	0.5670	0.6953
CAR [-5,+5]	2023	18	0.0257	0.0250	0.3568	0.4683
CAR [-5,+5]	2024	16	-0.0159	-0.0029	0.5863	0.4954

Table 17. Yearly aggregate ADR, total deal value, and CPD

The table reports yearly aggregate ADR, total deal value, and CPD. Total deal value refers to the total amount spent on acquisitions by year, excluding advisory fees and transaction-related expenses. Aggregate ADR and total deal value are expressed in constant 2024 USD millions, whereas CPD is expressed in cents per dollar of acquisition spending (constant 2024 USD).

Year	N_deals	Aggregate_dr_real	Total_deal_value_real	Cents_per_dollar
2002	**1**	8.91	6.10	146.16
2003	**2**	-53.33	680.10	-7.84
2005	**1**	744.13	13,075.24	5.69
2006	**3**	347.90	573.74	60.64
2008	**2**	2.24	143.64	1.56
2009	**3**	-59.67	383.63	-15.55
2010	**9**	-1,792.18	7,797.15	-22.98
2011	**7**	-360.37	842.34	-42.78
2012	**13**	2,568.56	12,098.40	21.23
2013	**16**	7,001.35	20,527.03	34.11
2014	**15**	1,465.82	9,122.60	16.07
2015	**9**	3,573.67	10,393.70	34.38
2016	**12**	-469.23	24,574.32	-1.91
2017	**15**	-1,071.25	42,323.44	-2.53
2018	**19**	32,082.42	25,327.54	126.67
2019	**11**	807.93	33,849.78	2.39
2020	**15**	1,566.17	15,970.13	9.81
2021	**28**	3,341.95	29,792.09	11.22
2022	**10**	2,558.04	8,928.06	28.65
2023	**18**	3,156.35	12,235.93	25.80
2024	**16**	-4,866.76	22,792.34	-21.35

Table 18. Subperiod aggregate ADR, total deal value and CPD

The table reports aggregate ADR, total deal value, and CPD by subperiod. Total deal value refers to the total amount spent on acquisitions by subperiod, excluding advisory fees and transaction-related expenses. Aggregate ADR and total deal value are expressed in constant 2024 USD millions, whereas CPD is expressed in cents per dollar of acquisition spending (constant 2024 USD).

Subperiod	N_deals	Aggregate_dr_real	Total_deal_value_real	Cents_per_dollar
2002-2010	21	-801.99	22,659.60	-3.54
2011-2019	117	45,598.90	179,059.14	25.47
2020-2024	87	5,755.76	89,718.55	6.42
2007-2009	5	-57.43	527.27	-10.89
2020-2022	53	7,466.16	54,690.28	13.65
2002-2024	225	50,552.67	291,437.30	17.35

Ich versichere an Eides Statt, dass ich die Arbeit selbständig verfasst, keine anderen als die angegebenen Hilfsmittel und Quellen benutzt habe, alle wörtlich oder sinngemäß aus anderen Werken übernommenen Aussagen als solche gekennzeichnet habe und dass die Arbeit weder vollständig noch in wesentlichen Teilen Gegenstand eines anderen Prüfungsverfahrens gewesen ist und dass ich die Arbeit weder vollständig noch in wesentlichen Teilen bereits veröffentlicht habe sowie dass das in Dateiform eingereichte Exemplar mit den eingereichten gebundenen Exemplaren übereinstimmt.

Date

09/03/2026