Universidade do Minho
Escola de Economia e Gestão

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# M&A announcement returns: Takeover market competition

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# M&A announcement returns: Takeover market competition

Dissertação de Mestrado
Mestrado em Finanças
Trabalho efetuado sob a orientação do

**Professor Doutor Gilberto Ramos Loureiro**

maio de 2023

# DIREITOS DE AUTOR E CONDIÇÕES DE UTILIZAÇÃO DO TRABALHO POR TERCEIROS

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# STATEMENT OF INTEGRITY

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism or any form of undue use of information or falsification of results along the process leading to its elaboration.

I further declare that I have fully acknowledged the Code of Ethical Conduct of the University of Minho.

*“Nothing great was ever achieved*

*without enthusiasm”*

*Ralph Waldo Emerson*

## Resumo

Esta dissertação investiga a relação entre a competição na indústria das aquisições e os retornos anormais acumulados (RAA) para licitantes, alvos e empresas combinadas. Embora haja evidências na literatura de uma relação inversa entre a competição no mercado das aquisições e os RAA dos licitantes, pouco se sabe sobre o efeito da competição na indústria das aquisições. Este estudo tem como objetivo preencher essa lacuna, explorando o impacto da competição na indústria das aquisições nos RAA, bem como sua associação com o prémio pago para adquirir empresas-alvo. Utilizando uma amostra de 3025 negócios de aquisição ocorridos em 24 países entre 2005 e 2021 e seguindo a metodologia descrita por Alexandridis, constatou-se que a competição na indústria das aquisições não influencia significativamente os retornos anormais acumulados. Essa constatação vai contra as expectativas sob a hipótese do "winner's curse". No entanto, o estudo revela uma relação positiva entre a competição na indústria das aquisições e o prémio pago para adquirir empresas-alvo, alinhando-se com o argumento de sobrevalorização. A robustez desses resultados é confirmada ao controlar diversas variáveis macroeconómicas, específicas de país, de empresa e de negócio. Essas descobertas contribuem para o entendimento das dinâmicas complexas da competição no mercado das aquisições, lançando luz sobre as relações complexas entre a competição, os retornos anormais e o prémio pago na aquisição de empresas-alvo.



**Palavras chave:** Acquisições, Competição na Indústria de Aquisições, Licitantes, Alvos, Retornos Anormais Acumulados

## Abstract

This dissertation investigates the relationship between takeover industry competition and cumulative abnormal returns (CARs) for bidders, targets, and combined companies. While prior literature has established an inverse relationship between takeover market competition and bidders' CARs, little is known about the effect of takeover industry competition. The present study aims to fill this gap by exploring the impact of takeover industry competition on CARs, as well as its association with the premium paid to acquire target companies. Using a sample of 3025 takeover deals that occurred in 24 countries between 2005 and 2021, and following the methodology described in Alexandridis et al. (2010), the analysis reveals that takeover industry competition does not significantly influence cumulative abnormal returns. This finding is contrary to the expectations under the winner's curse hypothesis. However, the study uncovers a positive relationship between takeover industry competition and the premium paid to acquire target companies, aligning with the overbidding argument. The robustness of these results is confirmed by controlling for various macroeconomic, country-specific, company-specific, and deal-specific variables. The findings contribute to the understanding of the complex dynamics of takeover market competition, shedding light on the nuanced relationships between competition, abnormal returns, and the premium paid in acquiring target companies.

**Keywords:** Acquisitions, Takeover Industry Competition, Bidder, Target, Cumulative Abnormal Returns

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# 1 Introduction

Competition in the takeover market has been shown to have an inverse relation with bidders' announcement returns on mergers and acquisitions (M&As) (Alexandridis et al., 2010; Rossi & Volpin, 2004). An explanation that offers a plausible rationale for the negative association is that the market for corporate control is marked for excessive levels of competitiveness which in light of the winner's curse hypothesis, increased competition tends to trigger bidding wars, resulting in higher premiums paid by bidders (Boone & Mulherin, 2008). The hubris hypothesis, proposed by Roll (1986), is strongly connected with this phenomenon. It posits that high levels of overconfidence exhibited by managers make them prone to more aggressive bidding strategies thus contributing to higher prices for their target acquisitions. Another explanation put forth by Jensen and Ruback (1983) highlights the role of takeovers as an external governance mechanism. According to this view, takeovers compel companies to operate efficiently under the threat of being outperformed by competitors. Consequently, a higher level of competition provides incentives for bidding managers to effectively allocate their resources.

Essentially, we ought to examine these two effects. If the competition has a disciplinary role and thus forces bidders to make value-creating decisions, we should see a positive association with the bidder-target combined announcement returns. As for the overbidding argument, if it holds, and bidders do pay a higher premium than they should when faced with a higher takeover maker competition, the association between the premium paid and competition should be negative. Consequently, bidders' announcement returns will also be lower due to higher premium.

In general, studies on this topic primarily examine takeover competition on a country-level and its impact on announcement returns (Alexandridis et al., 2010; Rossi & Volpin, 2004). However, this dissertation aims to extend the existing literature by investigating takeover competition at an industry-level and examine if there is similar results. To assess the level of competition in our target industry, I utilize the country competition measure outlined in Alexandridis et al. (2010). This measure quantifies the proportion of acquired targets relative to all listed companies within a specific country and year. Similarly, I gauge industry competitiveness by dividing the number of acquired targets by the total count of publicly traded companies in the corresponding industry, country, and year.

To test the hypothesis identified and discussed in the literature review, I analyze a sample of 3025 takeover deals from 2005 to 2021 across 24 countries. The sample exclusively comprises majority deals and excludes self-tenders, recapitalizations, repurchases, privatizations, and spinoffs. The majority of the targets are from the United States, Canada, Japan, Australia, and the United Kingdom, which together make up approximately 80% of the sample. Overall, the findings did not support the hypothesis that bidder cumulative abnormal returns exhibit a negative association with industry takeover competition. Furthermore, the analysis does not provide support for the hypothesis that industry takeover competition is positively associated with combined returns. After controlling

for country-level competition, company-specific, deal-specific, and macroeconomic variables, the results remain consistent. However, the premium regression analysis suggests a positive relationship between industry competition and the premium paid by bidders to acquire target companies, although marginally significant at a 10% level, aligning with previous literature (Alexandridis et al., 2010; Eckbo, 2009), but indicating a need for further investigation.

This dissertation contributes to the existing M&A literature in two key ways. Firstly, it expands the work of Alexandridis et al. (2010) by demonstrating, through regression analysis, that industry-level competition does not exert a significant influence on cumulative abnormal returns, diverging from the effects observed at the country-level competition. Secondly, it addresses the limited understanding of the impact of takeover competition within the target industry on announcement returns, bridging this gap in knowledge explored by previous researchers (Bradley et al., 1988; Morck et al., 1990; M. L. Humphery-Jenner & Powell, 2011). Additionally, it introduces a novel point based on Shams (2021) by examining the influence of acquirer size, method of payment on the nexus between takeover industry competition and cumulative abnormal returns.

The dissertation is structured as follows: Section 2 provides a comprehensive review of the relevant literature and establishes the hypotheses. Section 3 outlines the procedure for selecting the sample, and defines the competition variable employed in the analysis as well as the control variables and model used. Section 4 presents a general summary of the data utilized in the research. Section 5 presents and discusses the findings, and provides additional analysis. The final section concludes the dissertation,

## 2 Literature Review

Takeovers are means through which companies intend to create synergies (respond to economic stress, replace inefficient managers, or achieve economies of scale) (Bradley et al., 1988; Croson et al., 2004), thus creating value for shareholders. However, the value created accrues asymmetrically to target and bidder shareholders. As pointed out by Andrade et al. (2001) and Moeller et al. (2004), targets tend to experience positive cumulative abnormal returns (CARs) while bidder CARs tend to be zero or slightly negative.

Numerous studies have examined the companies and deal characteristics that could potentially impact bidder returns. For instance, research has shown that cash acquisitions tend to provide slightly positive abnormal returns, while stock acquisitions tend to result in slightly negative abnormal returns (Yook, 2003), small companies' abnormal returns exceed those of large companies (Moeller et al., 2004) and the distinct reaction between the acquiring a private versus public company (Fuller et al., 2002).

While these factors have been recognized as having an influence in M&A announcement returns, there are several others that could also play a role such as the quality of corporate governance mechanisms (Masulis et al., 2007), the industry characteristics (Andrade & Stafford, 2004), and cross-border M&As (Rossi & Volpin, 2004), among others.

The literature emphasizes the role of takeover competition and shows that bidders earn lower returns when they acquire targets where the markets for corporate control are more competitive (De et al., 1996; M. L. Humphery-Jenner & Powell, 2011; Moeller et al., 2004). Other studies reinforce this idea by showing similar results at a country level, for instance, Rossi and Volpin (2004) in the UK and US market and, more recently, Shams (2021) in Australia. In another research made by Alexandridis et al. (2010), the authors provided evidence, based on their sample, that bidders' returns in the most competitive markets, namely the US, Canada, and the UK, were lower than in the rest of the world. Although a more recent article by the same authors (Alexandridis et al., 2017) shows a reverse trend post-2009, wherein public acquisition gains generated positive abnormal returns for bidders during the 2010-2015 period.

The winner's curse hypothesis (Varaiya, 1988) is a prevalent argument referenced in competitive takeover market literature. It is closely associated with the hubris hypothesis introduced by Roll (1986), which suggests that the overconfidence of managers, in addition to other factors, can lead to bidding companies overpaying for their targets. This is supported by studies such as Malmendier and Tate (2015), who found that overconfident managers are more likely to make aggressive bids. As a result, the winner's curse hypothesis is frequently cited as a contributing factor to the negative relationship between bidder abnormal returns and takeover market competition (Boone & Mulherin, 2008). Therefore, by considering the above-cited literature, we formulate the first hypothesis as:

*H1: Bidder CARs are negatively associated with industry takeover competition.*

Leaning on the insights of previously cited literature regarding the winner's curse hypothesis, we focus on the overbidding argument and its potential implications on the bid premiums, meaning that bidders in competitive markets tend to pay a higher premium to acquire a target. As noted by Roll (1986), this overbidding argument can result from hubris-affected bidder managers decisions that can lead to sub optimal strategies, therefore resulting in bidder company overpaying for the target company (Boone & Mulherin, 2008). In line with this reasoning, Fishman (1988) also suggests that initial bidder may deter the second bidder by making a preemptive high-premium first offer, thus avoiding potential competition. So, a higher degree of competition ought to increase the bid premium , as argued by Eckbo (2009) and Alexandridis et al. (2010), which posit that a setting where takeover markets were less competitive ought to be characterized by relatively lower premiums. Due to these views, we hypothesize that there exists a positive association between takeover market competition and bid premium, as stated in the following terms:

*H2: Bid Premium is positively associated with industry takeover competition.*

Under the perspective of a market for corporate control, which presupposes a high positive relationship between corporate managerial efficiency and the company's stock price (Manne, 1965), this competitive environment is important for dealing with agency problems and efficiently allocating resources in the economy (Jensen & Ruback, 1983). The reasoning goes as follows, due to the disciplinary role of takeovers that can act as an external governance mechanism, managers of bidder companies need to engage in acquisitions that create value for shareholders, or else they may face the threat of becoming themselves a potential target (Mitchell & Lehn, 1990; Shleifer & Vishny, 1997). In this sense, competition in the takeover market is also advanced as a solution for the agency's problems since it incites management to make decisions that maximize market value (Ruback, 1983). The argument is supported by empirical findings, for instance, Bradley et al. (1988) sample showed an average positive increase in combined target and bidder company in a tender offer, consistent with Servaes (1991) that added mergers and tender offers, and Healy et al. (1992) who found considerable improvements in operating cash flows and stock returns in post-merger company.

In essence, if this argument holds, it means that a competitive takeover environment urges bidder managers to make decisions that increase synergies, which means engaging in positive net present value acquisitions reflected in the companies' combined returns. Meaning improving the company's value under the weight of takeover threats and disciplinary pressure. So, in light of this discussion, we can hypothesize that:

*H3: Bidder and target combined CARs are positively associated with industry takeover competition.*

# 3 Methodology

## 3.1 Cumulative abnormal returns

To estimate the stock price reaction to an acquisition announcement, I will apply the event study methodology (MacKinlay, 1997) and calculate the cumulative abnormal returns earned by a bidder over a 5-day event window (event window is from $\tau$ = -2 to $\tau$ = +2) around the acquisition announcement date ($\tau$ = 0). The abnormal return is the difference between the ex post return of the firm over the event window and the expected (normal) return of the firm over the event window. For a company *j* and an event day $\tau$ the abnormal return using the market model is calculated as follows:

$$AR_{j,\tau} = R_{j,\tau} - [\alpha_j + \beta(R_{m,\tau}) + \epsilon_{j,\tau}] \tag{1}$$

where $R_{j,\tau}$ is the ex post return for a bidder *j* on day $\tau$, $R_{m,\tau}$ is the return for the market on day $\tau$ and $\epsilon_{j,\tau}$ is the zero mean disturbance term. To calculate the cumulative abnormal return for a bidder or target in a certain period, we define $CAR_{j,(\tau_1,\tau_2)}$ as the sample CAR where $T_1 < \tau_1 \leq \tau_2 < T_2$ thus then, the CAR for 5 days period, around the acquisition announcement date, is as follows:

$$CAR_{j,(-2,+2)} = \sum_{\tau_1}^{\tau_2} AR_{j,\tau} \tag{2}$$

To calculate the combined CARs, we utilize the previous equation and compute the weighted average of bidder and target CARs. The weights assigned for the calculation are based on the market value of equity six days before the acquisition.

## 3.2 Industry competition

To determine the level of competition in our target industry, I adopt the country competition measure described in Alexandridis et al. (2010). This measure calculates the percentage of acquired targets out of all listed companies in a given country and year. I measure industry competitiveness in the same way by dividing the number of acquired targets by the total number of publicly traded companies in the same industry, country and year. According to this, the more competitive industries should have a higher ratio than non competitive industries. To ensure the robustness of our results, I use different thresholds with varying levels of industry competition, such as median, quartiles and quintiles to examine whether there were differences in the reactions to merger and acquisitions announcement returns between industries with different levels of competition. Furthermore, I categorize industries using Fama and French (1997) 48 groups, excluding financials and utilities.

## 3.3 Control variables

For this research, I decide to include a range of control variables that may influence cumulative abnormal returns. These variables include macroeconomic indicators, specific characteristics of the deal, country-specific governance measures, and company-level characteristics. I begin by including common deal characteristics such as the method of payment, cross-border deal, cross-industry, number of bidders, and relative deal size. The reasoning for including these variables goes as follows: All-stock acquisitions tend to generate lower announcement returns than all-cash acquisitions (Li, 2018; Mortal & Schill, 2015; Savor & Lu, 2009; Yook, 2003), which could be explained by Shleifer and Vishny (2003) as a tendency by overvalued bidders to use their stock as currency to acquire less overvalued targets. Although, there could be other possible explanations (Renneboog & Vansteenkiste, 2019); Cross-border acquisition deals are growing due to factors such as global industry consolidation and economic liberalization (Shimizu et al., 2004) but are prone to more problems, in particular, increased informational asymmetry (M. Humphery-Jenner et al., 2017). Therefore, foreign acquisitions often have lower returns than domestic ones (Martynova & Renneboog, 2008; Moeller & Schlingemann, 2005), even though more recent studies show an inverting trend (Danbolt & Maciver, 2012; Gregory & O'Donohoe, 2014); As to cross-industry deals, the literature states that related business acquisitions outperform those in unrelated businesses, due to higher synergistic gains (Bradley et al., 1988; Healy et al., 1997); Lastly, I include relative deal size, given that large deals are more likely to result in bidder underperformance (Betton et al., 2008; Moeller et al., 2005).

To control for country-related characteristics I lean on (Rossi & Volpin, 2004) and (Fauver et al., 2017), thus including the macroeconomic variables log GDP per capita and GDP growth, expecting a negative relation with abnormal returns (Erel et al., 2021). Moreover, given the positive relationship between corporate governance and bidder abnormal returns (Masulis et al., 2007), I add a country-based indicator of governance quality based on Kaufmann et al. (2009) that reports indicators for rule of law, regulatory quality, control of corruption, voice and accountability, political stability, and government effectiveness. Additionally, considering the previously cited research on takeover competition at a country level and its effect on returns and premiums (Alexandridis et al., 2010; Rossi & Volpin, 2004), I introduce an additional variable to account for country competition.

Finally, I also considered some company-level variables that may impact influence cumulative abnormal returns. An important factor is bidder/target size, which has been found to be a significant predictor of returns in previous studies (Moeller et al., 2004). Specifically, small bidders tend to gain from acquisitions, while very large bidders may display negative announcement returns, which might be linked to managerial objectives of empire building (Morck et al., 1990). Another variable I include is leverage, total debt scaled by equity, since it can undertake a disciplinary role on managers by increasing the pressure to perform well (Jensen, 1986). As such, I expect a positive effect of leverage on announcement returns. However, it is worth noting that a high debt level may induce a negative

response, as suggested by (Harrison et al., 2014).

Additionally, I incorporated Tobin's q as a company-level variable, a measure of a company's market value relative to its replacement cost. Research has shown that returns are expected to be higher if the bidder and target have large and small Tobin's q values, respectively (Lang et al., 1989; Servaes, 1991). Lastly, for the sample with public and private target, I account for the type of target, as it has been found to be a significant predictor of announcement returns according to findings by Fuller et al. (2002). Specifically, bidders are expected to have positive returns when acquiring a private company, while negative returns are expected when acquiring a public company.

## 3.4 Model Design and Specification

To examine the impact of industry competition on market reaction, I employ an analytical model represented by the following equation. This equation allows me to quantify the relationship between competition within an industry and the resulting market response:

$$CAR_{(-2,+2),d,t} = \alpha + \beta_0 IndustryCompetition_{d,\,i,\,t\text{-}1} + \beta_x Dealcontrols_{d,\,t} + \beta_y Countrycontrols_{j,\,t\text{-}1} + \beta_z Companycontrols_{j,\,t\text{-}1} + \delta_t + \zeta_i + \eta_c + \epsilon_{i,\,t} \quad (3)$$

where $CAR_{(-2,+2),d,t}$ is the bidder,target or combined cumulative abnormal return over a 5-day event window at time *t* for a deal *d*, $\alpha$ is the intercept, and $IndustryCompetition_{d,\,i,\,t\text{-}1}$ represents the target industry competition one year before the deal announcement for industry *i*, and deal *d*. For simplicity's sake, I comprise all deal characteristics under $Dealcontrols_{d,\,t}$ , which include the method of payment (dummy variable, one if it was a cash payment and zero otherwise), whether it was a cross-border (dummy variable, one if it was a cross-border deal and zero ir it was a domestic acquisition) and cross-industry deal (dummy variable, one if it was a domestic/same industry deal, zero if not), and the relative deal size (deal's value divided by the bidder's total market value of equity). The $Countrycontrols_{j,\,t\text{-}1}$ include the log GDP per capita, GDP growth, and a country-based governance quality score (dummy variable, one if the score is above the median, 0 otherwise) for a bidder j one year before the announcement of the deal. Regarding the $Companycontrols_{j,\,t\text{-}1}$, it encompasses the characteristics of the bidder company *J*, one year prior to the deal announcement. It includes the bidder size, leverage, Tobin's q, and the type of target (dummy variable equal to one if the company is private). To reduce the effect of outliers we limit the distribution extremes by winsorizing the one percent company-specific controls and the CARs. Lastly, I include a set of dummy variables for year $\delta_t$, industry $\zeta_i$, and country $\eta_c$.

Additionally, I extend the analysis by introducing another dependent variable *Premium*. The relationship between this variable and the set of control variables is modeled using the previously described multiple linear regression

framework. Specifically, it takes the following form:

$$Premium_{d,t\text{-}4\ or\ \text{-}1} = \alpha + \beta_0 IndustryCompetition_{d,\,i,\,t\text{-}1} + \beta_x Dealcontrols_{d,\,t} + \beta_y Countrycontrols_{j,\,t\text{-}1} + \beta_z Companycontrols_{j,\,t\text{-}1} + \delta_t + \zeta_i + \eta_c + \epsilon_{i,\,t} \quad (4)$$

where $Premium_{d,t\text{-}4\ or\ \text{-}1}$ is the four or one week ration of offer price to target stock price before the announcement of the deal, and the $Companycontrols_{j,\,t\text{-}1}$ refer to specific target company characteristics. Thus, I will employ the same set of independent variables as in the previous method, but examine their relationship with a different dependent variable.

# 4 Data

The sample was collected using Securities Data Corporation (SDC) Platinum, provided by Refinitiv. Similar to Rossi and Volpin (2004), the data only includes complete majority deals where the bidding company owns less than 50% of the target before the deal and more than 50% after. Additionally, following the methodology of Alexandridis et al. (2010), the sample excludes self-tenders, recapitalizations, repurchases, minority stake purchases, privatizations, and spinoffs. Furthermore, I exclude deals, where the value paid, was less than $1 million. The initial sample comprised 136 572 deals involving listed targets from more than 100 different countries. As my primary concern is public acquisitions, I narrowed the sample by excluding transactions in which the bidder's public status cannot be verified. Additionally, I exclude deals where stock price data was not obtainable because I was unable to retrieve it using Datastream Thomson Reuters. Finally, I further eliminate transactions in which the bidder had multiple announced deals within the estimation window used to calculate the abnormal returns and countries with less than ten deals. The number of deals that satisfied these criteria were 3025 in 24 countries.

In Appendix B, I present a distribution of target companies by country. The majority of the targets are from the United States with 1,117 deals (36.93% of the total), followed by Canada with 510 deals (16.86%), and Japan with 451 deals (14.91%). Australia and the United Kingdom complete the top five countries with 258 and 108 deals respectively. These countries together represent roughly 80% of the sample. In the same table, note that the highest number of deals occurred between 2005 and 2007, with year 2007 having the most number deals at 283, representing 9.36% of all deals in the sample. The number of deals declined in 2008 (218 deals) to 2009 (224 deals), and there were comparatively fewer deals between 2010 and 2015, with 2010 having the lowest number at 57, representing only 1.88% of all deals in the sample. However, there was a subsequent rise in deals in 2015.

Appendix C presents the sample distribution on the target industry, including the number of targets, average competition, and CARs over the 16-year sample period. From a close analysis of this table, it is observed that Business Services accounts for over 17.45% of all listed targets acquired, followed by the Oil (7.90%), Gold (7.74%), and Pharmaceutical Products (7.31%) while the Other (0.03%), Shipping Containers (0.03%) , and Smoke (0.10%) exhibit the smallest number of companies. In terms of competitiveness, the most competitive industries are Consumer Goods, Guns and Ships.

Table 3. presents summary statistics for each variable (Appendix A) used in this research, organized by their respective characteristics. First, it has the dependent variables which are the five-day CARs for the bidder, target, and combined, as well as the takeover premium, which are 0.22%, 24.37%, and 2.55%, respectively. The results show that, on average, bidder CARs are lower than target CARs. Then, the table encompasses the competition-related variables, with an average industry competition of 5.64% and a standard deviation of 7.19%. The third group covers deal characteristics, full cash payments are the preferred method of payment, with 46.74% of bidders using this method. Most of the acquisitions were domestic (73.98% of the total), and cross-industry deals accounted for 40.6% of the sample.

Table 3: Descriptive Statistics for the variables used in this research.

The sample for this table consists of all completed mergers and acquisitions deals involving listed bidder and target companies reported on Securities Data Corporation (SDC) between 2005 and 2021. We take into account majority control deals where the bidder has a minority ownership of the target (less than 50%) prior to the announcement deals and ends up with a majority ownership (more than 50%) after deal announcement. In our use of Fama-French 48 industrial categories, financials (SIC codes 6000-6999) and utilities (SIC codes 4900-4949) are excluded. Using the market model for a period of (-255,-25), the bidder and target CARs are the five-day cumulative abnormal returns surrounding the announcement date, while combined CARs are a weighted average of the bidder and target CARs. Takeover premium is defined as offer price to target closing stock price to a given period prior to the original announcement date. Further descriptions of other variables can be consulted in Appendix A.

| Variable | Mean | Median | Standard deviation | 25th percentile | 75th percentile |
|---|---|---|---|---|---|
| Bidder CARs | 0.0022 | -0.0006 | 0.0797 | -0.0346 | 0.0348 |
| Target CARs | 0.2437 | 0.1816 | 0.2925 | 0.0524 | 0.3425 |
| Combined CARs | 0.0255 | 0.0159 | 0.0817 | -0.0159 | 0.0592 |
| Premium 4 weeks | 0.3648 | 0.2839 | 0.4478 | 0.1176 | 0.482 |
| Premium 1 week | 0.3963 | 0.3111 | 0.4754 | 0.1413 | 0. |
| **Competition** | | | | | |
| Industry Competition | 0.0564 | 0.0332 | 0.0719 | 0.0174 | 0.0714 |
| Country Competition | 0.0201 | 0.0126 | 0.0181 | 0.0078 | 0.0254 |
| **Deal Controls** | | | | | |
| Method of Payment | 0.4674 | 0 | 0.499 | 0 | 1 |
| Cross-border | 0.2602 | 0 | 0.4388 | 0 | 1 |
| Same Industry | 0.594 | 1 | 0.4912 | 0 | 1 |
| Relative size | 0.3681 | 0.1295 | 0.7799 | 0.0301 | 0.4531 |
| **Country Controls** | | | | | |
| Log GDP per capita | 10.5626 | 10.7173 | 0.6805 | 10.5578 | 10.8633 |
| GDP growth | 2.3175 | 2.2889 | 2.3831 | 1.5606 | 3.1603 |
| Corporate Governance | 84.3425 | 85.4987 | 11.5922 | 84.0049 | 91.6658 |

Table 3: Descriptive Statistics for the variables used in this research *continued*.

| Variable | Mean | Median | Standard deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| **Company Controls** | | | | | |
| Bidder Size | 7.5614 | 7.6686 | 2.3502 | 5.975157 | 92717 |
| Target Size | 5.157 | 5.1349 | 2.0472 | 3.6615 | 6.6185 |
| Bidder Leverage | 0.8136 | 0.3825 | 1.862 | 0.0788 | 0.8403 |
| Bidder Tobin's q | 1.9675 | 1.5523 | 1.3522 | 1.1473 | 2.2769 |
| Target Leverage | 0.6698 | 0.2123 | 2.0604 | 0 | 0.8007 |
| Target Tobin's q | 1.9684 | 1.4208 | 1.8413 | 1.0229 | 2.1761 |

In relation to country characteristics, the average GDP growth rate of the entire sample is 2.3175% and GDP log per capita is 10.57. Additionally, the mean score for country-based governance quality is 84.34. As to company-specific characteristics, which are the leverage, long-term debt divided by equity, and Tobin's q, of the year prior to the announcement date. From the table, it is observed that on average bidder companies have a higher leverage ratio of 0.8136, which suggest that they have relatively more debt to equity than target companies who averaged 0.6698. As for Tobin's q, both the bidder and target companies have values around 2, suggesting they on average trade at a premium to their replacement cost.

Table 4. provides a Pearson correlation matrix between some variables to identify significant relationships. The highest correlation is between the bidder and combined CARs (0.81), which is expected since combined CARs include bidder CARs. There is also a strong positive correlation between target CARs and the premium paid (0.5939 for the one-week premium and 0.6899 for the four-week premium), suggesting that a higher premium is associated with higher CARs for the target. As for country competition, it presents a strong significant negative correlation with bidder CARs (-0.0637) and a strong positive correlation with target CARs (0.1125), suggesting that higher country competition may have a slightly negative effect on bidder abnormal returns and a slightly positive effect on target abnormal returns. Lastly, a moderate positive correlation between country competition and the premium paid (0.0433 and 0.0432, for four-week and one-week premium, respectively), suggests that a higher competition will have a slight positive effect on the premium.

Table 4: Correlation Matrix for Dependent and Competition Variables

The sample for this table consists of all completed mergers and acquisitions deals involving listed bidder and target companies reported on Securities Data Corporation (SDC) between 2005 and 2021. We include majority control transactions in which the bidder begins with a minority ownership (less than 50%) of the target before the announcement and ends up with a majority ownership (more than 50%) after the announcement. Financial services (SIC codes 6000-6999) and utilities (SIC codes 4900-4949) are not included in our use of the Fama-French 48 industrial categories. The bidder and target CARs are the five-day cumulative abnormal returns surrounding the announcement date when using the market model for a period of (-255,-25), and the combined CARs are the weighted average of the bidder and target CARs. Offer price to target closing stock price to a specific period previous to the initial announcement date is the takeover premium.

| | Bidder CARs | Target CARs | Combined CARs | Industry | Country | Premium |
|---|---|---|---|---|---|---|
| Bidder CARs | 1 | | | | | |
| Target CARs | 0.0396** | 1 | | | | |
| Combined CARs | 0.8062*** | 0.2316*** | 1 | | | |
| Industry Competition | 0.0105 | 0.0241 | 0.0224 | 1 | | |
| Country Competition | -0.0637*** | 0.1125*** | 0.0012 | 0.3164*** | 1 | |
| Premium | -0.0191 | 0.6899*** | 0.1409*** | 0.0261 | 0.0443** | 1 |

Note: The table reports reports the correlation matrix for the takeover market competition where $^{*}\, p < 0.1$; $^{**}\, p < 0.05$; $^{***}\, p < 0.01$.

# 5 Empirical Findings

## 5.1 Univariate analysis

This dissertation aims to investigate the impact of industry competition on announcement returns and the premium paid by bidders in takeover deals. To explore this relationship, I conduct a univariate analysis of our M&A sample. I begin by classifying the sample into two groups based on their industry competition value, those with values above (below) the median were considered more (less) competitive. Based on the hypothesis, I expect that under more competitive industries, bidder announcement returns would be lower when compared to less competitive industries, and target announcement returns would be higher. As for combined returns and the premium, I expect them to be higher when the competition is stronger. The results are presented in Table 5, where I use a two-tailed t-test to examine whether the difference in returns between the two groups is significant.

Table 5: Univariate test - Takeover Industry Competition

The table presents univariate tests examining the impact of industry takeover competition on bidder, target and combined CARs. The sample used consists on all majority completed mergers and acquisitions control deals involving listed bidder and target companies reported on Securities Data Corporation (SDC) between 2005 and 2021. In the use of Fama-French 48 industrial categories, financials and utilities are excluded. Using the market model for a period of (-255,-25), the bidder and target CARs are the five-day cumulative abnormal returns surrounding the announcement date, while combined CARs are a weighted average of the bidder and target CARs. Takeover premium is defined as offer price to target closing stock price to a given period prior to the original announcement date. CARs and takeover premiums are winsorized at the 1% level for outliers, where $*p < 0.1$, $**p < 0.05$, $***p < 0.01$,

| | Lower Competition | | Higher Competition | | | |
|---|---|---|---|---|---|---|
| | Mean | N | Mean | N | difference | p-value |
| Bidder CARs | 0.0033% | 1523 | 0.0011% | 1502 | 0.00% | 0.4413 |
| Target CARs | 22.62% | 1523 | 26.15% | 1502 | 3.53%*** | 0.0009 |
| Combined CARs | 2.42% | 1523 | 2.69% | 1502 | 0.27% | 0.3698 |
| Premium 4 week | 35.24% | 1523 | 37.73% | 1502 | 2.48% | 0.1541 |
| Premium 1 week | 37.87% | 1523 | 41.41% | 1502 | 3.54%* | 0.0556 |

Upon closely analyzing the table, it is observed that the sample is not evenly split with slightly more deals in the less competitive group (1523 deals) compared to the more competitive (1502 deals). The column difference indicates the mean difference between the two groups (higher competition - lower competition). In the case of the bidder CARs, the 0% difference suggests no significant variation between the groups (p-value = 0.4413). As for the combined returns, the mean is 2.42% for the below-median competition group and 2.69% for the above-median competition group. This aligns with my expectations and supports my *H3*. However, since the p-value is

not statistically significant (0.3698), I cannot assume that there is a difference between groups.

In contrast, the results suggest that there is a significant (p-value = 0.0009) difference in target mean CARs (3.53%) between deals with above-median industry competition and those below, indicating that targets in industries with higher competition tend to experience higher returns. Similarly, it is observed a marginally significant difference at 10% level in the one-week bid premium (p-value = 0.0556) which meets my expectations in *H2*. Overall, these results suggest that industry competition may have different effects on takeover announcement returns, with targets benefiting more from higher competition and bidders paying a higher takeover premium.

Table 6: Wilcoxon Signed-Rank Test: Industry takeover competition

The table presents the results of Wilcoxon signed-rank tests investigating the impact of industry takeover competition on bidder, target, and combined CARs. The sample used includes all majority completed mergers and acquisitions control deals involving listed bidder and target companies reported on Securities Data Corporation (SDC) between 2005 and 2021. Fama-French 48 industrial categories are employed, excluding financials and utilities. The bidder and target CARs represent the five-day cumulative abnormal returns around the announcement date, calculated using the market model for the period (-255,-25). The combined CARs are the weighted average of the bidder and target CARs. Takeover premium is defined as the offer price to target closing stock price ratio within a specified period prior to the original announcement date. Both CARs and takeover premiums are winsorized at the 1% level to address outliers, where $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$,

| | Lower Competition | | Higher Competition | | | |
|---|---|---|---|---|---|---|
| | Median | N | Median | N | difference | p-value |
| Bidder CARs | 0.0714% | 1523 | -0.143% | 1502 | 0.21% | 0.6188 |
| Target CARs | 19.14% | 1523 | 16.94% | 1502 | 2.2%*** | 0.0001 |
| Combined CARs | 1.66% | 1523 | 1.48% | 1502 | 0.18%** | 0.0305 |
| Premium 4 week | 29.32% | 1523 | 27.4% | 1502 | 1.92%*** | 0.0032 |
| Premium 1 week | 31.6% | 1523 | 30.38% | 1502 | 1.22%*** | 0.0057 |

Table 6. presents the results of a Wilcoxon test comparing the medians between lower and higher industry takeover competition. When comparing bidder CARs, the results show no statistically significant difference between the two groups (p-value=0.6188). Nonetheless, the analysis indicates significant differences in target CARs and takeover premiums. The median target CAR for the lower competition group is 19.14%, whereas, for the higher competition group, it is 16.94%. This implies that targets in higher competition scenarios tend to experience lower CARs. Similarly, the difference in medians between the two groups in takeover premium is 1.92% and statistically significant.

In relation to the combined CARs, the analysis reveals a 5% statistically significant difference. The median combined CAR for the lower competition group is 1.66%, compared to 1.48% for the higher competition group.

Thus, the test provides evidence that industry takeover competition has a significant impact on target CARs and takeover premiums. However, I further examine this relationship in the following sections.

## 5.2 Multivariate analysis

The univariate analysis of the sample revealed some patterns expected in my hypothesis between the behavior of announcement returns and the level of competition. However, these should be interpreted with caution, the previous analysis doesn't account for the potential influence of other variables, thus it is necessary to perform a multivariate regression that controls for a range of factors known to affect takeovers announcement returns and premium, such as company, deal and country characteristics. In doing so, it might better identify the specific effects of competition and further understand the contribution of these factors in the dependent variables.

### 5.2.1 Takeover Industry Competition, Bidder and Target Market Reaction

This research starts by addressing the unequal distribution of announcement returns between bidder and target shareholders (Moeller et al., 2004). Bidder announcement returns often exhibit lower or negative values, and several factors may contribute to such outcome. However, in this section the primary focus is on the influence of industry takeover competition and the winner's curse hypothesis if commonly forwarded as an explanation for this negative association, thus presenting our first hypothesis *H1*.

Table 6 presents the output of the regression described in the methodology (Equation 3). By examining the results of Model (1), which includes a larger sample of public and private targets, we observe a positive coefficient for industry competition, indicating a positive association with a higher degree of industry competitiveness and bidder abnormal returns contrary to the overbidding argument and our formulated hypothesis *H1*. However, for the smaller sample, that only includes public targets, the variable of interest has no statistically significance so, there is insufficient evidence to draw the same conclusion. As for the other control variables, country competition has a positive sign for the larger sample thus not consistent with other studies on this topic(Alexandridis et al., 2010; Rossi & Volpin, 2004), although in the public only sample it has a negative association but not statistically significant. As for the other variables, the positive effect of cash acquisitions on bidder announcement returns has already been documented in prior researches (Dong et al., 2006; Martynova & Renneboog, 2011), there are many possibilities put forward for such effect, for instance, Linn and Switzer (2001) highlighted the role of cash offers to deter competing bids and the signaling effect of this method of payment to convey the likelihood of potential synergies.

Moreover, the regression results show that GDP growth of the target country has a positive effect on the announcement returns of the bidder. This finding is also consistent with prior research (Irwin et al., 2022), and suggest that bidder companies tend to achieve higher returns when acquiring targets from countries with more economic growth. They also suggest that the larger the acquiring companies the lower the announcement returns

in takeover deals. It is expected that larger firms would have more resources and expertise to make successful acquisitions, nevertheless the weight of the evidence suggest that large bidders achieve lower abnormal returns (Moeller et al., 2004).

Model (3) in the table, presents the regression results of the target cumulative abnormal returns. From the output, competition has a positive effect on the target announcement returns, consistent with the studies on this topic (Alexandridis et al., 2010; Rossi & Volpin, 2004), however it is not statistically significant so there is insufficient evidence to draw a conclusion. Furthermore, the variable cash has a positive significant coefficient, indicating that full cash deals are associated with higher target announcement returns which is consistent with existing literature (Huang & Walkling, 1987).

Table 7: Cumulative Abnormal Returns - Regression Results

The table presents regression results of the cumulative abnormal returns. The sample used includes all majority M&A deals involving listed bidder and target companies reported on Securities Data Corporation (SDC) between 2005 and 2021. Fama-French 48 industrial categories are employed, excluding financials and utilities. The bidder and target CARs represent the five-day cumulative abnormal returns around the announcement date, calculated using the market model for the period (-255,-25). The combined CARs are the weighted average of the bidder and target CARs. CARs are winsorized at the 1% level to address outliers. The key variable of interest, referred to as "Industry competition," is defined as the ratio of acquired targets to the total number of registered targets, accounting for year, industry, and country. Detailed definitions of all variables can be found in Appendix A. T-statistics are reported in parentheses, and statistical significance levels are denoted by ***, **, and * representing the 1%, 5%, and 10% thresholds, respectively. For conciseness, the regression models incorporate fixed effects for year, industry, and country, and their coefficients are not displayed.

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Dependent Variables | Bidder CARs (larger sample) | Bidder CARs | Target CARs | Combined CARs |
| Industry Competition | 0.0251*** | 0.0103 | 0.0345 | 0.0108 |
| | (2.86) | (0.41) | (0.41) | (0.47) |
| Country competition | 0.1221* | -0.0089 | 0.3062 | 0.0258 |
| | (1.95) | (-0.05) | (0.49) | (0.14) |
| Method of payment | -0.0096*** | 0.0170*** | 0.0833*** | 0.0168*** |
| | (5.10) | (-3.47) | (7.46) | (4.68) |
| Cross-border | -0.0043 | 0.0061* | 0.0209 | 0.0050 |
| | (-1.38) | (1.77) | (1.58) | (1.43) |

Note: The table continues in the next page.

Table 7: Cumulative Abnormal Returns - Regression Results *continued*

| Dependent Variables | (1) Bidder CARs (larger sample) | (2) Bidder CARs | (3) Target CARs | (4) Combined CARs |
|---|---|---|---|---|
| Same Industry | 0.0034 | -0.0007 | -0.0057 | -0.0030 |
| | (1.47) | (-0.22) | (-0.54) | (-0.92) |
| Relative size | 0.0001 | 0.0004 | -0.0337*** | 0.0077** |
| | (0.22) | (0.13) | (-5.15) | (2.38) |
| GDP Growth | 0.0021** | 0.0037*** | 0.0077 | 0.0028** |
| | (2.38) | (2.68) | (1.37) | (2.06) |
| GDP Log | 0.0193 | -0.0273** | -0.0651* | -0.0282** |
| | (1.50) | (-2.08) | (-1.78) | (-2.21) |
| Corporate Governance | -0.0012** | 0.0009 | 0.0035 | 0.0008 |
| | (0.94) | (-2.00) | (1.38) | (0.80) |
| Bidder Leverage | 0.0009 | 0.0012 | 0.0006 | |
| | (1.09) | (1.10) | | (0.77) |
| Bidder Size | -0.0082*** | -0.0044*** | | -0.0100*** |
| | (-10.02) | (-5.41) | | (-9.40) |
| Bidder Tobin's Q | -0.0012** | -0.0000 | | 0.0009 |
| | (-2.35) | (-0.02) | | (0.49) |
| Target Leverage | | | -0.0022 | -0.0017** |
| | | | (-0.74) | (-2.31) |
| Target Size | | | -0.0292*** | 0.0068*** |
| | | | (-8.63) | (6.91) |
| Target Tobin's Q | | | 0.0026 | -0.0032*** |
| | | | (0.64) | (-3.23) |
| Constant | 0.0073 | 0.2048 | 0.6188 | 0.2753* |
| | (0.06) | (1.18) | (1.39) | (1.75) |
| Fixed Effects | Yes | Yes | Yes | Yes |
| Observations | 9544 | 3025 | 3025 | 3025 |
| R-Squared | 0.049 | 0.080 | 0.206 | 0.104 |

In addition, based on the results, the size of the target company has a significant negative effect on its

abnormal returns. This is also consistent with the existing literature, due to the fact that larger target companies may face additional challenges when integrating with the acquiring firm, additionally they may face more scrutiny from regulatory authorities, for instance, Agrawal et al. (1992) found that larger targets experience lower abnormal returns, particularly when the acquirer is a diversified company. The negative coefficient between relative deal size and target cumulative abnormal returns is again consistent with this complexity hypothesis and should also reflect on the premium paid as found by Alexandridis et al. (2010).

Overall, the results in the regression analysis do not support the hypothesis that bidder CARs are negatively associated with industry takeover competition neither do target CARs. Thus, industry competition, as measured by the ratio of number of targets to total number of publicly traded companies in the same industry, country and year, did not have a significant effect on bidder returns.

### 5.2.2 Takeover Industry Competition, and Combined Market Reaction

In my hypothesis, I postulated, that bidder and target combined CARs were positively associated with takeover market competition. The rationale was that a competitive takeover market would incentivize bidder managers to engage in acquisitions that create value, as they face the threat of becoming a potential target themselves if they do not (Shleifer & Vishny, 1997), thus promoting efficient allocation of resources and dealing with agency problems (Jensen & Ruback, 1983). To test this hypothesis, I conduct a regression analysis with several control variables on the weighted average of bidder and target combined CARs, whose weights were determined by the equity market value one week prior to the acquisition. The results are presented in Table 7 model (4).

The industry competition variable has a positive coefficient of 0.0108 thus indicating that increased competitiveness is associated with a increase in the combined CARs. However, the robust t-statistic is not significant and so, under this regression, I can not conclude that industry competition has a significant impact. As for the other control variables, the positive coefficient estimate of cash acquisitions at a 0.01% level suggest that full cash deals tend to result in higher CARs for the combined company. Once again, consistent with prior research (Brown & Ryngaert, 1991;Travlos, 1987), given that cash deals can be used by bidders to signal confidence in the value of the target company and if stock is undervalued (Wansley et al., 1983).

The coefficient relative to target leverage is negative and statistically significant at a 5% level, this is consistent with the reasoning that highly leveraged target companies are riskier for bidders to acquire and expected to create more financial difficulties in the future, thus leading to lower combined returns (Harrison et al., 2014). As for the bidder size effect, it is congruent with empirical evidence, suggesting that larger acquiring companies is negatively associated with combined returns. Additionally, in relation to the relative deal size, which captures the size of the deal relative to the acquiring company's market value, the regression output exhibits a significant positive coefficient at a 1% level, which further evidence of the relation denoted in literature, such as Moeller et al. (2004).

### 5.2.3 Takeover Industry Competition, and Takeover Premium

An aim in this research was to investigate the relationship between takeover market competition and bid premium. The main theoretical argument is the overbidding argument, where bidders in competitive industries tend to pay a higher premium to acquire a target (Boone & Mulherin, 2008), based on this I hypothesize a positive association between competition and premium.

Regarding the analysis on cumulative abnormal returns, it doesn't find a statistically significant association with industry competition. In the premium regression analysis, the coefficient for industry competition indicates a positive relationship, thus suggesting that in a more competitive industry, bidders may need to pay a higher premium to successfully acquire a target company consistent with existing literature (Alexandridis et al., 2010; Eckbo, 2009). However, it is worth noting that the coefficient for industry competition was only marginally significant at a 10% level, with a t-value of 1.36, thus it is necessary to interpret the result with caution and not a assume a significant relationship.

Table 8: Takeover Premium - Regression Results

The table presents regression results of the takeover premium. The sample used includes all majority M&A deals involving listed bidder and target companies reported on Securities Data Corporation (SDC) between 2005 and 2021. Fama-French 48 industrial categories are employed, excluding financials and utilities. Takeover premium is defined as the offer price to target closing stock price ratio within a specified period prior to the original announcement date and is winsorized at the 1% level to address outliers. The key variable of interest, referred to as "Industry competition," is defined as the ratio of acquired targets to the total number of registered targets, accounting for year, industry, and country. Detailed definitions of all variables can be found in Appendix A. T-statistics are reported in parentheses, and statistical significance levels are denoted by ***, **, and * representing the 1%, 5%, and 10% thresholds, respectively. For conciseness, the regression models incorporate fixed effects for year, industry, and country, and their coefficients are not displayed as well as some of the non statistically significant control variables.

| | (1) | (2) |
|---|---|---|
| Dependent Variables | Premium 1 week | Premium 4 weeks |
| Industry Competition | 0.2336 | 0.2526 |
| | (1.36) | (1.40) |
| Country competition | -1.1572 | -0.3402 |
| | (-1.09) | (-0.34) |

Note: The table continues in the next page.

Table 8: Takeover Premium - Regression Results *continued*

| | (1) | (2) |
|---|---|---|
| Dependent Variables | Premium 1 week | Premium 4 weeks |
| Method of payment | 0.1013*** | 0.1064*** |
| | (4.82) | (5.34) |
| Cross-border | 0.0368 | 0.0407* |
| | (1.51) | (1.83) |
| GDP Log | -0.1528* | -0.0886 |
| | (-1.92) | (-1.16) |
| Target Leverage | -0.0137*** | -0.0115*** |
| | (-3.00) | (-2.93) |
| Target Size | -0.0490*** | -0.0453*** |
| | (-7.41) | (-7.32) |
| Constant | 2.4354** | 1.9753** |
| | (2.42) | (2.05) |
| Observations | 3025 | 3025 |
| R-Squared | 0.146 | 0.147 |

In addition to the marginal relationship between industry competition and premium, the results also found that target size has a significant effect on the premium paid in acquisitions. Specifically, the results suggest that acquirers tend to pay less for large target companies, indicating a robust negative relation between the offer premium and the target size. This is consistent with previous studies, such as Alexandridis et al. (2013), that also find a negative association between target size and acquisition premia. Moreover, is is also found that cash payments are positively associated with bid premiums, which is consistent with prior research (Huang & Walkling, 1987; LuSavor), suggesting that bidders pay higher premium when cash is the method o payment used, possibly due to lower uncertainty associated with cash payments as opposed to stock.

Finally, the negative coefficient for target leverage suggests that higher levels of leverage in the target company may be associated with lower combined abnormal returns of the acquirer and target. This is consistent with previous research that has found a negative relationship between target leverage and premium (Vincent et al., 2017).

### 5.2.4 Takeover Industry Competition, and Market Reaction - further analysis

In this section, I further investigate the impact of industry competition and its influence on the cumulative abnormal returns of bidder, target, and combined companies in the takeover market. Specifically, I proceed to examine if its effects differ between competitive and non-competitive industries.

To divide the industries into degrees of competitiveness, I distribute the sample into quartiles, terciles, as well as a dummy variable based on the median of the industry competition measure where: non-competitive industries represent the first quartile and first tercile and competitive industries represent the third tercile and fifth tercile. The results of our analysis are presented in Table 9.

Table 9: Industry Competition - Quantile Regression Results

The table displays the regression outcomes for different quantiles of industry takeover competition defined as the ratio of acquired targets to the total number of registered targets, accounting for year, industry, and country. The sample used includes all majority M&A deals involving listed bidder and target companies reported on Securities Data Corporation (SDC) between 2005 and 2021. Fama-French 48 industrial categories are employed, excluding financials and utilities. The bidder and target CARs represent the five-day cumulative abnormal returns around the announcement date, calculated using the market model for the period (-255,-25). The combined CARs are the weighted average of the bidder and target CARs. Takeover premium is defined as the offer price to target closing stock price ratio within a specified period prior to the original announcement date. Both CARs and takeover premiums are winsorized at the 1% level to address outliers. T-statistics are reported in parentheses, and statistical significance levels are denoted by ***, **, and * representing the 1%, 5%, and 10% thresholds, respectively. For conciseness, the regression models incorporate fixed effects for year, industry, and country, and their coefficients are not displayed as well as the control variables.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| Dependent Variables | BCARs | TCARS | CCARS | BCARs | TCARS | CCARS | BCARs | TCARS | CCARS |
| IC Dummy | -0.0099 | 0.0031 | -0.0036 | | | | | | |
| | (-0.23) | (0.22) | (-0.83) | | | | | | |
| 1st tercile | | | | 0.1103 | -1.6316 | -0.5549 | | | |
| | | | | (0.17) | (-0.79) | (-0.76) | | | |
| 3rd tercile | | | | 0.0073 | 0.0876 | 0.2382 | | | |
| | | | | (0.26) | (0.96) | (0.96) | | | |
| 1st quartile | | | | | | | 1.8242* | -2.8482 | 0.4779 |
| | | | | | | | (1.88) | (-0.83) | (0.43) |

Note: The table continues in the next page.

Table 9: Industry Competition - Quantile Regression Results

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| Dependent Variables | BCARs | TCARS | CCARS | BCARs | TCARS | CCARS | BCARs | TCARS | CCARS |
| 2nd quartile | | | | | | | 0.6876 | -1.4483 | 0.8825 |
| | | | | | | | (0.83) | (0.608) | (1.04) |
| 3rd quartile | | | | | | | 0.4199 | -0.709 | 0.4468 |
| | | | | | | | (1.33) | (-0.71) | (1.53) |
| 4th quartile | | | | | | | 0.0156 | 0.007 | 0.0404 |
| | | | | | | | (0.52) | (0.07) | (1.40) |
| Control Variables | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 3025 | 3025 | 3025 | 3025 | 3025 | 3025 | 3025 | 3025 | 3025 |
| R-Squared | 0.0795 | 0.2648 | 0.1044 | 0.0778 | 0.2325 | 0.1621 | 0.0767 | 0.2546 | 0.2018 |

According to Alexandridis et al. (2010) findings, acquiring public targets from markets which are more(less) competitive will have a negative(positive) impact on the bidder abnormal returns, although this research were made at a country level. From the regression results Models (1)-(3), it appears that the industry competition (IC) dummy variable is not statistically significant for any of the three dependent variables: bidder CARs (BCARs), target CARs (TCARs) and combined CARs (CCARs). The results on Models (4)-(6) show that taking over targets from the 1st tercile (i.e., less competitive) results in significantly higher bidder abnormal returns and lower target abnormal returns. However, none of the effects is significant. The same applies to Models (7)-(9) where we observe the same dynamics but there is a significant effect at a 10% level in the 1st quartile relative to the bidder abnormal returns. Given this results, it is not possible to extend Alexandridis et al. (2010) findings to an industry level and that industry competition influences the value of bidder and target companies.

Furthermore, I extended the analysis by computing the eleven-day cumulative abnormal returns for both the entire sample and the five-day CARs for major target countries, namely the United States, Canada, Japan, Australia, and the United Kingdom. However, the results of this analysis align with the previous findings, revealing no statistically significant impact of industry takeover competition on the CARs. Therefore, the conclusion remains that industry competition does not exert a significant influence on the observed CARs, as evidenced by the lack of statistical significance in the results.

Table 10: Industry takeover Competition and Cumulative Abnormal Returns - Further Regression Results

The table displays the regression outcomes for regression on industry takeover competition. The sample used includes all majority M&A deals involving listed bidder and target companies reported on Securities Data Corporation (SDC) between 2005 and 2021. Fama-French 48 industrial categories are employed, excluding financials and utilities. The bidder and target CARs on (1), (2), (3) represent the five-day cumulative abnormal returns around the announcement date for 5 major target countries, calculated using the market model for the period (-255,-25), while (4), (5) and (6) are the eleven-day cumulative abnormal return for public sample. The combined CARs are the weighted average of the bidder and target CARs. CARs are winsorized at the 1% level to address outliers. T-statistics are reported in parentheses, and statistical significance levels are denoted by ***, **, and * representing the 1%, 5%, and 10% thresholds, respectively. For conciseness, the regression models incorporate fixed effects for year, industry, and country, and their coefficients are not displayed as well as the control variables.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Dependent Variables | BCARs | TCARS | CCARS | BCARs | TCARS | CCARS |
| Industry Competition | 0.0545 | 0.1511 | 0.0433 | 0.0464 | 0.0467 | 0.0322 |
| | (1.48) | (1.60) | (1.45) | (1.62) | (0.56) | (1.27) |
| Control Variables | Yes | Yes | Yes | Yes | Yes | Yes |
| Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 2444 | 2444 | 2444 | 3025 | 3025 | 3025 |
| R-Squared | 0.097 | 0.196 | 0.177 | 0.073 | 0.201 | 0.101 |

## 5.3 Additional Analysis

### 5.3.1 Firm size, Takeover Industry Competition, and Market Reaction

In the previous analysis, the role of size effect was prominent and leaning on Shams (2021), I decide to investigate the market reaction to competition based on the bidder sizes differences. To achieve this, I divide the sample in two where a company with a market capitalization over the median is considered a large bidder, whereas one with a market capitalization below the median is considered a small bidder. In the sample, the average (median) market capitalization for large bidders was $23,326 million ($10,650 million), compared with $603 million ($393 million) for small bidders. As reported in the table below, small bidders earn an average of 0.6339% of cumulative abnormal returns while large bidders earn -0.197%, the difference in means is statistically significant at a 1% level.

Table 11: Univariate Analysis - Bidder size

The table presents univariate tests examining the impact of bidder size on bidder and target CARs. The sample used consists on all majority completed mergers and acquisitions control deals involving listed bidder and target companies reported on Securities Data Corporation (SDC) between 2005 and 2021. In the use of Fama-French 48 industrial categories, financials and utilities are excluded. Using the market model for a period of (-255,-25), the bidder and target CARs are the five-day cumulative abnormal returns surrounding the announcement date and are winsorized at the 1% level for outliers.

| | Small Bidders | | Large bidders | | | |
|---|---|---|---|---|---|---|
| | Mean | N | Mean | N | difference | p-value |
| Bidder CARs | 0.6339% | 1513 | -0.197% | 1512 | 0.831% | 0.0041 |
| Target CARs | 21.49% | 1513 | 27.25% | 1512 | -5.77% | 0.00 |

From Shams (2021), we would expect that larger bidders would be more likely to overbid for target companies, thus expecting a negative coefficient on industry competition variable. Appendix D presents the estimations of equation (3) for large and small bidders. In fact, the results show a negative coefficient for large bidders, Model (1), and positive for small bidders, Model (3), however, since none of them are statistically significant at a 10% level I can not conclude that the size of the bidder has an influence on the market reaction and takeover competition relationship. Notably, in Models (2) and (4), the coefficient for industry competition in the larger sample is -0.2281**, indicating a negative association between competition and target cumulative abnormal returns. In contrast, the coefficient for target abnormal returns in the small bidder sample us 0.2875**, suggesting a positive relationship between industry competition and target cumulative abnormal returns. This findings suggest that competition has a different impact on target returns depending on the size of the bidder. In the larger sample, where the bidder is larger, increased industry competition is associated with lower returns for the target company. This result is contrary to what we might expect based on the overbidding argument (Roll, 1986), and more in line with the market for corporate control argument (Manne, 1965). However, in the smaller sample, where the bidder is smaller, increased industry competition is associated with the higher returns for the target company. This result is consistent with the overbidding argument, which suggests, in this case, that as industry competitiveness increases target companies are more likely to benefit in the form of increased abnormal returns.

### 5.3.2 Method of payment, Takeover Industry Competition, and Market Reaction

In this subsection, I proceed to examine whether the payment method used has any impact on the relationship between takeover competition and cumulative abnormal returns. To accomplish this aim, I stratified the overall

sample into two distinct sub-samples: cash only and mixed/stock only deals. Table 12 present the outcomes of the univariate analysis for the method of payment using a t-test between means. The results are based on a sample of 1414 cash-only deals and 1611 of mixed and stock-only transactions. Both the mean of bidder and target abnormal returns for cash-only deals were found to be significantly higher (0.847% and 0.218%, respectively) that mixed/stock-only deals (-0.333% and -10.221%).

Table 12: Univariate Analysis - Method of Payment

The table presents univariate tests examining the impact of method of payment on bidder and target CARs. The sample used consists on all majority completed mergers and acquisitions control deals involving listed bidder and target companies reported on Securities Data Corporation (SDC) between 2005 and 2021. In the use of Fama-French 48 industrial categories, financials and utilities are excluded. Using the market model for a period of (-255,-25), the bidder and target CARs are the five-day cumulative abnormal returns surrounding the announcement date and are winsorized at the 1% level for outliers.

| | Cash-only | | Mixed/Stock-only | | | |
|---|---|---|---|---|---|---|
| | Mean | N | Mean | N | difference | p-value |
| Bidder CARs | 0.847% | 1414 | -0.333% | 1611 | 0.218% | 0.00 |
| Target CARs | 29.81% | 1414 | 19.59% | 1611 | -10.22% | 0.00 |

Based on the results presented in Appendix E, the relation between method of payment, takeover competition and abnormal announcement returns is overall not statistically significant. Specifically, the table shows that the difference in competition in target CARs is not significant between cash-only and stock-only/mixed deals. In fact, the results indicate that the only significant relationship between the industry competition variable and abnormal announcement returns is for cash-only financed deals in relation to bidder abnormal returns, with a statistical significance level of 5%. This suggests a positive impact of industry competition for cash-only deals and not for mixed or stock-only deals. Therefore, while the results provide some insight into the relationship, the overall insignificance of the findings may require further research.

# 6 Conclusions

In this dissertation, I have conducted a comprehensive investigation into the influence of competition on takeover announcement returns and bid premiums. Through initial univariate analysis, it is observed that targets operating in highly competitive industries tend to experience higher cumulative abnormal returns, while bidders pay elevated takeover premiums. However, upon conducting multivariate analysis, the results did not support these initial findings, as there was no significant association found between bidder and target cumulative abnormal returns and the level of competition. Likewise, the regression analysis did not reveal a substantial relationship between combined abnormal returns, takeover market competition, and bid premiums.

Nevertheless, the research confirms certain commonly observed patterns mentioned in the existing literature by considering additional variables as control factors. For instance, cash payments are positively correlated with abnormal returns for both bidders and targets, as well as the combined entity. Moreover, the relative size of the deal exhibited a negative association with target abnormal returns, but a positive relationship with combined abnormal returns. The size effect of both bidders and targets displayed a negative association with abnormal returns. In terms of bid premiums, the findings indicate a positive correlation with the method of payment, suggesting that cash-only transactions involve higher premiums. Furthermore, the level of leverage in the target company and its size exhibited a negative association with bid premiums. It explored whether the impact of industry competition on bidders, targets, and combined companies differed between competitive and non-competitive industries. However, the results did not provide support for the influence of industry competition.

Despite some findings lacking statistical significance, my dissertation makes a valuable contribution to the existing literature on takeover markets by examining the effects of industry competition on bidder, target, and combined abnormal returns, as well as bid premiums. The findings highlight the intricate nature of the impact of competitiveness on takeover returns, which depends on various factors such as the type of deal, bidder size, and target company characteristics. Additionally, the importance of carefully controlling for confounding variables, including country factors, deal-specific factors, and company-specific characteristics, is emphasized.

Overall, this dissertation significantly enhances the understanding of the determinants of M&A returns and provides valuable empirical insights into the influence of industry competition on bidder and target announcement returns, bid premiums, and combined abnormal returns.

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# 8 Appendix

## Appendix A - Definitions of variables

Appendix A: Definitions of Variables

| Variable | Definition |
|---|---|
| Bidder and target CARs | The cumulative abnormal returns calculated using Equation (1) for a 5-day event window around the announcement date (from day -2 to day +2). |
| Combined CARs | The average return of both bidder and target company, weighted according to their market value of equity six days prior to the acquisition. |
| Takeover Premium | Premium of offer price to target closing stock price 1/4 weeks prior to the original announcement date as reported by SDC Platinum database |
| Industry Competition | N° of deals divided by listed targets per industry, country, and year as reported by SDC and Worldscope |
| Country competition | N° of deals divided by listed targets in each country, and year as reported by SDC and Worldscope |
| Method of payment | Dummy variable: Equals 1 if the deal is 100% cash financed, and 0 otherwise |
| Cross-border | Dummy variable: Equals 1 if it is a cross-border deal, and 0 otherwise. |
| Same Industry | Dummy variable: Equals 1 if the deal is in the same industry, and 0 otherwise. |
| Relative size | The value of the deal as reported by SDC divided by bidder market value one-month prior to the announcement date. |
| GDP Growth | Annual real GDP growth as reported by World Development Indicators. |
| GDP Log | Lof of real GDP per capita as reported by World Development Indicators. |
| Corporate Governance | World governance indicators (target country) mean index score as reported by Word Bank |
| Bidder\|Target Leverage | Total debt to equity ratio (Datastream item WC8231) |
| Bidder\|Target Size | The natural logarithm of market capitalisation (Datastream item WC08001) |
| Bidder\|Target Tobin's Q | Equity market value (MV) (Datastream WC08001) plus liabilities MV (Datastream WC03351) divided by equity book value (BV) (Datastream WC08001) plus liabilities (BV) |

## Appendix B - Classification of final sample by Country and Year.

Classification of final sample by Country and Year.

The sample for this table consists of all completed mergers and acquisitions deals involving listed bidder and target companies reported on Securities Data Corporation (SDC) between 2005 and 2021. We take into account majority control deals where the bidder has a minority ownership of the target (less than 50%) prior to the announcement deals and ends up with a majority ownership (more than 50%) after deal announcement. In our use of Fama-French 48 industrial categories, financials (SIC codes 6000-6999) and utilities (SIC codes 4900-4949) are excluded.

| Panel A: Sample by country | | | Panel B: Sample by year | | |
|---|---|---|---|---|---|
| Country | Frequency | % | Country | Frequency | % |
| Australia | 258 | 8.53 | 2005 | 241 | 7.97 |
| Belgium | 13 | 0.43 | 2006 | 263 | 8.69 |
| Brazil | 21 | 0.69 | 2007 | 283 | 9.36 |
| Canada | 510 | 16.86 | 2008 | 218 | 7.21 |
| China | 25 | 0.83 | 2009 | 224 | 7.4 |
| France | 73 | 2.41 | 2010 | 57 | 1.88 |
| Germany | 28 | 0.93 | 2011 | 140 | 4.63 |
| Hong Kong | 17 | 0.56 | 2012 | 186 | 6.15 |
| India | 65 | 2.15 | 2013 | 154 | 5.09 |
| Israel | 33 | 1.09 | 2014 | 166 | 5.49 |
| Japan | 451 | 14.91 | 2015 | 220 | 7.27 |
| Malaysia | 28 | 0.93 | 2016 | 172 | 5.69 |
| Netherlands | 24 | 0.79 | 2017 | 133 | 4.4 |
| Poland | 24 | 0.79 | 2018 | 167 | 5.52 |
| Russian Fed | 14 | 0.46 | 2019 | 151 | 4.99 |
| Singapore | 29 | 0.96 | 2020 | 116 | 3.83 |
| South Africa | 20 | 0.66 | 2021 | 134 | 4.43 |
| South Korea | 78 | 2.58 | | | |
| Sweden | 30 | 0.99 | | | |
| Total | 3025 | 100 | | 3025 | 100 |

Note: The table continues in the next page.

Classification of final sample by Country and Year. *(continued)*

| Panel A: Sample by country | | | Panel B: Sample by year | | |
|---|---|---|---|---|---|
| Country | Frequency | % | Country | Frequency | % |
| Switzerland | 31 | 1.02 | | | |
| Thailand | 15 | 0.5 | | | |
| Turkey | 13 | 0.43 | | | |
| United Kingdom | 108 | 3.57 | | | |
| United States | 1117 | 36.93 | | | |
| Total | 3025 | 100 | | 3025 | 100 |

## Appendix C - Classification of final sample by Industry.

Classification of final sample by Industry.

The sample for this table consists of all completed mergers and acquisitions deals involving listed bidder and target companies reported on Securities Data Corporation (SDC) between 2005 and 2021. We take into account majority control deals where the bidder has a minority ownership of the target (less than 50%) prior to the announcement deals and ends up with a majority ownership (more than 50%) after deal announcement. In our use of Fama-French 48 industrial categories, financials (SIC codes 6000-6999) and utilities (SIC codes 4900-4949) are excluded. The key variable of interest, referred to as "Industry competition," is defined as the ratio of acquired targets to the total number of registered targets, accounting for year, industry, and country. Using the market model for a period of (-255,-25), the bidder and target CARs are the five-day cumulative abnormal returns surrounding the announcement date, while combined CARs are a weighted average of the bidder and target CARs. Takeover premium is defined as offer price to target closing stock price to a given period prior to the original announcement date .

| Industry | N° of targets | Average industry competition | Bidder CARs | Target CARs | Combined CARs |
|---|---|---|---|---|---|
| Agriculture | 14 | 0.0787 | 0.002 | 0.1405 | 0.0177 |
| Food | 52 | 0.095 | 0.0042 | 0.1878 | 0.017 |
| Soda | 14 | 0.196 | -0.012 | 0.213 | 0.0131 |
| Beer | 8 | 0.161 | 0.0046 | 0.2613 | 0.01 |
| Smoke | 3 | 0.2 | -0.0251 | 0.1111 | 0.0103 |
| Toys | 17 | 0.0847 | -0.008 | 0.22 | 0.0114 |
| Fun | 45 | 0.0583 | -0.0017 | 0.2157 | 0.0348 |
| Books | 20 | 0.3447 | 0.0102 | 0.1511 | 0.0299 |
| Consumer Goods | 27 | 0.0728 | 0.008 | 0.2316 | 0.032 |
| Apparel | 25 | 0.1307 | 0.0267 | 0.2183 | 0.0457 |
| Healthcare | 44 | 0.0968 | 0.013 | 0.2286 | 0.0429 |
| Medical Equipment | 103 | 0.0815 | -0.0046 | 0.3486 | 0.0117 |
| Pharmaceutical Products | 221 | 0.0654 | 0.0013 | 0.4169 | 0.0287 |
| Chemicals | 75 | 0.0417 | 0.0161 | 0.199 | 0.0425 |
| Rubber and Plastic Products | 21 | 0.0874 | -0.0026 | 0.2111 | 0.0215 |
| Textiles | 16 | 0.0942 | 0.024 | 0.176 | 0.0198 |

Note: The table continues in the next page.

Classification of final sample by Industry. *(continued)*

| Industry | N° of targets | Average industry competition | Bidder CARs | Target CARs | Combined CARs |
|---|---|---|---|---|---|
| Construction Materials | 47 | 0.0651 | 0.0064 | 0.2066 | 0.0383 |
| Construction | 62 | 0.0326 | 0.0014 | 0.2 | 0.0165 |
| Steel | 46 | 0.0414 | 0.0012 | 0.1456 | 0.0131 |
| Fabricated Products | 8 | 0.2053 | 0.0658 | 0.0848 | 0.0621 |
| Machinery | 87 | 0.0357 | 0.0148 | 0.2196 | 0.0302 |
| Electrical Equipment | 35 | 0.07 | -0.0034 | 0.2238 | 0.025 |
| Automobiles and Trucks | 47 | 0.0395 | 0.0042 | 0.1752 | 0.0214 |
| Aircraft | 5 | 0.1197 | -0.0168 | 0.2258 | 0.0153 |
| Ships | 6 | 0.2986 | -0.0035 | 0.1754 | 0.0286 |
| Guns | 3 | 0.3444 | 0.0253 | 0.3766 | 0.0439 |
| Gold | 234 | 0.0242 | -0.0139 | 0.2552 | 0.0172 |
| Mines | 150 | 0.0178 | 0.0023 | 0.2903 | 0.0322 |
| Coal | 16 | 0.0814 | 0.0523 | 0.2013 | 0.0761 |
| Oil | 239 | 0.0432 | -0.0254 | 0.1801 | 0.0064 |
| Communication | 93 | 0.0826 | -0.0001 | 0.1891 | 0.0227 |
| Personal Services | 30 | 0.075 | 0.0115 | 0.2178 | 0.0211 |
| Business Services | 528 | 0.0394 | 0.0066 | 0.2637 | 0.0271 |
| Computers | 89 | 0.08 | -0.0124 | 0.2321 | 0.0062 |
| Eletronic Equipment | 175 | 0.0732 | 0.0054 | 0.2917 | 0.0381 |
| Measuring Control | 45 | 0.0692 | 0.0044 | 0.2658 | 0.0278 |
| Business Supplies | 25 | 0.0939 | 0.0332 | 0.2152 | 0.0477 |
| Shipping Containers | 1 | 0.1111 | 0.0053 | -0.0046 | 0.0048 |
| Transportation | 71 | 0.0609 | 0.031 | 0.1765 | 0.0482 |
| Wholesale | 90 | 0.0301 | 0.0179 | 0.1969 | 0.0317 |
| Retail | 136 | 0.0355 | 0.0078 | 0.1709 | 0.0269 |
| Meals | 51 | 0.0506 | 0.0018 | 0.1511 | 0.019 |
| Other | 1 | 0.0714 | -0.0508 | 0.552 | 0.0426 |
| Total | 3025 | 0.0564 | 0.0022 | 0.2437 | 0.0255 |

# Appendix D - Takeover Industry Competition, Bidder Size, and Market Reaction.

Takeover Industry Competition, Bidder Size, and Market Reaction.

The table presents regression results of the announcement returns based on bidder size. The sample used includes all majority M&A deals involving listed bidder and target companies reported on Securities Data Corporation (SDC) between 2005 and 2021. Fama-French 48 industrial categories are employed, excluding financials and utilities. Takeover premium is defined as the offer price to target closing stock price ratio within a specified period prior to the original announcement date and is winsorized at the 1% level to address outliers. The key variable of interest, referred to as "Industry competition," is defined as the ratio of acquired targets to the total number of registered targets, accounting for year, industry, and country. Detailed definitions of all variables can be found in Appendix A. T-statistics are reported in parentheses, and statistical significance levels are denoted by ***, **, and * representing the 1%, 5%, and 10% thresholds, respectively. For conciseness, the regression models incorporate fixed effects for year, industry, and country, and their coefficients are not displayed.

| | Large bidders | | Small bidders | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| | BCARs | TCARs | BCARs | TCARs |
| Industry Competition | -0.0390 | -0.2281** | 0.0404 | 0.2875** |
| | (-0.82) | (-2.07) | (1.50) | (2.42) |
| Country competition | -0.0727 | 0.9133 | 0.0808 | 0.0105 |
| | (-0.20) | (0.86) | (0.45) | (0.01) |
| Method of payment | 0.0200*** | 0.0738*** | 0.0135*** | 0.0591*** |
| | (3.45) | (4.40) | (3.53) | (3.79) |
| Cross-border | 0.0102 | 0.0206 | 0.0026 | 0.0096 |
| | (1.49) | (0.91) | (0.72) | (0.58) |
| Same Industry | 0.0023 | -0.0135 | -0.0003 | 0.0046 |
| | (0.40) | (-0.82) | (-0.08) | (0.34) |
| Relative size | -0.0008 | -0.0218*** | -0.0052 | -0.0288* |
| | (-0.22) | (-3.22) | (-0.74) | (-1.83) |
| GDP Growth | 0.0057*** | 0.0094 | 0.0025 | 0.0053 |
| | (2.66) | (1.07) | (1.63) | (0.80) |

Note: The table continues in the next page.

## Appendix D - Takeover Industry Competition, Bidder Size, and Market Reaction.

Takeover Industry Competition, Bidder Size, and Market Reaction *(continued)*.

| | Large bidders | | Small bidders | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| | BCARs | TCARs | BCARs | TCARs |
| GDP Log | -0.0395* | -0.0572 | -0.0159 | -0.0951* |
| | (-1.89) | (-1.05) | (-1.14) | (-1.83) |
| Corporate Governance | 0.0018 | 0.0060 | -0.0008 | 0.0018 |
| | (1.14) | (1.63) | (-0.82) | (0.46) |
| Bidder\|Target Leverage | 0.0018 | -0.0047 | 0.0003 | -0.0008 |
| | (1.27) | (-1.02) | (0.42) | (-0.22) |
| Bidder\|Target Size | -0.0088*** | -0.0295*** | -0.0029** | -0.0520*** |
| | (-4.20) | (-4.79) | (-2.11) | (-9.24) |
| Bidder\|Target Tobin's Q | 0.0013 | -0.0012 | -0.0016 | 0.0040 |
| | (0.59) | (-0.16) | (-1.11) | (0.88) |
| Constant | 0.2624 | 0.3794 | 0.2392 | 1.1961* |
| | (0.97) | (0.59) | (1.33) | (1.83) |
| Observations | 3025 | 3025 | 3025 | 3025 |
| R-Squared | 0.108 | 0.182 | 0.104 | 0.294 |

## Appendix E - Takeover Industry Competition, Method of payment, and Market Reaction.

Takeover Market Competition, Method of payment, and Market Reaction.

The table presents regression results of the announcement returns based on method of payment. The sample used includes all majority M&A deals involving listed bidder and target companies reported on Securities Data Corporation (SDC) between 2005 and 2021. Fama-French 48 industrial categories are employed, excluding financials and utilities. Takeover premium is defined as the offer price to target closing stock price ratio within a specified period prior to the original announcement date and is winsorized at the 1% level to address outliers. The key variable of interest, referred to as "Industry competition," is defined as the ratio of acquired targets to the total number of registered targets, accounting for year, industry, and country. Detailed definitions of all variables can be found in Appendix A. T-statistics are reported in parentheses, and statistical significance levels are denoted by ***, **, and * representing the 1%, 5%, and 10% thresholds, respectively. For conciseness, the regression models incorporate fixed effects for year, industry, and country, and their coefficients are not displayed.

| | Cash only | | Mixed/Stock | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| | BCARs | TCARs | BCARs | TCARs |
| Industry Competition | 0.0520** | 0.1762 | -0.0244 | -0.0561 |
| | (2.29) | (1.40) | (-0.55) | (-0.47) |
| Country competition | 0.0510 | -0.7253 | -0.0363 | 1.4620* |
| | (0.24) | (-0.76) | (-0.12) | (1.79) |
| Cross-border | 0.0070* | 0.0098 | 0.0040 | 0.0263 |
| | (1.73) | (0.52) | (0.66) | (1.35) |
| Same Industry | 0.0014 | -0.0067 | -0.0027 | -0.0013 |
| | (0.42) | (-0.42) | (-0.51) | (-0.09) |
| Relative size | 0.0208* | -0.1080*** | -0.0016 | -0.0298*** |
| | (1.74) | (-3.41) | (-0.50) | (-5.07) |
| GDP Growth | 0.0019 | 0.0119 | 0.0046** | 0.0057 |
| | (1.06) | (1.25) | (2.22) | (0.81) |
| GDP Log | -0.0325** | -0.0616 | -0.0195 | -0.0724 |
| | (-1.99) | (-0.93) | (-1.03) | (-1.56) |
| Corporate Governance | -0.0004 | -0.0007 | 0.0013 | 0.0064** |
| | (-0.38) | (-0.15) | (0.88) | (2.15) |

Note: The table continues in the next page.

## Appendix E - Takeover Industry Competition, Method of payment, and Market Reaction.

Takeover Industry Competition, Method of payment, and Market Reaction. *continued*

| | Cash only | | Mixed/Stock | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| | BCARs | TCARs | BCARs | TCARs |
| Bidder\|Target Leverage | 0.0003 | -0.0020 | 0.0013 | -0.0029 |
| | (0.25) | (-0.45) | (1.18) | (-0.70) |
| Bidder\|Target Size | -0.0037*** | -0.0350*** | -0.0051*** | -0.0236*** |
| | (-3.29) | (-6.29) | (-4.12) | (-5.26) |
| Bidder\|Target Tobin's Q | -0.0008 | -0.0072 | 0.0014 | 0.0065 |
| | (-0.53) | (-1.49) | (0.64) | (1.11) |
| Constant | 0.4007* | 1.0586 | 0.0789 | 0.3491 |
| | (1.85) | (1.22) | (0.32) | (0.67) |
| Observations | 3025 | 3025 | 3025 | 3025 |
| R-Squared | 0.109 | 0.241 | 0.116 | 0.168 |