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**M&A announcement returns: does industry takeover competition reduce bidder firms' abnormal returns?**
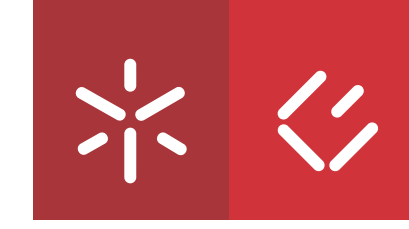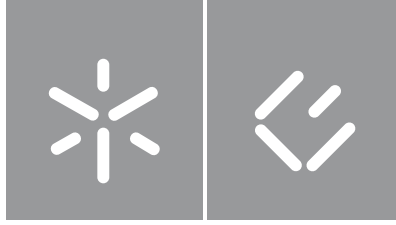
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# M&A announcement returns: does industry takeover competition reduce bidder firms' abnormal returns?

Master Dissertation
Master in Finance

Conducted under the supervision of:
**Professor Artur Jorge Rodrigues**

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# Abstract

This master dissertation explores the impact of competition on value creation in mergers and acquisitions (M&As) for acquirer firms in the United States, the United Kingdom, and Canada. By analyzing the Cumulative Abnormal Return (CAR) as an indicator of value creation, the research findings indicate that there's some evidence to support the idea that competition influences indeed M&A outcomes for acquiring firms.

This dissertation centers on the event study methodology, using a sample of M&A deals from the three stated countries from 2001 to 2021, aiming to explain the CAR using a competition variable measured as the number of deals occurring in a given industry of a given country each year divided by the number of listed firms in that country's industry in that year. The regressions are also controlled using other key variables, such as the mean of payment, the dimension of the firms involved, and others.

The study reveals that industry competition plays a vital role in determining the CAR for acquirer firms. M&As taking place in highly competitive industries tend to result in lower CAR compared to those in less competitive sectors. This suggests that acquirer firms face challenges in achieving substantial value creation in fiercely competitive markets.

In conclusion, this dissertation emphasizes the significance of competition in shaping M&A outcomes for acquirer firms. The findings highlight the challenges faced by acquirer firms operating in highly competitive industries and underscore the importance of considering competition when evaluating the potential value creation in different industry contexts. By recognizing the impact of competition, firms can enhance their decision-making process and optimize the benefits of M&A activities.


**Key words:** Mergers and Acquisitions; Event Study; Competition; Industry; Announcement Returns.

# Resumo

Esta dissertação de mestrado explora o impacto da concorrência na criação de valor em fusões e aquisições (F&A) para empresas adquirentes nos Estados Unidos, Reino Unido e Canadá. Ao analisar o Retorno Anormal Acumulado como indicador de criação de valor, os resultados da pesquisa indicam que existem evidências que apoiam a ideia de que a concorrência de fato influencia os resultados das F&A para as empresas adquirentes.

Esta dissertação concentra-se na metodologia de estudo de evento, utilizando uma amostra de F&A dos três países mencionados de 2001 a 2021, com o objetivo de explicar o retorno abnormal utilizando uma variável de concorrência medida pelo número de ocorrências de F&A em uma determinada indústria de um dado país a cada ano dividido pelo número de empresas cotadas em bolsa na indústria desse país nesse ano. As regressões também são controladas usando outras variáveis-chave, como o método de pagamento, a dimensão das empresas envolvidas, entre outras.

O estudo revela que a concorrência na indústria desempenha um papel vital na determinação do retorno para as empresas adquirentes. As F&A que ocorrem em indústrias altamente competitivas tendem a resultar em retornos mais baixos em comparação com aquelas em setores menos competitivos. Isso sugere que as empresas adquirentes enfrentam desafios para alcançar uma criação de valor substancial em mercados altamente competitivos.

Em conclusão, esta dissertação enfatiza a importância da concorrência na moldagem dos resultados das F&A para as empresas adquirentes. Os resultados destacam os desafios enfrentados pelas empresas adquirentes que operam em indústrias altamente competitivas e ressaltam a importância de considerar a concorrência ao avaliar a potencial criação de valor em diferentes contextos industriais. Ao reconhecer o impacto da concorrência, as empresas podem aprimorar seu processo de tomada de decisão e otimizar os benefícios das atividades de F&A.


**Palavras-chave:** Fusões e aquisições; Estudo de Eventos; Competição; Indústria; Retorno do Anúncio.

# Contents

# 1. Introduction

Standard economic theory argues that, in a perfect world, resource allocation is optimal and efficient, and assets will be channeled to work in their best utilization possible. Building on this, Mergers and Acquisitions (henceforth M&As) may also constitute a way to reallocate assets and take advantage of synergies to obtain a more efficient resource allocation, contributing as well to knowledge transfer between the acquirer company (bidder) and the acquired company (target). M&As have long been a significant feature of the corporate landscape where companies seeking to grow, diversify, and increase their competitiveness often turn to them as a means of achieving these goals. A merger or acquisition happens in the context of the market for corporate control, where "investors seek the right to control the management of corporate resources" (Jarrell et al., 1988), either through mergers, tender offers (the bidder makes an offer directly to the target's shareholders, with or without the support of the target firm's management) or proxy contests (shareholders vote to obtain control of the management of the firm).

While an M&A can bring substantial benefits to companies, it can also be associated with significant risks. One of the primary concerns for investors is whether the returns from M&A activities are adequate. In the literature, even though the effects of the announcement of M&As on stock returns both to the bidder and to the target companies is well documented (especially for the United States and the United Kingdom), there is still some discussion on why such conclusions arise and what implications do they have. Most of the research available sums up a positive return for targeted companies' shareholders, while the result for bidder companies is not that straightforward, ranging from negative to very little positive returns for the shareholders of the bidder companies. Some arguments try to explain why firms announcing an M&A suffer on their stock price. Roll (1986) explained that there may be a hubris factor when bidders' management price the deal, often caused by presumption and irrationality. There's also the equity signaling argument – some firms (small ones, for example) prefer to pay the deal with equity, potentially signaling that their equity is overvalued, destroying value (Travlos, 1987). Finally, the argument that this dissertation aims at studying relates to the high level of competition for M&As in some markets, that lead to higher premia when the acquisition is priced. As bidder companies turn out paying more for the transaction because of the higher competition, the potential earnings for their shareholders may end up swallowed by the extra premium. Although usually tested between countries, the goal of this dissertation is to test this argument, but instead of verifying the hypothesis across countries, the purpose will be to verify it in each industry, checking if bidders' value is also compromised in less competitive industries.

According to Alexandridis et al. (2010), the United States, the United Kingdom and Canada correspond to the markets where there is more competition in M&A deals, and, as a result, the intention of this dissertation is to narrow the geographical location of the sample to include only deals that have target companies from these three countries, so that it will be possible to find if M&A deals can be profitable for the bidder firm in non-competitive industries even in these three countries. For this purpose, I will assess which industries have a more intense and competitive M&A activity, and then evaluate the Cumulative Abnormal Return (CAR) around the M&A deal, focusing on the bidder company, in order to verify if there is a positive or negative return for its shareholders. This will be done using the event study methodology developed by MacKinlay (1997), and a regression will be used to explain what influences the CAR.

The main findings of this study are that industry competition is, in fact, statistically significant in the overall sample to explain the CAR, and the coefficient for this variable is negative, indicating that higher industry competition results in lower CAR for acquiring firms. Besides this,

The following sections of this proposal are the Literature Review, a Methodology and Data section followed by a description of the tentative timing, and at the end there is the References list.

## 2. Literature Review

Mergers and Acquisitions have been happening around the world, although their expression and importance has boosted since the beginning of the 20th century, with the first wave of M&As following the depression of 1883. After that, several other waves of M&As have been occurring with different characteristics, although it is only at the end of the 20th century that continental European companies started to engage in these kind of deals at comparable rates as US's and UK's companies (Fuller et al., 2002; Gaughan, 2010). These M&As waves typically occur in a recovery economy and could be explained by industrial or technological shocks, due to lack of regulation, or even changes in input costs (Mitchell & Mulherin, 1996).

M&A deals, besides the possibility of shareholder value creation, bring to the table other types of consequences. For example, synergy effects between the target and bidder companies might allow for better asset allocation and cost saving, resulting in revenue enhancement, as Houston et al. (2001) studied for the bank industry. The main paper used for this dissertation (Alexandridis et al., 2010) suggests that the findings are consistent with the idea that the gains from M&A are related to the ability of the acquiring firm to extract synergies and to exploit market power, and that these factors are influenced by the level of legal and institutional protection for shareholders and the level of market efficiency.

As stated previously, there is a vast amount of literature on M&A announcement returns, and the value created for target companies' shareholders is understood as a stylized fact in this field (Andrade et al., 2001; Bruner, 2002; Eckbo & Thorburn, 2000; Houston et al., 2001). However, for the bidder firms, the value creation for shareholders is not as consensual. Ultimately, because of the disparity of the different studies, we can conclude that, aggregately, the abnormal returns for the buyer are essentially break-even, as explained by Bruner (2002) in his summary of the findings of 41 studies. Therefore, considering the M&A deal as a whole, we can argue that there is an overall positive value created because of the net value for the buyer and the positive value for the seller (Bruner, 2002). Nevertheless, empirical evidence for M&A deals from 2009 onwards suggests that in the recent years bidder firms do get positive and statistically significant returns, especially in public acquisitions (Alexandridis et al., 2017).

When executing a merger or acquisition, the firm may opt for different means of paying the deal. Most commonly, the bidder chooses between giving up its own stock, paying with cash, or a mix of both. There's evidence that in periods of overvaluation, bidder firms may prefer to abdicate stock in order to cash-out temporarily some of its own valuation (Di Giuli, 2013; Shleifer & Vishny, 2003). Contrary, some recent evidence argues against this hypothesis (see Eckbo et al. (2018) for example). However, if we

assume that bidders do offer stock when their companies are overvalued, why should targets accept such deals? Shleifer and Vishny (2003) explain that this may be due to asymmetries in information from the target, leading to a lack of proper valuation of the bidder, and Di Giuli (2013) argues that the target firm may believe that in the long run the value creation by the M&A deal will compensate the overvaluation of the stock. Overall, some studies find that stock-financed M&A transactions generate higher returns compared to cash-financed transactions, like Jarell & Poulsen (1989), while other publications end up finding evidence of the opposite. This way, the literature on the relationship between the mean of payment and M&A returns ends up being mixed, and this impact is likely to depend on various factors, including the specific circumstances of the M&A transaction and the motivations of the acquiring firm. The importance of considering the mean of payment in the evaluation of M&A opportunities cannot be overstated, as it can have a significant impact on the returns generated by these activities.

Studies have found that private deals tend to generate higher returns compared to public deals. One explanation for this finding is that private deals are often characterized by greater asymmetry of information and bargaining power, which can result in better negotiated terms for the acquiring firm. The difference between private and public M&A deals is notorious, and several studies conjugate this with the mean of payment of the deal (stock or cash). The result is that bidder firms tend to earn higher returns when private deals are paid with stock (Fuller et al., 2002; Moeller et al., 2004) and when public deals are analyzed, returns for the bidder firm are greater when cash represent the majority of the mean of payment (Alexandridis et al., 2010; Fuller et al., 2002; Moeller et al., 2004; Travlos, 1987).

Other important control variables when assessing the returns for the firms involved in these M&As are the characteristics of the firms itself, in particular their size in value. Larger firms, having more resources and more pressure to conclude the deals, end up being more successful at doing so, sometimes overpaying and bidding at a higher price (Moeller et al., 2004). There's evidence as well that in the private sector the effect of size is not relevant to determine the returns of the deal, mostly because we can interpret that the private sector is predominately composed by small firms (Moeller et al., 2004). This could also explain why private deals are usually more profitable than public deals for the bidder firm.

We can extend this argument analyzing the relative size of the firms involved. Asquith et al. (1983) was one of the first to include the relative size in an empirical study, arguing that when the difference in size between the bidder and the target is large, some positive returns may appear insignificant. For example, if the bidder firm is abnormally large compared with the target firm size, any potential positive returns to the bidder firm could be diluted in its market capitalization. Some papers also include a relative

size variable, trying to understand whether size difference impacts returns (Alexandridis et al., 2010; Faccio et al., 2006; Fuller et al., 2002).

Even though somewhat difficult to analyze, the quality of the management of the bidding firm can also impact the outcome of the deal. Poor management quality can result in operational challenges that can negatively impact the returns generated by M&A, for example with the lack of ability to realize the synergies and benefits that are expected from the M&A transaction. On the other hand, high-quality management can effectively manage the integration process and maximize the benefits resulting from the deal. Therefore, although not easy to quantify, management quality is a key factor to consider when evaluating the potential returns from M&A activities. For example, Mausulis et al. (2007) find that companies that separate the positions of CEO and chairman of the board observe higher abnormal returns after announcing a M&A deal. Nevertheless, it is obvious that the success of a M&A deal is dependent on many other variables, which can be hard to define and control for, and, as Hoorn and Hoorn (2011) put it, "Even the most promising M&A transaction on paper can turn bad (...)".

The 2007 financial crisis – one of the worst in recent history – caused a significant impact in the way businesses conduct their day-to-day life, including how M&As are chosen. Gupta and Leech (2015) present this issue, concluding that poor risk assessment conducted by firms is one of the main faults for corporate governance failures. As such, the financial crisis brought an increase in internal control mechanisms, shareholder activism, as well as reforms in government supervision, improving the approach that managers have towards M&As, aiming to enhance value creation and having a positive influence in the quality of these decisions, making post 2009 deals overall value to be higher (Alexandridis et al., 2017).

In terms of takeover competition, which will be the focus of this dissertation, there are some studies that identify and try to isolate this variable. For example, Alexandridis et al. (2010) conclude that the negative effect of M&As on bidder companies is predominant in countries with higher M&A competition and, on the contrary, the transactions that do not involve such countries create positive returns for bidder companies. Rossi and Volpin (2004) also study this, however through the inclusion of a dummy variable equal to one if contestation is present (i.e., the number of bidder companies is higher than one) as opposed of the mean competition ratio used by Alexandridis et al. (2010), and they conclude that the premium of the M&A increases when we are in presence of contested deals.

# 3. Methodology

## 3.1 Main hypothesis

The purpose of this dissertation is to try and understand whether shareholders of companies that develop their activity in industries with less competition for M&As may obtain positive returns if they wish to acquire/merge with a potential target (or at least improve their returns). Besides this, other common variables will also be controlled for, such as the mean of payment, the size of each of the firms involved in the deal, and other control variables, as already discussed in the literature review. As such, three main hypotheses will be studied:

**H1: Even in highly competitive countries (US, UK & CA), bidder firms in less competitive industries exhibit higher returns.**

Overall, we should expect that bidder firms in less competitive industries present higher returns when compared with bidders of more competitive industries.

**H2: In these countries (US, UK & CA), acquirers that pay with stock in low-competition industries observe better returns.**

Alexandridis *et al.* (2010) find that, in countries besides the UK, US and CA, there's a positive return for acquiring firms when they pay the deals with stock. Assuming this is due to competition, we should observe that, even in US/UK/CA, low competition industries get positive returns when paying with stock.

**H3: Deals that occurred after 2009 present better returns for acquirer firms, especially in low-competition industries.**

As discussed in the literature, the recent financial crisis resulted in a higher level of internal control mechanisms in companies as well as a surge in regulation. As such, a potential consequence of this are better chosen M&A deals (by the acquirer). Therefore, CARs for bidding firms are expected to have improved in the following years. Crossing this effect with competition should lead to an even better outcome in low-competition industries.

Besides these three main hypotheses, I will also check the if the usual relations hold:

- higher acquirer dimension (measured by market value four weeks prior to the announcement date) leads to lower CAR;
- deals involving public targets generate lower CARs.

### 3.2 Methodology description

The core methodology of this dissertation is based on the event study model of MacKinlay (1997), focusing on the changes in the stock price of the acquiring target firms around the announcement of the M&A transaction. The abnormal returns are calculated by comparing the actual stock returns to a benchmark, in this case the market return of the country. The event study will be designed with an event window of 5 days around the announcement date (-2, +2), together with an estimation window of 230 days ending 25 days before the announcement date of the M&A deal. All the CARs were winsorized at 1% and 99% to remove possible outliers in the sample. Afterwards, the intention is to apply regression analysis to study which variables explain the CAR variation, including the takeover competition variable.

The abnormal return for each firm $j$ and period $\tau$ ($AR_{j,\tau}$) is calculated as follows:

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

where $R_{j,\tau}$ is the return for firm $j$ in period $\tau$ and $[\alpha_j + \beta(R_{m,\tau}) + \epsilon_{j,\tau}]$ is the expected return for that firm, with $\alpha_j$ the stock specific intercept, $\beta$ the stock's beta coefficient, $R_{m,\tau}$ the return for the market index during period $\tau$ and $\epsilon_{j,\tau}$ the error term. The Cumulative Abnormal Return over the event window of five days $CAR_{j,(-2,+2)}$ will consist of the summation of the abnormal returns:

$$CAR_{j,(-2,+2)} = \sum_{\tau1}^{\tau2} AR_{j,\tau}$$

In order to study the impact of the industry takeover competition in the returns of the M&A deal, a competition variable has been constructed consisting of the total amount of M&A deals on a given year on each industry of each country divided by the total amount of listed companies in that industry in that country in that year. For this, I considered the listed firms in the New York Stock Exchange (NYSE) and the National Association of Securities Dealers Automated Quotations (NASDAQ) in the US, and for the listed firms in the UK and Canada I retrieved the data from the London Stock Exchange (LSE) and Toronto Stock Exchange (TSX), respectively. This will output an industry competition ratio for each industry in each country in a given year, enabling the comparison between industries and assessing if more competition does indeed have an effect on CAR for the bidder firm. This methodology is be similar to the one used by Alexandridis et al. (2010) in their country competition study, but instead of having a ratio for each country there's a granulation by the industry of each country.

To begin the analysis of the results, some univariate breakdowns will be performed, in order to understand if, without controlling for other variables, the main hypothesis of this dissertation hold. As such, the CAR will be analyzed independently by payment method, first for the overall sample and then by country, and also a distribution of the CAR by the deals that occurred before and after the year of 2009 will be performed.

As for the multivariate regression analysis, the methodology will be similar to the literature (mainly to Alexandridis et al. (2010)), using the proposed *competition* variable, some other deal specific variables, as well as fixed effects for the industry, country and year.

# 4. Data

In order to test the study hypotheses, a sample of M&A deals from the Thomson Securities Data Company (SDC) database was collected, imposing some filters on the deals. The sample contains completed acquisitions where targets are listed or private firms from the United States, United Kingdom and Canada, and the bidding firms are listed firms from these same three countries. The sample was restricted to contain only domestic deals, so that cross-country factors do not interfere with the analysis, and to ensure that acquirers who already owned a substantial percentage of the target company before the deal are not considered, the bidder firm must have less than 10% of the target's shares before the announcement date, and at the end of the deal it must end up with at least half of the target company. This way, incomplete deals do not appear in the sample (Alexandridis et al., 2010; Faccio et al., 2006). Besides that, only deals worth more than $1 million were taken into account. Retrieving deals only from the US, UK and Canada lead to an initial sample containing 21,819 deals.

To measure the level of competition in the industries, a competitivity ratio was calculated, as previously explained. The values on each country's stock exchange constituents were collected in Reuters Refinitiv Eikon Database. This database was also used to obtain the returns of the market and the returns of the firms in the sample that were used to estimate the expected and abnormal returns in the event study. The final sample of deals after performing the event study corresponded to 6,497. Table 1 contains the description of the mean competition and median premium by each country and by industry, using the 12-industry classification from Fama&French, excluding the money and baking industry, given their specificities.

## TABLE 1 – COMPETITION AND PREMIUM

This table shows the average level of competition and the median of the premium of all acquisitions of listed targets reported in the Thomson Financial SDC global database from 2001 to 2021. Industry is the 12 levels classification used by professor Fama&French excluding the banking industry. Competition is the mean of the ratio of M&A deals divided by the number of listed firms each year in a given industry of a given country, in percentage points. Premium is the median ratio of deal value by the target's market value one month before the announcement of the deal, in percentage points. N is the number of firms. Total is the overall sample, and then the sample is divided between each of the three countries.

| INDUSTRY | UNITED STATES | | | UNITED KINGDOM | | | CANADA | | | TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Competition | Premium | N | Competition | Premium | N | Competition | Premium | N | Competition | Premium | N |
| Consumer Nondurables | 6.817 | 46.53 | 186 | 7.742 | 30.72 | 93 | 5.409 | 58.62 | 22 | 6.997 | 31.12 | 301 |
| Consumer Durables | 4.559 | 32.41 | 59 | 6.600 | 2.07 | 10 | 4.000 | NA* | 2 | 4.876 | 18.77 | 71 |
| Manufacturing | 7.748 | 50.85 | 424 | 5.100 | 15.64 | 70 | 6.300 | 48.76 | 40 | 7.294 | 35.61 | 534 |
| Energy | 10.418 | 45.40 | 232 | 2.455 | 22.53 | 22 | 16.271 | 37.62 | 365 | 13.663 | 19.31 | 619 |
| Chemicals | 5.689 | 32.32 | 74 | 8.000 | 79.46 | 9 | 15.286 | 30.95 | 7 | 6.758 | 26.51 | 90 |
| Business Equipment | 12.139 | 45.54 | 1605 | 6.907 | 16.21 | 270 | 9.393 | 42.62 | 84 | 11.272 | 37.16 | 1959 |
| Telecomunications | 7.446 | 37.70 | 148 | 11.000 | 8.98 | 35 | 6.286 | 22.77 | 14 | 8.029 | 26.33 | 197 |
| Utilities | 3.795 | 26.25 | 73 | 12.375 | 6.83 | 8 | 3.333 | 29.30 | 9 | 4.551 | 19.95 | 90 |
| Shops | 5.682 | 36.92 | 314 | 6.097 | 33.01 | 103 | 6.077 | 50.97 | 39 | 5.725 | 31.31 | 456 |
| Health | 7.327 | 61.83 | 645 | 4.594 | 25.59 | 32 | 20.028 | 35.49 | 71 | 8.454 | 44.47 | 748 |
| Other | 6.137 | 41.68 | 622 | 6.111 | 30.81 | 397 | 7.932 | 37.86 | 413 | 6.629 | 34.96 | 1432 |
| Total | 8.866 | 45.359 | 4382 | 6.500 | 25.112 | 1049 | 11.508 | 39.009 | 1066 | 8.913 | 33.33 | 6497 |

\* Due to the small sample size (2 deals) there's no information about the premium of this industry for Canada.

At first sight we can check that, although the opposite of what we would expect, higher levels of competition are sometimes associated with lower premiums. This outcome could be explained by information transparency, because in highly competitive industries, information about potential targets may be more readily available and easier to obtain, meaning that acquirers may have a better understanding of the target company's value and making it less likely that they will overpay for the company.

In order to check for differences between the most and the least competitive industries, two groups with the most and the least competitive industries have been created for the whole sample (sorted by the competition measure in percentage points), which are the following:

- Most competitive industries: Energy, Business Equipment and Health
- Least competitive industries: Consumer Durables, Utilities and Shops

This division into two groups was also extended to each of the three countries in order to broaden the analysis and check the impacts by country.

- US most competitive industries: Business Equipment, Energy, and Manufacturing
- US least competitive industries: Utilities, Consumer Durables, and Shops
- UK most competitive industries: Utilities, Telecommunications, and Chemicals
- UK least competitive industries: Energy, Health, and Manufacturing
- Canada most competitive industries: Health, Energy, and Chemicals
- Canada least competitive industries: Utilities, Consumer Durables, and Consumer Nondurables

Using these groups, tables 2A and 2B were generated, explaining the different variables both in aggregated terms and also subdivided in deals that belong to the most and to the least competitive industries in each country. This division is intended to aid in the explanation of the effects, checking if the variables impact these groups differently or not.

Table 2A presents some statistics related to the characteristics of the deal and the firms for the overall sample, in which there's a division of the deals that belong to the three most competitive countries (MCI) and the deals that belong to the three least competitive countries (LCI). The deals are then divided between the three countries in table 2B, also with the most and least competitive industries in each country. The difference between the statistics of both groups is also reported, together with the significance value of this difference.

In the overall sample (table 2A), we can see that the average deal value is around $522 Million, and in the least competitive industries this average is higher compared to the most competitive, although not significant. Acquirer firms are worth, on average, almost $8 billion, with this average increasing to more than $11 billion for the most competitive industries. The difference of about $6 billion in market value of the acquirer firm between the most and the least competitive industries is statistically significant, even though the median market value of the acquirer is lower for the most competitive industries. Target firms are considerably cheaper than their acquirers, and the relative size between the two participants of the M&A deal decreases for the most competitive industries.

## TABLE 2A – OVERALL SAMPLE STATISTICS

This table shows the sample statistics of all acquisitions of listed targets reported in the Thomson Financial SDC global database from 2001 to 2021. Total is the overall sample and then MCI corresponds to the most competitive industries and LCI corresponds to the least competitive industries (for a description of the industries in each country see table 1). Difference corresponds to the value for the most competitive industries minus the value for the least competitive industries. Deal value is the value of the M&A transaction in million US dollars. Acquirer (target) market value is the equity market value of the acquirer (target) firm four weeks before the announcement date. Relative size is the ratio of the deal value by the acquirer market value four weeks prior to the announcement. Premium is the offer price divided by the target's stock price four weeks prior to the announcement date. All cash (all stock) is the percentage of deals paid only using cash (stock). Other/Mixed are deals paid using other or a combination of means. CAR is the Cumulative Abnormal Return calculated using the event study methodology on a 5-days event window (-2, +2). N is the number of firms. Difference values have significance tests (t-test for difference of means and Wilcoxon sign-rank test for difference of medians), where * p < 0.1, ** p < 0.05, *** p < 0.01.

|  | Total (N=6497) | LCI (N=617) | MCI (N=3326) | Difference |
|---|---|---|---|---|
| **DEAL VALUE** |  |  |  |  |
| Mean | 552.126 | 677.973 | 643.422 | -34.551 |
| Median | 36.078 | 50.615 | 41.786 | -8.8295* |
| **ACQ MARKET VALUE** |  |  |  |  |
| Mean | 7896.972 | 5409.948 | 11459.180 | 6049.232** |
| Median | 582.660 | 766.534 | 661.198 | -105.337*** |
| **TARGET MARKET VALUE** |  |  |  |  |
| Mean | 1408.713 | 1907.137 | 1521.764 | -385.373 |
| Median | 185.443 | 572.996 | 179.743 | -393.253 |
| **RELATIVE SIZE** |  |  |  |  |
| Mean | 0.467 | 1.173 | 0.394 | -0.779** |
| Median | 0.084 | 0.082 | 0.077 | -0.005 |
| **PREMIUM (%)** |  |  |  |  |
| Mean | 47.074 | 50.813 | 4840.342 | 4789.53 |
| Median | 33.330 | 26.275 | 3473.000 | 3446.725* |
| **ALL CASH (%)** |  |  |  |  |
| Mean | 30.706 | 34.522 | 32.562 | -1.96*** |
| **ALL STOCK (%)** |  |  |  |  |
| Mean | 13.129 | 7.780 | 12.959 | 5.179 |
| **MIXED / OTHER (%)** |  |  |  |  |
| Mean | 56.164 | 57.699 | 54.480 | -3.219 |
| **INTRAINDUSTRY (%)** |  |  |  |  |
| Mean | 0.712 | 0.598 | 0.793 | 0.195 |
| **CAR (%)** |  |  |  |  |
| Mean | 2.075 | 3.914 | 0.744 | -3.169*** |

On average, acquirers pay a higher premium when firms belonging to the most competitive industries are involved, although the average premium difference is not statistically significant. The average deal overpays the value of the target company by 47%.

As for the mean of payment, more deals are paid for using only cash compared to using only stock, and the negative difference between the percentage of deals paid using only cash in the most competitive industries comparing to the least competitive is negative and significant.

In this sample, the majority of the deals (71%) comprise an acquirer and a target firm that belong to the same industry. And finally, and probably most importantly, the average cumulative abnormal return for this sample is around 2%, somewhat in accordance to the literature review, as past evidence suggests that CAR for acquirer firms is, at best, positive and small. Deals occurring in the most competitive industries generate less 3.17 percentage points of CAR when comparing to deals occurring in the least competitive, which sustains the initial hypothesis that competition is inversely related to CAR

Analyzing now the statistics by country (table 2B), we can see that the deals from the US correspond to most of the sample – about 65% – while UK and Canada represent about 18% and 17%, respectively.

Deals are significantly larger in the US compared to the UK and Canada, averaging $674 Million in the US. The difference in the mean deal value between the most and the least competitive industries is negative for the US and UK, and statistically significant for the first one, suggesting that the average deal in competitive industries is worth less compared to less competitive environments for this country. As for the market value of the firms involved, the same conclusions arise as the overall sample.

Furthermore, in the US and UK the premium of the deal is higher in the most competitive industries, as expected. The difference in the premium of both groups is also significant for the US sample. Important to highlight that the statistical significance of the difference in the median premium between the competition groups in Canada.

For the payment method, it is important to highlight that the percentage of all cash deals is higher than the percentage of all stock deals in the US and also in the UK, as it was in the overall sample.

Finally, for the Cumulative Abnormal Return, the reduction when comparing the most and the least competitive industry maintains for the three countries, although now this difference presented no statistical significance.

## TABLE 2B – SAMPLE STATISTICS BY COUNTRY

This table shows the sample statistics of all acquisitions of listed targets reported in the Thomson Financial SDC global database from 2001 to 2021. The sample is divided between the three countries (United States, United Kingdom and Canada), and the statistics for the total sample are presented in the last column (total). For each country, there's the overall sample (Total) and then MCI corresponds to the most competitive industries and LCI corresponds to the least competitive industries, both groups depending on the country (for a description of the industries in each country see table 1). Difference corresponds to the value for the most competitive industries minus the value for the least competitive industries. Deal value is the value of the M&A transaction in million US dollars. Acquirer (target) market value is the equity market value of the acquirer (target) firm four weeks before the announcement date. Relative size is the ratio of the deal value by the acquirer market value four weeks prior to the announcement. Premium is the offer price divided by the target's stock price four weeks prior to the announcement date. All cash (all stock) is the percentage of deals paid only using cash (stock). Other/Mixed are deals paid using other or a combination of means. CAR is the Cumulative Abnormal Return calculated using the event study methodology on a 5-days event window (-2, +2). N is the number of firms. Difference values have significance tests (t-test for difference of means and Wilcoxon sign-rank test for difference of medians), where * p < 0.1, ** p < 0.05, *** p < 0.01.

| | UNITED STATES | | | | UNITED KINGDOM | | | | CANADA | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Total (N=4967) | LCI (N=237) | MCI (N=2187) | Difference | Total (N=1367) | LCI (N=86) | MCI (N=199) | Difference | Total (N=1309) | LCI (N=95) | MCI (N=540) | Difference |
| **DEAL VALUE** | | | | | | | | | | | | |
| Mean | 733.446 | 1209.903 | 717.703 | -492.201** | 152.717 | 1265.089 | 174.693 | -1090.396 | 199.815 | 189.164 | 208.884 | 19.720 |
| Median | 60.000 | 103.000 | 59.183 | -43.817*** | 9.670 | 10.907 | 15.104 | 4.197 | 20.597 | 23.932 | 33.707 | 9.776 |
| **ACQUIRER MARKET VALUE** | | | | | | | | | | | | |
| Mean | 10858.520 | 7498.618 | 14357.870 | 6859.252 | 2188.768 | 6442.723 | 3495.809 | -2946.914 | 1340.144 | 1109.760 | 1180.743 | 70.983 |
| Median | 1014.206 | 2134.611 | 298.995 | -1835.616*** | 153.995 | 181.482 | 316.458 | 134.976 | 125.493 | 235.831 | 210.410 | -25.421 |
| **TARGET MARKET VALUE** | | | | | | | | | | | | |
| Mean | 1838.395 | 2465.471 | 1737.554 | -727.917 | 1762.584 | 4072.410 | 5010.854 | 938.444 | 354.314 | 452.816 | 363.206 | -89.609 |
| Median | 371.686 | 1179.965 | 298.995 | -880.97*** | 99.868 | 144.825 | 284.236 | 139.412 | 38.601 | 79.207 | 52.919 | -26.288 |
| **RELATIVE SIZE** | | | | | | | | | | | | |
| Mean | 0.414 | 0.273 | 0.295 | 0.022 | 0.376 | 0.322 | 0.555 | 0.233 | 0.774 | 0.250 | 0.867 | 0.617 |
| Median | 0.072 | 0.081 | 0.065 | -0.016 | 0.070 | 0.112 | 0.061 | -0.052** | 0.203 | 0.121 | 0.200 | 0.079*** |
| **PREMIUM (%)** | | | | | | | | | | | | |
| Mean | 48.240 | 29.396 | 46.073 | 16.67705* | 26.809 | 27.171 | 20.911 | -6.260 | 48.561 | 60.473 | 36.810 | -23.663 |
| Median | 33.930 | 18.725 | 34.075 | 15.35*** | 29.470 | 28.710 | 25.705 | -3.005 | 33.330 | 47.700 | 20.750 | -26.95*** |
| **PAYMENT METHOD (%)** | | | | | | | | | | | | |
| All cash | 35.874 | 30.583 | 37.380 | 6.79783* | 26.311 | 26.984 | 34.932 | 7.947 | 13.790 | 22.857 | 14.673 | -8.184* |
| All stock | 9.425 | 9.709 | 10.781 | 1.072 | 5.052 | 17.460 | 5.479 | -11.981*** | 36.304 | 11.429 | 30.023 | 18.594*** |
| Mixed/other | 54.701 | 59.709 | 51.839 | -7.87** | 68.637 | 55.556 | 59.589 | 4.033 | 49.906 | 65.714 | 55.305 | -10.410 |
| **INTRAINDUSTRY (%)** | | | | | | | | | | | | |
| Mean | 0.709 | 0.495 | 0.781 | 0.286 | 0.638 | 0.698 | 0.630 | -0.068 | 0.798 | 0.571 | 0.828 | 0.257 |
| **CAR (%)** | | | | | | | | | | | | |
| Mean | 1.785 | 1.406 | 0.511 | -0.895 | 1.954 | 3.359 | 3.154 | -0.205 | 1.438 | 1.995 | -0.484 | -2.480 |

# 5. Analysis

## 5.1 Univariate Analysis

Starting the analysis focusing on the contribute of some variables separately, the sample was divided into the countries and the groups representing the level of competition so that the CAR for the acquirer firm can be analyzed comparing the mean of payment utilized to complete the M&A deal.

**TABLE 3 – CAR BY COMPETITION AND MEAN OF PAYMENT**

This table shows the mean CAR by level of competition in the overall sample as well as in each of the three countries (US/UK/Canada), by mean of payment. In each group of rows, All corresponds to the whole sample, MCI corresponds to the most competitive industries and LCI corresponds to the least competitive industries, both groups depending on the country (for a description of the industries in each country see table 1). Cash are deals paid using 100% cash, Stock are deals paid using 100% stock and Mixed/Other are the rest of the deals, where combinations or other means of payment were used.

|  |  | All | Cash | Stock | Mixed/other |
|---|---|---|---|---|---|
| **TOTAL** | All | 1.78% | 0.70% | 4.30% | 1.74% |
| | MCI | 0.74% | 0.14% | 2.28% | 0.74% |
| | LCI | 3.91% | 1.79% | 20.43% | 2.96% |
| UNITED STATES | All | 1.78% | 0.69% | 7.25% | 1.56% |
| | MCI | 0.51% | 0.15% | 1.74% | 0.51% |
| | LCI | 1.41% | 1.10% | 6.76% | 0.69% |
| UNITED KINGDOM | All | 1.95% | 1.86% | 0.94% | 2.07% |
| | MCI | 3.15% | 1.58% | 19.98% | 2.53% |
| | LCI | 3.36% | 1.73% | -1.52% | 5.69% |
| CANADA | All | 1.44% | -1.46% | 1.61% | 2.11% |
| | MCI | -0.48% | -5.68% | 1.15% | 0.01% |
| | LCI | 2.00% | 2.66% | -9.06% | 3.69% |

As stated before, we wouldn't expect CAR for acquirers to be highly positive. From table 3, it is possible to understand that in this sample the average gain for the bidding firm is positive, although in some cases this value becomes negative, for example when paying with cash in Canada. Nevertheless, focusing on the mean of payment, these results are consistent with some of the literature already presented, stating that deals paid using only stock tend to be more profitable than deals paid using only cash. The higher CAR values for M&A transactions paid using stock may be due to the fact that stock transactions are often seen as a sign of confidence in the acquiring company's future prospects, which can lead to positive market reactions.

## TABLE 4 – CAR BY COMPETITION AND BEFORE/AFTER 2009 CRISIS

This table shows the mean CAR by level of competition in the overall sample (total) and in each of the three countries (US/UK/Canada) split by a dummy variable equal to one if the deal was conducted after the year of 2009 and zero otherwise. The sample was truncated to include only deals where the target is public. All corresponds to the whole sample, MCI corresponds to the most competitive industries and LCI corresponds to the least competitive industries, both groups depending on the country (for a description of the industries in each country see table 1). The difference corresponds to the CAR value after 2009 minus the CAR value before 2009. The table contains the significance value for the difference in the mean CAR value of deals after and before 2009 using a t-test, where * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

|  |  | All | Before 2009 | After 2009 | Difference |
|---|---|---|---|---|---|
| **TOTAL** | All | -0.08% | -0.99% | 0.87% | 1.86%** |
|  | MCI | -0.51% | -1.99 % | 1.37 % | 3.36 %*** |
|  | LCI | 1.80 % | 3.32% | 0.64% | -2.68 %* |
| UNITED STATES | All | -0.24% | -1.11% | 0.76% | 1.87%* |
|  | MCI | -1.28% | -1.90% | -0.46% | 1.44% |
|  | LCI | -0.79% | 0.34% | -1.33% | -1.67% |
| UNITED KINGDOM | All | -0.57% | 0.68% | -2.31% | -2.99% |
|  | MCI | 0.72% | 1.16% | -0.23% | -1.39% |
|  | LCI | 0.00% | 0.93% | -0.31% | -1.24% |
| CANADA | All | 0.38% | -1.09% | 1.58% | 2.67%** |
|  | MCI | -0.86% | -2.20% | -0.84% | 1.36% |
|  | LCI | 3.42% | 6.09% | -0.23% | -6.32% |

In table 4, in order to test one of the hypothesis presented by Alexandridis *et al.* (2017), the differences in the CAR of the acquiring firms was analyzed, dividing the sample between the deals that happened before and after 2009. However, so that the main hypothesis presented in the publication is maintained, only deals where the target is public have been considered for this table, with a sample of 1544 deals (when extended to all deals, both private and public, the differences lose statistical significance). As such, we can notice that for the overall sample the CAR that the acquiring firm obtains is higher for more recent deals. This happens to be the opposite as what Alexandridis *et al.* (2017) find, as they report that the total value of M&A deals increased significantly in the post-2009 period compared to the pre-crisis period, despite the decline in the average CAR for acquirer firms during the same period.

Acquiring firms may have obtained higher CAR because they have become more experienced in executing M&A transactions and identifying value-enhancing deals over time, particularly as they adapted to the changing market conditions and regulatory environment following the financial crisis. This increased

expertise may have allowed firms to extract greater value from M&A deals and generate higher returns for their shareholders. As global economic environment was relatively stable and conducive to M&A activity during this period, with low interest rates, ample liquidity, and improved investor confidence, this may have created favorable conditions for M&A deals, allowing acquiring firms to find attractive targets and finance deals at lower costs.

### 5.2 Multivariate Analysis

Finally, the multivariate regression analysis was compiled in tables 5A and 5B which, following what has been done in the previous sections, corresponds to an overall view of the sample and then a division between countries. Using the 5-day CAR as the dependent variable, the effect of competition was analyzed together with the other variables in order to understand if it is also relevant to explain the abnormal returns to the acquirer firm.

For the overall sample (table 5A), and in order to test the robustness of this analysis, several regressions were performed in order to see if the results hold and if there are differences in the outcomes. Regressions (1) to (3) correspond to the overall sample, and regressions (4) to (6) and (7) to (9) correspond to the most and the least competitive industries, respectively. For each of these three groups, I check whether performing the regression without fixed effects of *year*, *country* and *industry* alters the results (regressions (2), (5) and (8)) and test also the impact of using only public firms (regressions (3), (6) and (9).

When excluding the fixed effects, the result is that some variables present better values of statistical significance, which is the case of *competition* and *public* variables, and also the R-squared coefficient of determination is always higher when the regression includes fixed effect. This means that the fixed effects should be considered important because they capture a significant amount of the explanation of the CAR, thus the analysis will focus on the regressions that do include the fixed effects.

As for the regressions that were performed using only deals consisting of public targets, the main difference corresponds to the competition variable that loses its significance. This variable, that measures for each year the competition of each industry of each country, dividing the number of deals by the number of listed firms in that industry in that country, is negative and statistically significant at the 10% level for all the sample, indicating that, indeed, higher competition at an industry level decreases the returns generated for the acquirer firm. For each increase of 1% in the competition ratio, returns for the

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bidder firm decrease on average 0.098%, everything else constant, presenting some support for the main hypothesis (1): "*Even in highly competitive countries (US, UK & CA), bidder firms in less competitive industries exhibit higher returns*".

One possible factor that could explain why this competition variable loses its statistical significance when performing the regression using only public firms is information asymmetry: publicly traded companies are required to disclose more information to the public compared to private firms. This increased transparency may reduce the information asymmetry between market participants and lead to a higher level of efficiency in pricing public firms' securities. Consequently, the impact of industry competition on the returns of public firms may be more accurately reflected in their stock prices, making it more challenging to detect the significance of the competition variable in the regression when only public firms are considered. As such, including private firms allows for a broader assessment of the impact of competition, considering a wider range of market dynamics, and as such I will continue the analysis using the overall sample.

For the other control variables, the dummy equal to one when the deal is financed 100% by stock is, overall, positive, consistent with the literature, and statistically significant for the total sample, suggesting that using stock to finance a merger or acquisition leads to higher acquirer CAR. There is also support for the main hypothesis (2): "*In these countries (US, UK & CA), acquirers that pay with stock in low-competition industries observe better returns*", given that the coefficient for the *stock financed* variable in the least competitive industries (regression (7)) is statistically significant and higher than the overall sample.

The size of the acquirer firm, measured by the natural logarithm of the market value four weeks prior to the announcement, has a negative coefficient and is significant at the 1% level for the total sample, indicating that larger acquisitions are associated with lower acquirer CAR. This is explained by the overpaying that may occur when large firms, with more resources and sometimes also due to overconfidence and managerial hubris, may end up paying a premium on the deals, reducing their abnormal returns.

## TABLE 5A – OVERALL MULTIVARIATE REGRESSION OF CAR

This table reports the regression estimates of the five-day cumulative abnormal return to acquiring firms. The sample includes acquisition of targets reported in Thomson Financial SDC database from 2001 to 2021. Regressions (1) to (3) correspond to the overall sample, regressions (4) to (6) correspond to the MCI (most competitive industries) and regressions (7) to (9) to the LCI (least competitive industries) - for a description of the industries in each group see table 1. Regressions (3), (6) and (9) contain only deals in which the target is listed. Competition is the the ratio of M&A deals divided by the number of listed firms each year in a given industry of a given country. Stock financed is a dummy variable equal to one if the deal was financed using only stock. Acq Market Value corresponds to the natural logarithm of the market value of the acquirer four weeks prior to the announcement. Relative size is the logarithm of the deal value divided by the acquirer's market value. Intraindustry is a dummy variable equal to one if both acquirer and target belong to the same industry. Public is a dummy variable equal to one if the target is a listed firm. After 2009 is a dummy variable equal to one if the deal occurred after the year of 2009. All regressions but (2), (5) and (8) control for country, year and industry fixed effects. N corresponds to the sample size. The value below the coefficient corresponds to the standard deviation. The coefficients have stars that correspond to their significance level, where * p < 0.1, ** p < 0.05, *** p < 0.01.

| | Total | | | Most Competitive Industries (MCI) | | | Least Competitive Industries (LCI) | | |
|---|---|---|---|---|---|---|---|---|---|
| | **All** (1) | **All no f.e.** (2) | **Public** (3) | **All** (4) | **All no f.e.** (5) | **Public** (6) | **All** (7) | **All no f.e.** (8) | **Public** (9) |
| **Competition** | -0.0954* | -0.2264*** | -0.0965 | | | | | | |
| | (0.0573) | (0.0586) | (0.1255) | | | | | | |
| **Stock financed** | 0.0282* | 0.0269* | -0.0082 | 0.0152 | 0.0140 | 0.0134 | 0.1792* | 0.1717* | 0.1714* |
| | (0.0148) | (0.0147) | (0.0112) | (0.0134) | (0.0130) | (0.0141) | (0.0953) | (0.0949) | (0.0878) |
| **Acq Market Value** | -0.0117*** | -0.0094*** | -0.0086** | -0.0087*** | -0.0064*** | -0.0090*** | -0.0203*** | -0.0187*** | -0.0215*** |
| | (0.0018) | (0.0014) | (0.0034) | (0.0022) | (0.0017) | (0.0020) | (0.0071) | (0.0067) | (0.0079) |
| **Relative Size** | 0.0208 | 0.0222 | 0.0080 | 0.0086 | 0.0094 | 0.0085 | 0.1107 | 0.1196 | 0.1090 |
| | (0.0324) | (0.0326) | (0.0745) | (0.0404) | (0.0403) | (0.0404) | (0.1277) | (0.1294) | (0.1271) |
| **Intraindustry** | 0.0007 | -0.0005 | 0.0034 | -0.0036 | -0.0060 | -0.0039 | -0.0132 | -0.0082 | -0.0140 |
| | (0.0054) | (0.0051) | (0.0081) | (0.0078) | (0.0074) | (0.0080) | (0.0170) | (0.0155) | (0.0174) |
| **Public** | -0.0158** | -0.0193*** | | -0.0055 | -0.0101 | | -0.0158 | -0.0236 | |
| | (0.0064) | (0.0064) | | (0.0080) | (0.0071) | | (0.0207) | (0.0218) | |
| **After 2009** | 0.0123 | 0.0056 | 0.1214 | 0.0626 | 0.0080 | 0.0634 | 0.0154 | 0.0123 | 0.0147 |
| | (0.0355) | (0.0049) | (0.0925) | (0.0420) | (0.0062) | (0.0412) | (0.0571) | (0.0195) | (0.0569) |
| **Constant** | 0.1447*** | 0.0955*** | 0.0784** | 0.0636*** | 0.0508*** | 0.0642*** | 0.1270** | 0.1498*** | 0.1334** |
| | (0.0349) | (0.0129) | (0.0341) | (0.0206) | (0.0132) | (0.0204) | (0.0527) | (0.0486) | (0.0554) |
| *Fixed effects* | Yes | No | Yes | Yes | No | Yes | Yes | No | Yes |
| *N* | 6497 | 6497 | 1544 | 3326 | 3326 | 3326 | 617 | 617 | 617 |
| R^2 adjusted | 0.0332 | 0.0266 | 0.0237 | 0.0194 | 0.0133 | 0.0195 | 0.1211 | 0.1188 | 0.1219 |

The dummy variable equal to one when the deal involves a public target is negative and significant at the 5% level for the whole sample, suggesting that going private (i.e., delisting from the stock exchange) leads to lower acquirer CAR. This negative coefficient may be related with information asymmetries, as it was previously explained. The more transparent nature of public firms can lower the likelihood of the acquiring firm generating abnormal returns from the acquisition. The higher regulatory oversight than privately held companies have can also increase the complexity and cost of the acquisition process. The *public* variable loses its significance when dividing into the most and least competitive industries groups.

As for the *After 2009* dummy variable, even though we found some evidence that there are statistically significant differences in the CARs for deals after the crisis in the univariate analysis, this variable ends up not being statistically significant in the multivariate context to explain the CAR variation for the overall sample and, therefore, there's not enough evidence to support the main hypothesis (3): "*Deals that occurred after 2009 present better returns for acquirer firms, especially in low-competition industries*".

Overall, there aren't many significant differences in the explanation when the division between the most and the least competitive industries is performed. However, different results appear in the *stock* financed variable, which is higher in the least competitive industries, meaning that financing the deal only with stock when M&As occurs in low competition industries leads to higher CAR. Another difference is the acquirer market value variable, which reflects a lower CAR for biggest acquirers in the least competitive industries.

In accordance with the existing literature, the R-squared coefficients of the presented regressions are somewhat small, with the main regression (1) explaining about 3.3% of the CAR variation. The increased complexity of the factors around M&A deals and the increased amount of noise and randomness present in stock returns reflects the inherent challenges of explaining the returns of acquiring firms in M&A deals, making it frequent to observe low R-squared values in these types of studies.

Finally, in the following table 5B with the division by country and most/least competitive industries in each country, and using both private and public deals and including fixed effects, some interesting variations occur that are worth mentioning. The *competition* variable loses its significance in the United Kingdom and Canada, but still maintains its negative value. This suggests that the competition factor may be more prominent in the United States, which is the country with the most active M&A market.

## TABLE 5B –MULTIVARIATE REGRESSION OF CAR BY COUNTRY

This table reports the regression estimates of the five-day cumulative abnormal return to acquiring firms. The sample includes acquisition of targets reported in Thomson Financial SDC database from 2001 to 2021. Regression (1) corresponds to the overall sample, and for each of the three countries the first regression correspond to the whole sample of deals from that country, MCI corresponds to the most competitive industries of that country and LCI corresponds to the least competitive industries of that country (for a description of the industries in each country see table 1). Competition is the the ratio of M&A deals divided by the number of listed firms each year in a given industry of a given country. Stock financed is a dummy variable equal to one if the deal was financed using only stock. Acq Market Value corresponds to the natural logarithm of the market value of the acquirer four weeks prior to the announcement. Relative size is the logarithm of the deal value divided by the acquirer's market value. Intraindustry is a dummy variable equal to one if both acquirer and target belong to the same industry. Public is a dummy variable equal to one if the target is a listed firm. After 2009 is a dummy variable equal to one if the deal occurred after the year of 2009. All regressions control for country, year and industry fixed effects. N corresponds to the sample size. The value below the coefficient corresponds to the standard deviation. The coefficients have stars that correspond to their significance level, where * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

| | Total | United States | | | United Kingdom | | | Canada | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | All (1) | All (2) | MCI (3) | LCI (4) | All (5) | MCI (6) | LCI (7) | All (8) | MCI (9) | LCI (10) |
| **Competition** | -0.0954* | -0.0497* | | | -0.1619 | | | -0.1367 | | |
| | (0.0573) | (0.1423) | | | (0.2325) | | | (0.1228) | | |
| **Stock financed** | 0.0282* | 0.0527** | 0.0097 | 0.0791 | -0.0098 | 0.2251 | -0.0583 | -0.0118 | 0.0243 | -0.1138** |
| | (0.0148) | (0.0241) | (0.0163) | (0.0536) | (0.0461) | (0.2140) | (0.0459) | (0.0138) | (0.0221) | (0.0528) |
| **Acq Market Value** | -0.0117*** | -0.0130*** | -0.0035 | 0.0034 | -0.0087*** | -0.0138* | -0.0102 | -0.0091*** | -0.0018 | 0.0088 |
| | (0.0018) | (0.0024) | (0.0026) | (0.0062) | (0.0023) | (0.0076) | (0.0100) | (0.0025) | (0.0044) | (0.0085) |
| **Relative Size** | 0.0208 | 0.0242 | 0.2163 | 1.0854 | 0.0331 | 0.1065 | 0.1778 | 0.0156 | 0.0127 | 0.5247 |
| | (0.0324) | (0.0518) | (0.1514) | (0.7023) | (0.0408) | (0.0654) | (0.2046) | (0.0183) | (0.0132) | (0.6939) |
| **Intraindustry** | 0.0007 | -0.0016 | -0.0131 | 0.0012 | 0.0066 | 0.0077 | -0.0252 | 0.0079 | 0.0171 | 0.0407 |
| | (0.0054) | (0.0077) | (0.0089) | (0.0112) | (0.0067) | (0.0279) | (0.0438) | (0.0151) | (0.0307) | (0.0279) |
| **Public** | -0.0158** | -0.0144* | -0.0155** | -0.0463** | -0.0169 | -0.0549 | 0.0130 | -0.0103 | -0.0252 | 0.0688* |
| | (0.0064) | (0.0076) | (0.0066) | (0.0227) | (0.0184) | (0.0713) | (0.0457) | (0.0115) | (0.0164) | (0.0397) |
| **After 2009** | 0.0123 | 0.0317 | 0.0387 | 0.0396 | -0.0026 | 0.1452** | 0.0418 | -0.0629 | -0.0485 | -0.1336** |
| | (0.0355) | (0.0426) | (0.0334) | (0.0276) | (0.0573) | (0.0623) | (0.0273) | (0.0383) | (0.0686) | (0.0537) |
| **Constant** | 0.1447*** | 0.1500*** | 0.0255 | -0.0362 | 0.0806 | -0.0499 | 0.1259 | 0.1395*** | 0.0604 | 0.0181 |
| | (0.0349) | (0.0386) | (0.0233) | (0.0489) | (0.0597) | (0.0636) | (0.1099) | (0.0267) | (0.0518) | (0.0694) |
| *Fixed effects* | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| *N* | 6497 | 4382 | 1985 | 206 | 1049 | 146 | 6p3 | 1066 | 443 | 70 |
| *R^2 adjusted* | 0.0332 | 0.0370 | 0.0738 | 0.2625 | 0.0271 | 0.1206 | -0.1353 | 0.0254 | -0.0191 | 0.0668 |

As for the mean of payment of the deal, important to highlight that even though in the overall sample financing the deal with stock was associated with more CAR, in the UK and Canada the opposite is true, and this variable is statistically significant for the least competitive industries in Canada. Lower CARs for acquirer firms could be attributed, for example, to stock dilution concerns, as issuing additional shares to finance the deal can dilute the ownership stakes of existing shareholders, leading to a reduction in earnings per share (EPS) and dividends and potentially dampening shareholder returns. Also financing the deal with stock can result in market skepticism, particularly if the acquirer's stock is perceived as overvalued or if there are concerns about the long-term sustainability of the acquisition.

Another aspect is the negative coefficient associated with the public variable, which was significant overall, but when dividing the sample in the three countries it is possible to understand that this statistical significance only applies to deals in the United States. This could be related to various reasons, for example to differences in regulatory characteristics of each country.

# 6. Conclusion

The analysis presented in this dissertation aimed to investigate the impact of different variables on the value creation for acquirer firms in M&A deals. The focus was on the level of competition in the industry of the target company, while also considering the mean of payment utilized to complete the transaction and the impact of the 2009 financial crisis.

The mean CAR for the acquirer firm in this sample was positive, although in some cases, it becomes negative, such as when paying with cash in Canada. The level of competition in the industry of the target company also plays a role in the value creation for the acquirer firm, with M&A deals in the most competitive industries generating lower CAR than those in the least competitive ones. Besides that. the results suggest as well that deals paid using only stock tend to be more profitable than deals paid using only cash, which is consistent with the literature presented.

Moreover, the impact of the 2009 financial crisis was also examined, and the results indicate that there was a somewhat significant difference in the CAR value of deals conducted before and after the crisis. Specifically, in the US and Canada, M&A deals conducted after 2009 generated higher CAR than those conducted before, while in the UK, the opposite was observed. However, these results are only significant for some groups of samples, suggesting that the impact of the financial crisis varied depending on the sector.

In conclusion, this analysis provides valuable insights into the factors that affect the value creation for acquirer firms in M&A deals. The findings suggest that paying with stock and targeting companies in less competitive industries can increase the chances of generating higher CAR. Important to denote, however, some key variables that were not included in this study given their complexity but could be relevant as well to explain the CAR, such as the corporate governance quality and the legal protection that may exist in some industries and countries. Another shortfall consisted in the division of the most and least competitive industries, that didn't improve significantly the understanding of competition and the other variables.

As a suggestion, possible future study ideas could be to incorporate more deal, industry and country specific variables, such as the quality of management or corporate governance scores, and also to expand this hypothesis to more countries.

Overall, these findings can still be useful for practitioners involved in M&A deals as they can use this information to make more informed decisions and increase their chances of creating value for their firms.

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