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The impact of capital structure over acquisition premia

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Abstract

Merger & Acquisitions (M&A) has become an important tool for firms to create value for its shareholders. Since M&A activity has been growing in past years it becomes important to understand which effects are behind the decision of the offered control premium. Literature regarding the relation between control premium and target capital structure is limited and ambiguous. This dissertation tries to understand the ambiguity by introducing an alternative approach, the firm value premium. The study argues that the ambiguity results from the misleading effect of the control premium. This effect arises from the fact that higher levels of leverage allow acquirors to offer higher percentual control premiums while reducing the amount offered in absolute terms.

The reached results, despite of being based in theoretical hypothesis, are promising in showing that the usage of the control premium might be misleading.

Sumário

A criação de valor para acionistas através de Aquisições e Fusões tem sido cada vez mais predominante. A tendência de crescimento desta ferramenta nos recentes anos intensifica a importância de compreensão dos efeitos que influenciam o prémio de aquisição, visto ser um ponto fulcral no sucesso da mesma.

Atual literatura relativa à relação entre o prémio de aquisição ("control premium") e estrutura de capitais da empresa comprada é limitada e, acima de tudo, ambígua. Esta dissertação tenta perceber a presente ambiguidade através da introdução de uma alternativa, o "firm value premium". O estudo argumenta que o prémio de aquisição atualmente considerado apresenta um efeito enganador. Este efeito surge do facto de níveis mais altos de endividamento de uma empresa-alvo permite que uma empresa licitante ofereça prémios percentuais mais elevados reduzindo montante oferecido em termos absolutos.

Os resultados, apesar de serem baseados em fundamentos teóricos, são promissores na prova da existência de um efeito enganador no prémio de aquisição.

Palavras-chave: prémio de aquisição, estrutura de capitais, fusões e aquisições, empresa-alvo

JEL-Codes: G32, G34

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1. Introduction

The importance of acquisition decisions is extremely relevant considering the rise in M&A activity over the years. Firms buy other firms to diversify their operations, to create value through synergies, that can be originated from taxes, market power, economies of scale, and others. The premium paid in acquisitions is influenced by a several factors and it is a critical decision that must be carefully considered by the acquirors since it is a key determinant for an acquisition's success or failure.

One of these factors is capital structure. Capital structure is a a theme that is extensively studied in financial literature, several theories revolve around it: the irrelevance theorem by Modigliani and Miller (1958), improved in 1977 by Miller; the trade-off theory present by several authors (such as Baxter, 1967; and Kraus & Litzenberger, 1973); the pecking order theory by Myers and Majluf (1984); and the market timing theory (Baker and Wurgler, 2002). However, the study of relation between the target capital structure, the object of study of this dissertation, and the acquisition premium in literature is rather limited. Regarding empirical studies, results are ambiguous. Walkling & Edmister (1985) found a negative impact of target's leverage on the offered premium, presenting the justification that lower levels of leverage indicate higher availability of free cash flows that can be spend at the discretion of managers (consistent with the management control hypothesis (Jensen, 1986)) and higher capacity to create value from tax shields. Chung (2016) finds the same relation but in particular circumstances. During economic contractions acquirors seem less willing to pay higher premiums for companies with high levels of leverage. The author postulates that reducing the target's level of leverage during economic contractions is not an easy achievement and, therefore, acquirors are not willing to face the risk of high levels of debt in their portfolio. Contrarily, Jandik and Lallemand (2017) found the opposite effect and argue that new debt concentrates managerial ownership and signals a higher target firm value which results in higher target bargaining power.

This dissertation intends to provide an explanation for the observed ambiguity by challenging the usage of the control premium (difference between share price and the price offered for the shares of target shareholders in the announcement day) and providing a different approach to study of the relationship between acquisition premium and target capital structure. To do it, the present work is focused on US takeovers for the past 20 years (2001-

2021) and relies on a regression analysis to, first, study the impact of the target capital structure on the premium offered in acquisitions and, second, to determine if the different approach proposed has merit. This relation is controlled for several determinants of premiums such as acquirors capital structure; both target and acquiror Tobin's q; profitability, measured through the EBITDA margin; relative size between target and acquiror; industry relatedness; if the deal is between US firms or not; and the method of payment. The control premium is considered as the dependent variable and the new approach relies on the usage of the firm value premium (further explained at section 2.3.1). Year fixed effects are incorporated. The structure of the dissertation is organized as follows: section 2 reviews the base literature used in this study; section 3 presents the methodology and the description of variables; section 4 describes the sample and provides the respective descriptive statistics; section 5 presents and discusses the empirical results; and section 6 provides the conclusions and suggestions for further research.

2. Literature Review

2.1. Determinants of control premium

2.1.1. Tobin's Q

Tobin's Q can be interpreted as an investment opportunity measure where a higher q ratio translates higher expectations for future profits. The hypothesis is simple, a firm that desires to increase its value should invest in assets which market value exceeds the cost of new capital, which is the definition of a positive Tobin's Q. Therefore, if an acquisition is seen as investment from a firm perspective, the target q ratio should signal favorable opportunities for acquisitions. An acquiror that desires to increase its value might be willing to invest more in high q target resulting in higher offered premium. Chappell and Cheng (1984) studied this relation, and their findings somewhat support the presented hypothesis since the effects of q ratio are not always significant and appear to be variable over time. Gondhalekar et al. (2004) postulated the same reasoning and found no significant evidence to support the hypothesis.

On another perspective, the q ratio might be associated with management performance. A low q indicates that a target is not taking advantage of all opportunities reflecting poor management (Marris, 1968; Servaes, 1991). Therefore, is expected that an acquiror offers a higher control premium for a company with a lower q ratio since poorly managed firms possess room for improvement. Accordingly, Walkling & Edmister (1985) finds a negative relation between offered premium and the target q ratio. According to the authors, the asset undervaluation enables higher paid premiums since payment will always be lower than the target intrinsic value.

On the other hand, Goergen & Renneboog (2004) found evidence of positive relation between target's q ratio and the offered control premium combined with a negative abnormal return for the acquiror. One can argue that the observed negative returns in acquirors derive from poor acquisition decisions, since targets with high Tobin's Q had a lower value creation opportunity and therefore lower premiums should have been offered.

Regarding acquiror's q ratio, Lang et al. (1989) found evidence of abnormal positive returns in acquirors possessing a high Tobin's Q and abnormal negative returns in targets possessing

a low Tobin's Q – the highest returns are observed in the combination of high q ratio for acquirors and low q ratio for targets, and lowest returns in the opposite combination. The authors associate the q ratio to internal investment opportunities, an acquiror with a high q ratio can find good investment opportunities internally, whereas a low q ratio firm will have to rely on the M&A market to discover good investment opportunities. Gondhalekar et al. (2004) supports this hypothesis, providing evidence of higher premiums paid by acquirors with lower q ratio and high free cash flows.

2.1.2. Size

The size premium of smaller companies is one of the best-known academic market anomalies. Reinganum (1983) and Banz (1981) found that small-cap stocks in the US stock market demonstrated higher returns than large-cap stocks. However, the market anomaly has been debated due to its variation over time. Penman & Reggiani (2022) conducted an overtime study of the effect and provide a justification for its decline since the 1980s: 1) on average small firms present higher forward earnings growth, and this expectation is associated with higher average returns; 2) higher average growth and higher average returns for small firms is associated with higher risk to both growth and returns[1]; 3) the differences in growth, risk, and returns are conveyed ex ante by accounting information that projects earnings growth at risk; 4) once this accounting information is controlled for, firm size is not related to returns – the observed spread between returns of small and large firms relates to relevant information about risk to earnings growth; 5) when large firms present growth at risk, the return premium is higher than that for small firms with less return at risk – it is growth at risk that explains return premiums, not size; 6) the decline observed since the 1980's is explained by poor realized earnings of small firms, the risk did not compensate the ex-ante return premium; and, it is observed a flip in the risk ex-ante: growth risk was more associated with large firms which eventually paid off[2].

Smaller firms tend to perform better than large firms, in M&A literature evidence of value destruction is present when acquirors target large firms. The main source of value destruction is overpayment for large targets, demonstrating worse performance than smaller targets

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[1] This evidence is in line with theoretical explanation of Fama & French (1992) – higher returns are equilibrium compensating for risk bearing.

[2] The authors mention Facebook, Amazon, Apple, Microsoft where risk proved to be extremely profitable.

(Cools et al., 2007). Paying too much for a target could be explained by managerial hubris, where managers overestimate their abilities and overpay for a target (Roll, 1986). Another reason for managers to overpay for targets are misaligned incentives, Grinstein & Hribar (2004) presents evidence of larger bonuses when deals are larger. The linkage of management bonuses to the size of an acquisition leads managers to pay higher premiums for private benefits.

Literature also presents a negative relationship between size and offered premiums. The larger the target, larger the complexity for the acquiror to gather economic benefits. Additionally, the fact that larger targets possess a larger impact onto the acquiror if the deal goes bad, acquirors conduct a more thorough valuation and lower offered premiums are observed (Alexandridis et al., 2013). Larger target firms generally display lower management ownership concentration. The lower management concentration appears to be linked to a lower level of bargaining by management which results in lower premiums (Bauguess et al., 2009).

Regarding acquirors, Moeller et al. (2004) provide evidence of larger firms offer larger premiums. The authors reference the role of managerial hubris and the misalignment of interests since managers of large firms usually possess less ownership. Larger firms' management usually focus its interests on growing the firm and being considered important socially, which leads to the payment of higher premiums.

2.1.3. Synergies and Industry relatedness

Several benefits can arise through an acquisition, nevertheless literature suggests that acquisitions take place to maximize the acquiror value. A survey conducted Mukherjee et al. (2004) demonstrated that the predominant motive for 75 CFOs to proceed with M&A is to capture synergies. The synergy hypothesis states that a M&A transaction should occur if the combined value of an acquiror and a target is greater than the individual value of each firm (Bradley et al., 1988). Several sources of synergy are discussed in literature, Ross et al. (2008) summarizes into the following: (1) revenue enhancement, from marketing gains, strategic benefits and, increase in market power; (2) cost reduction, from economies of scale, economies of vertical integration and elimination of inefficient management; (3) tax gains, from the usage of tax losses and, from unused debt capacity.

The prevailing theory is that synergies are more easily created if the target operates in the same industry as the acquiror, where efficiency can be created from synergy (Salter and Weinhold, 1979). Accordingly, Fan & Goyal (2006) found evidence of positive wealth effects in vertical mergers, being significantly larger when compared with wealth effects in horizontal mergers. Overall, the study presents creation of value in industry-related acquisitions, which might indicate that an acquiror is willing to offer a higher premium for a target in the same industry.

Harrison et al. 1991 finds the same positive impact between industry relatedness and control premium through a different perspective. Succinctly, the authors analyzed how an acquisition of a target with similar resources of an acquiror (which occurs more frequently when both companies operate in the same industry) performs compared with acquisitions of target with differences in resources. Since it is expected to find more synergies in acquiring firms with similar resources, a tendency to focus on targets with similar resources arises, while it is overlooked the potential of synergy creation in firms with differences in resources. This tendency leads to higher demand for targets in the same industry (with similar resources) and the competitive bidding increases the offered premium. The authors found, for this reason, a higher performance in M&A of firms with differences in resources.

Contrarily, Hubbard and Palia (1999) found evidence of abnormal returns in diversifying mergers but justifies with information asymmetry between external capital markets and management. When a diversifying acquisition occurs, the acquiror is able to know more about the firm than the external capital markets, the informational advantage leads to a higher value creation than expected by external markets. Nevertheless, it is important to refer that the study relates to the merger wave in the 1960s, where external markets were less developed.

2.1.4 Target Location

Domestic acquisitions are more common than cross-border acquisitions, however in the current global panorama looking for targets beyond national borders is becoming more frequent.

Erel et al. (2012) presents several determinants that can impact cross-border merger or acquisitions: 1) geography, the probability of acquiring a firm in a nearby country is higher than a firm in a country far away since significant cultural differences might jeopardize the

integration process; 2) acquirors were more likely to be found in countries with better economic development and accounting standards; 3) currency movements, countries where currency appreciated are more likely to host an acquiror; 4) stock market performance, acquirors have a higher probability of being in countries with better relative stock market. The last two determinants are usually associated with misvaluation arguments; however, evidence of wealth gains is observed in international markets due to the lower cost of capital of poorer countries (Erel et al., 2012), which might positively affect premiums offered for cross-border targets. Accordingly, Bris & Cabolis (2008) found evidence of larger premiums in countries where shareholders have more protection and better accounting standards. Also, Sonenshine & Reynolds (2014) found that firms are more willing to pay higher premiums to obtain greater control of targets in foreign countries. Cross-border investments can also provide the acquiror new opportunities to increase shareholder wealth, namely through improved risk management and new technologies (Moeller & Schlingemann, 2005), which might result in higher paid premiums for foreign firms.

2.1.5 Form of payment

Form of payment should be considered in this study since M&A literature presents consistent differences in returns for each financing method. The main question regards the difference in returns between cash offers and equity offers. For instance, Travlos (1987) discovered that acquirors suffer significant losses in pure stock exchange acquisitions. Asquith & Mullins (1986) reports the same negative returns on announcement day of larger issues, referencing the price-pressure hypothesis by Scholes (1972) – issue of equity to pay for an M&A transaction dilutes the current shareholders positions, leading to a stock price decline.

Regarding cash offers, Huang & Walkling (1987) found evidence of abnormal positive returns when cash is used, since shareholders demand higher premiums to be forced to pay immediate taxes on their gains. Franks et al. (1988) also discovers better post-merger performance of acquiror's stock price in cash offers compared with stock offers and presents evidence of larger bid premiums in cash offers. Martynova & Renneboog (2006) studied the European M&A activity and discovered the same pattern of positive returns for cash offers. The authors justify the pattern with asymmetric information between acquiror's management and outside investors. The explanation is that cash payments signal the market that the acquiror is not willing to share future value from synergies with the target shareholders, leading them to believe that their company is more valuable. Contrarily, equity offers signal

the opposite to the market, the acquiror wants to share the risk of the merged firm with target shareholders, and lower returns are observed. The covered literature suggests that a positive relation between control premium and cash offers should be expected.

2.2. Capital Structure

2.2.1 Capital structure irrelevance

Modigliani and Miller (1958) under certain assumptions reached the conclusion of capital structure irrelevance. This irrelevance is extended to the market value of the company and to the welfare of shareholders and debtholders of the given firm. The assumptions that led the authors to reach this conclusion are as follow, markets are in perfect competition, no market frictions in demand and supply, no taxes, no agency, transaction and bankruptcy costs, no restrictions to financing and debt, homogeneous expectations, no arbitrage opportunities, and homemade leverage.

Two hypothetical companies can be considered, one financed purely on equity, and one financed equally by equity and debt. Both firms display the same operating profits and possess the same growth opportunities. According to the authors both companies should possess the same market value because an investor that invests in both companies[3] should expect the same return from both, otherwise arbitrage opportunities appeared (Proposition I).

The main distinction between the two companies is the incurred risk. The first possesses no risk, whereas the second faces default risk from interest payments obligations. Since the agent that assumes most of the risk is the shareholder, it is, then, expected to be required a higher return to willingly face the risks of owning a company that relies on debt to operate (Proposition II).

Miller (1977) challenges the independence between firm value and capital structure by incorporating the existence of taxes into the equilibrium. Corporate tax and taxes on individual's revenues[4] were considered and the conclusion of capital structure irrelevance was not reached. The value of a firm can increase by relying on leverage because interest

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[3] Assuming that the investor is a shareholder in the first company, and both a shareholder and a debtholder in the second company.
[4] Namely, tax on dividends and tax on interests.

payments can be deducted from taxable corporate income. On the other hand, the increase of debt results in the increase of bankruptcy costs. Therefore, there is an equilibrium amount of debt can be determined by relative corporate and personal taxes.

2.2.2. Trade-off theory

Kraus & Litzenberger (1973) formally introduces corporate taxes and bankruptcy penalties into a single period valuation model in a complete capital market. Similar to the argument explained before, the capital structure relevance arises from the trade-off between gains and costs of debt creation, respectively, tax advantages from deductibility of interest payments and bankruptcy costs associated with the increase of leverage. Therefore, it exists an optimal capital structure where the costs do not surpass the gains. The author concludes that the "market value of a levered firm is shown to equal the unlevered market value, plus the corporate tax rate times the market value of the firm's debt, less the complement of the corporate tax rate times the present value of bankruptcy costs" (Kraus & Litzenberger, 1973, p.918). Additionally, Baxter (1967) presented the nonlinear effect of debt in the risk of ruin. Succinctly, it is not expected for a company to always face the same risk of bankruptcy with the reliance on debt since this risk is dependent on the current capital structure. If a company presents a low level of leverage, its probability of bankruptcy is low, therefore an increase in the given leverage will not entail an excessive impact in the bankruptcy risk. When a considerable amount of debt is present in the capital structure, it is expected a higher impact of increasing leverage because the presence of bankruptcy risk is already significant. The riskiness of the company is translated in its cost of capital, therefore the author concludes that "the interest rate on debt will only rise very slowly, if at all, with leverage, when the reliance on debt is low, but the interest rate may begin to rise very sharply, as the capital structure becomes riskier." (Baxter, 1967, p.402).

2.2.3. Pecking Order theory

Myers and Majluf (1984) introduce the information asymmetries between the managers and market to the capital structure decision. In financial theory when a company desires to enter an investment opportunity it should rely on the capital markets to raise capital. In a context of efficient capital markets, choosing between external sources of financing should be irrelevant since markets price securities at a fair value. However, the existing asymmetric information between management and external capital – managers know more about the

value of its assets and its investment opportunities than outside investors – contradict the financing irrelevance. The main reason is the signaling problem of raising capital i.e., new issues might be perceived by the market as bad news, which leads investors to not accept the fair price of the issue. The asymmetry nudge managers to avoid issuing new shares and to prefer other sources of financing in the following (pecking) order: internal financing, that is available from retained earnings, and then external financing, first debt, then convertible debt and, finally, new equity issues.

2.2.4. Market Timing Theory

In corporate finance, the practice of issuing shares at high prices and repurchasing at low prices is denominated as "equity market timing". The premise is simple, managers try to take advantage of the fluctuation of equity cost relatively to the cost of other forms of capital. In other words, managers try to issue shares when the Market-to-Book ratio is high and issue debt when the Market-to-Book value is low (Baker and Wurgler, 2002). The authors found evidence that the market fluctuations have significant effects on capital structure that can persist for at least one decade and believe "that capital structure is largely the cumulative outcome of past attempts to time the equity market" (Baker and Wurgler, 2002, p.22).

Additionally, a survey conducted by Graham and Harvey (2001) found that two-thirds of CFOs agree that the current market conditions (the company is being overvalued or undervalued by the market) is an important consideration when issuing equity. The implication of the theory is that an optimal capital structure does not exist, managers simply take decisions based on market conditions and do not try to reach an optimal capital structure that maximizes the company value.

2.3. Capital Structure and Control Premium

The literature postulating a relationship between capital structure and control premium is limited, so this section will try to cover available literature. Then, some effects of capital structure will be discussed, and hypothesis will be formulated regarding control premium – the objective relies on finding how firms' capital structure is linked to value creation and, consequently, how it affects offered premiums.

Regarding acquiror's capital structure, Uysal (2010) studied the acquiror's leverage deficit (difference between optimal and observed capital structure) on its acquisition choices. The

author concluded that the likelihood of a firm undertaking an acquisition decrease with its leverage deficit, the effect of overleverage is negative and significant. The author also finds that overleverage companies have lower premiums and lower cash components in their acquisition offers. Finally, overleverage firms start building debt capacity, by reducing current leverage levels, if there is a high probability of undertaking on an acquisition.

High levels of debt discipline the management in the from of stronger monitoring by financial creditors, making it more difficult for acquirors to pay higher premiums (Gondhalekar et al., 2004). This approach is consistent with the "control hypothesis" introduced by Jensen (1986), where the increase in leverage entails a decrease of Free Cash flows available for spending at the discretion of managers.

The theory of reduction of agency costs through leverage can also be applied to the target, where the capacity to increase target's leverage for disciplinary reasons is expected to be considered by the acquiror and translated in a higher premium. The agency cost reduction provides an expectation of a negative relation between control premium and leverage. Walkling & Edmister (1985) found a negative impact of target's leverage on the offered premium. The debt-to-equity ratio is an indication of the availability of free cash flows, higher levels of debt entail lower free cash flows which makes the deal less attractive for acquirors. Additionally, lower levels of leverage can lead to gains in tax shields. Therefore, it is expected for an acquiror to pay more has more debt capacity is available.

Additionally, Pearce & Robinson (2004) argues that companies with low debt-to-asset ratios are more attractive to acquirors since the target available borrowing capacity can be used to finance the acquisition. This might lead to higher paid premiums because leveraging the transaction through the target's debt expansion can generate higher returns to the acquiror.

Finally, Chung (2016) studied the impact of economic contractions on the acquirors' choices of targets and the respective premium. The author discovered that acquirors are less willing to acquire and to pay higher control premiums for targets with high level of debt, especially during economic contractions. Nevertheless, the author emphasizes that observed results could be a consequence of economic conditions, in which acquirors believe that during economic contractions reducing the target's level of leverage is not an easy achievement and are not willing to face the intensified risk of high levels of debt.

Contrarily, Jandik and Lallemand (2017) studied the impact of debt issuance by targets before or after takeover announcement, "new debt results in improvements in target bargaining power, either from concentrating managerial equity stakes via repurchases or from signaling of greater target firm value" (Jandik & Lallemand, 2017, p.196). The increase in bargaining power results in positive adjustments in the offered control premium, especially after takeover announcements.

2.3.1. Market Participant Acquisition Premium

The main purpose of this study is to challenge the control premium, defined as "the percentage difference between the trading price of the target's stock before the announcement of the acquisition and the price per share paid by the acquiring firm" (Haunschild, 1994). The challenge arises from the misleading effect of the control premium, since "the greater a target company's leverage, the less cash or shares an acquiror needs to control the target enterprise. Given the benefits of acquiring a target, the equity takeover premium is spread over relatively more assets in a more highly leveraged target, thus reducing the premium paid relative to the entire enterprise" (Covrig et al., 2017, p.123).

The Appraisal Foundation released in 2015 "The Measurement and Application of Market Participant Acquisition Premiums[5]", where it identified the misleading effect explained above and proposed a valuation alternative for acquisitions: the Market Participant Acquisition Premium, or MPAP, based on the TIC foundation. "Although the MPAP may be expressed as a dollar amount (the difference between the *pro rata* fair value of a controlling interest and its Foundation), valuation specialists customarily express valuation premiums and discounts as the percentage difference. This is intuitive and facilitates the comparison of premiums across companies of different sizes. Valuation specialists have traditionally used the Equity Foundation to calculate the transaction premium as a percentage. (…) In deliberating the MPAP, the Working Group concluded that the traditional method of calculating transaction premiums is potentially misleading. Specifically, the economic benefits realized through exercising the prerogatives of control[6] enhance the fair value of the enterprise, not just the fair value of the equity. Further, expressing the MPAP as a percentage

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[5] The Measurement and Application of Market Participant Acquisition Premiums, Appraisal Practices Board, The Appraisal Foundation, September 1, 2015.

[6] Some prerogatives of control are covered in the literature review above.

of the Equity Foundation distorts the comparability of the MPAP among companies with different capital structures." (Page 27). According to the Working Group the best practice relies on expressing the MPAP in the context of the TIC foundation, Total Invested Capital, which corresponds to the sum of debt plus equity.

Covrig et al. (2017) tries to discover the misleading effect of the control premium by using the MPAP based on the equity foundation as a dependent variable and the target leverage as the independent variable of interest. The authors expected to find a positive relation between the two variables to support the hypothesis. However, the reached results were the opposite, a negative relationship between the two variables.

This study argues that Covrig et al. (2017) results are a consequence of the misleading effect of the equity foundation. The hypothesis is that the equity premium is pressured by two opposing forces of leverage: a negative force from effects identified above, such as tax savings, management control hypothesis (reduction of agency costs) and available debt-capacity to finance the transaction; and a positive force from the fact that higher levels of leverage allow acquirors to offer higher percentual equity premiums because, in absolute terms, the same or lower premiums can be offered. Therefore, it is postulated that in the sample used by the authors the negative forces are stronger than positive forces hence the reached negative relation. To verify this hypothesis, this study introduces a different approach relying on the MPAP based on the TIC foundation (section 3).

3. Methodology

This chapter describes the used methodology in this research, provides a brief explanation of the variables considered and an expectation for their impact on the control premium.

3.1. The Model

The objective of this study is to understand how leverage influences the control premium offered to target shareholders and to verify the existence of the misleading effect of MPAP based on the Equity foundation.

This study will, therefore, focus on the percentage of the market acquisition premium (MPAP, i.e., the difference between share price and the price offered for the shares of target shareholders in the announcement day) on the total equity, named "control premium"; and, on the percentage of the MPAP on the total invested capital (TIC, i.e., the equity plus debt), named "Firm Value premium". The two variables will be the dependent variables of the present study, while the variable of interest will be the target capital structure. Additionally, there are considered several control variables – deal-specific variables, financial variables for both acquiror and target and fixed year variables, as presented in the following models:

$$
\begin{aligned}
Control\_Prem_i = {} & \alpha + \beta_1 Tar\_CS_i + \beta_2 Acq\_CS_i + \beta_3 EBITDA\_Margin_i + \\
& \beta_4 Ind\_Relat_i + \beta_5 Cash_i + \beta_6 Relative\_Size_i + \\
& \beta_7 Tar\_Tobin\_Q_i + \beta_8 Acq\_Tobin\_Q_i + \beta_9 Location_i + \gamma_t + \varepsilon_i
\end{aligned}
$$

(3.1.1)

$$
\begin{aligned}
FV\_Prem_i = {} & \alpha + \beta_1 Tar\_CS_i + \beta_2 Acq\_CS_i + \beta_3 EBITDA\_Margin_i + \\
& \beta_4 Ind\_Relat_i + \beta_5 Cash_i + \beta_6 Relative\_Size_i + \\
& \beta_7 Tar\_Tobin\_Q_i + \beta_8 Acq\_Tobin\_Q_i + \beta_9 Location_i + \gamma_t + \varepsilon_i
\end{aligned}
$$

(3.1.2)

Control_Prem$_i$ and *FV_Prem$_i$* are the premium paid on the total equity and on total invested capital, respectively. *Tar_CS$_i$* and *Acq_CS$_i$* represent the capital structure of the target and acquiror, respectively. *EBITDA_Margin$_i$* represents the target EBITDA Margin. *Ind_Relat$_i$* represents industry relatedness between the target and acquiror. *Cash$_i$* relates to the form of payment used by the acquiror. *Tar_Tobin_Q$_i$* and *Acq_Tobin_Q$_i$* represents the Tobin's Q of target and acquiror respectively. Finally, γ_t are the year fixed effects and ε_i is the error term.

3.2. Variables Description

Two different variables relate to premium, **control premium** and **firm value premium**, defined above. The **firm value premium** is a constructed variable, the formula below converts the "control premium" (MPAP based on the Equity foundation) into the "firm value premium" (MPAP based on the Equity foundation), the difference between the two variables is expected to explain the misleading effect of the "control premium" (see section 2.3.1).

$$FV\_Prem = \frac{Control\_Prem}{1 + \frac{Tar\_CS}{1 - Tar\_CS}} \qquad (3.1.3)$$

The **capital structure** is captured by the ratio of Long-term Debt/Total Capital for both acquiror and target. Regarding acquiror capital structure, a negative relation with the control premium is expected (Uysal, 2010; Gondhalekar et al., 2004). For the target, the evidence for the "control premium" is ambiguous so no relation is expected. Finally, there is no evidence for the relation between leverage and "firm value premium", therefore no expectation can be provided.

The **Tobin's Q** ratio can be accessed as the wealth created for a firm shareholder. The q ratio represents the ratio between asset market value and book value. Therefore, if the ratio is higher than one, a company has a unit is generating more wealth to its shareholders than simply detaining all assets from its balance sheet. And if the ratio is lower than one, the opposite scenario is in place, the market is valuing the company below its assets' replacement cost. The q ratio is calculated for both acquiror and target, no relation with the offered premium is expected for the target's q ratio since literature is ambiguous and a negative relation is expected for the acquiror's q ratio (Lang et al., 1989; Gondhalekar et al., 2004).

"EBITDA Margin" is obtained by dividing a target's EBITDA by its revenues, it is incorporated in the model as a profitability metric. Since it is considered that an acquiror will pay a premium for a target if it can create value from the deal, it is expected a negative relation between offered premium and the variable *EBITDA_Margin*. The assumption is that a lower EBITDA margin presents room for improvement, whereas higher margins are not easily improved. Covrig et al. (2017) while studying the effects of capital structure in offered premium found the expected relationship between EBTIDA Margin and offered premium.

The **size** is considered in the model through relative size between target and acquiror – ratio between target pre-deal total assets and acquiror pre-deal total assets. Regarding the size of the target, literature is ambiguous, several authors defend a positive relation between premium and size (Cools et al., 2007; Grinstein & Hribar, 2004) while others present the opposite relation (Alexandridis et al., 2013; Bauguess et al., 2009). The size of the acquiror seems to positively impact premiums from a hubris perspective (Moeller et al., 2004).

Industry relatedness is considered in the model through the dummy *Ind_Relat*, the dummy presents a value of 1 if the target operates in the same industry as the acquiror. The analysis is based on the one-digit SIC[7] code, if both companies display the same code, the respective dummy equals to 1. Although literature presents ambiguous results, it is expected a positive relationship between the control premium and the variable "industry relatedness" since in the covered literature a negative relation was only found in the 1960s with the justification of weak external capital markets (Hubbard and Palia, 1999).

The **location** is considered through a dummy, if both acquiror and target are from the same country a value of 1 is attributed. As explained in the previous section, one of the firms involved in the deal must be from the US, therefore if the dummy equals to 1 both firms are from the US. A negative relationship between the variable and the control premium is expected since it exists a consensus in literature regarding the effect of cross-border acquisitions.

The **method of payment** is controlled through the dummy *Cash*, which is equal to 1 in case of cash payment, and equal to zero otherwise (equity offers and mixed). A positive expectation is expected from the price-pressure hypothesis by Scholes (1972) and the

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[7] Standard Industry Classification (SIC) code.

evidence provided by Huang & Walkling (1987), Franks et al. (1988) and Martynova & Renneboog (2006).

4. Sample

This chapter describes the sample used in this study and the descriptive statistic of all variables presented before.

4.1 Sample Selection

This study uses a sample of US takeovers for a 20-year period, from 2001 to 2021, collected from the Zephyr database. The same database was used to retrieve the "Control Premium", the "Industry Relatedness", "Cash" and "Location". The remaining variables, namely, "Target Capital Structure", "Acquiror Capital Structure", "EBITDA Margin", "Relative Size", "Target Tobin-Q" and "Acquiror Tobin-Q" were retrieved from the Datastream database. The sample meets the following criteria: (1) at least one of the takeover's companies involved must be from the USA; (2) acquiror and target companies must be listed in the moment of the deal; (3) post-acquisition target company must become delisted; (4) the deals must be announced and completed within the 2001-2021 period; (5) bidding firm should acquiror a minimum stake of 50% of the target shares; and lastly, (6) the focus is only on transactions classified as acquisitions.

This selection process results in a final sample of 5,703 deals. Deals that report missing values necessary for the regressions' variables calculation are dropped, reducing the sample to 575 deals. All variables, with exception of dummies variables, were winsorized at their 2nd and 98th percentile to mitigate the influence of extreme values.

4.2. Descriptive Statistics

4.2.1. Premium and Capital Structure

Table 1 demonstrates the number of deals per year in the considered period, due to the drop of several deals the first observation occurs in 2009. The final sample shows a worst year of M&A activity in 2020, with 2.78% of all acquisitions; and the year with the highest activity lands in 2015, with 12.17% of all acquisitions.

Table 1: Number of acquisitions per year of sample

The following table presents the number of deals in each year of the final sample and the respective percentage.

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
N	26	40	39	53	35	58	70	68	58	43	50	16	19	575
%	4.52	6.96	6.78	9.22	6.09	10.09	12.17	11.83	10.09	7.48	8.70	2.78	3.30	100

The descriptive statistics for the dependent variables, "Control Premium" and "Firm Value Premium", can be found summarized in Table 2. From the construction of the variable *FV_PREM*, it is expected to observe a lower average and median when compared with the variable *Control_PREM*. The verified average (median) of *FV_PREM* is 21.6% (14.3%), whereas the *Control_PREM* presents 28.8% (23.7%).

Table 2: Descriptive statistics for dependent variables

The following table presents the mean, median, maximum, minimum and standard deviation of the independent variables for the sample of 575 observations.

	Mean	Median	Maximum	Minimum	Std. Dev.
Control_PREM	28.8%	23.7%	119.8%	-15.6%	25.9%
FV_PREM	21.6%	14.3%	116.2%	-14.4%	23.4%

Table 3 presents the descriptive statistic for the capital structure variables, namely the "Target Capital Structure" and the "Acquiror Capital Structure". The mean (median) for the target's leverage levels is 28.5% (24.4%) and for the acquirors' the value stands at 32.7% (31%). It is important to notice that several companies are practically financed by debt, and several do not display any leverage.

Table 3: Descriptive statistics for capital structure variables

The following table presents the mean, median, maximum, minimum and standard deviation of capital structure variables for the sample of 575 observations.

	Mean	Median	Maximum	Minimum	Std. Dev.
Tar_CS	28.5%	24.4%	91.5%	0.0%	26.1%
Acq_CS	32.7%	31.0%	89.0%	0.0%	22.0%

4.2.2. Other Control Variables

Table 4 summarizes the descriptive statistics for the control variables used in the methodology, *Acq_Tobin_Q, Cash, EBITDA_Margin, Ind_Relat, Location, Relative_Size* and *Tar_Tobin_Q.* The acquiror capital structure is also a control variable, for a better comparison it was analyzed above with the variable of interest "Target Capital Structure".

Considering the Tobin-Q, we can observe that the acquirors' Tobin-Q – 1.30 (0.99) – is on average (median) higher than the targets' Tobin-Q – 2.54 (1.17). The outliers have a significant effect, this can be observed in the difference in discrepancies between average and median.

Regarding the EBITDA Margin, target companies displayed on average (median) a negative margin of 49% (and a positive median of 15.7%). The average analysis might indicate that acquirors perceived an improving opportunity in the targets' operating costs. However, the median describes a story of outliers in the sample since presents a positive value.

Through the Industry Relatedness, we can observe that most deals occurred in the same industry, 77% of the deals (442 deals).

On average the targets are smaller than the acquirors by the comparison of total assets, this is expected. Targets are on average 62.5% the size of acquirors. The median also translates presence of outliers from its lower value, 13%.

Most of deals where domestic deals, 80% of deals (461 deals) occurred between an US acquiror and an US target.

Lastly, for the method of payment, it is observed that 23% of the deals were cash offers – 132 deals.

Table 4: Descriptive statistics for control variables

The following table presents the mean, median, maximum, minimum and standard deviation of the control variables for the sample of 575 observations.

	Mean	Median	Maximum	Minimum	Std. Dev.	Sum
Acq_Tobin_Q	1.30	0.99	11.62	0.02	1.51	-
Tar_Tobin_Q	2.54	1.17	43.53	0.09	5.50	-
EBITDA_Margin	-46.1%	15.7%	74.9%	-3,447.2%	414.6%	-
Relative_Size	62.5%	13.0%	1,774.3%	0.05%	209.3%	-
Ind_Relat	0.77	1.00	1.00	0.00	0.42	442
Location	0.80	1.00	1.00	0.00	0.40	461
Cash	0.23	0.00	1.00	0.00	0.42	132

5. Results

This chapter presents the results for the estimations of the two models (3.1.1. and 3.1.2.) and it is organized as follows: first section corresponds to a univariate analysis, where a correlation analysis is proceeded; the second section is multivariate analysis, where several combinations of regressions for the models are displayed and analyzed.

5.1. Univariate Analysis

5.1.1. Correlation Analysis

The correlation matrix – annex 1 – between independent variables is used to check for the multicollinearity problem. The coefficients correlation must not surpass 0.70 since it may indicate multi-collinearity. A reasonable and low relation between the independent variables is verified, suggesting that all variables are uncorrelated.

5.1.2. High vs. low levels of leverage in target capital structure

This analysis consists in dividing the sample according to the median level of leverage of targets. The t-test and the Wilcoxon rank-sum test are performed to test the equality of the mean and median of the subsamples. The analysis is performed for the "control premium" and the "firm value premium".

The results of the analysis show that, for both the "control premium" and the "firm value premium", the mean and median is higher for the sub-sample "target leverage below median" when compared with the sub-sample "target leverage above median". Both results are significant at the 1% level for both t-test and Wilcoxon rank-sum test. These results are consistent with the negative relationship between control premium and leverage that will be further explored in the next section.

Table 5: Descriptive statistics of premiums in sample division: target leverage below and above median

The following table presents the mean, median of the control premium and firm value premium for the sub-samples: target leverage below the median (with 288 observations) and target leverage above the median (with 287 observations). The presented equality tests are the t-test, for the mean, and the Wilcoxon rank-sum (Mann-Whitney), for the median. The level of significance is presented through the following criteria: *** for significance at 1% level, ** for significance at 5% level and * for significance at 10% level.

	Mean	Median	Size	Mean	Median	Size	Equality Tests	
	Target's Leverage below median			Target's Leverage above median			Mean	Median
Control_PREM	34.9%	28.2%	288	25.1%	20.7%	287	-3.08***	3.11***
FV_PREM	32.9%	26.5%	288	12.5%	9.5%	287	6.97***	9.22***

5.2. Multivariate Analysis

In this section, it is presented the cross-sectional OLS regressions. Dummy variables are used to control for year fixed effects and the Newey-West estimator is used to control for heteroskedasticity.

5.2.1. Results – Model 3.1.1

The table 6 presents the different combinations of regressions for the model 3.1.1, which regards the control premium as the dependent variable. The variable of interest, **target capital structure**, negatively impacts the "control premium". The coefficient is significant at the 1% and 5% level for all the presented regressions except for the last, the combination when the entire model is considered. The literature is ambiguous regarding this relationship but observed results are consistent with tax savings, the management control hypothesis (Jensen, 1986; Walkling & Edmister, 1985), the available debt-capacity to finance the transaction (Pearce & Robinson, 2004) and the empirical evidence of Chung (2016), that justifies the negative relationship with the difficulty for an acquiror to lower leverage levels during economic contractions. Regarding the hypothesis presented above (section 2.3.1), the studied sample might demonstrate stronger negative forces.

Regarding the **acquiror capital structure**, the coefficients demonstrate a negative relationship between the variable and the control premium, however no significance was found in all regressions.

Table 6: Regression results for the model 3.1.1 for the whole sample

The following table presents the results for the model 3.1.1 for the whole sample. The level of significance is presented through the following criteria: *** the coefficient is significant at 1% level, ** the coefficient is significant at 5% level and * the coefficient is significant at 10% level.

	Control_PREM								
Intercept	0.3815***	0.3885***	0.3665***	0.3726***	0.3685***	0.3662***	0.3928***	0.4275***	0.3620***
Std. Error	*0.0520*	*0.0549*	*0.0568*	*0.0572*	*0.0584*	*0.0578*	*0.0609*	*0.0687*	*0.0617*
Tar_CS	-0.1297***	-0.1231***	-0.1149***	-0.1280***	-0.1126***	-0.1029**	-0.1031**	-0.1065**	-0.0468
Std. Error	*0.0370*	*0.0398*	*0.0405*	*0.0421*	*0.0415*	*0.0422*	*0.0424*	*0.0425*	*0.0445*
Acq_CS		-0.0302	-0.0210	-0.0132	-0.0132	-0.0155	-0.0159	-0.0182	-0.0225
Std. Error		*0.0574*	*0.0579*	*0.0580*	*0.0584*	*0.0585*	*0.0588*	*0.0592*	*0.0497*
Acq_Tobin_Q			0.0141*	0.0146*	0.0129*	0.0164**	0.0163**	0.0157**	0.0140**
Std. Error			*0.0080*	*0.0080*	*0.0078*	*0.0080*	*0.0080*	*0.0082*	*0.0073*
Tar_Tobin_Q				-0.0040**	-0.0058***	-0.0060***	-0.0061***	-0.0060***	-0.0060***
Std. Error				*0.0016*	*0.0019*	*0.0019*	*0.0019*	*0.0019*	*0.0020*
EBITDA_Margin					-0.0085**	-0.0085**	-0.0079*	-0.0076*	-0.0081***
Std. Error					*0.0042*	*0.0042*	*0.0041*	*0.0041*	*0.0027*
Relative_Size						-0.0090	-0.0084	-0.0078	-0.0052
Std. Error						*0.0056*	*0.0057*	*0.0058*	*0.0053*
Ind_Relat							-0.0381	-0.0346	-0.0227
Std. Error							*0.0281*	*0.0280*	*0.0253*
Location								-0.0393	-0.0198
Std. Error								*0.0315*	*0.0267*
Cash									0.1201***
Std. Error									*0.0268*
Year-fixed effects	Inc	Inc	Inc	Inc	Inc	Inc	Inc	Inc	Inc
R^2	0.0544	0.0550	0.0614	0.0685	0.0851	0.0898	0.0935	0.0970	0.1287
Adj. R^2	0.0325	0.0314	0.0362	0.0418	0.0572	0.0604	0.0624	0.0644	0.0956
F-statistic	2.4827	2.3277	2.4389	2.5639	3.0477	3.0485	3.0117	2.9744	3.8883
Prob	0.0027	0.0040	0.0019	0.0008	0.0000	0.0000	0.0000	0.0000	0.0000
Observations: 575									
Periods: 20 (2001-2021)									

No expectation was regarded for the **target tobin's q** since literature is ambiguous. The results of this study support a positive relation between the q ratio and the control premium, the results are always significant for at least the 5% level. The results are consistent with the investment opportunity hypothesis, where a high q ratio transmits a good investment opportunity for an acquiror and therefore a higher premium is observed (Chappell and Cheng, 1984; Gondhalekar et al., 2004). For the **acquiror** a negative relation was expected because a low q ratio translates lower internal investment opportunities, therefore the necessity to acquire other companies to be able to create value should be translated in higher paid premiums. This was not observed, instead a significant positive relation between control premium and acquiror tobin's q was found. This evidence might indicate that the q ratio is a good indicator for management performance (Marris, 1968; Servaes, 1991), where a higher q translates better management because better managers believe to be able to create more value from the deal and, therefore, are willing to pay higher premiums.

As expected, the **EBITDA margin** demonstrated a negative impact on the offered control premium. The postulated hypothesis was that an acquiror cannot extract as much value from a firm that is displays high margins, low margins' firms might suffer improvements post-acquisition which should be translated in higher premiums (Covrig et al., 2017). The coefficients are all significant for at least the 10% level.

The impact of **relative size** into the control premium has not been study, literature tends to focus on the relation between size and control premium and provides ambiguous expectations. The model retrieves a negative effect of target size relative to acquiror on control premium, but the coefficients are not significant at the 10% level. These results are consistent with the complexity hypothesis, larger targets are more complex, and, more difficult it is for acquirors to gather economic benefits (Alexandridis et al., 2013); and with the management ownership concentration hypothesis, where lower management ownership is linked with lower levels of bargaining (lower private benefits for managers) and, therefore, lower premiums are more easily accepted (Bauguess et al., 2009).

Regarding **industry relatedness**, literature is also ambiguous. It was found a negative relation between acquisitions of targets related to the acquirors and the control premium, but the coefficients are, once again, not significant. The results are consistent with the hypothesis postulated by Hubbard and Palia (1999).

Location fails to present significant coefficients. However, the obtained results are in accordance with covered literature, cross-border acquisitions generate higher paid premiums (Erel et al., 2012; Bris & Cabolis, 2008; Sonenshine & Reynolds, 2014; Moeller & Schlingemann, 2005).

Finally, **cash** offers present on average a control premium higher in 12 percentual points than equity and mixed offers. The result is consistent with the price-pressure hypothesis by Scholes (1972) and the evidence provided by Huang & Walkling (1987), Franks et al. (1988) and Martynova & Renneboog (2006). The coefficient is significant at the 1% level.

5.2.2. Results – Model 3.1.2

The model 3.1.2 is the proposal to try to identify the misleading effect of the control premium (discussed at section 2.3). The verified results (presented at table 7) demonstrate that the control premium has the misleading effect mentioned by the working group of the Appraisal Foundation. This conclusion can be reached by comparing the coefficients of the **target capital structure** of the model 3.1.1 with the ones of the model 3.1.2.

As explained before, the hypothesis is that the control premium is subjected to two opposing forces, a negative impact from identified effects in the previous sub-section and a positive impact from the fact that a higher level of leverage increases the capacity for an acquiror to offer a higher control premium (see section 2.3.1). In the model 3.1.1 it is observed an average negative impact between 4.7 p.p and 13 p.p in the control premium for an increase of 1 p.p. of the Tar_CS[8]*,* this observation hints that the negative effects are more significant than the positive effects which results in an overall negative impact. Since the **firm value premium** is stripped from the leverage impact[9], the previous statement can be confirmed by the estimations of the model 3.1.2 where the regressions retrieve a more significant effect – an average negative impact between 34.74 p.p and 42.08 p.p in the control premium for an increase of 1 p.p of the Tar_CS[10]. The observed intensification of the leverage impact from the model 3.1.1 to 3.1.2 confirms the existence of the hypothesized misleading effect of the control premium.

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[8] *Ceteris Paribus.*
[9] Positive force on the equity premium, originates from the fact that higher levels of leverage allow acquirors to offer higher percentual equity premiums because, in absolute terms, the same or lower premiums can be offered.
[10] *Ceteris Paribus.*

Regarding the control variables, it is observed the same relations as in model 3.1.1 except for the acquiror capital structure. The **acquiror capital structure** exhibits a positive impact in the firm value premium but continues to be not significant. Additionally, some control variables become significant when the firm value premium is the dependent variable, this true for the **relative size** and for the **location**.

Table 7: Regression results for the model 3.1.2 for the whole sample

The following table presents the results for the model 3.1.2 for the whole sample. The level of significance is presented through the following criteria: *** the coefficient is significant at 1% level, ** the coefficient is significant at 5% level and * the coefficient is significant at 10% level.

	FV_PREM								
Intercept	0.3647***	0.3629***	0.3474***	0.3537***	0.3498***	0.3477***	0.3732***	0.4208***	0.3667***
Std. Error	*0.0363*	*0.0379*	*0.0387*	*0.0391*	*0.0404*	*0.0398*	*0.0434*	*0.0512*	*0.0504*
Tar_CS	-0.3765***	-0.3782***	-0.3725***	-0.3859***	-0.3709***	-0.3623***	-0.3624***	-0.3672***	-0.3178***
Std. Error	*0.0295*	*0.0314*	*0.0318*	*0.0329*	*0.0321*	*0.0322*	*0.0322*	*0.0321*	*0.0363*
Acq_CS		0.0077	0.0142	0.0222	0.0222	0.0201	0.0198	0.0165	0.0130
Std. Error		*0.0462*	*0.0466*	*0.0467*	*0.0471*	*0.0473*	*0.0475*	*0.0478*	*0.0406*
Acq_Tobin_Q			0.0099*	0.0104**	0.0088*	0.0119**	0.0118**	0.0110**	0.0096
Std. Error			*0.0052*	*0.0052*	*0.0050*	*0.0049*	*0.0049*	*0.0051*	*0.0060*
Tar_Tobin_Q				-0.0042***	-0.0058***	-0.0061***	-0.0061***	-0.0060***	-0.0060***
Std. Error				*0.0014*	*0.0017*	*0.0017*	*0.0017*	*0.0017*	*0.0016*
EBITDA_Margin					-0.0082**	-0.0082**	-0.0076*	-0.0072*	-0.0077***
Std. Error					*0.0041*	*0.0041*	*0.0040*	*0.0040*	*0.0022*
Relative_Size						-0.0081**	-0.0075**	-0.0067**	-0.0046
Std. Error						*0.0032*	*0.0033*	*0.0034*	*0.0043*
Ind_Relat							-0.0365	-0.0318	-0.0219
Std. Error							*0.0232*	*0.0229*	*0.0207*
Location								-0.0539**	-0.0378*
Std. Error								*0.0274*	*0.0218*
Cash									0.0992***
Std. Error									*0.0219*
Year-fixed effects	Inc	Inc	Inc	Inc	Inc	Inc	Inc	Inc	Inc
R^2	0.2110	0.2111	0.2150	0.2242	0.2433	0.2480	0.2521	0.2602	0.2867
Adj. R^2	0.1928	0.1914	0.1939	0.2019	0.2202	0.2237	0.2265	0.2335	0.2596
F-statistic	11.5433	10.7027	10.2065	10.0776	10.5364	10.1868	9.8469	9.7423	10.5858
Prob	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Observations: 575									
Periods: 20 (2001-2021)									

6. Conclusion and further research

6.1. Conclusion

The purpose of this dissertation relied on studying the impact of the target leverage on the acquisition premium and to try to prove the existence of a misleading effect present in the MPAP based on the equity foundation. The postulated hypothesis is that the acquisition premium is subjected by two opposing forces, a negative force from effects such as tax savings, the management control hypothesis (Jensen, 1986; Walkling & Edmister, 1985) and available debt-capacity to finance the transaction (Pearce & Robinson, 2004); and a positive force from the fact that higher levels of leverage enable acquirors to offer higher premiums since the premium is focused in a lower amount of equity (Appraisal Foundation, 2015).

The reached results indicate the existence of these two opposing forces. The effect of target leverage in the control premium is negative, which is consistent with the findings of Covrig et al. (2017). This dissertation argues that this occurs due to the negative effect being more prevalent than the positive effect, this is proved with the introduction of the variable firm value premium. By comparing the coefficients of the control premium and the firm value premium it is possible to argue that a more significant negative effect of the latter is consistent with the existence of a positive force in the former. Therefore, previous empirical studies of this relation might also be subjected to the misleading effect and, therefore, reached conclusions compromised.

6.2. Further research

Although the reached results are promising, it is important to point out that the mentioned opposing forces are purely theoretical. Further research should, therefore, complement the presented models by encountering proxies for these effects. This development will be necessary to fully comprehend which of the effects is driving the control premium. Additionally, this study should be replicated to different samples (different markets and different time periods) to verify if it is a prevailing effect and not a particularity of the considered sample.

References

Alexandridis, G., Fuller, K. P., Terhaar, L., & Travlos, N. G. (2013). Deal size, acquisition premia and shareholder gains. Journal of Corporate Finance, 20, 1–13.

Asquith, P., & Mullins, D. W. (1986). Equity issues and offering dilution. Journal of Financial Economics, 15(1), 61–89.

Baker, M., & Wurgler, J. (2002). Market timing and capital structure. The Journal of Finance, 57(1), 1–32.

Banz, R. W. (1981). The relationship between return and market value of common stocks. Journal of Financial Economics, 9(1), 3–18.

Bauguess, S. W., Moeller, S. B., Schlingemann, F. P., & Zutter, C. J. (2009). Ownership structure and target returns. Journal of Corporate Finance, 15(1), 48–65.

Baxter, N. D. (1967). Leverage, Risk of Ruin and the Cost of Capital. The Journal of Finance, 22(3), 395–403.

Bradley, M., Desai, A., & Kim, E. H. (1988). Synergistic gains from corporate acquisitions and their division between the stockholders of target and acquiring firms. Journal of Financial Economics, 21(1), 3–40.

Bris, A., & Cabolis, C. (2008). The Value of Investor Protection: Firm Evidence from Cross-Border Mergers. The Review of Financial Studies, 21(2), 605–648.

Chappell, H. W., & Cheng, D. C. (1984). Firms' acquisition decisions and Tobin's q ratio. Journal of Economics and Business, 36(1), 29–42.

Cools, K., Gell, J., Kengelbach, J., & Roos, A. (2007). A brave new world of M&A: How to create value from mergers and acquisitions. The Boston Consulting Group.

Covrig, V., McConaughy, D. L., & Travers, M. A. K. (2017). Takeover Premia and Leverage: Theory, Empirical Observations and Recommendations. Journal of Business Valuation and Economic Loss Analysis, 12(1), 123–139.

Devos, E., Kadapakkam, P.-R., & Krishnamurthy, S. (2008). How Do Mergers Create Value? A Comparison of Taxes, Market Power, and Efficiency Improvements as Explanations for Synergies. The Review of Financial Studies, 22(3), 1179–1211.

Erel, I., Liao, R. C., & Weisbach, M. S. (2012). Determinants of cross-border mergers and acquisitions. The Journal of Finance, 67(3), 1045–1082.

Fama, E. F., & French, K. R. (1992). The Cross-Section of Expected Stock Returns. In The Journal of Finance (Vol. 47, Issue 2, pp. 427–465). https://doi.org/10.1111/j.1540-6261.1992.tb04398.

Fan, J. P. H., & Goyal, V. K. (2006). On the patterns and wealth effects of vertical mergers. Journal of Business, 79(2), 877–902.

Franks, J. R., Harris, R. S., & Mayer, C. (1988). Means of payment in takeovers: Results for the United Kingdom and the United States. In Corporate takeovers: Causes and consequences (pp. 221-264). University of Chicago Press.

Froot, K. A., & Stein, J. C. (1991). Exchange rates and foreign direct investment: an imperfect capital markets approach. The quarterly journal of economics, 106(4), 1191-1217.

Goergen, M., & Renneboog, L. (2004). Shareholder wealth effects of European domestic and cross-border takeover bids. European Financial Management, 10(1), 9–45.

Gondhalekar, V. B., Raymond Sant, R., & Ferris *, S. P. (2004). The price of corporate acquisition: determinants of cash takeover premia. Applied Economics Letters, 11(12), 735–739.

Graham, J. R., & Harvey, C. R. (2001). The theory and practice of corporate finance: evidence from the field. Journal of Financial Economics, 60(2), 187–243.

Grinstein, Y., & Hribar, P. (2004). CEO compensation and incentives: Evidence from M&A bonuses. Journal of Financial Economics, 73(1), 119–143.

Harrison, J. S., Hitt, M. A., Hoskisson, R. E., & Ireland, R. D. (1991). Synergies and Post-Acquisition Performance: Differences versus Similarities in Resource Allocations. Journal of Management, 17(1), 173–190.

Haunschild, P. R. (1994). How Much is That Company Worth?: Interorganizational Relationships, Uncertainty, and Acquisition Premiums. Administrative Science Quarterly, 39(3), 391–411.

Horowitz, J. L., Loughran, T., & Savin, N. E. (2000). Three analyses of the firm size premium. Journal of Empirical Finance, 7(2), 143–153.

Hou, K., & van Dijk, M. A. (2018). Resurrecting the Size Effect: Firm Size, Profitability Shocks, and Expected Stock Returns. The Review of Financial Studies, 32(7), 2850–2889.

Huang, Y.-S., & Walkling, R. A. (1987). Target abnormal returns associated with acquisition announcements: Payment, acquisition form, and managerial resistance. Journal of Financial Economics, 19(2), 329–349.

Hubbard, R. G., & Palia, D. (1999). A reexamination of the conglomerate merger wave in the 1960s: An internal capital markets view. The Journal of Finance, 54(3), 1131–1152.

Kraus, A., & Litzenberger, R. H. (1973). A State-Preference Model of Optimal Financial Leverage. The Journal of Finance, 28(4), 911–922.

Lang, L. H. P., Stulz, R., & Walkling, R. A. (1989). Managerial performance, Tobin's Q, and the gains from successful tender offers. Journal of Financial Economics, 24(1), 137–154.

Marris, R. (1968). The Economic Theory of "managerial" Capitalism. Macmillan.

Martynova, M., & Renneboog, L. (2006). Mergers and acquisitions in Europe. Advances in corporate finance and asset pricing, 13-75.

Mathew L. A. Hayward, & Hambrick, D. C. (1997). Explaining the Premiums Paid for Large Acquisitions: Evidence of CEO Hubris. Administrative Science Quarterly, 42(1), 103–127.

Miller, M. H. (1977). Debt and Taxes. The Journal of Finance, 32(2), 261–275.

Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. American Economic Review.

Moeller, S. B., & Schlingemann, F. P. (2005). Global diversification and bidder gains: A comparison between cross-border and domestic acquisitions. Journal of Banking & Finance, 29(3), 533–564.

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

Mukherjee, T. K., Kiymaz, H., & Baker, H. K. (2005). Merger Motives and Target Valuation: A Survey of Evidence from Cfos. https://papers.ssrn.com/abstract=670383

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. Journal of Financial Economics, 13(2), 187–221.

Penman, S. H., & Reggiani, F. (2022). A Fundamental Explanation for the Size Premium in Returns and its Variation Over Time. https://doi.org/10.2139/ssrn.4180896

Reinganum, M. R. (1983). The anomalous stock market behavior of small firms in January: Empirical tests for tax-loss selling effects. Journal of Financial Economics, 12(1), 89–104.

Rhodes-Kropf, M., & Viswanathan, S. (2004). Market valuation and merger waves. The Journal of Finance, 59(6), 2685–2718.

Roll, R. (1986). The Hubris Hypothesis of Corporate Takeovers. The Journal of Business, 59(2), 197–216.

Ross, S. A., Westerfield, R., & Jaffe, J. F. (2008). Corporate Finance. McGraw-Hill/Irwin.

Salter, M. S., & Weinhold, W. A. (1979). Diversification through acquisition: Strategies for creating economic value. New York: Free Press.

Scholes, M. S. (1972). The Market for Securities: Substitution Versus Price Pressure and the Effects of Information on Share Prices. The Journal of Business, 45(2), 179–211.

Servaes, H. (1991). Tobin's Q and the Gains from Takeovers. In The Journal of Finance (Vol. 46, Issue 1, pp. 409–419). https://doi.org/10.1111/j.1540-6261.1991.tb03758.x

Shleifer, A., & Vishny, R. W. (2003). Stock market driven acquisitions. Journal of Financial Economics, 70(3), 295–311.

Sonenshine, R., & Reynolds, K. (2014). Determinants of cross-border merger premia. Review of World Economics, 150(1), 173–189.

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

Uysal, V. B. (2010). Deviation from the Target Capital Structure and Acquisition Choices. SSRN.

Walkling, R. A., & Edmister, R. O. (1985). Determinants of Tender Offer Premiums. Financial Analysts Journal, 41(1), 27–37.

Annexes

Annex 1: Correlation Matrix

The following table presents the correlation between independent variables for the sample of 575 observations.

		1	2	3	4	5	6	7	8	9
1	*Acq_CS*	1.0000								
2	*Acq_Tobin_Q*	-0.1207	1.0000							
3	*EBITDA_Margin*	0.0257	-0.0976	1.0000						
4	*Relative_Size*	-0.0347	0.2663	0.0249	1.0000					
5	*Tar_CS*	0.2729	-0.1272	0.1538	0.0959	1.0000				
6	*Tar_Tobin_Q*	0.0427	0.0484	-0.2876	-0.0940	-0.1294	1.0000			
7	*Location*	-0.0347	-0.0399	0.0872	0.0516	-0.0321	0.0011	1.0000		
8	*Cash*	-0.0691	0.0655	-0.0340	-0.1323	-0.3167	0.0409	-0.1538	1.0000	
9	*Ind_Relat*	0.0052	-0.0063	0.1620	0.0831	0.0359	-0.0683	0.0996	-0.1321	1.0000