
Determinants of the Method of Payment in M&A: the case of US
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Dissertation
Master in Finance

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2022

Bibliographic note

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The conclusion of this dissertation will mark the accomplishment of the Master in Finance.

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Acknowledgments

First, I would like to start by expressing my gratitude to my supervisor, Professor Jorge Farinha, for his availability, guidance, valuable inputs, and feedback. Moreover, I would also like to show my appreciation towards all the professors in the Master of Finance and in the Bachelor in Management. Being part of a prestigious university, such as the School of Economics and Management of the University of Porto, allowed me to learn valuable competencies and skills, I become more resilient, and it prepared me for the beginning of my professional path.

I am extremely grateful to my family for the endless support, for having faith in me and giving me the courage necessary to continue. You are the ones responsible for this path of mine, and I have only to thank you for the possibility to trace my path.

Furthermore, I would like to thank my girlfriend, who was there for me every time. You were the best thesis partner I could ask for. You never let me settle, you always pushed me, and most importantly, you always believed in me. I could not be here without you.

Lastly, I would like to thank my friends who were always by my side and supported me.

The dissertation was always something I was afraid of, but I am proud to say that this milestone is done and let the next ones come!

Abstract

Several studies have been carried out over the years in the scope of finding out which determinants influence the payment method in mergers and acquisitions. To contribute to the existing research, this dissertation intends to analyze the US M&A market within a recent period by testing hypotheses less addressed in the literature. Thereby, it aims to find out whether the characteristics of the target and acquiring company, as well as the availability of cash and budgetary constraints, impact this decision.

To this end, data were collected regarding transactions between the US publicly listed and delisted acquirers for the US publicly listed and delisted targets between 2010 and 2019 through the Zephyr and Thomson Reuters Eikon database, resulting in 212 transactions analyzed.

In light of other research, the methodology used was the Tobit model, to analyze the influence of the growth of the share value of the target and acquirer companies, the equity-to-assets ratio of both sides of the transaction, the acquirer's cash holdings, the acquirer's EBITDA and the relative size of the target to the acquirer.

The results show relevance for the variables acquirer equity-to-assets ratio, acquirer EBITDA, and the relative size of the target to the acquirer. Weak evidence is found for the growth rate of the target firm. On the other hand, the acquirer growth rate, targets equity-to-asset ratio, acquirer cash holdings, and premium did not prove to be statistically significant.

The relevance of this dissertation comes from the benefits that the outcome may yield in the corporate world, by identifying the crucial factors that influence the method of payment in M&A deals and the patterns that have more influence on the decision-making chosen and accepted by firms.

Keywords: Mergers and Acquisitions, M&A, Method of Payment, Corporate Finance

JEL codes: G30, G31, G32, G34

Resumo

Ao longo dos anos foram realizados estudos para descobrir quais os determinantes que influenciam o método de pagamento nas fusões e aquisições. Para contribuir para a investigação existente, esta dissertação pretende analisar o mercado americano de F&A num período de tempo recente testando hipóteses menos abordadas na literatura. Assim, esta investigação visa averiguar se as características da empresa alvo e adquirente, bem como a disponibilidade de numerário e restrições orçamentais, impactuam esta decisão.

Para o efeito, foram recolhidos dados relativos a transações entre as empresas americanas adquirentes cotadas e *delisted* e as empresas americanas alvo cotadas e *delisted* entre 2010 e 2019 através da base de dados Zephyr e Thomson Reuters Eikon, resultando em 212 transações analisadas.

À luz de outras investigações, a metodologia utilizada foi o modelo Tobit, para analisar a influência do crescimento do valor das ações das empresas alvo e adquirentes, o rácio capital próprio sobre ativos de ambos os lados da transação, a disponibilidade do adquirente em numerário, o EBITDA do adquirente e a dimensão relativa do alvo para o adquirente.

Os resultados revelam significância estatística para o rácio capital próprio sobre ativos das empresas adquirentes, o EBITDA das adquirentes e a dimensão relativa do alvo em relação à adquirente. Com menor significância foi encontrada uma relação entre o crescimento do valor das ações da empresa-alvo e o método de pagamento. Por outro lado, o crescimento do valor das ações da empresa adquirente, o rácio entre o capital próprio e o ativo da empresa adquirente e o prémio não provaram ser estatisticamente significativos.

A relevância desta dissertação provém dos benefícios que os resultados podem produzir no mundo empresarial, identificando os fatores cruciais que influenciam o método de pagamento nas operações de F&A e os padrões que têm mais influência na tomada de decisões escolhidas e aceites pelas empresas.

Palavras-chave: Fusões e Aquisições, F&A, Método de Pagamento, Finanças Empresariais

Código JEL: G30, G31, G32, G34

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1. Introduction

Mergers and Acquisitions (M&A) describe transactions involving two or more companies that combine in some form, resulting in a transfer of ownership between them. Even though some authors use the terms “merger”, “acquisition”, and “takeover” as synonyms, they are not. A “merger” occurs when the management of two or more entities agrees to merge and create a new legal entity, whereas a “acquisition” and “takeover”, occurs when the acquirer company purchases more than 50% of ownership in the targets company (Singh & Singh, 1971).

M&A has recently evolved into a vital element of the economic and corporate environment, playing a crucial role in responding to the escalating global competitiveness and the evolution of markets (Vyas et al., 2012).

The US market is one of the largest M&A markets in the world, with a volume of \$1.8 trillion in 2019, which is a record year for US M&A in the combined middle, large, and mega markets compared to the previous decade. The average deal size was \$1.8 billion, with 28 megadeals announced worth \$10 billion or more each and 1,039 deals over \$100 million or more. The year 2019 outperformed most years in the 2010s, the exception being 2015, which was a massive M&A year in the United States, albeit the larger transaction amounts are due to the higher value of the acquisitions rather than the number of deals.

Nelson (1959), Shleifer and Vishny (2003), Rhodes-Kropf and Viswanathan (2004), Rhodes–Kropf et al. (2005), and other authors have evidenced that merger and acquisition activities are intricately linked to the valuation of the stock market. Therefore, when acquiring, the choice of payment method is an important decision that has to be made for an M&A deal to be concluded, and it reflects how companies interpret the information in the market. In a Modigliani and Miller (1958) perfect market, one should expect that the payment method and the way investments are financed in M&A deals should not be relevant, as the market correctly prices all firms. However, this is not what happens, which raises the questions of which are the determinants that affect the payment method.

Furthermore, payment method selection is a crucial risk management approach. The seller will always want the highest possible price for the firm, while the buyer will want to pay the lowest, being this is a highly delicate scenario. In this case, the deal is completed by satisfying both the buyer and the seller with a fair purchase price and payment form. In

corporate acquisitions, the payment method used is a crucial factor for both the acquirer and the target (Sankar & Leepsa, 2018).

The acquirer's payment options include cash/debt, its own stock, or a combination of the two. The most frequent and simplest method of payment in M&A agreements is cash, and the trade-off is cash for the acquisition of another company's shares and assets. To obtain the funds needed for the acquisition the acquirer may raise more debt or use internal sources, with the overall deal value being paid via these sources. The fundamental benefit of using cash as a payment method is that the corporate identity and shareholders' ownership remain intact, and earnings per share are not diluted. However, the drawback of this method is that target shareholders are required to pay immediate taxes. The stock payment method is a non-cash payment in which the acquiring equity shares are issued and/or traded to shareholders of the target company. Hence, shareholders of the target firm become shareholders of the acquirer, and as a result, both the acquirer and the target firms share post-M&A deal outcome. In all equity transactions, the determination of a rational exchange ratio and the price-to-earnings ratio of the firms are two critical factors that have a substantial impact on the real benefits to the shareholders of acquiring companies. Lastly, mixed payment combines cash and non-cash payments. Cash, debt, and equity are used to settle the transaction.

In M&A transactions, the method of payment has considerable importance on both the target and acquiring firms, namely on the capital structure, firms' risk profile, post-takeover ownership structure, and synergy allocation (Faccio & Masulis, 2005).

As a result, one of the key elements in achieving a successful transaction is the payment method. The literature on payment methods, proposes remarkable determinants that affect that decision. Travlos (1987), Linn and Switzer (2001), and Shleifer and Vishny (2003) suggest that the decision of the medium of payment chosen depends on asymmetric information between the target and the bidder firm, in what concerns the stock price of bidder shares since it can be perceived that the bidder will only offer shares if they are overvalued and offer cash otherwise. Another aspect has to do with the taxation or capital gains effects, given that cash brings immediate tax liabilities to the target shareholders, and thus a higher premium will be required, however, by paying with stock current tax liabilities do not arise, according to Wansley et al. (1983) and Amihud et al. (1990). Stulz (1988) and Faccio and Masulis (2005), infer that managerial control or ownership influences the

payment form since by including shares as a payment, bidder shareholders will see their stake being diluted and thus, they will lose control over the firm. Other determinants are the relative size of the two companies and the number of growth or investment opportunities that the acquirer company has at its disposal. Grullon et al. (1997), and Swieringa and Schauten (2007), imply that the relative size has impact since a smaller acquirer may have barriers in obtaining the amount of cash needed to acquire a larger target. Martin (1996) and Zhang (2001) suggest that a bidder with higher growth opportunities will privilege acquisitions via shares, so they can preserve cash available to pursue those investments opportunities. Jensen (1986) claims that companies with substantial cash availability, cash flow or a sufficient debt capacity are more likely to fund acquisitions with cash rather than equity. Other factors that affect the form of payment that are not widely accepted nor investigated are whether it is a hostile takeover or non-hostile, if there are defensive mechanisms, the possible synergy effects, firms experience and transaction/investment characteristics and the interest.

In light of previous empirical and theoretical literature, the relevance of this dissertation comes from the benefit that the results and conclusion may produce in its aim to identify the key determinants of M&A payment methods and the patterns that have more influence on the decision-making of the method of payment chosen and accepted by firms, that could be used in the corporate world.

After the introduction and a slight deepening of the theme to be addressed, the dissertation is structured into four more chapters: literature review, methodology and research data, results, and conclusion. The second chapter is dedicated to the literature review of the determinants that affect the payment method decision in M&A addressed and examined by main authors over time. The following chapter addresses the methodology to be developed in this dissertation, as well as the formulation of hypotheses to be investigated and a brief data analysis. Chapter four aims to analyze and discuss the results obtained. Finally, the last chapter contains the conclusions to be drawn from empirical findings.

2. Literature Review

According to the existing literature, numerous theories have been developed in an attempt to explain the determinants of the payment alternatives in M&A deals. Evidence suggests that companies are not indifferent regarding the method of payment in M&A transactions, and there are several propositions advanced and tested in the literature to scrutinize the decision.

2.1 Information asymmetry theories for the choice of payment in M&A

The relationship between high stock market values and acquisition activity has been widely established: Nelson (1959) realized that acquisition activity increases during periods of high market valuations. When the acquiring firm's manager has better access to information than outside investors regarding firm's current assets overvaluation, they will tend to pursue a stock-financed acquisition (Myers & Majluf, 1984). If the bidding firm's management knows that its shares are undervalued, cash-financed acquisitions are more likely. Investors, being reasonable and rational, will foresee this trend and react negatively, lowering the stock price of companies that issue new equity. During these periods, a cash or debt offering will be preferred unless the real costs are excessive. When target shareholders have better information about the worth of their company and believe it is undervalued, they will favor equity offers over cash offers (Hansen, 1987). According to the author, target shareholders who retain an equity position in the new entity would benefit from the post-merger gains more than those gained at the time of the deal, when the company was undervalued.

The results of Travlos (1987) study showed that share exchange offers cause considerable losses to the acquiring firm shareholders at the time of the takeover proposal's announcement, but cash-financed offers result in normal rates of return for stockholders. Its findings revealed substantial differences in abnormal returns between cash offers and pure stock exchange, corroborating the signaling hypothesis that share exchange conveys negative information about the value of the assets of the acquiring company (the bidding firm is overvalued).

To test the information asymmetries theory, Fishman (1989) created a model of pre-emptive bidding. The finding revealed a positive relationship between cash offers and

correct information regarding the true value of the acquirers' assets. The author claims that bidders use cash to prevent rival bids when they possess favorable information, that is private, suggesting a high value for the target, potentially due to synergies. Thus, managers of the target company, on the other hand, are more likely to reject a stock offer. Cornu and Isakov (2000) conducted an analysis in which bidder equilibrium strategies for a signaling game were described according to the Perfect Bayesian Equilibrium requirements, confirming Fishman (1989) findings. Berkovitch and Narayanan (1990) developed an asymmetric-information model that revealed that as the quantity of cash in a mixed offer rose, investors of both the acquirer and the target received larger abnormal returns. Furthermore, the authors argue that an offer comprised of a large amount of cash strengthens the chances of the target accepting the bid and decreases the time for others to submit competing offers. The percentage of synergistic profits captured by the bidding company rises as the fraction of the offer represented by cash increases, according to their argument. They also indicate that bidding competition increases returns to target shareholders.

The findings of Linn and Switzer (2001) are in line with those of Fishman (1989) and Berkovitch and Narayanan (1990) in regard to the reasons why cash offers are occasionally favored over equity offers. When the bidding firm possesses a higher degree of private information about future synergies and uses cash to deter rival offers, the greater the synergies, the higher the probability of a cash offering.

Eckbo et al. (1990) constructed a model in which the bidder and target firms have a two-sided information asymmetry, resulting in an optimal mix of stock and cash as medium of payment in the transaction. According to the authors, the real value of the bidder after the transaction is disclosed to the target, given the nature of the mixed offer, with this value being higher and more convex as the amount of cash in the offer increases.

The effect of stock market valuations on acquisition activity was modeled by Shleifer and Vishny (2003) and Rhodes-Kropf and Viswanathan (2004). Both models predict that overvalued bidders would make large stock offers, implying that overvalued firms will be more prone to acquire other firms using shares. Short-run deviations in value from long-run trends are strongly correlated with merger intensity, particularly when shares are used as the source of payment (Rhodes-Kropf et al., 2005). In this sense, overvalued companies may be able to acquire, prevail, and grow, whereas undervalued companies, or

comparatively with less overvalued equity may become takeover targets. The primary distinction between these models is the reason why target management accept the acquirer's overvalued shares. Shleifer and Vishny (2003) assume the inefficiency of financial markets, resulting in some firms being valued incorrectly, and claim that opportunistic target managers accept the acquirer's overvalued equity, due to the fact that post-merger, they are able to cash out faster and profit from it, and/or due to the fact that shareholders have short time horizons. According to Rhodes-Kropf and Viswanathan (2004), target shareholders keep long-term objectives, and their interests are aligned with the ones of their target managers'. However, target management overestimate takeover synergies, and therefore they accept acquirers' overvalued shares. Di Giuli (2013) finds that acquirers lead the choice on exchange payment, using short-term market mispricing, in line with Shleifer and Vishny (2003) and Rhodes-Kropf and Viswanathan (2004). As anticipated by Rhodes-Kropf and Viswanathan (2004), Di Giuli (2013) implies that target management have confidence and believe in the quality of the transaction, and are also concerned about the long-term value of the combined entity's shares.

As already mentioned, several equity-financed acquisitions appear to be driven by acquirer stock overvaluation. To secure a better deal on less overvalued targets, acquirers use their overvalued shares as a kind of payment. For instance, research by Rhodes-Kropf et al. (2005), Dong et al. (2006), and Ang and Cheng (2006) establish that before transactions announcements, share-exchange bidders have their equity more overvalued than the equity of their targets (on average), and that the greater the level of overvaluation the greater the likelihood of a company becoming an acquirer by using their shares as the way of payment. This occurs because, when the market is overvalued, the target management logically reduces the expected value of a given equity offer; however, even though the target's stock is affected by the same market overvaluation, the target is more likely to overvalue the offer, when the market overvaluation is greater. Furthermore, according to Rhodes-Kropf and Viswanathan (2004), when there is overvaluation in the markets, transactions are more probable to happen, causing a wave, even if there is no justification for it, due to misvaluation, and those mergers that do occur are more likely to use stock. On the other hand, when markets are undervalued, the likelihood of mergers occurring is smaller, and those that occur are financed via cash or debt.

Savor and Lu (2009) corroborate Shleifer and Vishny (2003) hypothesis that overvalued corporations produce value for their shareholders by utilizing their stock as payment when acquiring target companies. They evaluate the long-term performance of share acquisitions against stock agreements that were cancelled. Their findings suggest that acquirer shareholders are better off with the acquisition than they would be without it since withdrawn acquisitions delivered lower long-run abnormal returns than completed transactions. Contrarily to this evidence, Fu et al. (2013) and Akbulut (2013) claim against the advantages of exploiting overvalued equity in M&A deals. They suggest that overvalued stock acquirers considerably overpay for their targets and underperform overvalued non-acquirers over the long term, eroding value for their shareholders. Regardless, overvalued equity motivates managers to undertake deal acquisitions (Akbulut, 2013). As per Fu et al. (2013), a share exchange acquisition by overpriced acquirers can only benefit its shareholders if the acquisition provides remarkable synergies or in the case that the premium paid to the target is not too large, but their article argues that neither of these requirements is satisfied.

Eckbo et al. (2018) created and tested a rational payment design as an alternative to bidder opportunism, a hypothesis that examined the asymmetry between the two sides in a transaction, taking into account how well knowledgeable the target is about the bidder and its intrinsic value. This theory claims that bidders that make share offers are not opportunistic, but rather worried about adverse selection on the target side of the transaction. Additionally, the value of an equity payment effectively changes with the following target value realization, but a cash offer ties the bidder to an ex-ante specific target value. Thus, with stock payments, the real value of the deal will fluctuate depending on the performance of the shares, creating a rational incentive for bidders to pick equity payments over cash payments. The proportion of shares included in the transaction will decrease only when the target company undervalues the acquirer, which is unlikely the more the target company is aware of the acquirer. To summarize, with rational payment design, the better the target's ability in assess the bidder's worth, the larger the equity component of the payment should be. Under bidder opportunism, the projection is the inverse: better-enlightened targets are better in identifying bidder overvaluation, and those bidder shares will be more difficult to sell, which makes it harder to fit the overvalued shares in the payment, resulting in a lower stock component that should be included.

Vagenas-Nanos (2020) developed a quasi-experimental design to test if acquirers may profit and create value from their overpriced stock by buying less overvalued or undervalued target firms. To accomplish so, he identified the variables that affect the acquirers' stock price and separated the one that evaluates the effect from the exploitation of overvaluation through the use of equity in acquisition activity. Acquirers of overvalued stocks face four contrasting forces. First, they face a share price decrease and a natural long-run price correction due to their overvaluation. Furthermore, the disclosure of stock acquisitions sends unfavorable signals to the market about the firm's value. Also, the acquisition's quality has an impact. Finally, they are vulnerable to the effects of overvalued equity exploitation. To make reasonable conclusions about Shleifer and Vishny (2003) theory, the author believed he needed to remove the first three forces and isolate, capture, and quantify the fourth. The findings of Vagenas-Nanos (2020) back up Shleifer and Vishny (2003) market-timing theory.

Although Shleifer and Vishny (2003), Rhodes-Kropf and Viswanathan (2004), Rhodes–Kropf et al. (2005), and other scholars argue that acquirer equity misvaluation is a primary driver of the mode of payment decision, De Bodt et al. (2019) contend that the academic community was deceived. They claim that during the period when pooling accounting was allowed in the United States (1970–2001), these accounting rules created an artificial incentive for acquirers to buy their targets with all equity funding, particularly during times of high overall stock market valuation or for individually overvalued acquirers (De Bodt et al., 2019). They demonstrate that the connection between acquirer valuation and the decision to carry out an all-equity transaction in an M&A deal is eliminated, by using data from the post-pooling period and foreign countries, and by removing those regulatory incentives. They also imply that changes in accounting standards can have a significant influence on financial market behavior, even if there are no direct cash-flow repercussions.

2.2 Taxation or capital gains effects as a determinant of payment form

A cash acquisition exposes target company stockholders to immediate capital gains tax obligation in the year of the acquisition, while in a merger with share exchange, the capital gains taxes from trading equity securities can be postponed until the new shares are sold by the investors (Amihud et al., 1990; Wansley et al., 1983). Zhang (2001) claims that

since a cash offer triggers immediate tax obligations, the acquirer must pay a higher acquisition price to compensate for the target shareholders' tax burden. Former tax regulations that favored cash payments were also mentioned, as there was a possibility to price assets from the target firm at their fair market value. Hence, it will result in higher tax-deductible depreciation and amortization allowances, which are not available in all equity bids. As a result, the acquirer will experience higher future cash flows after taxes, which will incentivize them to fund the transaction with cash when the market value of the target's assets exceeds the book value.

Wansley et al. (1983) looked for systematic changes in the abnormal returns of acquirer shareholders around the day of the merger announcement, and found substantial differences across payment methods: cash, securities, and a mix of them. From 40 days before the original merger announcement to the announcement day, seller shareholders in cash acquisitions gain an average of 33,54 percent abnormal returns, according to their sample. These abnormal returns are almost twice as high as those received from a securities medium exchange, at 17,47%, and nearly three times as high as those gained from a payment combining the two, at 11,77%. This disparity stems from tax effects, regulatory constraints that favor cash as a medium of exchange, and the growing popularity of cash mergers at a period of generally higher merger premiums (Wansley et al., 1983).

Harris et al. (1987) come to the same findings as Wansley et al. (1983). They find that cash acquisitions result in greater gains for target shareholders than equity acquisitions, which is consistent with the assumption that target shareholders must be compensated for capital gains taxes. Although, previous to the implementation of capital gains tax in 1965, differences in offer premia between cash and equity funded acquisitions in the UK were seen. Since there is no clear connection between the use of cash as a payment method and capital gains taxes, bid premia can only be explained in part by capital gains taxes.

Huang and Walkling (1987) investigated the abnormal returns achieved by target companies during the first acquisition announcements with the medium of exchange. To reward target shareholders for the prompt tax payment, their hypothesis assumed that abnormal returns would be larger in cash offers than in stock offers. The findings, consistent with the tax theory, revealed that cash offers are connected with considerably greater target returns, both before and after adjusting for the kind of acquisition and the degree of resistance.

Ayers et al. (2004) analyzed the impact of shareholder capital gains taxes on the structure of corporate acquisitions and found a positive relationship between the utilization of tax-free stock-for-stock acquisitions and the individual capital gains tax rate. Their findings imply that the decision between taxable cash-for-stock and tax-free stock-for-stock transactions is considerably impacted by shareholder-level taxes, and that this impact varies depending on target shareholders' tax status. That being said, changes in capital gains tax rates may affect the time and method of payment employed in firm acquisitions.

In contrast to previous studies, Eckbo and Langohr (1989) found that the average premium over the post-expiration price is 24% versus 23%, nearly equivalent across offers with the two forms of payment, implying that the payment method effect is not due to a need to compensate target shareholders for a potential capital-gains tax liability. In both all-stock and all-cash offers, the average bidder firm abnormal returns are indistinguishable from zero.

2.3 Managerial control or ownership theories on the payment choice

According to the management control theory, which is backed by Stulz (1988), Harris and Raviv (1988), and Faccio and Masulis (2005), managerial ownership impacts the payment form since by comprising shares as a payment it dilutes bidding shareholders' stake and therefore they will lose control over the company. Managers are hesitant to renounce control, thus they would rather not to use stock to fund acquisitions. Hence cash financing is more likely to be used when the acquiring firm's management ownership share is higher (Amihud et al., 1990; Yook et al., 1999).

According to Harris and Raviv (1988) and Stulz (1988), managers who want to maintain control of the company may want to raise the debt level and use the proceeds to acquire stock owned by shareholders to maximize the chances of sustaining control and granting additional profits. As a result of raising debt to acquire additional equity, there will be less equity for passive investors, lowering the likelihood of the firm being acquired by a raider.

In accordance with Stulz (1988), the managers' desire to maintain control, authority, and gather more advantages and benefits influences finance decisions. The author claims that managers have an incentive to maintain ownership and voting power since the chance of a change in management grows as the percentage of shares owned by the manager

diminishes. Moreover, as the percentage of target management control voting rights held rises, the likelihood of a hostile acquisition falls, increasing the premium offered in the event of a tender offer. Additionally, he demonstrates that the value of a possible takeover target is determined by the voting stock allocation between management and outside shareholders (shareholders whose voting rights are not controlled by management).

Another aspect raised by Stulz (1988) is that substantial leverage may dissuade potential unwanted investors by increasing covenants and limiting the capacity to issue debt. However, Harris and Raviv (1988) suggest that increasing debt reduces the likelihood of maintaining control since bankruptcy risk increases, loan covenants restrictions become more tight, and future cash obligations become more committed.

The relationship between the means of funding an investment, such as a firm acquisition, and the acquirer's management ownership was investigated by Amihud et al. (1990). They found that an increase in the percentage of voting rights held by the acquirers' managers enhances the chance of an acquisition being funded with cash or debt. The authors find a negative association between acquirer management voting rights and stock offers, which is consonant with the corporate control motivation. This relationship exists because managers that value control choose to finance investments through cash or debt rather than issuing new equity, which dilutes existing ownership and raises the risk of losing control.

Martin (1996), in contrast to the preceding findings, proposes a nonlinear link between managerial ownership and the likelihood of equity financing. Managers will not be extremely concerned about the impact of dilution control at both very low and very high levels of ownership. However, managers may be concerned about their control of the business in some middle range of management ownership (5-25%), therefore an increase in ownership within this range would lead to a decreased chance of equity financing.

Faccio and Masulis (2005) also find a notable non-linear connection between the bidder's greatest controlling shareholder's voting stake and the likelihood of cash financing. The likelihood of cash financing is high when a bidder's controlling shareholder has an intermediate degree of voting power in the range of 20-60%, because the risk of losing control is significant in this range. When a bidder's controlling shareholders have a voting stake of less than 20% or more than 60%, they are less worried about voting control threats. This means that when major shareholders voting control is endangered, bidders

prefer financing M&A deals with cash. The findings also indicate a tendency of European bidders opting for equity financing more frequently when indicators of their financial health deteriorate.

The studies by Faccio and Masulis (2005) and Martin (1996) have some parallels, however the first focuses on Europe and finds a higher level of concentration ownership and larger effects than the later author finds for the United States on M&A financing choice from bidder corporate governance concerns. Furthermore, Faccio and Masulis (2005) find a non-linear relationship between method of payment and bidder corporate control, which is particularly strong when the largest shareholder holds between 20-60% shares, and Martin (1996) finds a non-linear relationship, with an increase in ownership decreasing the likelihood of the deal being financed with stock only when the largest shareholder's voting power is between 5-25%.

According to Yook et al. (1999), managerial ownership has an impact on abnormal returns surrounding the offer. Given the managerial control hypothesis, a high-ownership bidder is more prone to make a cash offer, consequently, if a high-managerial-holding company makes a stock offer, it may be interpreted as bad news, signaling that their stock is overvalued.

Although a few papers discuss both acquiring and target companies, the majority of research focuses on acquiring firms' motivations. Ghosh and Ruland (1998) investigate how control rights preferences of acquiring and target company management impact the form of payment for acquisitions. They are especially interested in target companies and the management motive to gain power and control in the merged entity following acquisitions. Their premise is that target company managers who hold substantial fraction of stock in their companies' value voting power in the merged company, thus, they would rather get acquirer stock in exchange for their ownership. Furthermore, target company managers who control a large percentage of their company's stock have significant bargaining power in takeover negotiations, which they may utilize to either negotiate favorable terms or deter acquisitions (Song & Walkling, 1993). The findings of Ghosh and Ruland (1998) reveal that stock acquisitions are related with strong management ownership of target firms, and that target firm managerial ownership is even more relevant than acquirer managerial ownership in explaining the payment method.

2.4 The impact of the relative size of the two companies and other financial measures on the choice of the payment form

According to Grullon et al. (1997) and Swieringa and Schauten (2007), relative size is a factor that must be taking into account since a smaller acquirer may face difficulties in obtaining the funds required to acquire a bigger target. As per Grullon et al. (1997), the larger the target's relative size to the acquirer, the more probable the merger is financed by stock or combination, rather than cash alone. Faccio and Masulis (2005) and Zhang (2001) anticipate that when the size of the target is relatively larger in comparison to the size of the bidder, bidders are more likely to employ equity financing. Zhang (2001) offers two interpretations: when the relative transaction size is significant, the availability to generate enough internal funds and the capacity to borrow are insufficient to settle deals in cash. Furthermore, larger target companies have more bargaining power over payment means, and assuming that target management have an equity holding and desire to retain influence in the merged firm, a stock offer is preferred. Swieringa and Schauten (2007) realize that the relative size of the deal has a considerable impact on the payment method in Dutch mergers and acquisitions. Their conclusion supports the premise that when the relative transaction size is large, bidders have inadequate unused debt capacity and liquid assets to fund an acquisition only through cash.

In contrast to these findings, Martin (1996) results evidence that the relative size of the target at the 5% level is not significant in any of his analysis. The author concludes that there is no obvious and tight relationship between acquisition financing and relative size in M&A since target's relative size does not considerably change among payment methods. The same findings are presented by Ghosh and Ruland (1998). According to the authors, one potential interpretation of their findings is that when the target size is relatively large compared to the acquirer's, the target management would prefer to negotiate for equity financing in order to keep their interest and influence in the merged firm. Meanwhile, acquirer managers choose to pay cash rather than diluting their existing stake in the company. As a result of the two contrasting incentives between the counterparts, the payment choices are offset, and there is no obvious indication suggesting the relationship between the relative size of the two parties and payment methods selected in M&A transactions.

To evaluate the payment method in M&A, Zhang (2001) studied financial measures, such as return on equity and dividend payout ratio, of both acquiring and target companies. He discovered a statistically significant positive association between the acquirer's dividend payout and the likelihood of cash-financing. According to Jensen (1986) free cash flow hypothesis, companies with substantial dividend payouts have high levels of free cash flows, implying that acquisitions might be funded with cash. Other findings suggest that acquisitions by bidders with a high return on equity are typically cash-financed, as a high return on equity denotes a high level of free cash flows or easy access to the capital market (Zhang, 2001).

2.5 The impact of growth and investment opportunities on the medium of payment

Combining debt agency costs with Myers and Majluf (1984) asymmetric information model, Jung et al. (1996) claim that managers with growth aspirations favor raising capital through equity over debt, since it offers them better control over the funds raised. Unlike stock, debt forces managers to pay out cash flows, which they cannot invest in opportunities. As a result, debt financing optimizes company value for companies with limited investment opportunities. In contrast, equity financing is useful and beneficial for companies with promising investment opportunities, bearing in mind that it increases the likelihood that these firms will be able to fully exploit their investment potential. Companies with solid investment opportunities issue equity under this analysis, while companies with poor investment opportunities issue debt if managers are under the control of the firm's capital providers and issue equity otherwise.

Martin (1996) and Zhang (2001) studied the link between M&A payment methods and the company growth opportunities. Martin (1996) stated that one of the most crucial factors influencing payment method is bidder investment opportunities. Their findings demonstrated that an acquirer with larger growth opportunities is more likely to use a stock exchange as a medium of payment in this type of transaction in order to conserve cash to fund those investment opportunities. Equity financing conveys less limitations on managers, allowing them more flexibility in their current investments and future financing strategies (Martin, 1996). Fishman (1989) further supports the theory that transactions by acquirers with a broad range of investment opportunities tend to be equity funded, because

supplementary borrowing raises debtholder scrutiny and perhaps leads to future debt-financing constraints. For that reason, the bidder's ability to implement future investment opportunities is limited (Fishman, 1989; Swieringa & Schauten, 2007).

2.6 Hostile takeovers theories as a determining factor of the choice of payment

Schwert (2000) analyzed 2,346 takeover contests to evaluate whether there were any noticeable differences between hostile and non-hostile takeovers. According to him, undesirable offers, are frequently viewed as a threat to at least part of the target stakeholders, leading to substantial defensive measures by the target firm's management. Friendly takeovers, on the other hand, are repeatedly perceived as generating higher synergies that benefit both companies. The form of payment proposed to target stockholders, which may reflect the bidder's bargaining strategy, was one aspect that the author considered when determining if there is economic validity to perceptions of hostility. The sample included concerns such as whether target corporations have a poison pill, whether target shareholders are paid entirely in cash or stock, whether other formal offers for the target firm have been made, and so on. His findings suggest that in hostile bids, cash is more likely to be offered as a form of payment, however the link is weak. Furthermore, hostile bidders are less willing to make offers that simply include equity as compensation. Schwert (2000) results support the hypothesis that cash offers are related to higher than average bidder returns, which is consistent with literature claiming that a bidder who chooses to pay for an acquisition with cash rather than equity sends positive information to the market about the value of its stock.

Another issue to consider in hostile takeovers is the time it will take to complete the transaction. According to the control theory, a hostile bid is more likely to be funded with cash since a stock offer requires authorizations, which might take a long time, allowing rivals to collect information and potentially intervene. The target, on the other hand, has more time to plan its defense and find a white knight (Papageorgiou et al., 2008).

2.7 Firms experience and investment/transaction characteristics as determinants of payment form

Over the past decades, researchers have studied in detail the M&A phenomena, resulting in a plethora of papers. Initially, academics concentrated on the acquiring firm's performance; later, they expanded to include the target's performance implications, the merged performance effect, and M&A antecedents (Haleblian et al., 2009). However, the majority of the studies have focused on a static understanding of mergers and acquisitions, treating each M&A deal as an isolated and independent event in the firms' past. Scholars have lately started to acknowledge that firms often partake in several M&A transactions throughout time, hence they claim that treating M&A transactions as separated and distinct acquisitions may be unrewarding. Instead, a firms' M&A transactions and, by extension, its result is likely to be influenced by the firms' M&A course (Hutzschenreuter et al., 2012). Regardless, the literature of investment characteristics of the target and acquirer continues scarce.

Hutzschenreuter et al. (2012) reviewed 183 empirical M&A studies, categorizing impact variables into four primary categories to investigate their influence on mergers and acquisitions outcomes: antecedents, transaction content characteristics, transaction process characteristics, and the transaction itself. According to their findings, state-related research was more common than path-related research on M&A outcomes. Furthermore, path-related connections have only been studied glancingly, and those that have been investigated are mostly focused on antecedents, being the exception a few that dealt with the characteristics of the transaction. Most of the studies that dealt with transaction characteristics focused on the transaction itself and did not take into consideration particular transaction process or content elements.

2.8 The impact of cash availability and budget constraints on the choice of payment decision in M&A deals

According to Myers (1984) pecking order theory of financing, managers implement the following financing hierarchy: internal finance, borrowing, and finally external equity funding. When generated internal funds are scarce, other internal sources such as cash reserves can deliver useful funds to employ in investment opportunities (Harford, 1999). Firms frequently accumulate far more capital than is required to satisfy anticipated

financing requirements. Furthermore, Jensen (1986) asserts that companies with substantial levels of free cash flow are more likely to fund acquisitions with cash – free cash flow hypothesis.

On the other side, when faced with debt-financing constraints, such as considerable financial leverage, or when capacity to issue debt is limited, bidders are more willing to fund acquisitions with equity (Faccio & Masulis, 2005). As a result, companies with high cash reserves, cash flow, or a sufficient debt capacity are more prone to utilize cash rather than equity to fund their acquisitions (Martin, 1996). Regardless, in the absence of favorable investment possibilities, firms with agency problems stash capital rather than giving it back to shareholders (Jensen, 1986). Thereby, encouraging companies to use their cash reserves may result in wealth destruction, as proven by Moeller et al. (2005).

The payment method used is determined by the target's and bidder's financial conditions (Mayer & Walker, 1996). The financing expenses of a cash transaction include a rise in interest rates and, as a result, the risk of bankruptcy. For a company that currently has debt, adding more debt or reducing liquid assets or cash can be costly. A company is less likely to finance acquisitions with cash when leverage rises as well as when free cash flows and liquidity decrease (Papageorgiou et al., 2008).

Harford (1999) investigated the acquisition behavior of cash-rich firms to test if cash stockpiles are poorly invested and found that those firms are more willing to undertake acquisitions and become an acquirer. These completed deals by cash-rich companies support the free cash flow hypothesis (Jensen, 1986), being value decreasing, as cash-rich bidders destroy seven cents in value for every excess dollar of cash reserves held, as evidenced in the negative share price reaction to the announcement and the following unsatisfactory operating performance of the merged firm. Thus, cash-rich firms engage excessively in acquisitions.

Pinkowitz et al. (2013) studied the relationship between cash stockpiles and the method of payment decision for cash-rich firms, examining if cash-rich firms are keener to utilize their cash to acquire their targets. These authors built on Harford (1999) research by looking at how cash-rich companies employed cash and shares in their acquisitions. Their findings suggest that cash-rich firms are less likely to make cash bids and employ a lower ratio of cash in mixed offers to fund acquisitions, than similar bidders that are non-cash-rich companies.

3. Research Data and Methodology

As previously mentioned, this study aims to comprehend the determinants that impact the selection of payment methods in mergers and acquisitions. Existing literature has already established evidence and associations, although most of the evidence focuses on determinants that have been widely discussed in the literature, namely asymmetry of information, taxation effects, and managerial ownership. Therefore, this dissertation plans to deepen the evidence in less addressed determinants, such as the characteristics of the acquirer and target, and cash availability and budget constraints. This investigation will be focused on the United States, one of the biggest M&A markets worldwide, in a recent period.

3.1 Methodology

According to Malhotra et al. (2017), there are 3 types of research: exploratory, descriptive, and causal. In this research, the technique employed was the causal method because it allows the determination of cause-effect relationships between variables, which is what is intended. In addition, the author divides research into qualitative and quantitative. In this study, we will use the quantitative method since it enables quantifying the existing information and performing statistical processing of the data to explain, predict the phenomena studied, and establish relationships between them (Malhotra et al., 2017).

As in this study we are analyzing the factors that influence the mode of payment in M&A, it is critical to understand how these methods are defined. Hence, Faccio and Masulis (2005), defined the payments method as follows:

CASH	= Cash, assumption of liabilities, nonconvertible debt, earnout
STOCK	= Common shares, preferred shares, ordinary shares, convertible debt, and warrants + options
COMBINATION	= Mix of CASH and STOCK

In this methodology, the dependent variable while analyzing the medium of payment in M&A will be the proportion of shares as a function of the total price paid by the acquirer to the target shareholders. Thereby, it is reasonable to use the Tobit model, a

censored regression model, also applied by Faccio and Masulis (2005), Swieringa and Schauten (2007) and Ismail and Krause (2010). The variable will belong to the interval $[0;1]$, being 0 and 1 the censoring points, by using a two-boundary Tobit estimator. The variable will be 0 in cash deals, 1 in stock deals, and between 0 and 1 in mixed deals. Even though the acquirer may choose to offer a stock proportion above one, which would require additional cash from the target shareholders, or a stock proportion below zero, i.e., negative, which would require the target shareholders selling their stock to the acquirer, those options are not quite realistic and usually available to acquirers. Therefore, the observed proportion of shares is y^* , and the intended proportion of shares, y , is connected as follows:

$$y^* = \begin{cases} 1 & \text{if } y > 1 \\ s & \text{if } 0 \leq y \leq 1 \\ 0 & \text{if } y \leq 0 \end{cases} \quad (3.1)$$

We will apply a model that is a default model in many papers and that is estimated by several software packages (Wooldridge, 2010). The model used in the estimation is

$$y_i^* = x_i' \beta + u_i, \quad (3.2)$$

where u_i is an independently distributed error term presumed to be normal with zero mean and variance σ^2 .

3.2 Hypotheses

The research hypotheses will be made considering the characteristics of the companies, cash availability and budget constraints. After developing the necessary literature review and considering the state of research in the field, the following set of hypotheses are intended to be developed and tested through the linkage of various articles and different works.

3.2.1 Firm characteristics

3.2.1.1 Growth Rate

H1.1: Stock financing and acquirer stock performance are positively related.

Companies are more likely to issue shares when the market value is high in comparison to the prior market value, according to Baker and Wurgler (2002). Therefore, it is assumed that bidders who recently had a sizable increase in their stock price will be more likely to use stock financing. On the other hand, one could contend that equity financing raises the possibility of dilution and losing control by reducing the percentage of voting rights held by management and controlling shareholders. As per Ismail and Krause (2010) and Boateng and Bi (2014), a greater increase in the value of the acquirer company's shares or a higher return on assets will result in a cash offer because a stock offering would dilute the earnings of the acquirer company's shareholders. The dilution of this voting stake, however, is smaller following a significant stock price run-up since fewer shares are issued to cover the offer size (Faccio & Masulis, 2005). As per Zhang (2001), the greater the performance of acquirers on the stock market, the more attractive their shares are, and as a result stock financing is preferred.

H1.2: The higher the growth rate of the target, the more likely stock financing is used.

According to Ismail and Krause (2010), one can expect that a higher growth rate of the target will lead to a deal being financed with shares, with the sense that, as the company is increasing its share value, it could be interesting to keep the resources and cash in order to invest in the business. The opposite can be also seen from the management's point of view. Poor performance of the target company before the acquisition could indicate ineffective management, and as a result, the acquirer is more eager to finance the deal with cash to eliminate the targets' inefficient management (Zhang, 2001).

3.2.2 Cash availability and budget constraints

The freedom to choose a payment method will be constrained by budgetary restrictions on the amount of cash available or, alternately, by the capacity to obtain debt to fund cash offers.

3.2.2.1 Equity-to-Assets ratio

H2.1: Increasing function of the equity-to-assets ratio in the acquiring firm gives rise to cash financing more preferably.

H2.2: Increasing function of the equity-to-assets ratio in the target firm gives rise to cash financing more preferably.

The higher the leverage of the acquirer or target, the more limitations both companies will have to issue debt, so financing deals with stocks become more frequent (Faccio & Masulis, 2005; Uysal, 2011). As the equity-to-asset ratio increases, the greater the proportion of assets owned by the firm's investors, and so the less leverage the firm is. Hence, bidders with high borrowing capacity are more prone to fund acquisitions with cash from additional debt (Swieringa & Schauten, 2007). Thus, it is expected a positive relationship between financial leverage and share financing, i.e., a negative relationship between the equity-to-assets ratio and the fraction of stock offered.

3.2.2.2 Cash holdings

H3: The greater the amount of cash held by the acquirer company, the more likely cash financing is.

Cash is a liquid asset that can be immediately employed to acquire a company. According to Jensen (1986) and Martin (1996), companies with high levels of cash are more prone to use it to finance their investments. Being cash available the sum of cash and cash equivalents, it is notable that the larger the amount available, the more convenient and easier cash appears as a payment method, and as such, a negative relationship is expected between available cash and the number of shares offered. This hypothesis presumes that acquirer companies have enough cash on hand but there are not many potentially profitable investment opportunities (Zhang, 2001).

3.2.2.3 EBITDA

H4: Adequate EBITDA by acquiring companies leads to the acquisition deal being financed by cash.

In this dissertation, we will consider EBITDA as a proxy for firms' free cash flow, since it is easier to calculate, even though EBITDA is a less liquid value and not so realistic. By not considering capital expenditures and working capital, EBITDA is not as a good measure as free cash flow is since it is not the real amount available to the firm. This hypothesis is also based on the premise stated in the hypothesis above (the company has cash but does not have good investment opportunities).

Nevertheless, using EBITDA as a proxy for FCF, one should expect that the stronger the free cash flow is, the more likely an offer is financed with cash. Firms with large levels of FCF are more likely to possess enough internal funds to finance investments

with cash (Jensen, 1986; Swieringa & Schauten, 2007). That being said, it is believed that EBITDA and share financing are negatively related.

3.2.2.4 Relative size

H5: The likelihood of share financing increases as the size of the target relative to the acquirer increases.

Budget constraints can also result from the size of both companies involved in a deal. The expectation is that when the size of the target, i.e., deal size, is large relative to the size of the bidder, acquirers are more prone to finance the deal with stock (Faccio & Masulis, 2005; Grullon et al., 1997; Swieringa & Schauten, 2007). For example, when the acquirer and target have a similar size, or in the case of an acquirer taking over a larger target, the acquirer will have more difficulties due to insufficient liquid assets and unused debt capacity to include in the offer (Ismail & Krause, 2010). On the other hand, when a company is acquiring a smaller target, it is believed that they have more capacity to raise appropriate levels of cash and debt. Therefore, it is expected a negative link between the relative size of the target to the acquirer and cash offers, i.e., a positive relationship between the relative size of the target to the acquirer and equity offers.

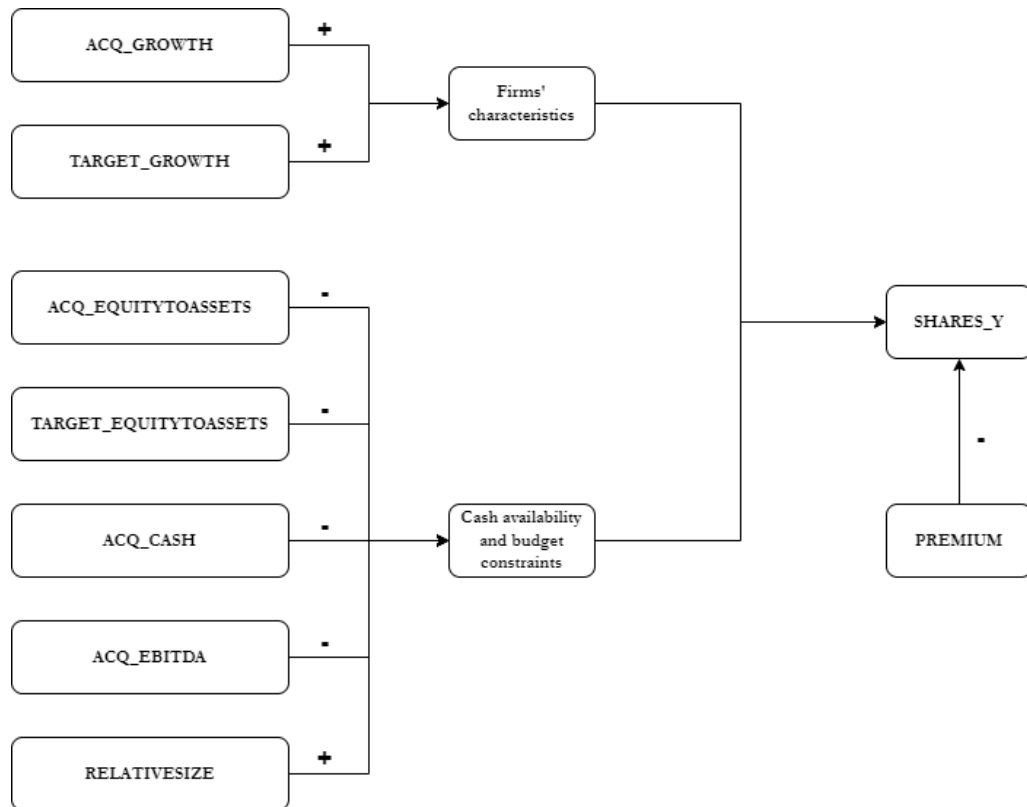


Figure 1 - Conceptual model

Notes: ACQ_GROWTH denotes the growth rate of the stock price of the acquirer, TARGET_GROWTH denotes the growth rate of the stock price of the target, ACQ_EQUITYTOASSETS the ratio equity to assets of the acquirer, TARGET_EQUITYTOASSETS the equity to assets ratio of the target, ACQ_CASH the amount of cash and cash equivalents available to the acquirer, ACQ_EBITDA is the EBITDA of the acquirer, RELATIVESIZE denotes the relative size of the target to the acquirer, PREMIUM is the premium paid to the target, SHARES_Y denotes the fraction of shares as a function of the total price paid by the acquirer.

3.3 Variable definitions

3.3.1 Explanatory variables

In this section, and given the numerous theories suggested in the literature review as well as the hypotheses formulated, the potential explanatory variables for the payment forms will be addressed and presented in detail.

3.3.1.1 Firm characteristics

The first set of variables are the ones that characterize the characteristics of the firms partaking in M&A transactions. The factors taken into account are the growth rates of the targets and the acquirers stock prices. For that reason, the stock prices of both firms three months before the announcement, as well as the stock price before the merger announcement, were gathered. The growth rates for the target and acquirer were then calculated using the stock prices that had been withdrawn (TARGET_GROWTH and ACQ_GROWTH, respectively).

3.3.1.2 Cash availability and budget constraints

The second set of potential explanatory variables is related to the theories addressing cash availability and budget constraints. To start, the financial leverage of the acquirer and target, ACQ_EQUITYTOASSETS, and TARGET_EQUITYTOASSETS, were considered, being obtained as the equity to assets ratio. The book values of equity and assets considered are the ones from the end of the fiscal year before the merger announcement.

As previously mentioned, EBITDA was conveniently considered as an FCF proxy, and as so, the last EBITDA available pre-deal was considered. The variable

ACQ_EBITDA was then calculated by dividing the acquirer's EBITDA by the book value of its assets.

The availability of cash to the acquirer, ACQ_CASH, is determined as the ratio of cash, cash & equivalents, and short-term investments to the book value of assets as obtained from the balance sheet at the end of the fiscal year before the announcement of the merger.

Additionally, the variable relative size of the target to the acquirer (RELATIVESIZE), which is the market capitalization ratio of the target to the acquirer, was considered. These market capitalizations collected are due the last available year prior merger announcement.

3.3.2 Control variables

In addition to the explanatory variables introduced above, it was also included a control variable, the premium. Papers that were examined and faced the same difficulties have employed this control variable. It aims to control other factors in the model and to analyze the individual effects of the independent variables more thoroughly. The ratio of the deal value to the target's market capitalization (at the end of the year before the announcement), or PREMIUM, determines the premium that the acquirer paid for the target. The deal value considered is the total amount paid by the acquirer to the target in the transaction.

As mentioned in the literature review, taxation effects are one factor that may influence the method of payment chosen in M&A deals. According to Huang and Walkling (1987) and Savor and Lu (2009), premiums are higher in cash offers than those paid in stock offers since target shareholders must be rewarded for the imminent tax liabilities. Thus, a high premium merger will commonly be linked to a greater portion of cash being offered, i.e., there is a negative relationship between the premium and the likelihood of the deal being financed with stock.

		Hypothesis	Variable	Expected sign
Explanatory variables	Firms' characteristics	H1.1	ACQ_GROWTH	Positive
		H1.2	TARGET_GROWTH	Positive
	Cash availability and budget constraints	H2.1	ACQ_EQUITYTOASSETS	Negative
		H2.2	TARGET_EQUITYTOASSETS	Negative
		H3	ACQ_CASH	Negative
		H4	ACQ_EBITDA	Negative
		H5	RELATIVESIZE	Positive
Control variables			PREMIUM	Negative

Table 1 - Overview of variables and hypotheses

Notes: ACQ_GROWTH denotes the growth rate of the stock price of the acquirer, TARGET_GROWTH denotes the growth rate of the stock price of the target, ACQ_EQUITYTOASSETS the ratio equity to assets of the acquirer, TARGET_EQUITYTOASSETS the equity to assets ratio of the target, ACQ_CASH the amount of cash and cash equivalents available to the acquirer, ACQ_EBITDA is the EBITDA of the acquirer, RELATIVESIZE denotes the relative size of the target to the acquirer, PREMIUM is the premium paid to the target.

3.4 Sample selection

The research sample results from identifying all confirmed M&A by the US publicly listed and delisted acquirers for the US publicly listed and delisted targets between January 1, 2010, through June 30, 2019, using the Zephyr database. Furthermore, deals led by financial institutions as acquirers and deals with a value of less than \$ 1 million were excluded. Additionally, a condition was imposed that the acquirer needed to acquire at least a majority position in the target company, i.e., 50%. According to this search strategy and restrictions, a sample of 978 deals was obtained.

The sample was then reduced due to the existence of deals that did not record values for all the information needed for the independent variables and dependent variable, namely the value of their shares and some financial and accounting indicators, so those deals were not considered. All these data items required for the variables considered in the regression were taken from the Zephyr database, and additionally, the value of cash and

cash equivalents was also collected for all acquirers at the end of the year before the announcement of the transaction in the Thomson Reuters Eikon database.

The final sample consists of 212 observations, a size that is believed to be relevant and in line with other empirical research, such as Swieringa and Schauten (2007) and Ismail and Krause (2010).

3.5 Data Analysis

The final data sample after gathering all required data consists of 212 M&A transactions announced between January 1, 2010, and June 30, 2019, by 177 US public bidders to 212 US public targets. There were 24 bidders who made multiple acquisitions, of whom 17 made two acquisitions, 5 made three acquisitions, and 2 made five acquisitions. Being a condition necessary to this analysis that both companies are public, it is possible to arrive at an average value for their market value, which is \$ 30,590.22 million for acquirers and \$ 2,636.71 million for targets. As per the average deal value, our sample has a mean amount of \$ 2,998.76 million.

Regarding the payment form, the sample comprises 132 cash deals (62.26%), 44 stock deals (20.75%), and 36 combined deals (16.98%). It is thus concluded that the sample consists mostly of mergers and acquisitions financed entirely with cash. Comparing the current research with previous ones, it is possible to say that the results and conclusions are quite similar. Faccio and Masulis (2005) achieved 80.2% of cash deals, 8.4% of stock deals, and 11.4% of mixed deals. In Swieringa and Schauten (2007) sample, they had 85% of cash deals, 8.4% stock deals, and 6.6% combined deals.

From the mixed deals, the mean percentage of cash financing is 48.31% and the median is 50.53%. Assessing the similarities of these results with the prior studies noted one can also state that the resemblances are clearly visible, since Swieringa and Schauten (2007) and Faccio and Masulis (2005) mixed deals are 50.5% and 56.9%, respectively, cash financed.

Table 2 shows the data analysis in more detail, providing more insights regarding the values for the average, median, maximum, minimum, and standard deviation.

		Observations	Mean	Median	Maximum	Minimum	Standard deviation
Mergers partners	Number of deals	212	-	-	-	-	-
	Number of bidders	177	-	-	-	-	-
	Multiple bidders	24	-	-	-	-	-
	Market value of acquirer	212	30,590.22	5,865.06	625,348.84	7.13	62,259.58
	Market value of target	212	2,636.71	959.31	72,834.96	1.06	5,864.86
	Deal Value	212	2,998.76	1,000.00	61,694.67	2.26	5,620.70
Payment Form	All-share offers	44	20.75%	-	-	-	-
	All-cash offers	132	62.26%	-	-	-	-
	Mixed offers	36	16.98%	-	-	-	-

Table 2 - Merger characteristics

Note: Values in millions of dollars, except the number of observations.

3.6 Descriptive Statistics

To continue the preliminary analysis of the data, a descriptive statistical analysis of the explanatory and dependent variables, summarized in table 3, was performed by calculating the mean, median, maximum, and minimum value, and standard deviation of the sample.

As expected, the dependent variable, the fraction of the total transaction value paid in shares, lies between the minimum value 0 and the maximum value 1, meaning that the sample presents both transactions entirely financed by shares and cash. The average is 29.53%, which shows us that, effectively, the sample is influenced by a larger number of transactions financed by cash. The standard deviation indicates whether there is a dispersion of the data relative to the sample mean or not, which allows us to perceive the

divergence between the payment methods chosen. This item has a standard deviation below 1 (0.4169), which indicates some homogeneity in the responses.

Regarding the characteristics of the target firms, the explanatory variables to consider are share value growth and the equity-to-assets ratio. As for the growth in share value, it has a mean of 12.07% and a median of 7%, ranging from -50% to 314%, which represents a significant interval and may be related to the maturity of the company and to the sector they are part of. The financial leverage, characterized by the equity-to-assets ratio, registered 41.76% average and 49.5% median, ranging from -9.57% to 98%. The negative values obtained represent target companies with negative equity, which means that they have more liabilities than assets, a risk factor that may be considerable. Relatively to the highest value registered and the higher this ratio, it means that most of the company's assets are financed by its stock rather than by debt.

In terms of the characteristics of the acquiring companies, the sample registered a share growth between -31% and 103%, with 4.65% and 4%, average and median, respectively. As per the equity-to-assets ratio, these present similar values to the ones of the target companies, so the conclusions to be drawn are identical. As far as their EBITDA-to-assets ratio is concerned, the acquiring companies registered 10.75% and 12%, average and median respectively, with the values ranging between -125% and 40% minimum and maximum. These values do not necessarily imply that the companies present positive or negative FCF since to obtain FCF some adjustments must be considered, namely working capital, and CAPEX. The cash-to-assets ratio ranged between 0%, meaning that at least one company had no cash and cash equivalents on its balance sheet, and 87%, a very high value that reflects a company with very liquid assets. The mean was 15.63% and the median 11%.

As for the characteristics of the transactions themselves, the relative size of the target to the acquirer and the premium paid were analyzed, both having a minimum of zero. The relative size being 0 is due to the fact of being an acquirer significantly larger than the target, while a premium of zero reveals an offer price equal to its market price. Regarding the maximum, the premium shows a maximum of 577.93%, suggesting that this deal involved an offering price substantially higher than the market value of the stock in the fiscal year prior to the announcement of the transaction. The premium registered 441% mean and 109% median. The relative size presented 36.56% average and 17% median,

meaning that in most of the transactions the acquirers had a market capitalization greater than the targets.

	Variable	Mean	Median	Maximum	Minimum	Std. Dev.
Dependent Variable	SHARES_Y	0.2953	0	1	0	0.4169
Target Characteristics	TARGET_GROWTH	0.1207	0.0700	3.1400	-0.5000	0.3955
	TARGET_EQUITYTOASSETS	0.4176	0.4950	0.9800	-9.5700	0.7519
Acquirer Characteristics	ACQ_GROWTH	0.0465	0.0400	1.0300	-0.3100	0.1636
	ACQ_EQUITYTOASSETS	0.4324	0.4400	0.9200	-0.2200	0.2286
	ACQ_EBITDA	0.1075	0.1200	0.4000	-1.2500	0.1515
	ACQ_CASH	0.1563	0.1100	0.8700	0.0000	0.1623
Deal Characteristics	RELATIVESIZE	0.3656	0.1700	5.1300	0	0.5269
	PREMIUM	4.4055	1.0850	577.9300	0	39.8574

Table 3 - Descriptive statistics

Notes: SHARES_Y denotes the fraction of shares as a function of the total price paid by the acquirer, TARGET_GROWTH denotes the growth rate of the stock price of the target, TARGET_EQUITYTOASSETS the equity to assets ratio of the target, ACQ_GROWTH denotes the growth rate of the stock price of the acquirer, ACQ_EQUITYTOASSETS the ratio equity to assets of the acquirer, ACQ_EBITDA is the EBITDA of the acquirer, ACQ_CASH the amount of cash and cash equivalents available to the acquirer, RELATIVESIZE denotes the relative size of the target to the acquirer, PREMIUM is the premium paid to the target.

3.7 Tobit Regression

In this dissertation, the Tobit regression will allow us to evaluate whether the explanatory variables used have an influence or not on the payment method chosen in mergers and acquisitions.

Given the research hypotheses established above as well as the identification of the explanatory and dependent variables, the following regression will be settled:

$$\begin{aligned}
SHARES_Y_i^* = & b_1 + b_2 ACQ_GROWTH + b_3 ACQ_EQUITYTOASSETS + \\
& b_4 ACQ_EBITDA + b_5 ACQ_CASH + b_6 TARGET_GROWTH + \\
& b_7 TARGET_EQUITYTOASSETS + RELATIVESIZE + PREMIUM + u_i
\end{aligned} \tag{3.3}$$

Notes: SHARES_Y denotes the fraction of shares as a function of the total price paid by the acquirer, ACQ_GROWTH denotes the growth rate of the stock price of the acquirer, ACQ_EQUITYTOASSETS the ratio equity to assets of the acquirer, ACQ_EBITDA is the EBITDA of the acquirer, ACQ_CASH the amount of cash and cash equivalents available to the acquirer, TARGET_GROWTH denotes the growth rate of the stock price of the target, TARGET_EQUITYTOASSETS the equity to assets ratio of the target, RELATIVESIZE denotes the relative size of the target to the acquirer, PREMIUM is the premium paid to the target.

4. Results

The preceding chapters presented the theoretical framework and the anticipated results we expect to obtain for each variable in the model. The purpose of this chapter is to present and analyze the findings of the empirical investigation carried out. This analysis will enable us to draw conclusions about the validity of the previously hypotheses formulated as well as about which variables have the most significant impact, and whether they positively or negatively impact the method of payment chosen.

As mentioned in chapter 3, the results will be obtained by using the Tobit model as the estimation method, as it had been in other papers concerning this subject. The findings observed in table 4, which will be described in the following paragraphs are quite interesting, as they confirmed some hypotheses and relationships were established.

The model found statistical significance in four explanatory variables: targets' growth rate, acquirers' equity-to-assets ratio, acquirers' EBITDA, and relative size of the target to the acquirer, however at different significance levels.

The explanatory variable relative size of the target to the acquirer proved to be significant with a statistical significance at a 0.90% level. It confirmed the formulated hypothesis that an increase in the relative size of the target to the acquirer leads to a higher probability of a stock acquisition, exhibiting a positive coefficient of 0.6924.

Acquirer EBITDA, which has a negative coefficient of 7.3107 and statistical significance at a 0.0019% level, is the variable with the most significant impact. It means that when determining the method of payment in M&A deals, the acquirer EBITDA variable has more influence than any other variable when all variables experience equal changes. The sign confirms the expectation that the higher the EBITDA the more likely a cash financing acquisition takes place.

A negative impact of 2.0070 was found on acquirers' equity-to-assets ratio, at a statistical significance of 0.86%. In other words, as the acquirer's equity-to-assets ratio increases, i.e., the financial leverage of the acquirer decreases, the firm is more prone to pursue a cash offer.

With the lowest significance level from the significant variables (7.97%), the targets' growth rate shows a sign contrary to the expected. The prediction was that as the value of the target share increase in value, the more opportunities the company should have to

invest in, and as a result, the acquirer should make a stock acquisition to keep the cash available for future investments. However, this was not obtained by the model. Thus, with a coefficient of -0.7440, the expectation is that as the target growth rate increases, the more likely funding an acquisition with cash is.

The acquirers' growth rate, targets equity-to-asset ratio, acquirer cash holdings, and the premium are not statistically significant.

The coefficient values for each variable, together with their sign and statistical significance, are displayed in the table below.

		Hypotheses	Variable	Coefficient value	Sign	p-value
Constant				1.3620	Positive	0.0080
Independent variables	Firms' characteristics	H1.1	ACQ_GROWTH	0.8161	Positive	0.3945
		H1.2	TARGET_GROWTH	-0.7440	Negative	0.0797 *
	Cash availability and budget constraints	H2.1	ACQ_EQUITYTOASSETS	-2.0070	Negative	0.0086 ***
		H2.2	TARGET_EQUITYTOASSETS	-0.0422	Negative	0.9346
		H3	ACQ_CASH	-1.2925	Negative	0.2512
		H4	ACQ_EBITDA	-7.3107	Negative	0.0000 ***
		H5	RELATIVESIZE	0.6924	Positive	0.0090 ***
Control variable			PREMIUM	-0.1420	Negative	0.3666
			Value	p-value		
Log likelihood			-163.19	-		
Wald chi2(8)			28.22	0.0004		
Likelihood ratio			64.96	0.0000		

Table 4 – Regression results on the determinants of the payment form in M&A deals

Notes: Constant denotes the constant of the regression, ACQ_GROWTH denotes the growth rate of the stock price of the acquirer, TARGET_GROWTH denotes the growth rate of the stock price of the target, ACQ_EQUITYTOASSETS the ratio equity to assets of the acquirer, TARGET_EQUITYTOASSETS the equity to assets ratio of the target, ACQ_CASH the amount of cash and cash equivalents available to the acquirer, ACQ_EBITDA is the EBITDA of the acquirer, RELATIVESIZE denotes the relative size of the target to the acquirer, PREMIUM is the premium paid to the target. ***, ** and * denote statistical significance at 1%, 5% and 10% respectively. Those variables that confirmed our prediction regarding the expected sign are shown in bold for the sign.

4.1 Robustness of results

To validate our findings, we performed several robustness checks that are summarized in table 5. For this purpose, we considered our base case scenario and defined four additional scenarios. The scenario 1 is the same as the base scenario but it does not include the ACQ_EBITDA variable since, as we have previously stated, it does not represent the acquirer free cash flow with great certainty. The second scenario consists of the scenario 1 plus the variable ACQ_MARKETCAP, denoted acquirer market capitalization, and one could expect that as the acquirer market capitalization increases, the relative size of the target to the acquirer decreases, so it should have a negative impact on the shares offering. The third scenario includes both the ACQ_EBITDA and ACQ_MARKETCAP, only adding the acquirer market capitalization to the base scenario. The fourth scenario is equal to the base regression, but instead of including ACQ_EBITDA includes the ACQ_EBIT, i.e., the EBIT of the acquirer.

We observe that throughout all scenarios the acquirer variables that were significant in the base scenario (ACQ_EQUITYTOASSETS and ACQ_EBITDA) remain statistically significant. Moreover, ACQ_MARKETCAP and ACQ_EBIT revealed statistically significant in the scenarios that they were included, scenario 2 and 3 for the acquirer market capitalization, and scenario 4 for the acquirer EBIT. As for the target variable TARGET_GROWTH become insignificant in scenario 2 and 3, continuing significant in scenario 1 and 4. As per the relative size of the target to the acquirer it only become insignificant in scenario 3, being statistically significant in the other ones.

Concluding, one can observe that the results are quite similar, and so one can conclude that they are robust. ACQ_EQUITYTOASSETS, ACQ_EBITDA, ACQ_EBIT and ACQ_MARKETCAP were statistically significant in all the scenarios that these variables were included, RELATIVESIZE was statistically significant in four of the five regressions, and TARGET_GROWTH become insignificant in two of the four new regressions. ACQ_GROWTH, TARGET_EQUITYTOASSETS, ACQ_CASH, and PREMIUM did not reveal statistically significant in any of the scenarios.

		Base scenario	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Constant		1.3620 (0.0080)	0.2764 (0.5855)	1.1892 (0.0232)	1.8874 (0.0004)	1.0126 (0.0365)
Independent variables	ACQ_GROWTH	0.8161 (0.3945)	0.6484 (0.5170)	0.3402 (0.7130)	0.5489 (0.5425)	1.1850 (0.2299)
	TARGET_GROWTH	-0.7440 (0.0797)*	-1.0167 (0.0763)*	-0.7470 (0.1592)	-0.6276 (0.1217)	-0.6956 (0.0953)*
	ACQ_EQUITYTOASSETS	-2.0070 (0.0086)***	-2.3383 (0.0061)***	-2.9645 (0.0006)***	-2.5627 (0.0010)***	-1.9345 (0.0113)**
	TARGET_EQUITYTOASSETS	-0.0422 (0.9346)	-0.0913 (0.8736)	0.1939 (0.7201)	0.1868 (0.7046)	-0.1483 (0.7748)
	ACQ_CASH	-1.2925 (0.2512)	0.5029 (0.6555)	0.6230 (0.5569)	-0.9109 (0.3930)	-1.1059 (0.3183)
	ACQ_EBITDA	-7.3107 (0.0000)***	-	-	-6.0682 (0.0001)***	-
	ACQ_EBIT	-	-	-	-	-7.1325 (0.0000)***
	ACQ_MARKETCAP	-	-	-2.65E-11 (0.0009)***	-2.03E-11 (0.0026)***	-
	RELATIVESIZE	0.6924 (0.0090)***	1.0354 (0.0008)***	0.5631 (0.0484)**	0.3837 (0.1294)	0.6877 (0.0093)***
Control variable	PREMIUM	-0.1420 (0.3666)	-0.1342 (0.4025)	-0.1731 (0.2563)	-0.1650 (0.2658)	-0.1478 (0.3495)
Log likelihood		-163.19	-178.32	-165.57	-154.11	-161.60
Wald chi2		28.22 (0.0004)	19.78 (0.0061)	23.78 (0.0025)	30.07 (0.0004)	27.39 (0.0006)
Likelihood ratio		64.96 (0.0000)	34.68 (0.0000)	60.18 (0.0000)	83.10 (0.0000)	68.12 (0.0000)

Table 5 - Robustness of the Tobit regression of the payment form

Notes: Constant denotes the constant of the regression, ACQ_GROWTH denotes the growth rate of the stock price of the acquirer, TARGET_GROWTH denotes the growth rate of the stock price of the target, ACQ_EQUITYTOASSETS the ratio equity to assets of the acquirer, TARGET_EQUITYTOASSETS the equity to assets ratio of the target, ACQ_CASH the amount of cash and cash equivalents available to the acquirer, ACQ_EBITDA is the EBITDA of the acquirer, ACQ_EBIT is the EBIT of the acquirer, ACQ_MARKETCAP denotes de acquirer market capitalization, RELATIVESIZE denotes the relative size of the target to the acquirer, PREMIUM is the premium paid to the target. Numbers in parenthesis denote the p-values and ***, ** and * denote statistical significance at 1%, 5% and 10% respectively.

5. Conclusion

This dissertation focused on comprehending what determinants influence the choice of method of payment in mergers and acquisitions.

The literature review acknowledged a significant number of determinants that are linked to the payment method chosen, namely information asymmetry, tax effects, ownership structure and management control, growth opportunities, hostile takeovers, experience and characteristics of the firms and transactions, available cash and budget constraints. After recognizing and analyzing those factors, firms' characteristics and cash availability and budget constraints were selected in order to design a conceptual model where connections were established.

For the execution of the empirical study, a sample of 212 transactions in the US between publicly listed and delisted acquirers and publicly listed and delisted targets was selected from 2010 to 2019. Subsequently, we established a Tobit model.

The results showed a strong positive statistical significance between the relative size of the target to the acquirer and the possibility of an acquisition being financed by shares. The larger the relative size of the target companies to the acquirer companies, the bigger the amount of acquirers' stock that is expected to be included in the transaction. Negative connections were established between the EBITDA of the acquiring firms' and the likelihood of the deal being equity-financed, and between the equity-to-assets ratio of the acquiring firms' and stock financing. Thus, these two variables show a positive relationship with cash financing. These two variables assume that the acquiring firms' have more cash available or that the firms' have lower leverage and fewer restrictions on raising debt. With a lower level of significance, a negative relationship was also established between the growth of the target firm's stock value and the probability of the transaction being financed with equity. The latter was against the expectation addressed in the literature.

On the other hand, the acquirer growth rate, targets equity-to-asset ratio, acquirer cash holdings, and premium did not prove to be statistically significant.

From the robustness checks conducted we can assume that the outcomes reviewed are robust to variations in model or measurement specifications.

5.1 Relevance

The present dissertation intends to continue previous empirical and theoretical studies, in its aim to identify the key determinants of M&A payment methods and the patterns that have more influence on the decision-making of the method of payment chosen and accepted by firms. The results and conclusions of this dissertation on less addressed factors could benefit companies and their managers by improving the knowledge on the factors influencing this decision.

5.2 Limitations

Notwithstanding the contribution of this research there are limitations that need to be exposed for further work. Regarding the explanatory variables, with a more detailed database, a more precise analysis could be made in certain aspects. To begin with, regarding the value of the shares of both companies, as previously mentioned, it was only possible to collect their value three months before the announcement of the transaction and on the day of the announcement. In order to calculate a more accurate growth of the share value, it would be interesting to gather the daily values of the shares, which would allow adding explanatory variables, namely the volatility of the companies' shares as well as the correlation between them. Second, it would be ideal to actually use the free cash flow of the acquiring company instead of EBITDA as it is a closer estimate of the cash available to fund deals and transactions. Moreover, in the premium calculation, the value to consider of the target company's market capitalization was the value collected at the end of the year prior to the announcement, and to be more rigorous it should have been used its value on the day of the announcement or three months before the announcement, since we are talking about market values. Finally, some control variables could have been added such as synergies and the possibility of being a hostile takeover or not.

5.3 Suggestions for future research

Future research on the topic should attempt a more detailed data collection, consider other factors external to the firms' characteristics, make the analysis in other markets, as well as adding the already mentioned control variables and confront these findings with the new ones. It would also be interesting to test the impact of cross-border deals in the method of payment chosen.

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