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The determinants of takeover premiums and payment methods in publicly traded acquisitions

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ABSTRACT:
Mergers and acquisitions are vital for corporations and the entire economic landscape. They represent competitiveness, diversification, and capital allocation, being essential for economic growth and development. However, some transactions are unsuccessful and destroy shareholder value despite the purpose of such transactions: creating shareholder value through synergies.

This research aims to determine whether specific firm and deal characteristics impact takeover premiums and payment methods in publicly traded acquisitions. Existing financial literature presents various explanations for high takeover premiums and the choice of a payment method. However, inconsistencies occur, and prevailing determinants are still unexplored. Takeover premiums represent the additional payment for target company shareholders for the company's shares. Understanding the dynamics and motivations behind overpayment and the destruction of the value of the acquirers' shareholders is essential. Payment methods are critical regarding transaction structure as they determine and impact acquirers' cash assets, leverage, and equity.

This research uses a data sample of 531 transactions from publicly traded companies in the United States between 1996 and 2019. The research is divided into two main parts: the first examines determinants for takeover premiums, and the second focuses on determining payment methods. The methodology in the first part is linear OLS regression, and the second part utilizes logistic regression for its suitability to binary dependent variables. The independent variables in both models are specific acquirer and target characteristics. The findings of this research mainly align with previous literature and financial theories. Highly profitable target companies discourage acquirers from paying extensive premiums due to lower growth prospects. Despite previous evidence regarding leverage ratios determining premiums, neither the acquirer nor the target company's leverage ratios explain premiums or payment methods, indicating that capital structure does not drive decision-making. Hence, contradicting previous findings, the trade-off theory does not explain premiums or payment methods. Moreover, cash payments are most frequent, confirming the pecking order theory. Payment methods are determined by the relative size of the acquirer and target, but the size factors do not explain takeover premiums. Information asymmetry regarding valuation determines takeover premiums as high-valued acquirers pay extensive premiums. However, asymmetric information does not explain payment methods. These results establish the prevailing determinants for takeover premiums and payment methods, highlighting the importance of various attributes in complex transaction processes and providing essential insights to all stakeholders to maximize transaction returns and benefits.

KEYWORDS: Takeover premium, Payment method, Acquisitions, Synergy theory, Pecking order theory, Trade-off theory

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Yritysjärjestelyt ovat elintärkeitä yritykselle ja ylipäänsä koko taloudelle. Ne mahdollistavat kilpailun, hajauttamisen ja pääoman allokoimisen tehokkaasti sekä ovat edellytyksiä talouden kasvulle ja osakkeenomistajien arvonluonnille. Lukuisia yrityskauppoja tehdään päivittäin, luoden suurempia yrityksiä ja kasvattaen osakkeenomistajien arvoa. Kuitenkaan kaikki yrityskaupat eivät ole kannattavia, ja ne tuhoavat osakkeenomistajien arvoa huolimatta niiden perimmäisestä tarkoituksesta, joka on lisäarvon tuottaminen synergioiden kautta.

Tämän tutkimuksen tarkoitus on selvittää, määrittävätkö jotkin tietyt yritys- ja transaktiokohtaiset piirteet preemion ja maksutavan listattujen yrityksien välisissä yrityskaupoissa. Aiemmat tutkimustulokset esittävät erilaisia selityksiä korkeille preemioille ja maksutavan valinnalle. Kuitenkin epäjohdonmukaisuuksia esiintyy ja vallitsevat vaikutteet ovat vielä tutkimatta. Preemio edustaa ylimääräistä maksua yritysostokohteen osakkeenomistajille yrityksen osakkeista. Dynamiikan ja motivaation suurten preemioiden ja ostajan osakkeenomistajien arvon tuhoamisen ymmärtäminen on näin ollen välttämätöntä. Maksutavan valinta on kriittistä transaktion rakenteen kannalta, sen vaikuttaessa ostajan kassavaroihin, velkaantuneisuuteen sekä omaan pääomaan.

Tämä tutkimus käyttää otoksena 531 yrityskauppaa, jotka ovat toteutettu vuosina 1996–2019 Yhdysvalloissa. Tutkimus on jaettu kahteen pääosaan: ensimmäinen tutkii preemioihin vaikuttavia tekijöitä ja toinen maksutavan valintaan vaikuttavia tekijöitä. Tutkimusmenetelmä ensimmäisessä osiossa on lineaarinen OLS regressio ja toisessa logistinen regressio, sillä se soveltuu paremmin binäärisille riippuville muuttujille. Itsenäiset muuttujat molemmissa malleissa ovat ostajan ja kohteen tunnuslukuja sekä yritysjärjestelyyn että rahoitusteoriaan viittaavia muuttujia. Tutkimustulokset ovat pääasiassa johdonmukaisia aiempien akateemisten tutkimusten sekä rahoitusteorian kanssa. Korkean kannattavuuden omaavat kohdeyritykset eivät vastaanota suurta preemiota verrattuna vähemmän kannattaviin matalampien kasvunäkymien vuoksi. Huolimatta aiempien tutkimustuloksista velkaantuneisuusasteen vaikutuksesta preemioon, ostajan eikä kohteen velkaantuneisuus selitä preemioita eikä maksutapaa. Näin ollen, trade-off teoria ei selitä preemioita eikä maksutapaa ollen ristiriidassa aiempien tutkimusten kanssa. Preemiot ovat merkittävästi korkeampia käteisostossa kuin osakeostossa. Lisäksi käteisostot ovat huomattavasti yleisimpiä verrattuna osake- tai yhdistelmävaihtoehtoon, vahvistaen, että ostajat noudattavat pecking order -teoriaa. Yritysten suuruuden tulokset ovat ristiriidassa toistensa kanssa, indikoiden, että ostaja- sekä kohdeyhtiö painottavat muita muuttujia enemmän. Nämä tulokset vahvistavat vallitsevia määrittäviä tekijöitä preemioille ja maksutavan valinnalle korostaen tekijöiden kompleksisuutta monimutkaisissa yritysjärjestelyissä. Yleisesti, nämä tulokset tarjoavat tärkeitä näkökohtia kaikilla sidosryhmille maksimoimaan yrityskaupan tuotto ja hyödyt.

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1 Introduction

Mergers and acquisitions (M&A) are vital in the corporate world as they drive growth and shape market dynamics. Determining takeover premiums and choosing payment methods represent critical aspects that impact the results and implications of these transactions. This research explores the underlying determinants of takeover premiums and payment method choices. The United States represents the world's biggest markets and is characterized by its robust regulatory, diverse industries, and strong financial markets. By analysing a comprehensive data sample of acquisitions between publicly traded companies in the United States over a broad period, this research aims to identify and examine the significant factors driving takeover premiums and the decisions regarding payment methods.

This research will cover acquirer and target characteristics and financial theories such as pecking order theory, trade-off theory, agency theory, and asymmetric information to clarify the determinants of premiums and payment methods. The empirical analysis contains various expected determinants based on previous literature, including target and acquirer firm and deal-specific characteristics. Understanding the determinants can provide valuable insight for stakeholders. Moreover, the findings of this research are expected to contribute to both academic literature and practical insights.

1.1 Research problem and purpose of the research

Mergers and acquisitions are essential to financial markets and the broader business landscape regarding capital allocation. Transactions offer companies opportunities to access new markets, diversify, and grow. M&A transactions have the potential to create synergies and, therefore, enhance shareholders' value. Consequently, shareholders' value can be created or destroyed when determining the deal price. Understanding the determinants of takeover premiums and payment methods is essential for understanding M&A success, as they significantly impact deal success and value creation. Financial literature states that takeover premiums in M&A are driven mainly by expected syner-

gies after the transaction and integration (Simonyan, 2014). However, according to previous literature, most deals destroy acquirers' shareholders' value when they should create value for shareholders. In addition, recent literature criticizes the sizes of the premiums and argues that they do not reflect markets correctly (Laamanen, 2007, p. 1359).

Takeover premiums have remained relatively stable across time following market trends. However, significant variation can be seen when markets decline strongly. Due to substantial overpayment and value-destroying effects on shareholders' value, it is essential to understand what drives premiums to such levels. Agency theory suggests that premiums occur because management strives to mitigate agency problems and, on the other hand, agency costs. Asymmetric information can be used to explain takeover premiums because a buyer or target with more information than the other party can take advantage of the information asymmetry to pay or require a lower or higher premium, respectively. However, target shareholders require higher premiums in cash payments due to immediate tax liability, even though stock payment is considered more uncertain and riskier for shareholders (Ayers et al., 2003, p. 2784). Financial literature consists of extensive evidence on various explanations for premiums, but acquirer and target firm-specific characteristics still need to be studied. This research contributes to examining specific firm and deal characteristics enriched by variables related to financial theories.

As stated before, according to previous literature, cash payment impacts positively on premiums. Mergers and acquisitions typically have three payment methods: cash, stock, and a mix of those two. The payment method also plays a vital role in the deal's success. Cash payments may significantly reduce companies' liquidity, and stock payments can substantially mitigate control and decrease share prices. In the worst-case scenario, mixed payment implies both. Trade-off theory states that companies make financing decisions by balancing the benefits and costs of different options to optimize capital structure. According to the pecking order theory, companies make financing decisions

in a particular order, preferring cash, debt, and equity in terms of their costs from lowest to highest, respectively. These theories suggest that companies should use cash payments regardless of other conditions. However, stock payment and mixed methods are still commonly used. It is essential to recognize factors motivating companies to use payment methods. Payment methods can crucially impact shareholders' value and takeover premiums and, therefore, the deal's success.

As payment method varies through M&A, cash being the primary method, it is essential to recognize what drives the choice of a payment method. Financial literature comprehensively examines acquirer and target characteristics and financial theories' impact on payment methods. However, contradicting findings occur, and previous literature does not fully explain whether firm characteristics determine payment methods. This research examines whether acquirer and target characteristics determine payment methods. In addition, the empirical part explores the impact of payment method choice on theories such as the pecking order theory and the trade-off theory to understand acquirers' decision-making process in selecting cash, stock, or mixed payment methods.

The purpose of this research is to comprehensively examine the relationship between financial theories and empirical evidence regarding variation in takeover premiums and the choice of payment methods in acquisition transactions. In addition, the purpose is to offer valuable evidence for enhancing risk mitigation, decision-making, and value maximization in such transactions.

1.2 Hypothesis of the study

This research's hypotheses are based on previous financial research on mergers and acquisitions to determine the prevailing drivers of takeover premiums and payment methods. The hypotheses are divided into two categories: takeover premium and payment method.

1.2.1 Takeover premium

Previous literature has presented various explanations for determinants of takeover premiums. Lehn and Poulsen (1989) find a positive relationship between premium paid and target free cash flow. The acquirer benefits in many ways from the target company's high free cash flow. If the acquirer is forced to use debt in the deal, the target's free cash flow can be used to pay down debt, and financing institutions can give better terms for debt. Bugeja and Walter (1995) find that financial slack, which means extra financial capacity, is associated with high takeover premiums. In addition, synergy theory expects that a target with high free cash flow will provide more investment opportunities. However, contradicting findings are also reported. Simonyan (2014, p. 102) suggests that cash flows do not explain high premiums. Based on supporting findings and synergy theory, the first hypothesis is expecting:

H1: The acquirer and the target's high free cash flow positively correlate with takeover premiums.

According to Brealey et al. (2023, p. 919), companies engaging in M&A aim to achieve synergies from the deal. This means that acquirers typically seek positive characteristics from the target, including high return on assets (ROA) and earnings per share. However, Dimopoulos and Sacchetto (2014) and de La Bruslerie (2013) report that high premiums are associated with lower target profitability due to valuation errors and uncertainty. Companies with high profitability already operate efficiently, and thus, growth opportunities will be lower in the future. Hence, based on these findings, the second hypothesis expects that target profitability decreases premiums:

H2: Target company's profitability has a negative relationship with takeover premiums.

Previous financial literature has widely examined acquirer and target capital structure and its impact on deal success and takeover premium. According to Bebenroth and Ahmed's (2021) research, acquirers with high leverage will likely offer lower premiums.

This finding suggests that high leverage can limit acquirers' ability to pay higher premiums since it reduces cash flows. Conversely, Israel's (1991) study shows that the leverage does not explain premiums. Raad (2012) suggests that target companies' high leverage ratios drive higher takeover premiums. However, high premiums driven by leverage ratios may occur in transactions financed with debt, such as leveraged buyouts. Based on these previous findings, the third hypothesis of this research is formulated as:

H3: The higher financial leverage decreases the takeover premiums.

The valuation of an acquiring company can significantly impact the determination of takeover premiums in M&A. If the acquirer's stock is overvalued, it may have leverage to offer higher premiums to the target company through the stock payment. In addition, companies with relatively high valuations usually have liquidity and financial resources to offer higher premiums Lang et al. (1989). Moreover, Andrade et al. (2001) examine the impact of acquirer valuation on transactions and find that acquirers with high valuation are more prone to use stock payment and utilize the advantage of the high valuation to offer a higher premium. Bessler and Schneck (2015) converge previous findings that high-valued acquirers tend to pay higher premiums. Thus, the fourth hypothesis of this research is as follows:

H4: The high-valued acquirers pay extensive takeover premiums.

1.2.2 Payment method

The choice of a payment method is crucial for the acquirer as it may impact the company's leverage, cash assets, and outstanding shares. Target shareholders historically receive positive returns on announcements when the deal is paid with cash rather than stocks. This can be explained by the fact that target shareholders immediately have tax liability when receiving a cash payment and might demand higher premiums. Consequently, acquirers' shareholders tend to receive negative returns regarding stock payment due to the dilution of outstanding shares and, thus, value destruction. (Bellamy &

Levin, 1992) In addition, Simonyan (2014, p. 99) finds that cash transactions have significantly higher premiums than other methods. Therefore, the fifth hypothesis of this research assumes a positive relationship between cash payments and takeover premiums.

H5: The cash payment method has a positive relationship with the takeover premium.

The size factor is commonly studied in academic literature. Various studies have examined the impact of acquirer and target size on payment methods. Consistent findings state that large acquirers have better access to debt markets and may have enough liquidity for cash payment, and smaller acquirers tend to use stock payment. However, large targets tend to drive acquirers to use stock payments, and more minor targets cash. Further, the relative size of the companies encourages the acquirer to stock over cash as liquidity problems arise. (Boateng & Bi, 2014; Ismail & Krause, 2010, p. 482) Conversely, the pecking order theory states that a company should prefer financing with the lowest costs, which is expected to be cash. Based on these findings, the sixth hypothesis is:

H6: The size of the companies impacts the payment method.

Previous literature proposes asymmetric information as a significant driver for payment methods. According to Myers and Majluf (1984) and Yook et al. (1999), asymmetric information between the acquirer and target impacts the payment method. When the valuation of the target is high, the acquirer prefers to pay with stocks as it can be difficult to obtain debt, and it can significantly increase the acquirer's leverage. In addition, if the acquirers' valuation is high, it prefers to use its overvalued stocks for compensation rather than cash. However, Ismail and Krause (2010) do not find significant results for information asymmetry determining the payment method. Moreover, Karampatsas et al. (2014, p. 482) examine information asymmetry regarding analysts' recommendations. They find that more analysts' recommendations on acquirers decrease infor-

mation asymmetry. Hence, analysts' recommendations are expected to decrease information asymmetry and encourage the acquirer to pay with stock. Motivated by previous findings, it can be speculated that asymmetric information impacts payment methods. Thus, the final hypothesis of this research is:

H7: Asymmetric information impacts the payment method.

1.3 Structure of the study

The first section considers the theoretical framework related to the subject presenting M&A in general, its history, and the motivation for such transactions. Further, the importance of takeover premiums and the choice of a payment method is discussed, and related theories are presented. The second section examines previous literature and reflects on their coherence. The third section of this research addresses the data, its appropriateness, and its limitations in the context of this study. The research methodology is also illustrated. The fourth section presents the empirical findings of this study. The last section discusses the significance and contribution of the results and limitations of this research.

2 Mergers and acquisitions

This section presents the theoretical framework for mergers and acquisitions. It also discusses the principles and characteristics of mergers and acquisitions and the main features of M&A history. Moreover, motivations and financial theories related to mergers and acquisitions are discussed.

2.1 Mergers and acquisitions in general

Mergers and acquisitions are strategic corporate activities where two or more individual companies go through a process of combination or consolidation, typically through the acquisition of one by the other. This complex financial strategy serves companies to enhance their market position and achieve synergies and economies of scale. M&A differs in structure and nature as mergers combine companies to create a larger company. In contrast, acquisitions are purchasing one company by another, with the acquirer gaining control. Such transactions are generally carefully structured and governed by legal and regulatory authorities to ensure transparency, fair valuation, and protection of stakeholders' interests. Various motives, including market expansion, diversification, and enhancing operational efficiencies, drive M&A activity. Figure 1 shows M&A activity in the United States regarding transactions completed yearly. It highlights the importance of M&A for the financial markets and the economy, as numerous transactions are executed daily. Mergers and acquisitions are essential to corporate strategy and significantly impact the global business markets. (Miller & Segall, 2017)

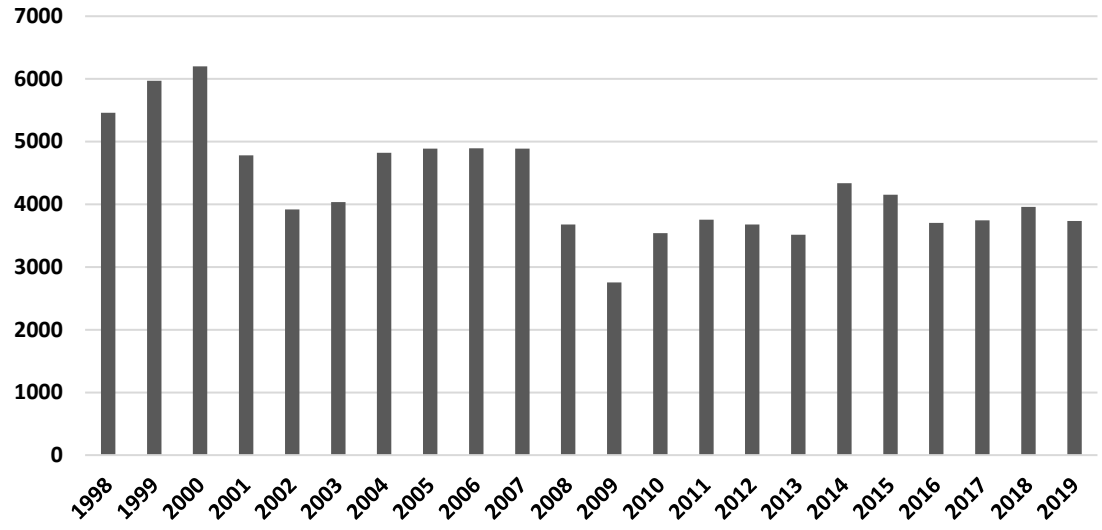

Figure 1 Number of transactions in the United States (Bloomberg, 2024).

Understanding M&A is essential due to its significant implications for the markets and the economy. M&A activities play a vital role in corporate strategies, influencing market structures and determining the competitiveness of businesses. By helping the consolidation of resources and market share, M&A transactions can improve efficiency, encourage innovation, and create synergies that contribute to overall economic growth. Additionally, understanding M&A structure and implications is essential for shareholders and potential investors, as these transactions often lead to significant movements in stock prices and valuation metrics. However, the impact is inconsistent, and the success of M&A depends on the effectiveness of strategies, regulatory compliance, and the ability to complete integration and achieve synergies. Consequently, all stakeholders, regulators, investors, and corporate managers must understand the structure of M&A to make rational decisions, reduce risks, and advance a competitive and sustainable business environment. (Miller & Segall, 2017)

2.2 Mergers and acquisitions history and activity

Mergers and acquisitions have been a persistent phenomenon throughout corporate companies and businesses. Throughout history, companies have established their positions in the market by outperforming competitors, often through M&A. Although the

specific motives behind these transactions vary and will be enlightened later, their underlying motivations have remained relatively consistent over time. In financial markets, stakeholders are well familiar with the concepts of economic cycles and the volatility of stock markets, including recessions and market crashes. Similarly, M&A tends to follow cyclic patterns characterized by volatility in market movements. These cycles often include waves where M&A activity increases significantly. The underlying principle covering these waves of M&A is their tendency to align with broader market cycles. During periods of economic growth, companies are more likely to engage in M&A as they have robust growth and strong profitability. This tendency for increased activity during economic growth reflects companies' desires to expand their operations and growth opportunities and enhance their competitive positions. (Harford, 2005)

Previous financial literature has widely examined merger and acquisition activity. The first wave of merger acquisitions started in the late 1890s when crucial changes in technology, innovations, and industry operations were witnessed. Further, new legislation on incorporations and the development of trading stocks increased activity even more. Since the new changes in the economic and financial market, companies faced more competition and established their position through horizontal consolidation. The wave created many large companies that enhanced their market power by merging. The wave ended at the beginning of the 1900s due to the financial market crash. (Stigler, 1950, p. 23)

While the world was recovering from the First World War, the second M&A wave emerged at the end of the 1910s. The features of the wave were market formation from monopolies to oligopolies and, therefore, strengthening competition. Industries were no longer dominated by one large company, but two or more large companies could dominate the industry. The current monopolies suffered from a lack of sufficient capital, which made it possible for new companies to compete in the industry. However, most transactions were made between small companies left outside in the previous wave. These companies enhanced their operations and achieved economies of scale

due to these transactions. The second wave ended when financial markets collapsed in 1929, causing a deep economic recession. (Martynova & Renneboog, 2008, p. 2149)

The economic depression in the 1930s and the Second World War prevented M&A activity for several decades. Relatively low activity was seen until the 1950s when the third wave started. The wave witnessed a substantial volume of transactions compared to subsequent waves. However, in terms of the total dollar value of deals, the wave was relatively small compared to others, even though the volume of transactions was high. The underlying reason behind the wave was that the world economy recovered after the Second World War. However, the beginning was caused by the US tightening of the anti-trust regime in 1950, and therefore, features of this wave were diversification and the development of substantial conglomerates. The peak of this wave was in 1968, already near to its collapse, when the oil crisis crashed the world economy into a recession in 1973. (Martynova & Renneboog, 2008, p. 2149)

After recovering from the oil crisis, another M&A wave was already visible. The stock market recovered from the recession, and according to Shleifer and Vishny (1991), the takeover wave started in 1981. Changes in anti-trust policy and finance sector deregulation pushed M&A activity with overall markets. Further, new financial instruments and markets, such as junk bonds, were created and worked to speed up the activity. The features of this wave diversified from previous waves as numerous hostile takeovers and going-private transactions. Massive multi-billion deals were seen in the 1980s, which is more important from the economic perspective as assets were reallocated. According to Mitchell and Mulherin (1996), almost half of major US-listed companies received a takeover offer. At the time, prevailing motivations were reorganizing the inefficiencies of the companies. The previous wave left behind large conglomerates that had become inefficient by the 1980s as markets faced several changes. The end of this wave was seen in 1987 when the stock market crashed and pushed the economy to the downside.

The world economy started to see globalization and technological innovations in the 1990s. In addition, markets were facing deregulation again, and privatization aligned with financial markets was booming. Unlike the previous waves, European and Asian markets represented a substantial fraction of M&A activity, and many cross-border transactions were recorded. Before, companies mainly focused on domestic markets resorted to cross-border deals to survive tightening global competition. Industry-related transactions dominated the wave as companies established growth horizontally and vertically. The wave stopped when the technology bubble burst at the beginning of the 2000s. (Martynova & Renneboog, 2008, p. 2149)

After the technology bubble burst and the market crashed, the world economy recovered relatively quickly, and M&A activity continued in terms of international industry consolidation as in the previous wave. New characteristics were seen as private equity became a significant player in the M&A field. Private equity enabled the new capital flow and allocation as firms executed transactions through their specific private equity funds, where investors could be institutions and wealthy individuals. This wave followed previous cycles and ended when the financial crisis hit in 2008. (Martynova & Renneboog, 2008, p. 2152)

Since the 2008 financial crisis, the M&A markets have witnessed notable transformations. Moschieri and Campa (2014) examine insights into M&A changes, particularly in European markets. During that time, enhancing competitiveness, regulatory tightening, and technological innovations were significant trends that drove M&A activity. Moreover, cross-border transactions and private equity have remained important, underscoring the globalization and diversity in M&A markets. Technological innovations and digitalization have impacted deal dynamics as companies increasingly prioritize acquiring technology startups to adapt to changing market conditions. Despite the increasing competition, better access to capital markets and reasonable deal financing have enhanced companies' ability to execute M&A and manage risks.

Financial literature includes many theories and explanations for drivers of abnormal activity and waves in M&A. According to previous findings, the start of the wave was associated with various economic, political, and regulatory changes. Harford (2005) presents two explanations for M&A waves: the market timing explanation and the neoclassical explanation. The neoclassical explanation is that M&A waves occur during specific economic or industrial shocks that require asset reallocation. The market timing explanation states that M&A activity correlates with the stock market valuations, and thus, companies are taking advantage of undervaluation. However, increased capital liquidity is mandatory for high M&A activity, which leads to lower transaction costs. Therefore, the explanation for M&A waves is two-sided, as they need economic motivation and low transaction costs.

Further, market timing explanation consists of managerial action and even hubris to take advantage of pricing errors. This theory has supporting findings, as Ferris et al. (2013) state, that an overconfident CEO might overpay for the target. Therefore, overpayment and high takeover premiums are associated with M&A activity. Over time, the overall M&A activity has risen and is related to economic growth. However, significant changes in the volume and total value of transactions occur. Figure 2 illustrates transaction volume from 1998 to 2019. The activity follows overall stock market development, and waves are observable. The volatility in the volume is relatively high, indicating companies' tendency to overpay when activity is high. Thus, robust market conditions and companies' financial performance may correlate with high premiums.

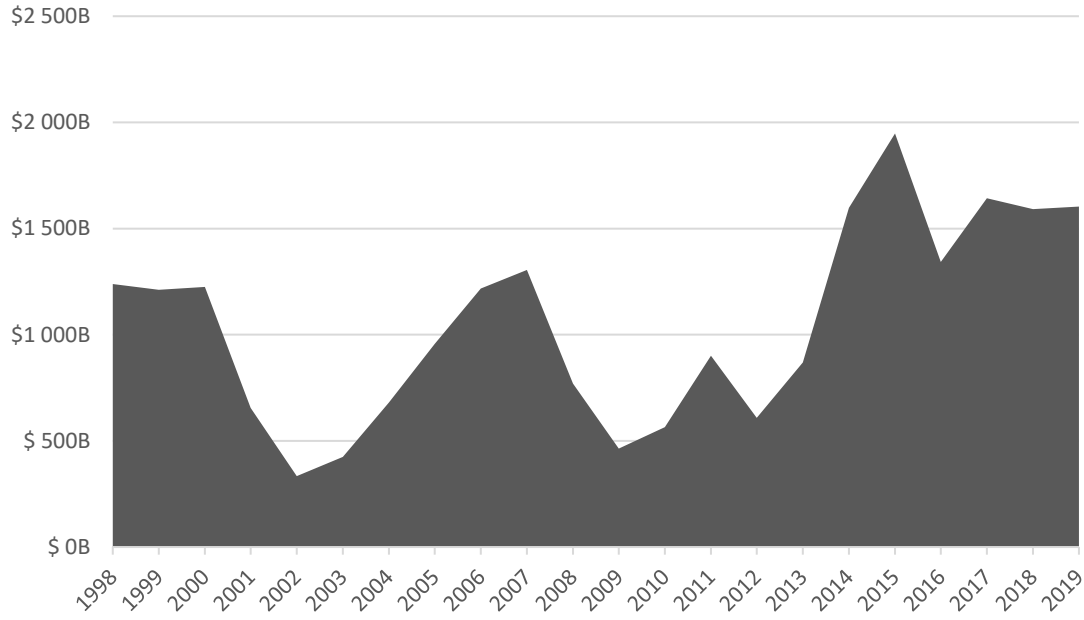

Figure 2 M&A volume in the United States (Bloomberg, 2024).

2.3 Motivations and theories for mergers and acquisitions

The ultimate reason for a company to execute M&A is to create value for its shareholders. In other words, it is making existing businesses even more valuable. According to financial theory, a company´s value is the present value of its future cash flows. Hence, acquiring the company will increase those cash flows. Increasing cash flows is not straightforward and can be established in many different actions. Everyday value-enhancing actions are economies of scale, changes in capital structure, and better management. In general, it is assumed that a company can establish organic or inorganic growth. Organic growth means expanding a company's operations and revenue through internal activities such as increasing sales and developing new products. Inorganic growth involves external growth through M&A. It allows companies to expand their operations and achieve economies of scale. (Miller & Segall, 2017)

It is essential to understand who the players in the M&A field are. There are two types of buyers in the market with slightly different underlying motives: financial and strategic. Financial buyers are institutions such as private equity firms who seek to own the

companies to make an exit in the future and maximize returns. Financial buyers usually use substantial leverage to finance the buyout, which is called a leveraged buyout (LBO). Strategic buyers are companies that are looking for other businesses to buy. They can operate in the same industry or not. This research focuses on both buyers as the sample limits financial institutions only. Therefore, this research does not consider whether it is a financial or strategic buyer. (Brealay et al., 2023)

Motivation for M&A is a comprehensively studied aspect in financial literature, even though it still needs to be explored to explain fully the motivation for such transactions. Hence, previous literature and financial theory provide various reasons and theories for M&A. The principal purpose of an acquirer is to create value for its shareholders. To succeed in that, the M&A should bring more value to the company to increase its total value. According to previous literature, synergy theory is a significant reason for executing M&A. Synergy theory suggests that combining two separate businesses is greater than the two individually. Thus, the company is greater than the sum of its parts. In M&A, synergy is the value created by integrating complementary resources and capabilities. This theory can also be considered cost savings, a typical long-term strategy for companies. (Brealey et al., 2023, p. 919; Alhenawi & Stilwell, 2017)

Synergies occur when complementary resources and capabilities are combined to create additional value. One way to achieve this is through operational synergy, which involves reducing costs and enhancing processes by combining resources. Although it is easy to formulate the combined value of two companies, estimating synergies can be challenging. A study by Duan and Jin (2019) found that positive synergies can be created if there is a difference in financial constraint between the target and the acquirer. The findings suggest that if both the acquirer and target have financial constraints, there is a positive correlation between the variance in financial constraints and the abnormal returns of both parties. This indicates positive synergies can be created when the acquirer and target have financial constraints.

Market power theory states that firms engage in mergers and acquisitions to increase their market share and pricing power and influence their industry. The increase in market share implies particularly in cross-border transactions where the acquirer and target are in different countries. According to theory, the significance of market concentration arises in terms of motivation for M&A. High M&A activity might increase market concentration by reducing the number of competitors and allowing large firms to exert their influence over prices and market shares. By establishing pricing power through M&A, firms may become price leaders in their industry, which typically results in higher profitability. (Chatterjee, 1991)

Asymmetric information is widely used to motivate companies to engage in mergers and acquisitions. Previous literature shows that assets with high information asymmetry are undervalued. Hence, asymmetric information is expected to motivate companies to M&A. Companies with low valuation tend to become targets, and vice versa. However, Cheng et al. (2016) argue that certain companies are permanently undervalued, so pricing errors can only be corrected through transactions. The target company's asymmetric information positively correlates with the takeover premium. Therefore, it can be expected that the acquirer is motivated by the asymmetric information. Further, the acquirer is earning a negative return when acquiring transparent targets, which are considered to be evaluated correctly by the markets. Hence, asymmetric information is a crucial motivation and determinant of acquirer returns.

Agency theory argues that the relationship between principals and agents in mergers and acquisitions are shareholders and management, respectively. The theory suggests that management may engage in M&A for their interests or to decrease agency conflicts. Management might take actions such as expanding the size of a company, enhancing its compensation, or protecting its control from potential acquirers. Another aspect of M&A and agency theory is asymmetric information, which occurs when management holds more information regarding the firm than shareholders. Hence, asym-

metric information creates agency costs as shareholders rely on managers to make rational decisions for their benefit. (Morck et al., 1990)

Market expansion and diversification enable companies to create value through mergers and acquisitions, for example, entering new markets, geographies, or customer segments. Diversification through M&A can reduce risks regarding dependence on a single market or product and enhance a business's stability. Coval and Moskowitz (2001) suggest that long-distance transactions gain high profits; thus, diversification enhances value creation. Consequently, geographical diversification significantly influences companies' motives for M&A.

2.4 Different types of mergers and acquisitions

Mergers and acquisitions can be classified into vertical, horizontal, and conglomerate deals. Horizontal and conglomerates are more consistent and more straightforward in their structure. Vertical mergers and acquisitions occur when two or more companies combine but operate in different supply chain stages with the same product or service. Vertical integration can have several reasons, such as protecting the product quality or enhancing efficiency. Vertical integration can be either backward into an industry closer to producing inputs or forward into an industry closer to outputs. However, despite potential benefits, several risks rely on the vertical integration strategy. Cost structure may increase as the company purchases inputs from its suppliers. When the company spreads through the supply chain, inefficient parts, such as technology, may be difficult to replace as they are part of the company. (Brealey et al., 2023)

Horizontal mergers and acquisitions represent the most significant volume of M&A. According to Gugler and Siebert (2007), horizontal integration can be defined as acquiring or merging with rival companies in the same industry. The purpose of horizontal M&A is to create value for existing businesses. A company can create value within horizontal integration by pursuing cost- or revenue-based synergies. After M&A, the combined companies can redeploy their resources and enhance their revenue synergies.

Cost savings are implemented through the effective use of economies of scale. In addition, asset divestiture is crucial in cost savings in M&As. Unnecessary and inefficient operations can be eliminated through the process, enhancing cost-saving synergies significantly. (Capron, 1999)

The third common type of merger and acquisition is conglomerate. A conglomerate deal is a merger of two companies operating in different businesses. In practice, conglomerated companies' businesses are not competitors to each other nor overlap. The purpose of a conglomerate is vertical and horizontal synergies. However, as a conglomerate consists of two companies with unrelated businesses, the motivation for such a deal can be diversification, increasing market share, or cross-selling. Conglomerates also include risks even though diversification is commonly associated with synergies enhancing strategy (Brealey et al., 2023, p. 919). Conglomerates can transfer the resources away from core operations and contribute to poor performance (Lewellen, 1971, p. 525). Supporting this theory, Stigell (1950) finds that giant conglomerates created in the 1900s suffered from inefficiencies and, therefore, forfeited their market shares.

The structure of such transactions varies in their nature. This research focuses on acquisitions, meaning the acquirer purchases the majority of the target company shares. Mergers are two or more companies combining to form a new entity. However, in the acquisition, the target company may become a subsidiary or wholly integrated into the acquirer's operations. The nature of acquisitions can be either friendly or hostile regarding the target company's willingness to be acquired. A friendly acquisition involves an offer from the acquirer to the target, and shareholders give a green light for the transaction, in other words, approving the takeover premiums offered. A hostile acquisition occurs when an acquiring company pursues control over the target against the company's management will. Further, hostile acquisitions are commonly interpreted as a takeover, which means acquisition against the target management's will. (Brealey et al., 2023, p. 936)

Hostile takeover strategies are widely presented and examined across the financial literature. In practice, the acquiring company can purchase most of the target shares directly from the stock market or make a tender offer for target shareholders. Hostile takeovers can occur due to asymmetric information, as the acquirer believes the target company is undervalued. Hostile takeovers are associated with significant takeover premiums and cash payments to persuade the target shareholders to give up their shares. The target's management may launch actions to avoid a takeover to keep its control. Financial literature discusses defence strategies in terms of these specific actions from target management. (Brealey et al., 2023, p. 937)

Financial literature recognizes several strategies to defend against a hostile takeover to maintain company control. The poison pill strategy has been widely examined through financial literature. The strategy includes variations, but the standard type is issuing new shares to all shareholders except the hostile acquirer, decreasing the possible existing control of the acquirer. However, to maintain control, the strategy most likely impacts negatively on the share price as shares outstanding increase. According to Schepker and Oh (2013), poison pills impact takeover premiums positively because the acquirer tends to pay a higher premium for control. To conclude, defence strategies can significantly negatively impact the target company, but on the other hand, management may obtain control over the company. Optimizing these actions can be crucial to the company's future and requires careful consideration.

2.5 Forms and transaction process of M&A

Mergers and acquisitions may vary in their form. Generally, there are two forms of mergers and acquisitions: stock and asset purchase. Stock purchases represent the most common type of acquisition. In a stock purchase, the acquirer pays the target shareholders in exchange for shares of the target company. Thus, the acquirer shareholders receive compensation, not the target itself. Notably, the acquirer takes control of all the target's assets and liabilities. Regarding executing the deal, target sharehold-

ers must approve the deal through a vote, which needs to result in a majority. (Miller & Segall, 2017, p. 11)

In the asset purchase, the target receives payment for its assets directly. The shareholder plays a minor role as no approval is required because the payment is made directly to the target. An acquirer might only purchase specific assets such as inventory, real estate, or intangible assets. A significant difference from the stock purchase is that as the acquirer purchases only the assets, it is not taking on liabilities to respond. Thus, the risk level significantly differs from stock purchases due to liabilities. Further, tax rules also vary as compensation is taxed at the corporate level, and the acquirer can allocate purchases to specific assets for tax purposes. Hence, tax benefits may occur due to depreciation deductions. Assets purchase has many advantages, including assuming liabilities, reducing risk in terms of acquisition, and potential tax benefits. However, asset purchase requires careful planning to achieve the advantages mentioned above. (Miller & Segall, 2017, p. 14)

It is essential to understand the M&A process, as it includes the valuation of the transaction and the expected decision on the takeover premium and payment method. Figure 3 presents the Corporate Finance Institute's 10-step M&A process. The presented process is a raw framework, and each transaction is unique in its motives and results. The first step is to develop an acquisition strategy that matches the company's current strategy and supports its long-term goals. In addition, it is essential to recognize the expected results of the transaction. The second step is to set criteria for target companies. This relates to the takeover premium as the acquirer may set specific characteristics for the target, and therefore, it might have a relationship with the premium. The third and fourth steps are searching for and contacting potential targets. The fifth step is to perform a valuation analysis of the target. This is an essential part because the valuation of a company can significantly impact the takeover premium. According to Simonyan (2014), a target's valuation is a critical factor affecting takeover premiums. After careful evaluation, the sixth step is negotiations. The seventh step is due diligence,

which is highly important as it includes a detailed examination of every target operation and aspect. The eighth step is the purchase and sale contract. Also, parties decide on a purchase agreement, whether it is an asset or stock purchase. The ninth part is again crucial in terms of this research. The financing strategy is explored earlier but is typically closed after the purchase and sale contract. The financing strategy determines the use of debt or the issuance of new shares. The final step is closing the deal and integration. (Corporate Finance Institute, 2024)

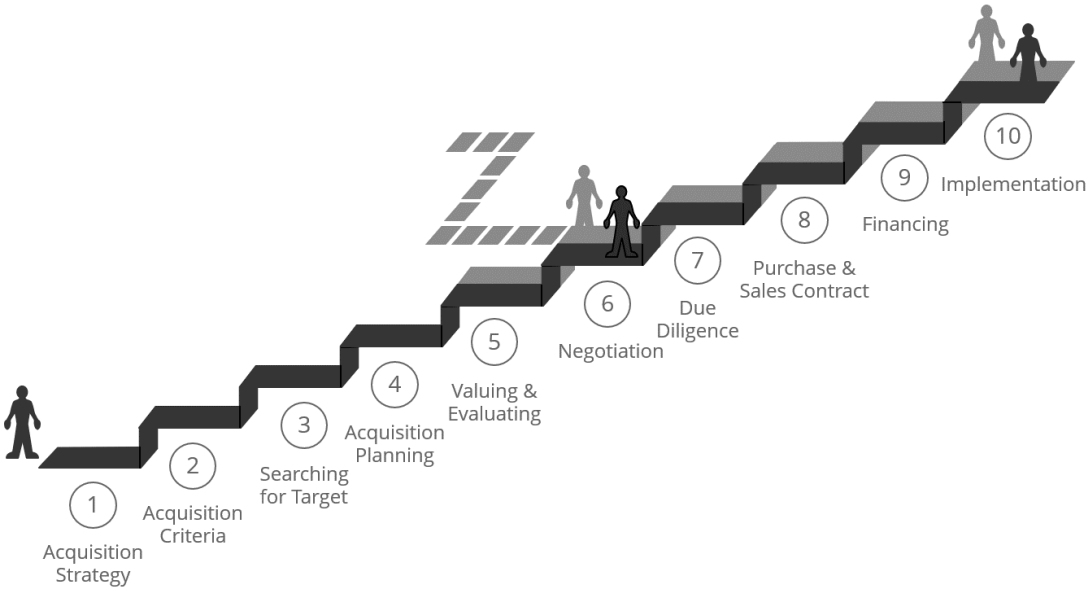

Figure 3 10-step M&A process (Corporate Finance Institute, 2024).

3 Takeover premium

This part of the study provides a theoretical background for takeover premiums and their determinants in terms of financial theories. Further, implications of the takeover premium for the acquirer and target are discussed.

3.1 Definition of a takeover premium

Takeover premium in mergers and acquisitions refers to the excess amount from the company's share price that the acquirer offers to purchase the target shares. It represents the extra amount the acquirer is willing to pay to obtain control of the target. In addition, shareholders want to maximize their returns, so takeover premiums are required to pay for control of the shares. Takeover premium affects the rate of return of target shareholders. Similarly, it determines transaction profitability for acquirers' shareholders. To understand takeover premiums, it is essential to determine its mathematical formula:

$$TP_t^i = \frac{PP_t^i - MP_t^i}{MP_t^i} \quad (1)$$

Where TP_t^i is the takeover premium, PP_t^i is the purchase price for the target *i* at the time *t*, corresponding to the deal announcement day. MP_t^i is the market price of the target *i*. Based on the formula, it is notable that calculating a takeover premium is meaningful only for publicly traded companies. Thus, this research sample consists of acquisitions of publicly traded companies. (Eichner, 2019, p. 3)

3.2 Contribution of takeover premium

Premiums have a crucial role in M&A transactions as indicating the value and strategic importance of the target company. Takeover premiums also signal competition in markets because, most likely, competitive bidders increase the premiums. As previously defined, the takeover premium represents the acquiring company's additional payment over the target company's current market price. Thus, high premiums indicate that the

acquirer sees the target more valuable and, by acquisitions, generates synergies and enhances profitability. Takeover premiums influence market sentiment and investor views. Positive reactions to high premiums signal shareholders' confidence and trust in acquirers' strategy and potential for future long-term value creation. However, an adverse reaction to low premiums can indicate shareholders' suspicions about the acquirer's potential and ability to realize synergies. Takeover premiums directly impact both targets and the acquirer's shareholder wealth. High premiums typically result in more significant returns for target shareholders because markets tend to react to the announcement immediately. (Eckbo, 2009) This can be explained by the efficient market hypothesis introduced by Fama (1970), which states that stock prices immediately reflect all the available information. Hence, shareholders expect future benefits and synergies due to announced premium and share price increases.

3.3 Determinants of takeover premium

Financial literature has various explanations for takeover premiums. First, the target company wants to maximize profit for its shareholders. Second, the deal will likely succeed when an excess premium is offered (Bessler & Schneck, 2015). The takeover premium represents the additional value of the target from the acquirers' perspective. Hence, the takeover premium is the value of the expected synergies achieved from the transactions. Furthermore, synergies are a significant motivation for acquirers to even engage in M&A. However, according to financial literature, M&A deals tend to destroy value rather than create it for shareholders. This can be explained by the fact that estimation synergies can be substantially complex. Further, factors such as firm and deal characteristics, market conditions, and information asymmetries are presented to determine takeover premiums. (Moeller et al., 2005)

Financial literature has also contradicted statements regarding takeover premiums. Laamanen (2007) criticizes the size of the takeover premium as the average takeover premium in the United States is 30% to 50%. Figure 4 shows the average takeover premium in the US between 1998 and 2019; despite the value-destroying deals represent-

ed by Mateev and Andonov (2018), companies continue to pay significantly high premiums. However, the effect of M&A waves is clearly observable from the figure. Several reasons are presented to determine the premiums, such as asymmetric information and target cash flows. Historically, target shareholders have received significant positive abnormal returns, and acquirer shareholders have received negative returns due to relatively high takeover premiums.

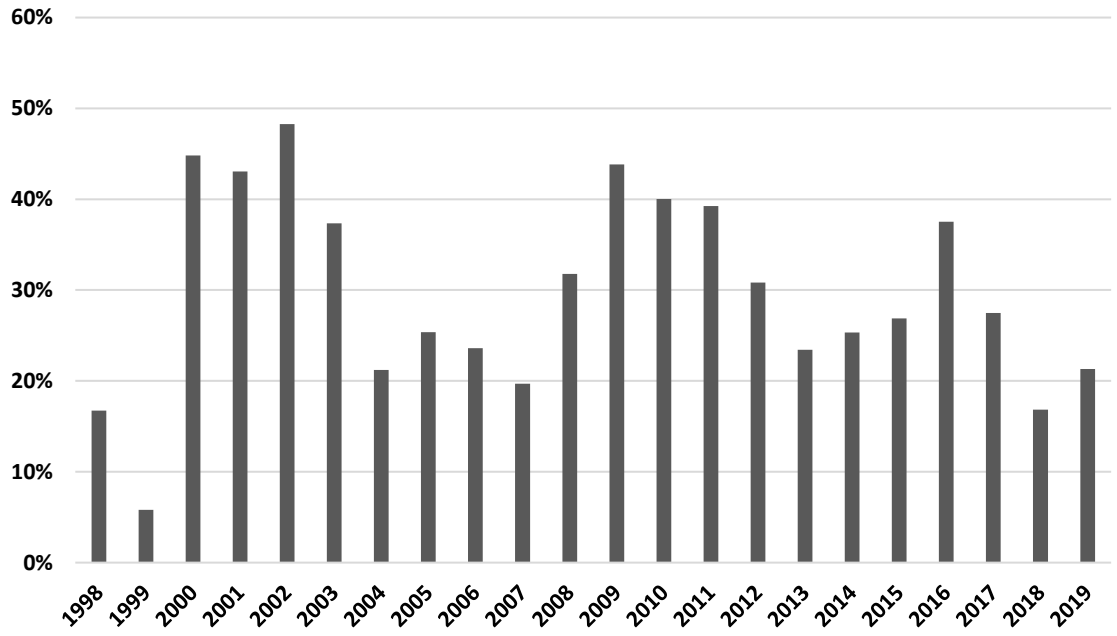

Figure 4 Average takeover premium (Bloomberg, 2024).

3.3.1 Firm characteristics

Free cash flow and assets are expected to positively correlate with takeover premiums because of acquirers' ability to utilize cash flows in future investments. In addition, acquirers with high free cash flow tend to pay higher premiums. Due to large cash reserves and cash flows, the risk is reduced even if the premium is excessive (Lehn & Poulsen, 1989). A company's financial capacity positively impacts the company's ability to allocate resources and thus offer higher premiums (Bugeja & Walter, 1995). These suggestions are consistent with the synergy theory, which expects two or more businesses to create additional value together. Hence, financial capacity and liquidity allow

companies to achieve more significant synergies by possible future investments and resource allocation. As a result, the acquirer is expected to pay higher premiums for more significant synergies.

A company's profitability and overall financial performance can make it more attractive to acquirers and increase the premium. High profitability is associated with reduced riskiness and may influence premiums due to the ability to generate higher cash flows and returns (Israel, 1991). However, contradicting findings by Dimopoulos and Sacchetto (2014) and de La Bruslerie (2013), they argue that high premiums are associated with lower target profitability. This is explained by the acquirer's uncertain growth prospects and valuation errors. In addition, significantly high profitability may be challenging to obtain in the future and thus mitigate investors' attraction. Acquiring a low-profitability company with high growth opportunities can result in significant returns in the future compared to a mature business with high profitability. Hence, acquirers may be willing to pay high premiums for growth prospects rather than already highly profitable companies.

The size of the deal, as well as the acquirer and the target, influence both the premium and the probability of the deal being successful. Acquirers are paying premiums for large targets compared to smaller targets. Acquiring a large target requires much capital; thus, paying a significant premium can be risky. Hence, smaller targets receive relatively higher premiums. However, despite the relatively low premiums, large deals destroy shareholders' value more than smaller ones. This can be explained by the synergies that can be difficult to estimate and the complexity of acquiring large targets due to regulation and other factors. (Alexandridis et al., 2017)

A target company's lower leverage ratio increases the likelihood of being a target and, therefore, is associated with a higher premium. Conversely, a high leverage ratio of the target decreases the premium because the acquirer must answer for the target's liabilities. The acquirer's leverage ratio has similar effects on premiums. The high leverage

decreases premiums as the acquirer may have difficulties obtaining financing. Lower leverage encourages to pay higher premiums in terms of free cash reserves and easier access to financing. (Bebenroth & Ahmed, 2021)

The value of a company is an essential aspect of takeover premiums. M&A deal valuation is complex for the acquirer as it must estimate expected synergies and several other factors to determine overall payment for the target and, therefore, takeover premium. Whether the company is listed or not, valuation includes multiple steps. In general, publicly traded companies' valuation is easier than private companies because, in principle, the target is already valued in the stock market. Thus, the market valuation can be used as a basis. Financial theory suggests several valuation methods, but a company's overall value is the present value of its future cash flows. However, estimating future cash flow always includes speculation and many assumptions. Hence, a company's absolute value is impossible to determine. In the real world, in evaluating an M&A deal, the acquirer may use several valuation methods, such as the discounted cash flow model, relative valuation, and precedent transaction valuation, where the average value of similar previous deals is used to determine the value of the target. (Miller and Segall, 2017) According to Laamanen (2007), the overvaluation of a target is a primary reason for significant takeover premiums and, therefore, a value-destroyer for acquirers' shareholders. Hence, the valuation of a target in the M&A process is a crucial aspect of value creation and the overall success of the transaction.

3.3.2 Other characteristics

Most acquisitions are competitive, which means that when a potential company to be acquired occurs on the market, several companies are interested in it. Thus, companies must pay higher premiums than rival bidders; therefore, the size and number of bidders can increase the premiums paid. This creates a loop where rival bidders increase the premiums; otherwise, justifying high premiums tends to increase premiums even more. Thus, rival bidding can significantly increase takeover premiums. (Petmezas, 2009)

The choice of a payment method can impact premiums as they represent an essential phase in the transaction process and require significant attention from the acquirers' management. Using cash payments may result in offering higher premiums as shareholders have an immediate tax liability and, therefore, require higher returns. Further, stock payments may concern shareholders if there is a threat of high volatility or regulatory approval. However, stock payments can also result in higher premiums as shareholders want compensation for risks included in the stock method. (Gondhalekar, 2004)

3.4 Theories on takeover premium

Financial theories can be employed to determine the existence of takeover premiums and the underlying motivation for extensive premiums. This part discusses the financial theories related to takeover premiums. However, the theories were not initially established to explain takeover premiums.

3.4.1 Synergy theory

The principal purpose of an acquirer is to create value for its shareholders. To succeed in that, the M&A should bring more value to the company to increase its total value. An extensive portion of the financial literature focuses on value creation in M&A. Theoretically, an M&A deal creates additional value when the target company's value as a component of the acquirer is greater than the target value individually. This is commonly referred to as synergy theory, commonly known as the underlying principle and motivation for M&A. M&A transaction value creation relies on achieved synergies in the future and the price paid for the target. The value-destroying aspect is thus the relatively high takeover premium. However, another loss is another profit, and target shareholders gain positive returns regarding high premiums. (Alhenawi & Stilwell, 2017) Synergies can be a crucial driver for a takeover premium if the acquirer's management evaluates high synergies; it is likely willing to pay a higher premium. Synergies represent an additional value; therefore, from a managerial perspective, asymmetric infor-

mation should be as limited as possible. However, synergy values may be unrevealed for several reasons, such as shareholder actions and a deal strategy. (Dutordoir et al., 2014)

Duan and Jin (2019) evaluate acquisitions, hypothesizing that the difference in financial constraint between the target and acquirer creates more positive synergies. Hence, the more the target company is constrained compared to the acquirer, the higher the synergies are. The research focuses on mergers and acquisitions in which companies are in the same industry. The research finds a constructive correlation between the variance in financial constraints and the abnormal returns of both acquirers and targets. Thus, positive synergies are created if the acquirer and target have financial constraints. However, target company shareholder value can be caused by a high takeover premium. High takeover premiums are recognized when the target is relatively more constrained than the acquirer.

3.4.2 Asymmetric information

Financial literature uses information asymmetry theory widely to explain premiums. The theory states that if one party has more information than the other, information asymmetry occurs, and thus, market valuations are inefficient. Undervalued targets gain more significant premiums due to the incentive to demand high premiums and acquirers' incentive to offer high premiums to ensure the deal. Substantial information asymmetry encourages using cash payment because target shareholders require immediate compensation for information asymmetry. Cash payments are associated with high premiums as shareholders are tax-liable. Hence, high information asymmetry is expected to increase premiums. However, historically, M&A occurs in waves; thus, companies' valuations are not necessarily the explanatory factor. In practice, the acquirers may demand lower premiums to compensate for the risk and uncertainty included in the transaction. Due to asymmetric information, these risks and uncertainties can be significant and impact the takeover premium. (Brealey et., 2023)

3.4.3 Agency theory

Agency theory can be used to explain the existence of takeover premiums. According to the agency problem, management can have incentives to engage in M&A, creating conflict between managers and shareholders' incentives. Managers may preserve control and resist acquisition even if shareholders benefit from the deal through premiums. According to Eckbo (2009), agency problems may occur when management pays high premiums, destroying the shareholders' value. To mitigate agency problems, strong corporate governance is needed. An independent board of directors and management compensation can reduce conflicts of interest and maximize shareholder returns due to takeover premiums.

4 Payment method

This section of the research presents payment methods used in M&A transactions. It examines their significance and factors that influence decision-making. Additionally, it discusses financial theories related to payments.

4.1 Contribution of payment method

The choice of a payment method emerges as a critical aspect of risk management strategies in M&A. It is crucial to the target as it maximizes shareholders' return, and the acquirer seeks to minimize expenditure. Resolving this dilemma requires agreeing to satisfy both parties through appropriate payment terms. The payment method chosen in takeovers plays a significant role in decision-making for acquiring and targeting companies. Thus, when examining M&A the determinants of takeover premiums, it is essential to understand the payment methods and whether they impact the deal price and, therefore, most likely, the takeover premium. In practice, the payment can be made with either cash or stock. In addition, the acquirer can use a combination of these. The choice of payment method, whether cash, stock, or a mixed payment, can be a significant factor in terms of the completion of the transaction. Generally, shareholders receive cash payments rather than shares of the acquiring company. Figure 5 shows the distribution of payment methods in publicly traded acquisitions in the United States between 1998 and 2019. A cash offer can be considered a simple method, as the acquirer pays cash for the target's shares, and thus, it is a commonly used method. The stock offer is slightly more complicated as the acquirer needs to issue new shares. The exchange ratio determines the number of shares the target receives, which is determined in advance due to stock price volatility. (Ismail & Krause, 2010)

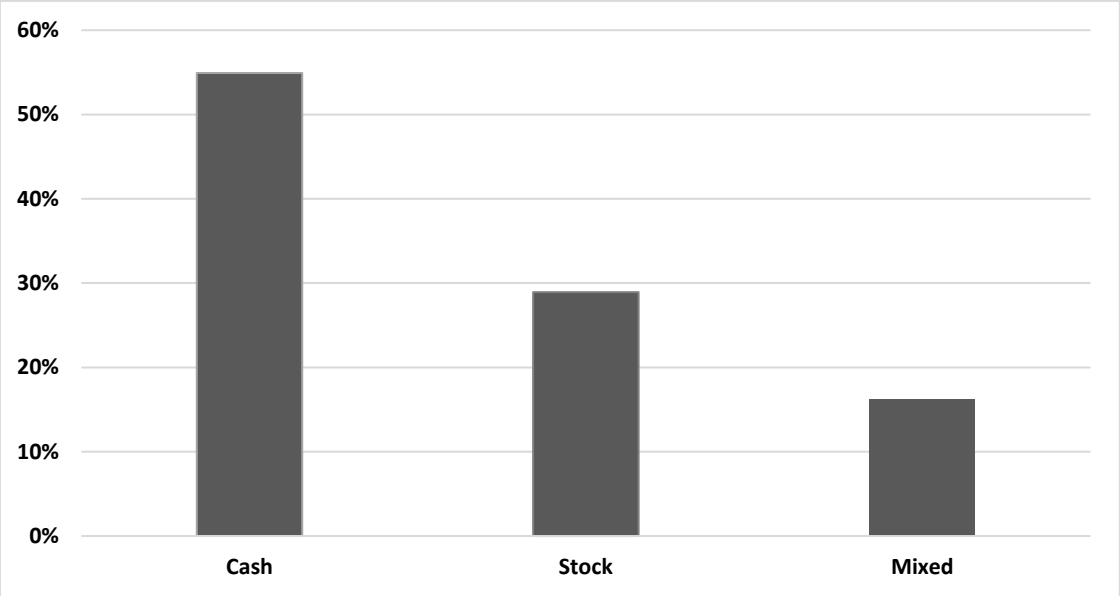

Figure 5 Distribution of payment methods (Research data).

4.2 Cash payment

The advantages of the cash payment method are liquidity, certainty, and simplicity. Cash payments offer immediate liquidity to the target company's shareholders. Unlike stock payment, which may involve a holding period or market uncertainty, cash allows reinvesting or distribution. Typically, cash consideration offers high certainty and predictability. The fixed amount is paid at the time of the transaction, reducing uncertainty for both the acquiring and target companies and their shareholders. Cash transactions are relatively simple compared to other payment methods. Payment involves less complexity in valuation, accounting, and regulation; therefore, execution and closing are expected to be faster and smoother. However, some disadvantages occur in cash payments. Cash payment requires substantial cash reserves or external financing. The acquirer may have challenges arranging debt, especially in significant acquisitions. In addition, cash consideration may lead to the overvaluation of the target as the acquirer is prone to paying a high premium to ensure the deal. Overvaluation can result in destroying the value of the acquiring company's shareholders. Further, cash payment creates a tax liability for target shareholders, who may seek diversification for their portfolio and prefer stock payment. (Sankar & Leepsa, 2018)

4.3 Stock payment

The stock payment method allows the acquiring company to save its cash reserves and preserve liquidity for other purposes. By issuing new stocks, the acquiring company shareholders become owners alongside target shareholders, creating incentives to maximize shareholder value aligned with parties. Stock payment can signal a positive effect on the markets, influencing the acquiring company's confidence and belief in its future growth potential, and it can enhance its credibility for investors and analysts. However, several disadvantages occur in the stock payment method. A significant drawback is exposure to volatility in the stock market. Target company shareholders are prone to market conditions and investor sentiment, which can impact the offer's overall success and attractiveness. From an acquiring company perspective, a decrease in ownership is a significant disadvantage of the stock payment method. Issuing new shares to finance an acquisition may dilute shares outstanding and, therefore, acquirers' ownership. Further, the increase in shares outstanding reduces each shareholder's ownership and may impact earnings per share and other metrics. Other problems may occur regarding complexity, as integration challenges may be compounded by increasing complexity. Security laws, accounting requirements, and other regulatory requirements increase the deal's complexity and overall costs. (Di Giuli, 2013)

4.4 Mixed payment

Combining cash and stock payments allows both the acquiring and target companies to reduce risks associated with a payment made by only one of them. Empirical evidence suggests that cash provides immediate liquidity and certainty, and stock payments create potential long-term value creation and align interests between acquirers and target shareholders. A mixed payment gives a broader range of flexibility in considering the preferences of acquirers and target shareholders, as the ones who prefer cash can receive liquidity, and those who prefer stock can participate in future value creation. The cash and stock advantages and disadvantages combine in the mixed payment, and shareholders receive several advantages and disadvantages. However, the overall com-

plexity can be the reason why mixed payments are used less through the M&A. (Ismail & Krause, 2010)

4.5 Determinants of payment methods

The underlying motivation for payment method is the sum of several internal and external factors. Thus, overall market conditions such as prevailing interest rates and debt markets can significantly impact acquirers' choice to pay with stock rather than cash. However, this research aims to determine firm-specific characteristics affecting the choice of a payment method. This part presents acquirer and target characteristics as well as other significant factors.

4.5.1 Firm characteristics

The relationship between payment methods and takeover premiums is examined through the academic literature and the first part of this research. The target company shareholders want to maximize their returns and minimize risks and costs regarding the transactions. The cash payment method creates an immediate tax liability for target shareholders, and therefore, they require higher premiums. Historically, target shareholders receive higher abnormal returns in cash payments due to extensive premiums. Simonyan (2014) and Bellamy and Levin (1992) state that acquirers pay significantly higher premiums than stock or mixed payments regarding cash payments.

Previous literature recognizes various firm-specific characteristics impacting the choice of a payment method. Ismail and Krause (2010, p. 482) examine the effect of the relativity of the acquirer and the target on the payment method. Acquiring a relatively large target is more efficient by stock or mixed payment because the acquirer does not necessarily have such large cash reserves, and a significant debt amount increases the default risk. Thus, the use of cash decreases the more acquirer and target sizes are relative. If the target company is relatively the same size as an acquirer, cash financing is

less likely, and stock or mixed payment is considered. The overall deal size is likely to correlate positively with stock payment for the above reasons (Boateng & Bi, 2014).

Further, size generally determines payment methods. Large companies typically have better access to debt markets and are more likely to use cash payments. When cash payments offer immediate liquidity and certainty, shareholders preferably receive compensation in cash to mitigate risks and increase stability. Small and mid-sized companies may have difficulties accessing debt markets and have limited cash reserves. Thus, smaller companies are more likely to use a stock or mixed payment method (Bebenroth and Ahmed, 2021). However, even though large companies have better access to debt markets, total deal value determines payment methods. Figure 6 shows the portion of payment methods from total deal values in the United States between 1998 and 2019. Hence, measured by the total size of the transactions, the stock method represents the largest volume even though cash payment is the most frequent. This indicates that acquirers prefer to use the stock method for significant large transactions.

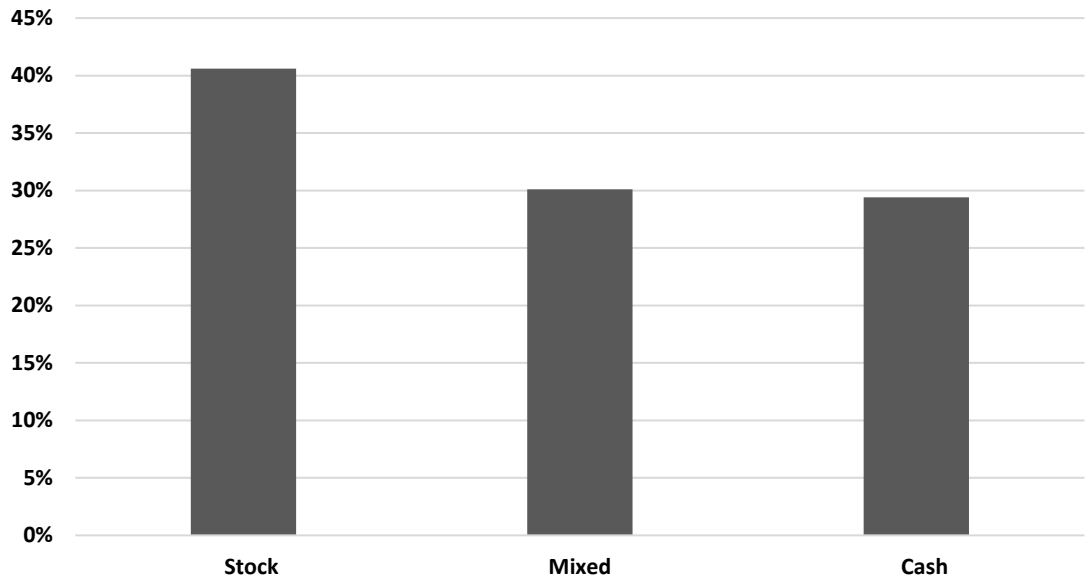

Figure 6 Payment methods in terms of deal value (Research data).

Information asymmetry is presented to determine payment methods in M&A. Previous literature suggests that high information asymmetry correlates with cash payment as target shareholders require compensation from asymmetry. Thus, low information asymmetry encourages the acquirer to use stock payment. Several variables can be examined regarding asymmetric information, such as valuation and analysts' recommendations. Karampatsas et al. (2014, p. 482) find that the more acquirers receive analysts' recommendations, the lower the information asymmetry is. Hence, a much-followed company should prefer stock payment. However, Boateng and Bi (2014) provide contradicting views on valuation and information asymmetry. They argue that highly valued companies take advantage of overvalued stock and use it for payment rather than cash.

Acquirers with high leverage are prone to use stock payment because of their limited access to debt and low liquidity. Consequently, low-leverage acquirers prefer cash payments for their immediate liquidity to the target shareholders and to reduce financing risks. The high free cash flow of the acquirer encourages the use of cash for payment, and vice versa; the acquirer with low free cash flow tends to use stock payment. Target profitability encourages the cash payment method because it enables higher access to future earnings. Thus, the purpose is to achieve a high return on assets and equity using cash. (Boateng & Bi, 2014; Sankar & Leepsa, 2018)

4.5.2 Other characteristics

Ownership structure and corporate control are vital determinants, according to previous findings. A significant shareholder controlling the acquirer should reduce the willingness to use the stock payment to preserve its control. Hence, assuming corporate control is valuable for a significant shareholder, it is expected to have a positive relationship with cash payment. Acquirer and target capital structure impact the choice of a payment method. The acquirer's high leverage increases the likelihood of stock payment as the existing debt burden refuses the banks to borrow new debt. Thus, the acquirer tends to use stock payment due to high leverage. (Faccio & Masulis, 2005)

Another frequently studied variable impacting the payment method is taxation. Shareholders are liable for taxation of profits if they receive cash payments. Thus, shareholders will require a higher takeover premium. Therefore, the acquirer will accumulate higher goodwill, which depreciation will reduce future profits and, therefore, tax liabilities. Previous literature commonly uses capital gain taxes as a proxy to measure the impact of tax considerations on payment methods. The limitation of this proxy is that it is substantially difficult to measure shareholders' capital gain tax as there is a lack of information on shareholders' total gain personally. (Ayers et al., 2003)

Investment opportunity theory states that an acquirer with more investment opportunities prefers to pay with stock as a possible increase in leverage would cause underinvestment problems. Regarding cash payment, raising debt and increasing leverage might be necessary. Previous literature uses the market-to-book ratio as a proxy to measure investment opportunities. Market overvaluation theory states that when acquirers' equity is relatively overvalued to target firms' equity, acquirers prefer stock payment. (Ayers et al., 2003) Contradicting evidence by Boateng and Bi (2014) states that overvalued acquirers use stock payments to take advantage of the overvaluation.

4.6 Theories on payment method

This part discusses the financial theories related to payment methods and their ability to explain the choice of payment.

4.6.1 The pecking order theory

The pecking order theory presented by Myers and Majluf (1984) suggests that companies prefer financing investments and projects in a particular order, from least riskiness to most riskiness: cash, debt, and equity, respectively. Information asymmetry impacts equity issuance, making it costly and thus encouraging companies to use debt over equity. According to theory, transactions are preferably financed by cash reserves. However, even though the acquirer has extensive cash reserves, it may have access to

low-cost debt and, therefore, would be optimal to use leverage to finance the transactions as the acquirer may have other investment requirements. Thus, cash reserves must be preserved. In addition, highly profitable companies will probably have lower debt ratios because of their retained earnings, which can be used for financing. Hence, low-profitable companies are more prone to use external financing, which is debt and equity. (Brealey et al., 2023, p. 508)

4.6.2 The trade-off theory

The trade-off theory states that companies make financing decisions by balancing the benefits and costs of different financing options to optimize capital structure. Regarding M&A transactions, the theory suggests that the acquirer considers trade-offs between financing sources, whether cash or stock, and their impacts on the capital structure and shareholders' value. According to theory, the choice of payment method should align with the acquirer's optimal capital structure. Thus, the acquirer should select an appropriate mix of cash and stock payments. However, the trade-off theory relies more on the company's choice between cash and debt, suggesting that the company should increase debt until an increase in financial distress costs compensates the tax shield's present value. Tax shield occurs as interest expenses are tax deductible; therefore, an increase in debt lowers the taxes payable. Hence, the trade-off theory suggests that, regarding M&A, companies prefer to use cash payment until the tax shield is equal to the costs of financial distress. (Brealey et al., 2023, p. 512)

4.6.3 The agency theory

Agency theory argues about the relationship between principals (shareholders) and agents (managers) and how conflicts of interest arise due to differing goals and incentives. In M&A transactions, parties' interests can influence payment method choices and mitigate agency costs. The acquirers may use stock or mixed methods to align the interests of target company shareholders with their own. Thus, they reduce agency conflicts and contribute to future returns. However, managers may use cash payments

to maintain control of the company. In addition, managers are prone to pay significant premiums with cash to execute the deal, destroying shareholders' value. (Morck et al., 1990)

5 Literature review

This part of the study provides evidence from previous literature on the determinants of takeover premiums and payment methods. In addition, other related findings are presented as they provide essential insight into the topic. One limitation of some studies is that the primary purpose of the papers is not to examine specific firm characteristics but momentum or investment opportunities.

5.1 Takeover premium

Lehn and Poulsen (1989) examine the relationship between a takeover premium and the free cash flow of the target. They find that high target free cash flow is related to high takeover premiums, suggesting that acquirers value excessive cash flows. In addition, they find that the likelihood of a company going private increases with high free cash flow. This can be explained by the fact that private equity companies seek potential targets with high free cash flow to maximize leverage in deals and use free cash flow to pay down debt. Buyouts from public to private are common in the private equity field (Brealey et al., 2023, p. 966). Consistent findings by Bugeja and Walter (1995) find that target companies with extra financial capacity are more likely to pay significant takeover premiums. However, a contradicting suggestion from Simonyan (2014, p. 102) states that cash flows do not explain significantly high premiums. The limitation of supporting findings is that the results were made relatively long ago.

Jensen (1986) examines the agency costs of free cash flow and its effect on the takeover premium. The study states that removing existing management is a possible solution to the problem. Thus, a positive relationship between the takeover premium and target free cash flow should be established. However, the existing management will be removed after the deal is closed. Thus, the findings of this research are limited as no managerial changes have been measured. Results suggest a negative relationship between takeover premium and free cash flow after closing the deal. This result contradicts Bugeja and Walter (1995) and Lehn and Poulsen (1989) as they find that the posi-

tive relationship between takeover premium and financial slack is expected to be higher if the financial slack between the acquirer and the target is high.

The study on takeover premiums and their determinants was conducted by de La Bruslerie (2013), which references multiple factors and their relationship to takeover premiums. However, the study's main argument is whether the payment method impacts takeover premiums. It examines, in total, 528 deals in the European Union region. The study finds that deals completed with cash only or mixed payments with a high cash portion have higher premiums than deals with stock payments. The pecking order theory can explain this finding, as acquirers prefer to use cash payments, and the cost efficiency is transferred to the additional premium. The limitation of the study is that it assumes that companies have similar growth opportunities. A company with a high growth opportunity and a high stock value may not be prone to be acquired with stocks as the potential enhances the takeover premiums. In addition, the study examines various characteristics of the relationship with premiums, reporting that target companies' profitability negatively impacts takeover premium levels. The explanation for such a finding is that targets with high profitability already operate efficiently and lack growth opportunities. Thus, the probability of future earnings being negative increases. The finding is consistent with those of Dimopoulos and Sacchetto (2014), who report similar results and support the hypothesis of this research.

Raad (2012) examines the relationship between target shareholders' returns and leverage with a sample of 190 takeovers between 1995 and 2005. The findings suggest a positive relationship between the leverage of targets and the size of takeover premiums. High-leverage targets receive an average higher premium than targets with low leverage. Israel's (1991) contradicting findings suggest no significant relationship between target leverage and takeover premiums. However, Bebenroth and Ahmed (2021) report supporting evidence that high-leverage acquirers pay significantly lower premiums than low-leverage ones. Consequently, these results show contradicting evidence regarding leverage ratios and takeover premiums.

Bessler and Schenck (2015) examine 1437 takeovers in Europe for the 1990-2012 period. Their study aims to determine whether excess premiums affect deal completion; thus, their sample includes successful and unsuccessful deals. An essential result of this research is that shareholders' abnormal returns after the announcement are significantly higher regarding cash payment deals. This supports the hypothesis of this research and the findings by de La Bruslerie (2013), Simonyan (2014), and Bellamy and Levin (1992). Another important finding is that no significant relationship occurs between returns and acquirer or target leverage. However, the limitation of this study is that it uses abnormal returns after the announcement as the dependent variable and not the takeover premium. Even though abnormal returns represent excess returns for target shareholders after the announcement, they cannot be compared entirely to takeover premiums.

Eichner (2019) examines the impact of acquirer and target characteristics on takeover premiums with a sample of 589 transactions from 2005 to 2016. The study finds that the low market valuation of the target increases the takeover premium. A low market valuation allows the acquirer to pay a higher premium for a takeover to achieve more significant synergies. Surprisingly, the low EBITDA margin is associated with a high takeover premium. A possible explanation for this result is that material restructuring potential motivates acquirers to pay higher premiums. However, observing one variable is not transparent enough to conclude that negative EBITDA drives higher premiums. Synergies riskiness is associated with high returns and therefore supports findings from Bessler and Schenck (2015) as they find that cash payments significantly impact target shareholders' abnormal returns.

Simonyan (2014) examines 2374 takeovers in the United States between 1985 and 2005. The study identifies four critical factors driving takeover premiums: market undervaluation, momentum, deregulation, and industry consolidation. Higher premiums occur during periods of market undervaluation, whereas lower premiums are evident

during periods of market overvaluation. This is inconsistent with this research's expectations and findings from Bessler and Schneck (2015), as they suggest that high-valued acquirers pay significant premiums. However, high premiums may be more prone to target undervaluation and vice versa. Takeover premiums are also higher during lower stock market returns and volatility periods. Momentum is a significant factor as takeover premiums in the current period positively correlated with those paid in previous takeovers, indicating a robust premium-level trend. This supports the previous findings as well as the historical development of premium levels. Takeovers of targets in heavily regulated industries immediately before deregulation events were associated with lower premiums than non-regulated ones. However, takeovers in deregulated industries after deregulation events had premiums similar to those of non-regulated industries and significantly larger premiums than those in regulated industries before deregulation events. In addition, the study reports significant findings regarding this research purpose, suggesting that free cash flow does not explain takeover premiums, and cash payments are associated with substantial takeover premiums.

Dong et al. (2006) investigate the motivations behind takeovers by examining the relationships between firms' market valuations and various takeover characteristics. The study tests two theories of takeovers: one based on stock market valuation and its correctness. The other is on extensions of the Q theory of investment. The study uses the relationship between market price and fundamentals to approximate acquirers' undervaluation, growth opportunities, and agency problems. The study finds that highly valued acquirers offer relatively high premiums, particularly in stock payments, supporting this research's hypothesis for highly valued acquirers paying higher premiums. However, this can be explained by the result from Boateng and Bi (2014), which is that valued acquirers prefer to use their overvalued stock as payment, which results in overpayment. The study's limitation is that managerial decisions are prone to market valuations, and this research limits the examination of managerial impact.

According to Mateev and Andonov (2018), overpayment of the deal is a significant factor in destroying shareholders' value, and therefore, valuation plays a vital role in mergers and acquisitions. They examine 275 European public acquisitions between 2003 and 2010. Similar results by Diaz et al. (2013) examine whether the takeover premiums correspond to expected synergies in European mergers and acquisitions by analysing the relationship between the premiums and acquirers' returns. Some previous literature suggests a linear relationship between these variables, but divergent views exist. The research finds that a positive relationship between the premium and abnormal return occurs regarding the synergy hypothesis. However, the effect becomes negative if takeover premiums exceed a certain point. Precisely, the takeover premium more than 39.69–40.03% higher than the value of the target is associated with overpayment. A sign of positive synergies is identified in terms of paying less than the amount, which positively impacts the acquirers' return. These results contribute to reducing information asymmetries and agency problems to avoid overpayment for seeking benefits for management.

Deal characteristics are less examined than other factors in terms of the size of the takeover premium. The lack of financial literature may be due to the inconsistency of target characteristics. However, Loderer and Martin (1990) find that acquirers destroy value more when acquiring large targets. The observed value destruction could be attributed to acquirers overpaying if the target is significant. This result differs from the research of Alexandridis et al. (2017). They examine the relationship between the deal size and the takeover premium. The research uses a sample of 3691 US public acquisitions and finds that the top tercile takeover premium is significantly lower than the bottom tercile. In addition, their evidence shows that the overpayment potential for acquiring large targets appears to be lower than for acquiring smaller targets. However, large deals still destroy more value for the acquirer's shareholders regardless of the lower premium. The inconsistency may be due to the complexity of large targets. Acquirers may need help evaluating potential synergies, which may reflect influences beyond overpayment.

5.2 Payment method

Ismail and Krause (2010) examine the determinants of payment choices in mergers and acquisitions. Their sample consists of 337 deals in the United States publicly traded companies between 1985 and 2004. Using consistent data makes it exciting and relevant compared to this research data sample. They focused on commonly studied variables and extended their study by introducing a new set of variables. Investment characteristics may affect the acquirer's choice of payment method when an increase in leverage establishes underinvestment problems. They use acquirers and targets to share growth and volatility as a proxy for estimating investment characteristics, resulting in no significant relationship with a payment method. However, when considering investment characteristics, share volatility and growth are not comparable to leverage ratios. Moreover, acquirer returns correlated positively with stock amounts in mixed payment methods. In addition, more stocks are offered if the takeover premium is lower, which supports the hypothesis of this study and evidence from Simonyan (2014, p. 99) for the cash payments relationship between significant premiums. Further, they show that acquirers use stock payment if the target company is relatively the same size. This finding is consistent with the hypothesis of this research.

Determinants of the M&A payment method in European markets are examined by Faccio and Masulis (2005). They explore a sample of 478 European transactions between 1997 and 2000. Their study focuses on the trade-off between acquirers' corporate control threats. However, their study examines various factors and their implications on payment methods, such as leverage, size, and information asymmetry. The study shows that cash payments have a negative and significant relationship with acquirers' leverage. Hence, European acquirers make cash payments regardless of their financial condition, and despite the debt burden, they prefer cash payments over stock. The result aligns with the pecking order theory, which states that companies prefer internal financing over debt and equity. The contradicting result by Boateng and Bi (2014) states that acquirers in the United States prefer stock payment when their financial condition

is poor. The explanation for this may be the regulatory differences between the two continents. Further, they show that companies of relative size are more likely to use stock or mixed methods over cash, supporting the hypothesis of this study. The relative size target requires extensive cash resources, and an enormous debt increases the leverage and default risk.

Boateng and Bi (2014) examine the effects of acquirer characteristics and payment methods on Chinese acquirers between 1998 and 2008. Notably, the Chinese government has significant ownership in many companies; thus, these results are not directly comparable. However, it is essential to see whether underlying determinants are universal despite different regulations and heavy state ownership. They find supporting results to previous findings as acquirers' high leverage increases the use of stocks due to reduced borrowing capacity. Acquirer Tobin's Q ratio is negatively correlated with the use of cash. Thus, information asymmetry can be universal as the acquirer prefers to pay with overvalued shares. This result is also consistent with this research hypothesis. Consistent with the hypothesis of this study and the study by Ismail and Krause (2010) and Faccio and Masulis (2005), the relative size of the companies encourages the acquirer to use stock payment. Hence, strong evidence from previous financial literature is recorded. Further, acquirers' return on assets does not significantly affect the payment method. The study expects that a high ROA will lead to using cash because it allows the acquirer to retain more future earnings.

An extensive number of studies have focused on information asymmetry's role in the choice of a payment method. However, previous studies use different methods to proxy asymmetric information, and thus, it is essential to explore a couple of them. Information asymmetry is expected to encourage companies to engage in M&A due to valuation errors. Regarding payment methods, acquirers' information asymmetry is suggested to play a significant role, particularly when the acquirer holds proprietary information of its value (Chemmanur et al., 2009). By investigating 6819 deals of publicly listed US acquisitions between 1998 and 2009, Karampatsas et al. (2014) show

that low information asymmetry encourages acquirers to pay with stock or mixed method. They use acquirer analysts' recommendations to proxy information asymmetry, stating that more recommendations decrease information asymmetry. Myers and Majluf (1984) and Yook et al. (1999) examine information asymmetry regarding the valuation metrics, highlighting the importance of overall market valuation and investor sentiment. They find that overvalued acquirers prefer to use their stock for payment. However, Ismail and Krause (2010) report no significant impact between payment method and information asymmetry.

Previous findings suggest that acquirers' ownership structure and corporate control play a significant role in determining the payment methods. According to Faccio and Masulis (2005) and Yook et al. (1999), high managerial control reduces the likelihood of stock payment by increasing outstanding shares and reducing control. Consequently, expecting that management values the existing control, it should have a positive relationship with cash payment. They proxied managerial ownership with a portion of shares held by the largest controlling shareholders. These findings are limited in this research as different proxy measures of ownership are used. However, evidence shows that through financial literature, ownership is an underlying determinant of payment methods.

5.3 Other relevant studies

Financial literature and theory suggest that synergies drive takeover premiums. Nevertheless, why companies do not announce these synergies has yet to be examined. Dutordoir et al. (2014) examine the motives behind acquirers' announcement of synergy forecasts during M&A. Their research consists of a sample of 1990 deals, of which 345 announce synergy forecasts. The impact of the synergy announcement on acquirers' stock returns is negative. This suggests that synergy announcements act as a signal mechanism to bridge the information gap between acquirers' management and shareholders regarding the potential synergy value associated with M&A deals. In addition, the study investigates whether the announcement of synergies affects transaction

prices and overall competition for the target company. Results indicate no significant impact of synergy announcements on takeover premiums or competition. Hence, it is more important that management evaluates synergies carefully rather than seeking approval from the stock market. The research contributes to understanding the determinants and consequences of voluntary synergy announcements, opening management motivations, and market responses.

Sonenshine and Reynolds (2014) examine the relationship between takeover premiums and the execution of cross-border mergers. The research finds a positive correlation between ownership percentage and the takeover premium. However, an even stronger correlation occurs when the target operates in an emerging market. The study recognizes specific characteristics with significant relationships between premiums, such as deal value and total assets. However, limitations occur as this study discusses cross-border deals; therefore, the implications may differ from domestic deals.

Ferris et al. (2013) examine whether the executives' biases can explain value creation or destruction. Overconfident executives may destroy shareholders' value as overconfident CEOs may pay too much for the deal or execute deals too often. Thus, these two may impact negatively on shareholders' value. Overconfident CEOs tend to overestimate their abilities to generate returns and, therefore, tend to overpay for a target company. CEOs' overconfidence impact on value creation is most significant if a deal does not require external financing. Hence, the cash payment method increases the possible overpayment. CEOs do not have to worry about external risk, so overconfidence rises. Agency theory supports CEO's overconfidence as they act as agents and shareholders as principals. The CEO's incentives can encourage irrational actions, and therefore, value is destroyed. Mitigating conflicts through shareholder activism and solid corporate governance can prevent overpayment and either take down the deal or pay the appropriate price.

6 Data and methodology

This section presents the data and the methodologies used in the empirical research. First, the source and selection of data are presented, and finally, methodologies and variables are discussed comprehensively.

6.1 Data

The data for this research is collected from the Bloomberg database. The Bloomberg mergers and acquisitions database offers dependable, relevant, and observable data from transactions with multiple different screening options and variables. The initial data sample consists of 4049 deals completed between 1996 and 2019 in the United States. The country-specific data was selected due to data quality and credibility. In addition, various previous research uses data from the United States because of its quality and the fact that it represents the world's largest M&A market. However, data from emerging markets or Europe could have provided new perspectives and instincts to the financial literature.

The criteria for the data of this research are based on observations and analyses of previous literature. The first criterion is the data range. Andrade et al. (2001) examine the reasons for merger and acquisition waves and cycles, and previous literature recognizes specific periods where the number of deals is significantly higher. Hence, this study observes deals announced between 1996 and 2019. The period includes M&A waves and market crashes; thus, specific events do not significantly affect the results. The deals accepted in the sample are where the ownership of the acquiring company is less than 50% before the deal and over 50% after the transactions. Hence, the acquirer has majority ownership after the transaction, which is considered an acquisition (Brealey et al., 2023, p. 936). The criteria for the transaction size are over 20 million due to the data quality. Significantly smaller deals only provide data for some variables, and thus, those are rejected from the sample. Payment types are cash, stock, and a mix of cash and stock. This allows for examining whether specific payment methods impact

takeover premiums and what determines payment methods. The financial sector is excluded from the sample due to its unique regulations and substantially varying company profiles. Moreover, the acquirer and the target are publicly listed companies in the United States because measuring the takeover premium for private companies is complex. In addition, data quality is ensured for public companies. These screenings aim to collect a comprehensive sample of deals from various industries within a broad timeframe.

6.1.1 Descriptive statistics

Descriptive statistics based on the variables of this research are presented in Table 1. The initial sample is adjusted as only the transactions that contain all the selected variables are accepted for the final sample. After the adjustments, the final sample consists of 531 deals. An average takeover premium of 38.24% is equal to the finding by Laamanen (2007) of average premiums between 30% and 50% in the United States. However, takeover premium variation is significant as the range between the highest and lowest measured premium is substantial at 374.15%. Notably, substantial low premiums occur in the data sample. A minimum premium of -84.66% is significant as it indicates that the target is acquired over six times less than its market value. An important observation from descriptive statistics is that the mean return on assets is negative, supporting the hypotheses of this study, which states a negative correlation between profitability and premium.

Table 1 Descriptive statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
Premium	531	38.24	35.89	-84.66	289.49
Target Leverage	531	2.69	2.94	1.03	36.22
Target ROA	531	-2.38	20.38	-127.33	51.23
Target FCF	531	120.18	523.79	-2053	5083.9
Target EPS	531	.68	2.47	-18.11	12.8
Target Size	531	4090.1	9878.35	1.5	85694
Acquirer Leverage	531	4.23	17.24	1.05	383.71
Acquirer FCF	531	4185.21	8780.51	-36948	69495
Acquirer Size	531	108928.43	258708.82	342.98	2794730
Acquirer P/E	531	30.87	37.2	3.51	300.4
Acquirer P/B	531	7.69	26.01	.34	329
Relative Size	531	582.66	2987.8	.13	46978.62
Analysts	531	21.21	11.24	1	68
Ownership	531	85.15	20.7	8.86	128.38
Cash	531	.72	.45	0	1
Stock	531	.15	.36	0	1
Mixed	531	.13	.33	0	1

Further notable is that the *Ownership* variable, a proxy of a portion of institutional investors from outstanding shares, is higher than 100%. In theory, the ownership percentage of shares outstanding should not exceed 100%. However, there are situations where the reported ownership percentage is higher. Institutional ownership data can include shares that are loaned out for short-selling purposes, and therefore, both the original owner and the borrower can be counted as owners. Other explanations can be found in options and derivatives. Ownership percentage can be distorted by the options and derivatives that are converted into shares, and these instruments may not be counted accurately in ownership, leading to an exceeded percentage.

Appendix 1 presents variables where all the continuous variables are natural logarithms. The number of analysts is not a logarithmic as it does not receive fractions but only integers. The explanation for presenting both raw and logarithmic values is the relatively high deviation in some variables, and logarithmic values are more accessible to interpret as normalized distributions. Compared to raw values, logarithmic data indicates equivalent information from the variables. Size variables represent the highest deviations and ranges, which provides exciting insight for this research as different size transactions and companies are analysed.

Appendix 2 shows summary statistics of variables in cash payments. Cash payments represent a substantial proportion of transactions. The average takeover premium is significantly higher than for other payment methods. Simonyan (2014, p. 99) provides supporting findings for this observation, as the study argues that high takeover premiums are associated with cash payments due to shareholders' immediate tax liability. Target return on assets and acquirer price to earnings have significant spreads compared to other variables. Appendix 3 reports summary statistics of variables on stock payments. Notably, the acquirer's mean size seems significantly lower in stock payments than others. According to Bebenroth and Ahmed (2021), smaller companies may have difficulty accessing debt markets and prefer stock payments. Appendix 4 shows summary statistics of variables on mixed payments. In stock and mixed payments, the mean return on assets is positive, unlike in cash payments. Further, the deviation of return on asset is significantly lower in stock and mixed payments compared to cash. This indicates that cash payment provides liquidity to target shareholders under uncertainty, and if the target is struggling to generate income, cash provides immediate value realization. The mean relative size is significantly greater in cash payments than in stock and mixed payments. Ismail and Krause (2010) find supporting results as they state that acquirers of relatively the same size as targets prefer to make stock payments.

6.2 Methodology

This research uses a statistical method called multiple linear regression to examine whether there is a relationship between different factors. The research uses ordinary least square regression to estimate parameters in the linear regression model. This method calculates the difference between the observed values of the dependent variable and the values expected by the regression model by minimizing the sum of the squares of the differences between the observed values of the dependent variable in the sample and the predicted values by the regression model. To analyze payment method determinants and their relationship with the deal and firm characteristics, the research used logistic regression as dependent variables are binary. It is important to

note that significant outliers can impact model significance and reliability. Hence, all continuous variables are winsorized at the 1% and 99% levels to address this issue.

6.2.1 The determinants of takeover premiums

The dependent variable of the first regression is the takeover premium, and the independent variables are the firm and deal characteristics based on previous literature. The payment method is observed as a dummy variable, whether cash, stock, or mixed-method; the dummy variable receives a value of 1 if the payment method is specific and 0 if it's not. The regression model for the first part of the research is as follows:

$$Premium = \beta_0 + \beta_1 Target\ Leverage + \beta_2 Target\ ROA + \beta_3 Target\ FCF + \beta_4 Target\ EPS + \beta_5 Target\ Size + \beta_6 Acquirer\ Leverage + \beta_7 Acquirer\ FCF + \beta_8 Acquirer\ Size + \beta_9 Acquirer\ P/E + \beta_{10} Acquirer\ P/B + \beta_{11} Relative\ Size + \beta_{12} Cash + \beta_{13} Stock + \beta_{14} Mixed + \varepsilon, \quad (2)$$

where *Premium* is the takeover premium, representing the difference between the price paid for the transaction and the share before the announcement. *Target Leverage* is the target company's financial leverage measured as total debt over total assets. *Target ROA* is the target company's return on assets. Return on assets is used as a proxy to measure profitability by de La Bruslerie (2013) and is preferred over return on equity. *Target FCF* is the natural logarithm of the target company's free cash flow. *Target EPS* represents the target company's earnings per share, measuring profitability. *Target Size* is the natural logarithm of the target company market value of equity. *Acquirer Leverage* is the financial leverage of the acquirer measured total debt over total assets. *Acquirer FCF* is the natural logarithm of the acquirer's free cash flow. *Acquirer Size* is the natural logarithm of the acquirer market value of equity. *Acquirer P/E* is the price-to-earnings ratio, which Eichner (2019) uses as a proxy for valuation and information asymmetry. *Acquirer P/B* is a price-to-book value ratio. Two different valuation metrics are used because they vary in their structure. *Relative Size* is the acquirer market value of equity over the target market value of equity used as a

proxy to measure the relativeness of the acquirer and the target (Ismail & Krause, 2010). *Analysts* are the number of analysts recommended to the acquirer one year before the announcement date. According to Karampatsas et al. (2014, p. 482), analysts' recommendations decrease asymmetric information, and therefore, a negative correlation between premium and the number of recommendations is expected. *Ownership* is the percentage of institutional owners of acquirer shares outstanding. *Cash* is the dummy variable, receiving 1 if the payment is total cash and 0 if otherwise. *Stock* is the dummy variable with the same structure. *Mixed* is the dummy variable measuring mixed payment method.

6.2.2 The determinants of payment method

This section consists of the determinants of payment methods. The purpose is to test hypotheses 5, 6, and 7. The payment methods are binary variables as the data provides information for the payment method in the specific transaction. Thus, each dependent variable receives 1 if the payment method is used and 0 if otherwise. Logistic regression is suitable for binary dependent variables to examine payment methods as it provides probabilities for outcomes, which can be a measure of confidence in predictions. Hence, the logistic regression is as follows:

$$Payment\ Method = \beta_0 + \beta_1 Target\ Leverage + \beta_2 Target\ ROA + \beta_3 Target\ FCF + \beta_4 Target\ Size + \beta_5 Acquirer\ Leverage + \beta_6 Acquirer\ FCF + \beta_7 Acquirer\ Size + \beta_8 Acquirer\ P/E + \beta_9 Acquirer\ P/B + \beta_{10} Relative\ Size + \beta_{11} Analysts + \beta_{12} Ownership + \beta_{13} Premium, \quad (3)$$

where the *Payment Method* represents the probability that the payment dummy variable equals 1 given the values of the independent variables. *Payment Method* dummy is either cash, stock, or mixed, and each payment method is tested, respectively. *Target Leverage* is the financial leverage of the target company measured as total debt over total assets. *Target ROA* is the target company's return on assets. *Target FCF* is the natural logarithm of the free cash flow of the target company. *Target Size* is the natural

logarithm of the target market value of equity. *Acquirer Leverage* is the financial leverage of the acquirer proxied as total debt over total assets. *Acquirer FCF* is the natural logarithm of the acquirer's free cash flow. *Acquirer Size* is the natural logarithm of the acquirer's market value of equity. *Acquirer P/E* is the acquirer's price-to-earnings ratio. Yook et al. (1999) argue that asymmetric information impacts the choice of payment method, and they use valuation metrics to proxy asymmetric information. *Acquirer P/B* is the price-to-book ratio of the acquirer used to measure asymmetric information. *Relative Size* is the acquirer's market value of equity over the target market value of equity. According to Ismail and Krause (2010), relative size drives companies to use stock or mixed payments, as having such large cash reserves may be challenging. Thus, it is expected that relative size negatively correlates with cash payment. *Analysts* are the number of analysts' recommendations from the acquirer one year before the announcement date. Karampatsas et al. (2014) use this as a proxy for asymmetric information and state that more analysts' recommendations reduce asymmetric information. *Ownership* is a percentage of institutional owners of acquirers from outstanding shares, motivated by Faccio and Masulis (2005), who found that majority controls use the cash method to maintain control. However, the data is limited in recognizing the number of institutional investors; therefore, no majority can be obtained. However, this research uses this proxy to measure whether there is statistical significance between payment method and institutional ownership. *Premium* is the takeover premium proxied as purchase price over target market value. High premiums are expected to be paid in cash (de La Bruslerie, 2013).

7 Empirical results

This part of the study presents the empirical results and discusses their relevance and relationship with the theoretical framework. The first part of the model uses takeover premium as the dependent variable. The determinants and implications are discussed further. The second model is logistic regression, which measures the determinants of payment methods.

7.1 The determinants of takeover premiums

This section presents empirical results for determinants of takeover premiums. First, the correlation matrix is presented and discussed briefly. Further, the regression results regarding the takeover premium are presented and discussed comprehensively. The correlation matrix for Panel A is presented in Table 2. Consistent with the expected results, *Target Leverage* negatively correlates with *Premium* being aligned with the hypothesis of this research. *Target ROA* is negatively correlated with premium, as it is expected. Consequently, this indicates that highly profitable companies' prices may already be high or lack growth opportunities; therefore, premiums remain low. In addition, *Target EPS* negatively correlates with *Premium*, making robust evidence for the negative relationship between profitability and takeover premium, as Dimopoulos and Sacchetto (2014) suggest. *Target FCF* negatively correlates with the premium being contradicted by expected results. According to Ayers et al. (2003), Bugeja and Walter (1995), and Lehn and Paulsen (1989), a target company's high free cash flow increases the premium. However, their studies show that acquirer free cash flow increases the premium, and a positive correlation between *Acquirer FCF* and *Premium* is recorded.

The negative correlation between *Acquirer Leverage* and P*remium* is expected, as the acquirer can pay a higher premium with higher financial capacity. However, correlations are substantially low. *Acquirer Size* has a positive with *Premium,* as expected. *Acquirer P/E* and *P/B* have slightly positive correlations with *Premium* and are therefore consistent with expected results, as overvalued companies may be overcon-

fident about paying high premiums. Notably, a couple of variables correlate strongly with each other. *Acquire Size* and *Acquirer FCF* have a positive correlation of 0.848. This can be explained by the fact that larger companies thus have high free cash flow and vice versa. *Acquirer P/B* and *Acquirer Leverage* have a strong positive correlation of 0.712. This indicates that overvalued companies use financial leverage to grow.

Table 2 Correlation matrix (Panel A).

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) Premium	1.00														
(2) Target Leverage	-0.07	1.00													
(3) Target ROA	-0.44	0.04	1.00												
(4) Target FCF	-0.19	0.21	0.11	1.00											
(5) Target EPS	-0.34	0.03	0.54	0.40	1.00										
(6) Target Size	-0.26	0.10	0.26	0.83	0.45	1.00									
(7) Acquirer Leverage	-0.01	0.17	0.00	-0.01	-0.00	-0.00	1.00								
(8) Acquirer FCF	0.08	0.03	-0.09	0.32	0.09	0.35	0.09	1.00							
(9) Acquirer Size	0.16	-0.04	-0.15	0.24	0.02	0.30	0.03	0.85	1.00						
(10) Acquirer P/E	0.14	-0.08	-0.06	-0.08	-0.06	-0.03	-0.05	-0.07	0.08	1.00					
(11) Acquirer P/B	0.06	-0.01	-0.05	-0.09	-0.06	-0.07	0.71	0.13	0.26	0.12	1.00				
(12) Relative Size	0.34	-0.11	-0.33	-0.64	-0.36	-0.81	0.04	0.07	0.19	0.05	0.19	1.00			
(13) Stock	-0.17	0.06	0.08	0.14	0.04	0.14	0.02	-0.13	-0.14	-0.04	-0.03	-0.19	1.00		
(14) Cash	0.25	-0.09	-0.17	-0.32	-0.24	-0.35	-0.01	0.11	0.13	0.03	0.05	0.33	-0.68	1.00	
(15) Mixed	-0.15	0.05	0.14	0.28	0.27	0.32	-0.01	-0.00	-0.03	-0.01	-0.04	-0.24	-0.16	-0.61	1.00

Regression results for takeover premiums are presented in Table 3. Ayers et al. (2003), Lehn and Poulsen (1989), and Bugeja and Walter (1995) suggest that target free cash flow positively correlates to the takeover premium due to financial capacity. However, no statistical significance or consistent relationship is found in the models. This can be explained by supporting findings being recorded approximately 30 years ago. Substantially older studies may receive different results as companies conserve financial capacity more these days. Moreover, no statistical significance occurs for *Acquirer FCF;* thus, the first hypothesis is rejected. According to Dimopoulos and Sacchetto (2014), the target company's profitability is associated with lower takeover premiums. *Target ROA* has a negative relationship with *Premium*, which is statistically significant in all models at a 1% level. Target company earnings per share are significant in models (1)

and (3). However, the coefficient is negative in all models, and thus, target profitability and takeover premium have a negative relationship, as stated. These results can be explained by the fact that already highly profitable companies have lower growth potential, and assets are already efficiently used. In addition, acquirers may be concerned about valuation errors and uncertainty. Based on this robust evidence, hypothesis two of this research is confirmed.

Previous studies by Bebenroth and Ahmded (2021) argue that acquirers' high leverage negatively correlates with takeover premiums and targets low leverage to increase the premium. The regression finds no statistical significance in any of the models for both targets and acquirers' leverage and thus, no statistical significance is found; therefore, hypothesis three is rejected. The results can be explained by the fact that the market may not perceive leverage as a significant risk factor if the M&A strategy is reliable and the company is overall stable. Supporting findings for negative and significant results between *Target Size* and *Premium* by Alexandridis et al. (2017) find that large companies receive lower premiums than smaller companies. However, *the Target Size* is only statistically significant in model (1). Despite weak evidence of size factor, *Relative Size* has positive and significant results in all models, indicating that the premium is lower if the acquirer and the target are relatively the same size.

A positive relationship between acquirer valuation and takeover premium, suggested by Bessler and Schneck (2015), states that management performance before acquisitions impacts the premium. Moreover, Adrade et al. (2001) show that an acquirer with a high valuation is prone to use stock as payment and utilize valuation to offer a higher premium. *Acquirer P/E* is positive and statistically significant in all models, indicating that highly valued acquirers pay higher premiums. However, *Acquirer P/B* does not have significant or positive results. This contradicting finding limits the credibility of the results. However, price to earnings represents better performance as it is measured as market value over net income. Thus, based on these results, hypothesis four is accepted as acquirer valuation has a positive relationship with takeover premiums.

Table 3 Regression results for takeover premium (Panel A).

	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4	(5) Model 5	(6) Model 6
Target Leverage	-.466		-.304	-.011		-.005
	(-.934)		(-.604)	(-.656)		(-.285)
Target ROA	-.568***		-.483***	-.012***		-.009***
	(-7.479)		(-6.284)	(-4.579)		(-3.482)
Target FCF	-.013		.177	-.009		-.008
	(-.011)		(.153)	(-.231)		(-.213)
Target EPS	-1.233*		-1.357*	-.029		-.034
	(-1.714)		(-1.878)	(-1.19)		(-1.375)
Target Size	-1.975*		-.847	-.032		.009
	(-1.73)		(-.415)	(-.832)		(.132)
Acquirer Leverage		.201	.163		.001	0
		(.413)	(.35)		(.093)	(.013)
Acquirer FCF		-.44	.102		0	.012
		(-.294)	(.072)		(-.008)	(.257)
Acquirer Size		2.286	1.765		.071	.051
		(1.338)	(.939)		(1.27)	(.785)
Acquirer P/E		.107***	.094***		.003**	.002**
		(2.951)	(2.749)		(2.221)	(2.017)
Acquirer P/B		-.181	-.126		-.008	-.007
		(-.978)	(-.717)		(-1.272)	(-1.084)
Relative Size		15.596***	7.237		.37***	.246
		(7.676)	(1.469)		(5.565)	(1.452)
_cons	51.6***	-12.799	9.048	3.561***	1.875***	2.201***
	(9.902)	(-1.282)	(.675)	(19.996)	(5.737)	(4.788)
Observations	531	531	531	531	531	531
R-squared	.219	.141	.256	.097	.089	.133

In models 1 – 3, the dependent variable is the takeover premium, and for models 4 – 6, the natural logarithm of the takeover premium. The dependent variable in models 7 – 9 is takeover premium as payment methods are tested. Models 1 and 4 are regressing target characteristics based on synergy theory. Models 2 and 5 regress the acquirer characteristics and relative size. In models 3 and 6, all the variables are tested. Models 7 – 9 regress all the characteristics, each with different payment methods: cash, stock, and mixed. T-values are in parentheses. Statistical significance is presented ***, **, * at 1%, 5%, and 10% levels, respectively.

The regression model continues in Table 4, which presents all the variables enriched by payment methods to determine whether there is a relationship between premiums

and payment methods. A significant finding is a positive relationship between cash payments and takeover premiums. In model (7), *Cash* and *Premium* have a significant positive relationship. This result supports the finding by Simonyan (2014) that target shareholders require higher premiums in cash payment due to tax liability. Moreover, *Stock* has a negative and significant relationship in the model (8), indicating that acquirers hold for a high premium in terms of stock payment. This can be explained by additional costs and risks, including the stock payment method, as the acquiring company issues new shares to finance and thus dilutes the ownership of existing shareholders. In addition, market reaction may be adverse and depress the stock price. According to regression results, cash and stock payments have inverse results and can be considered substitutes for each other. Ismail and Krause's (2010) consistent findings support the idea that stock payment has a negative and significant relationship with premiums. Also, the pecking order theory proposes that the acquirers prefer to use cash over equity and, thus, are more willing to pay extensive premiums. These results are supported by financial theories, previous findings, and the fifth hypothesis of this research, which states that cash payments include higher premiums.

In model (9), the mixed payment method has a negative relationship with takeover premiums even though the statistical significance is not recorded. Trade-off theory suggests that companies balance their optimal capital structure and financing costs. Hence, the acquirer refrains from paying extensive premiums in mixed payments because of the possible costs of equity and debt. Mixed payment methods have been studied less in previous literature, and thus, consistent results are not recognized. Correlations and frequency of payment methods indicate that the acquirer is likely to pay higher premiums for cash payments than stock or mixed payments. Further, payment methods are exclusively examined in the second part of this research.

Table 4 Regression results for takeover premium (Panel A continues).

	(1) Model 7	(2) Model 8	(3) Model 9
Target Leverage	-.25	-.276	-.294
	(-.501)	(-.551)	(-.583)
Target ROA	-.476***	-.475***	-.484***
	(-6.227)	(-6.2)	(-6.288)
Target FCF	.316	.337	.168
	(.274)	(.291)	(.145)
Target EPS	-1.33*	-1.485**	-1.294*
	(-1.853)	(-2.06)	(-1.781)
Target Size	.604	-.489	-.404
	(.29)	(-.24)	(-.193)
Acquirer Leverage	.147	.181	.149
	(.318)	(.391)	(.32)
Acquirer FCF	-.247	-.188	.079
	(-.175)	(-.133)	(.056)
Acquirer Size	1.026	1.589	1.536
	(.545)	(.85)	(.81)
Acquirer P/E	.092***	.091***	.094***
	(2.73)	(2.686)	(2.763)
Acquirer P/B	-.111	-.123	-.121
	(-.635)	(-.704)	(-.689)
Relative Size	9.617*	7.595	8.058
	(1.939)	(1.549)	(1.608)
Cash	8.608***		
	(2.915)		
Stock		-8.533**	
		(-2.525)	
Mixed			-3.502
			(-.904)
_cons	-1.226	10.803	7.65
	(-.089)	(.809)	(.567)
Observations	531	531	531
R-squared	.268	.265	.257

In models 1 – 3, the dependent variable is the takeover premium, and for models 4 – 6, the natural logarithm of the takeover premium. The dependent variable in models 7 – 9 is takeover premium as payment methods are tested. Models 1 and 4 are regressing target characteristics based on synergy theory. Models 2 and 5 regress the acquirer characteristics and relative size. In models 3 and 6, all the variables are tested. Models 7 – 9 regress all the characteristics, each with different payment methods: cash, stock, and mixed. T-values are in parentheses. Statistical significance is presented ***, **, * at 1%, 5%, and 10% levels, respectively.

7.2 The determinants of payment method

In this section, the research focuses on the determinants of payment methods. Each payment method is tested individually and discussed. The correlation matrix of payment methods and variables is presented and discussed before the regression analysis results. The correlation matrix is presented in Table 5. Consistent with the expected results, takeover premium, and cash payment have a positive correlation even though it is moderate. Contradicting this research's hypotheses, information asymmetry proxied by acquirer valuation and analysts' recommendations has a low positive correlation with cash payment. In addition, according to Boateng and Bi (2014), high-valued acquirers use stock payment over cash. However, contradicting the higher valuation correlates positively with cash payment. *The Relative Size* variable has a moderate positive correlation with cash payment consistently with expected results. Bebenroth and Ahmed (2021) state that the relative size target is preferably acquired with stock rather than cash, as the acquirer may have liquidity issues. Few high correlations occur between variables. Predictably, *Target Size* and *Acquirer Size* correlate strongly with *Target FCF* and *Acquirer FCF*, respectively. In addition, *Analysts* correlate strongly with *Acquirer Size,* indicating that larger companies receive more recommendations from analysts. The robust correlation recorded between *Acquirer P/B* and *Acquirer Leverage* can be explained by the fact that companies with higher business risk often have higher leverage ratios. However, *the Acquirer P/E* ratio correlates -0.05 with leverage, suggesting no significant relationship.

The correlations between stock payment and variables are mainly consistent with the expected results, as *Acquirer Size* and *Premium* have a negative relationship with stock payment. According to previous literature, smaller companies are prone to use stock as a payment due to liquidity problems. In addition, target shareholders require a lower premium for stock payment regardless of its uncertainty and liquidity. *Acquirer Leverage* has a slightly positive correlation with stock payment, suggesting that more leveraged companies tend to use stock, which is consistent with the trade-off theory. With high leverage, the acquirer's debt cost may rise significantly, and the risk of default in-

creases; thus, equity financing is an efficient choice. Contradicting the cash payment, all target characteristics results have a positive correlation. Hence, targets with a high return on assets and free cash flow are more likely to be purchased with stock, indicating that the acquirer tends to pay with stock to avoid paying the high premium associated with the cash payment method. However, contradicting results for information asymmetry as *Acquirer P/E* and *Acquirer P/B* correlate slightly negatively with *Stock.* According to Boateng and Bi (2014), an overvalued acquirer uses its stock as a payment, taking advantage of a high valuation. Mixed payment has similar correlations to the stock method. However, the data is limited to observing the portion of cash and stock in mixed payments, but regarding results, a significant portion is more likely to be paid with stock than cash. According to Ismail and Krause (2010), mixed payment is considered a complex and less-used method.

Table 5 Correlation matrix for payment methods.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) Cash	1.00															
(2) Stock	-0.68	1.00														
(3) Mixed	-0.61	-0.16	1.00													
(4) Target Leverage	-0.09	0.06	0.05	1.00												
(5) Target ROA	-0.17	0.08	0.14	0.04	1.00											
(6) Target FCF	-0.32	0.14	0.28	0.21	0.11	1.00										
(7) Target size	-0.35	0.14	0.32	0.10	0.26	0.83	1.00									
(8) Acquirer Leverage	-0.01	0.02	-0.01	0.17	0.00	-0.01	-0.00	1.00								
(9) Acquirer FCF	0.11	-0.13	-0.00	0.03	-0.09	0.32	0.35	0.09	1.00							
(10) Acquirer size	0.13	-0.14	-0.03	-0.04	-0.15	0.24	0.30	0.03	0.85	1.00						
(11) Acquirer P/E	0.03	-0.04	-0.01	-0.08	-0.06	-0.08	-0.03	-0.05	-0.07	0.08	1.00					
(12) Acquirer P/B	0.05	-0.03	-0.04	-0.01	-0.05	-0.09	-0.07	0.71	0.13	0.26	0.12	1.00				
(13) Relative size	0.33	-0.19	-0.24	-0.11	-0.33	-0.64	-0.81	0.04	0.07	0.19	0.05	0.19	1.00			
(14) Analysts	0.08	-0.07	-0.03	-0.00	-0.20	0.26	0.28	-0.04	0.70	0.81	0.16	0.16	0.11	1.00		
(15) Ownership	-0.20	0.12	0.14	0.05	0.12	-0.04	-0.07	0.04	-0.29	-0.23	0.03	0.04	-0.03	-0.18	1.00	
(16) Premium	0.25	-0.17	-0.15	-0.07	-0.44	-0.19	-0.26	-0.01	0.08	0.16	0.14	0.06	0.34	0.12	-0.13	1.00

Table 6 shows the regression results for cash payments. The first model considers determinants of cash payments in terms of pecking order and trade-off theory. According to the pecking order theory, companies prefer to finance investments by cash, and the trade-off theory states that a company optimizes its capital structure by balancing financing costs. Hence, leverage ratios and cash flows are expected to determine payment methods. However, neither *Acquirer Leverage* nor *Target Leverage* has statistical

significance, and thus, results do not align with the trade-off theory. In model (1), *Acquirer FCF* has a positive and statistically significant relationship *with Cash,* confirming the pecking order theory. The takeover premium determines cash payment as *Premium* has a positive and statistically significant relationship with *Cash* in models (2) and (3) at a 1% level. This result suggests that a high premium increases the likelihood of cash payment, and it is consistent with previous findings from Simonyan (2014); therefore, hypothesis five of this research is accepted. Substantial evidence is recorded for *Target Size* as it is negative and significant in models (1) and (3). This is supported by the trade-off theory, which states that companies make financing decisions by balancing the benefits and costs of financing choices. Thus, acquiring a smaller target is expected to be more efficient financing with cash than stock. *Relative Size* has statistically significant results in models (2) and (3). However, the contradicting result is based on the coefficient, which is positive in the model (2) but in the model (3) negative. This inconsistency may be due to other variables in the model (3) strongly correlated with the *Relative Size* variable. Thus, assuming that R*elative Size* has a positive relationship with the likelihood of cash payment, the acquirer is more prone to use stock or mixed payments if the target company's size is relative. Based on moderate evidence regarding the size of the companies, hypothesis six is speculative.

Table 6 Regression results for cash payment (Panel B).

	(1) Model 1	(2) Model 2	(3) Model 3
Target Leverage	-.03		-.022
	(-.699)		(-.504)
Target ROA	-.011		-.002
	(-1.38)		(-.275)
Target FCF	-.133		-.076
	(-1.167)		(-.646)
Target Size	-.519***		-.918***
	(-4.286)		(-4.604)
Acquirer Leverage	.006		.01
	(.152)		(.252)
Acquirer FCF	.286**		.215
	(2.239)		(1.602)
Acquirer Size	.235		.479**
	(1.642)		(2.45)
Acquirer P/E	.001		.001
	(.451)		(.246)
Acquirer P/B	-.012		-.007
	(-.794)		(-.452)
Relative Size		1.845***	-1.434***
		(6.137)	(-2.856)
Analysts		-.005	-.01
		(-.479)	(-.544)
Ownership		-.024***	-.023***
		(-3.873)	(-3.405)
Premium		.017***	.018***
		(3.324)	(3.104)
_cons	.681	-.348	5.16***
	(.795)	(-.458)	(3.184)
Observations	531	531	531
Pseudo R^2	.192	.185	.242

The dependent variable in all models is the dummy cash variable, which receives 1 if payment is all-cash and 0 if payment is not all-cash. The model is based on pecking-order and trade-off theory emphasizing target and acquirer characteristics. Model 2 tests asymmetric information and ownership as well as deal characteristics. Model 3 tests all variables. Z-values are in parentheses. Statistical significance is presented ***, **, * at 1%, 5%, and 10% levels, respectively.

Table 7 reports regression results for stock payments. The results are consistent with cash payment, which is expected to be an alternative to stock payment. *Acquirer FCF* has a significant and negative relationship with stock payment. This result is consistent with findings from regression on cash payment and previous findings by Ayers et al. (2003). They find that an acquirer with high free cash flow reduces the stock payment. *Relative Size* in the model (2) has a negative relationship with *Stock* and statistical significance. The result matches the cash payment regression model and the

previous literature; as Ismail and Krause (2010) state, transactions between companies of a relative size are paid with stocks. Relative sizes push the acquirer to use stock payment because acquiring a company of a relative size requires significant cash reserves. These results support hypothesis six.

Premium has a negative relationship with stock payment. Results are significant at the 5% level and thus further strengthen hypothesis four confirming. The high takeover premium decreases the likelihood of stock payment; therefore, cash is expected to be used. In addition, Panel B and previous findings by Simonyan (2014) and de La Bruslerie (2013) support this result. *Acquirer Size* needs more robust evidence to explain the stock payment. Both models have a positive relationship, but only model (1) is statistically significant. However, larger companies are expected to have better access to the debt markets and prefer to use cash. Model (2) reports that company ownership has a significant and positive relationship with stock payment. The result indicates that many institutional investors explain the stock payment. According to Faccio and Masulis (2005), significant owners are expected to value the control, but the data is limited in determining the number of institutions, and thus, the result is speculative.

Table 7 Regression results for stock payment (Panel C).

	(1) Model1	(2) Model2	(3) Model3
Target Leverage	.031		.02
	(.656)		(.403)
Target ROA	.003		-.003
	(.4)		(-.364)
Target FCF	.125		.113
	(.95)		(.819)
Target size	.244*		.152
	(1.81)		(.645)
Acquirer Leverage	.01		.021
	(.221)		(.464)
Acquirer FCF	-.287**		-.277**
	(-2.104)		(-1.982)
Acquirer size	-.134		-.174
	(-.856)		(-.787)
Acquirer P/E	-.003		-.003
	(-.772)		(-.774)
Acquirer P/B	.007		.001
	(.412)		(.076)
Relative size		-1.026***	-.192
		(-3.332)	(-.281)
Analysts		-.003	.03
		(-.213)	(1.44)
Ownership		.015**	.01
		(2.13)	(1.438)
Premium		-.015**	-.016**
		(-2.544)	(-2.52)
_cons	-.535	-.848	-.19
	(-.553)	(-.98)	(-.103)
Observations	531	531	531
Pseudo R^2	.085	.089	.112

The dependent variable in all models is the dummy stock variable, which receives 1 if payment is all-stock and 0 if payment is not all-stock. The model is based on pecking-order and trade-off theory emphasizing target and acquirer characteristics. Model 2 tests asymmetric information and ownership as well as deal characteristics. Model 3 tests all variables. Z-values are in parentheses. Statistical significance is presented ***, **, * at 1%, 5%, and 10% levels, respectively.

The last regression of this research is presented in Table 8, which provides mixed payment method results. Firstly, strong evidence is reported from *Target Size* as it receives positive and significant results. The acquirer may need help with cash reserves and liquidity regarding a large target; similarly, a large amount of new stock issuing would negatively impact the acquirer, and therefore, the acquirer prefers mixed payment. In contrast to other regressions for payment methods, *Premium* does not report signifi-

cant results for mixed payments. *Relative Size* has significant results in models (2) and (3). However, contradictory results between models as model (2) suggests a negative relationship and model (3) a positive one. *Ownership* is statistically significant and positive in models (2) and (3), suggesting that high institutional ownership increases the likelihood of mixed payment. Previous literature by Faccio and Masulis (2005) supports this, stating that significant owners prefer cash to maintain control. However, the result is speculative and limited because the majority and proportion of cash and stock in payment remains to be seen. *Acquirer Size* has a negative and significant relationship in the model (3). The same model results positive and significant results regarding *Relative Size*. This is consistent*,* suggesting that relatively larger acquirers use mixed methods, and conversely, large acquirers decrease the probability of mixed payment as cash is used. Based on these results, hypothesis six is confirmed as acquirer and target size determines payment method choice. However, inconsistent findings suggest that further examinations are needed.

Table 8 Regression results for mixed payment (Panel D).

	(1) Model 1	(2) Model 2	(3) Model 3
Target Leverage	.022		.023
	(.386)		(.395)
Target ROA	.022		.015
	(1.593)		(.975)
Target FCF	.023		-.053
	(.149)		(-.346)
Target Size	.665***		1.247***
	(3.919)		(4.788)
Acquirer Leverage	-.035		-.046
	(-.637)		(-.769)
Acquirer FCF	-.101		.02
	(-.624)		(.109)
Acquirer Size	-.302		-.528**
	(-1.588)		(-1.998)
Acquirer P/E	.001		.002
	(.199)		(.486)
Acquirer P/B	.017		.016
	(.879)		(.707)
Relative Size		-2.291***	2.175***
		(-4.824)	(3.342)
Analysts		.015	-.023
		(1.092)	(-.914)
Ownership		.023***	.03***
		(2.749)	(2.996)
Premium		-.011	-.01
		(-1.602)	(-1.36)
_cons	-3.163***	-.518	-10.862***
	(-2.682)	(-.48)	(-4.786)
Observations	531	531	531
Pseudo R^2	.186	.154	.237

The dependent variable in all models is the dummy mixed variable, which receives 1 if payment is mixed and 0 if payment is not mixed. The model is based on pecking-order and trade-off theory emphasizing target and acquirer characteristics. Model 2 tests asymmetric information and ownership as well as deal characteristics. Model 3 tests all variables. Z-values are in parentheses. Statistical significance is presented ***, **, * at 1%, 5%, and 10% levels, respectively.

Regardless of the trade-off theory and robust previous academic evidence of leverage impacting the choice of a payment method, no significant results are found from any models. In addition, according to previous findings by Karampatsas et al. (2014), information asymmetry is vital in determining payment methods. This research uses acquirers' valuation and analysts' recommendations as a proxy for asymmetric information. Acquirers' valuation is expected to increase information asymmetry and thus encourage cash payment. Analysts' recommendations for acquirers are expected to decrease

information asymmetry and favour stock payment. However, none of the models report significant information asymmetry results; thus, hypothesis seven is rejected. However, the result is consistent with Ismail and Krause (2010) arguing that information asymmetry does not explain payment methods. The explanation can be the limitation of data or selected variables used to measure information asymmetry.

8 Conclusions

This research focuses on determining whether specific firm and deal characteristics determine takeover premiums and payment methods by examining 531 transactions of publicly traded companies in the United States between 1998 and 2019. Previous literature proposes various determinations for takeover premiums and payment methods regarding financial theories such as synergy, pecking order, and trade-off theory. The prevailing market conditions have been widely examined, but the underlying determinants regarding specific deals and firm characteristics have remained relatively unstudied. However, financial literature suggests different characteristics determining takeover premiums and payment methods. Thus, this research, motivated by previous results, reveals interesting insights into the relationship between various factors, premiums, and payment methods.

The first regression analysis focuses on whether specific acquirer and target characteristics determine takeover premiums. Contrary to expectations from previous studies from Ayers et al. (2003), Bugeja and Walter (1995), and Lehn and Poulsen (1989), the results do not provide significant relationships between target free cash flow and premium. This lack of significance may indicate a change in corporate behaviour over time, as practices differ from those observed in earlier studies. In addition, previous results are limited in supporting this research as they were conducted a relatively long time ago. However, the negative relationship between target company profitability, proxied by return on assets, and takeover premiums is consistently significant across all models. Previous findings by Dimopoulos and Sacchetto (2014) establish this result's significance. This finding suggests that highly profitable target companies may receive lower premiums due to their perceived lower growth potential and already efficient asset utilization.

Furthermore, the examination reports on the impact of financial leverage on takeover premiums. Contrary to prior studies, which suggest a negative relationship between acquirers' high leverage and takeover premium, the regression finds no statistically

significant relationship between leverage and premiums for acquirers and targets. This finding challenges the prevailing sentiment and highlights the complexity of the relationship between leverage and characteristics. Regarding acquirer valuation, the research reveals robust evidence supporting a positive relationship between acquirers' price-to-earnings ratio and takeover premiums. Highly valued acquirers pay higher premiums, aligning with previous research from Bessler and Schneck (2015) and Andrade et al. (2001), suggesting that management performance and valuation impact premium levels. However, the lack of significant results for the acquirer price-to-book (P/B) ratio causes uncertainty and requires further research.

Moreover, the analysis explores the association between payment methods and firm and deal characteristics. Consistent with Simonyan (2014) and de La Bruslerie (2013), a positive relationship between cash payment and premiums indicates that acquirers tend to pay higher premiums when offering cash. The pecking order theory suggests that companies use cash, preferably, as a payment method. Robust results indicate that companies follow the pecking order, as robust evidence is found for acquirers with high free cash flow not using stock payment.

Further, the research finds explanations for payment methods. The results suggest that acquirer and target characteristics, such as relative size and ownership structure, impact the choice of payment method, highlighting the complexity of acquisition dynamics. Acquiring a relatively same-size company drives stock payment over cash because of difficulties obtaining extensive cash amounts. Large acquirers may have better access to debt markets and prefer cash payments. Consistent with the trade-off theory, the large target is more likely to be financed with mixed payment as the acquirer must balance financing choices to optimize capital structure. The importance of shareholders' action is highlighted as target shareholders rarely receive cash if institutional investors own a significant portion of shares outstanding.

Finally, this research contributes insights into the determinants of takeover premiums and payment methods in publicly traded companies' acquisitions. Some findings align with previous research, while others challenge prevailing views. The research highlights how corporate practices are constantly evolving and suggests that further research is needed to understand the changing determinants of takeover premiums, payment methods, and emerging trends such as digitalization and sustainability.

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Appendices

Appendix 1. Descriptive statistics of logarithmic variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Premium	531	3.31	1	-2.66	5.67
Target ROA	531	1.91	1.26	-6.57	4.85
Target Leverage	531	.76	.57	.03	3.59
Target FCF	531	3.41	1.97	-3.41	8.53
Target EPS	531	-.32	1.44	-6.41	2.9
Target Size	531	6.58	2	.4	11.36
Acquirer Leverage	531	1.01	.61	.05	5.95
Acquirer FCF	531	7.24	1.78	-.11	11.15
Acquirer Size	531	10.4	1.66	5.84	14.84
Acquirer P/E	531	3.13	.68	1.26	5.71
Relative Size	531	3.83	2.19	-2.04	10.76
Analysts	531	21.21	11.24	1	68
Ownership	531	4.4	.33	2.18	4.86
Cash	531	.72	.45	0	1
Stock	531	.15	.36	0	1
Mixed	531	.13	.33	0	1

Appendix 2. Summary statistics for variables in cash payment regression

	N	mean	sd	min	max
Premium	381	43.706	37.886	-22.11	289.49
Target Leverage	381	2.522	2.614	1.03	24.706
Target FCF	381	39.837	194.764	-2053	1329.44
Target Size	381	1945.361	4096.764	1.498	33147.9
Target ROA	381	-4.496	22.587	-127.335	51.234
Target EPS	381	.338	2.320	-18.11	10.864
Acquirer Leverage	381	4.493	20.168	1.053	383.706
Acquirer FCF	381	4374.47	9248.036	-36948	69495
Acquirer Size	381	121364.94	284318.914	545.173	2794730
Acquirer P/E	381	31.678	39.099	5.498	300.405
Acquirer P/B	381	7.899	25.157	.339	321.098
Relative Size	381	736.121	3403.630	.13	46978.621
Analysts	381	21.753	11.234	1	68
Ownership	381	82.512	21.936	8.859	126.671

Appendix 3. Summary statistics for variables in stock payment regression

	N	mean	sd	min	max
Premium	82	24.182	30.068	-84.66	146.36
Target Leverage	82	3.239	4.432	1.04	36.222
Target FCF	82	236.818	652.922	-1597	3538
Target Size	82	7070.507	14397.490	26.333	85694
Target ROA	82	1.332	12.885	-47.809	27.826
Target EPS	82	.973	2.732	-9.1	12.8
Acquirer Leverage	82	3.66	4.174	1.111	30.036
Acquirer FCF	82	2397.905	3857.452	-1943.12	19780
Acquirer Size	82	58510.834	105021.345	342.975	791409
Acquirer P/E	82	27.693	22.333	3.511	130.286
Acquirer P/B	82	8.532	36.203	.772	329.001
Relative Size	82	99.037	428.972	.168	3807.377
Analysts	82	19.439	12.088	1	61
Ownership	82	91.057	15.631	45.227	120.63

Appendix 4. Summary statistics for variables in mixed payment regression

	N	mean	sd	min	max
Premium	68	24.533	18.797	-59.41	82.16
Target Leverage	68	2.98	2.244	1.069	17.421
Target FCF	68	429.71	1135.395	-1668	5083.9
Target Size	68	12512.886	17807.122	7.23	70632.1
Target ROA	68	5.027	9.630	-48.704	24.159
Target EPS	68	2.275	2.339	-1.84	9.4
Acquirer Leverage	68	3.48	4.796	1.232	39.625
Acquirer FCF	68	5280.11	10073.821	-940	69495
Acquirer Size	68	100045.08	231438.070	1150.96	1740540
Acquirer P/E	68	30.161	40.687	5.593	241.232
Acquirer P/B	68	5.482	13.061	.794	103.303
Relative Size	68	306.06	2047.372	.387	16705.763
Analysts	68	20.279	10.059	1	65
Ownership	68	92.789	14.974	35.26	128.383