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# The Effect of Economic and Policy Uncertainty on Acquirers' M&A Performance by Method of Payment: Evidence from Norway

*An empirical analysis of acquirer cumulative abnormal returns*

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**Supervisor: Nataliya Gerasimova**

Master Thesis

MSc in Business, Major in Finance

BI NORWEGIAN BUSINESS SCHOOL

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# Abstract

This event study examines how economic and policy uncertainty affects acquirer firms' cumulative abnormal returns during an M&A announcement, with respect to payment methods. Using a sample of 700 announcements in Norway from 1996-2022, our evidence indicates significant importance in dividing the payment methods. Acquiring firms tend to use stock for risk mitigation, but we find that investors react adversely to the acquirer's CAR due to its negative signalling. Further, the market reacts negative to cash when the economy is in a recession, whereas stock is negative when the economy is growing. Payments are usually financed with debt or equity issuance, inducing different implications when both the interest and inflation rate rise. These influence investors' view on the acquirer and prospective synergies from the M&A transaction, as it can adversely affect its financial strength and valuations. Overall, our findings show strong results, and they are aligned with earlier evidence and established theories.

***Keywords*** – Mergers and Acquisitions, Announcement Returns, Method of Payment, Uncertainty, GDP, Interest Rate, Inflation, Geopolitical Risk, Corporate Tax

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# Abbreviations

| | |
|---|---|
| **AR** | Abnormal Return |
| **BBD** | Economic Policy Index |
| **BIS** | Bank for International Settlements |
| **CAR** | Cumulative Abnormal Return |
| **CPI** | Consumer Price Index |
| **EEA** | European Economic Area |
| **EU** | European Union |
| **FE** | Fixed Effects |
| **FRED** | Federal Reserve Bank of St. Louis |
| **GDP** | Gross Domestic Product |
| **GPR** | Geopolitical Risk Index |
| **M&A** | Mergers & Acquisitions |
| **MSCI** | Morgan Stanley Capital International |
| **OLS** | Ordinary Least Squares |
| **R&D** | Research & Development |
| **SDC** | Securities Data Company |
| **SSB** | Statistisk Sentralbyrå (Statistics Norway) |
| **STD** | Standard Deviation |
| **VIF** | Variance Inflation Factor |

# 1 Introduction

Merger and acquisition (M&A) activity in Norway has grown substantially in the past decade, contributed by Norway's high economic development and resiliency compared to the rest of the world (Appendix A1.1). The number of cross-border transactions has also grown, and the value of transactions is considerably higher than before (Appendix A1.2). Particularly since the entry of the Covid-19 pandemic in early 2020, the Norwegian economy has experienced a remarkable growth in M&A transactions despite an out of ordinary distress in the global markets. A more recent matter in Norway is the uncertainty associated with the high prevailing inflation and interest rate changes, as well as the government's proposed tax policy on certain industries that have major influences on the economy. As a result, we are interested in examining the effect of economic and policy uncertainty on acquirer's cumulative abnormal return (CAR) during an M&A announcement of a Norwegian target, and we divide our observations by the method of payment to potentially capture its opposing implications.

Most of the literature that refers to the method of payment in M&As is based on firm characteristics, focusing on the acquirer and target firms' determinants to participate in a transaction with an offer using either cash or stock. They are consistently explaining the underlying reasons behind the decision-making process by the firms' capital structure, incentives, information asymmetry, and control rights. This study contributes to the theory and practice of doing an M&A transaction with either cash or stock, but unlike most studies, our primary focus is on the different implications external factors have to acquirer's CAR-performance for each payment method, such as GDP, interest rate, inflation rate, geopolitics, and taxation policy,

Acquirer's payment consideration is a key element in an M&A transaction. However, cash and stock have opposing effects on acquisition performance (Faccio and Masulis, 2005). Payments with cash are financed with internal cash or new debt (Appendix A1.3). Typically, an acquirer has limited cash and liquid assets, necessitating debt financing. The cost of debt is dependent on the prevailing interest rate, which can induce financial distress for the acquirer if their debt capacity and leverage are inadequate. On the other hand, payments with stock are financed through equity issuance (Appendix A1.3). Using stock as consideration may raise concerns regarding corporate control, which can have an adverse impact on acquirer's governance structure because the issuance

of stock typically dilutes the voting power of a major shareholder (de Bodt et al., 2022). Unfortunately, since the data is limited for Norwegian M&As, we can not measure acquirer's financing source nor its governance structure. However, our control variables are selected consciously to capture these effects, increasing our explanatory power in the models.

M&As have been an effective strategy for companies to grow and expand their operations, and has been an important factor in a dynamic and modern economy as a resource allocation for many decades (Andrade et al., 2001; Koller et al., 2020). In the USA, de Bodt et al. (2022) find that the sharp decline in domestic interest rate as a result of the September 11th, 2001 attacks and the 2008 financial crisis has significantly decreased the cost of raising cash, thereby decreasing the demand for stock payment. In conjunction with Faccio and Masulis (2005), this must be driven by the tradeoffs between cash and stock contingent on firms' financial constraints. On the other hand, statistics on acquiring firms choosing stock show a significant increase in firm-level characteristics, such as market-to-book value, transaction value, growth, and announcement returns, compared to cash, when the market is volatile (Kanungo, 2021). Yet, there is little research on what implications the payment methods have to the market reaction, and to the best of our knowledge, there are no studies examining the implications with the influence of economic and policy variables. We will provide this using the event study method, looking at domestic and cross-border announcements in Norway.

We use a sample of 700 domestic and cross-border M&A announcements in Norway, for the period between 1996 and 2022. The acquirers must be a public company, such that we can collect stock price information. However, the targets can be a public, private, or subsidiary company. We group observations by the payment methods cash, stock, and a mix of both, of which they are respectively represented by 50.57%, 19.14%, and 30.29%. This is consistent and close to the corresponding representation in Faccio and Masulis (2005), which studied for a period between 1997 and 2000 in Norway, but our representation of the payments are more evened out (Appendix A1.4). This is due to that we have a larger and more recent period. As well, stock payment have increased in the period after 2005 in the effort to mitigate risk about the target, since the increased market volatility have caused increased uncertainty about the prospective synergies from the transaction. Moreover, to study the market reaction to acquirer's payment offer with economic and policy factors, our research question is thus outlined as:

"*What is the effect of economic and policy uncertainty on acquirers' three-day cumulative abnormal return during an M&A announcement, by the method of payment?*"

Our results show that economic and policy uncertainty do have an effect on acquirer's abnormal returns, and that there exist different implications in the market for announcements with cash and stock. Looking into the payments, it is clear that the signals in cash and stock have deflecting effects on acquirer's abnormal returns. We find that when the economy is growing, payments with cash have a positive market reaction since the uncertainty about the target valuation decreases. Although we get ambiguous results for stock in this case, we find that the relationship between stock and economic growth should be negative, as the market becomes uncertain due to the negative signalling effects about the target valuation. Stock is much more sensitive to increases in the interest and inflation rate, as the market becomes uncertain about the value creation from the transaction when the cost of acquisition increases and investors' required rate of return goes up. Cash is also negative, but shows no statistical significance. With the perspective of policy uncertainty, we find that increased political tension and wars cause acquirers to become conservative in their selection of targets. As a result, stock is highly sensitive compared to cash for the negative signalling effect to the market. Lastly, we find that the attributes of the target nations corporate tax influence the market reaction, and only payments with stock yield a significantly negative market reaction for an increase in the tax policy.

The following parts of the paper are structured as follows. In Section 2 we establish details on theories and empirical evidence used to design our hypotheses. Section 3 presents our method of study and analysis used to investigate our research objective, while Section 4 provides description of data, correlations, and interpretations on the variables in the empirical analysis. In Section 5 we present our results from the empirical analysis and make interpretations in line with theories and evidence. These results are tested for robustness in Section 6, including other checks for data quality. Lastly, Section 7 gives a summary of our empirical findings, and further research suggestions are mentioned.

# 2 Background

## 2.1 Merger Rationale

### 2.1.1 Definition of mergers and acquisitions

Mergers and acquisitions are a natural part of a well-functioning capital market, and an event most companies experience in the course of their lifetime. They act as a bridge between poorly performing companies needing revitalization and more well-equipped companies seeking growth. Motivation of acquirer companies pursuing M&A are typically ambiguous. However, it is often associated with accelerating growth and foregoing internal research and development costs (Berkovitch and Narayanan, 1993). From the perspective of the target, the motivation often lies in lucrative exit opportunities.

A division is typically set between the term merger and the term acquisition. Mergers can be either horizontal, vertical, or part of a conglomerate transaction. In a horizontal merger, companies in the same industry combine to leverage synergies and increase market share (Gaughan, 2018). Vertical mergers involve companies at different stages of production, enabling a unique advantage in taking control of the supply chain. A conglomerate merger, on the other hand, happens between companies in different industries to diversify business operations and mitigate risks. Acquisitions, in contrast, involve one firm taking over another. The acquirer typically purchases a majority stake in the target company, effectively controlling its operations post-acquisition (Gaughan, 2018). Acquisitions can be friendly, where both parties agree to the transaction, or hostile, where the acquirer aggressively pursues the takeover against the wishes of the target's management or board (Martin, 1996).

### 2.1.2 Why companies participate in M&A

For a company to be lucrative for investors, it has to demonstrate growth and future prosperity. Bower (2013) state five strategic scenarios in which a company would pursue an acquisition: "To deal with overcapacity through consolidation in mature industries; to roll-up competitors in geographically fragmented industries; to extend into new products or markets; as a substitute for R&D and to exploit eroding industry boundaries by inventing an industry". While these can explain some of the strategic rationale, it does not account for the plain motive a firm might have or the theoretical perspective. However, Berkovitch and Narayanan (1993) suggest three major motives for companies

to engage in M&A: synergies, agency and hubris.

Synergies is an effect which occurs when the sum of the parts stand-alone is less than the aggregated sum of the parts of a consolidated firm. These synergies stem from a variety of sources, where the classical identifiable synergies are cost synergies and revenue synergies. The former are typically savings related to overhead costs such as integrating a customer-service function to be more effective whilst eliminating the function of the acquired firm. The latter is often related to operational effects such as increased pricing power. Synergies are often a key selling point for M&A, and they materialize differently based on the choice of payment. For instance, through a stock payment, the acquired firm shareholders will take part in the realization of synergies through the performance of the consolidated company in the future. On the other hand, a cash payment will trigger the synergies for the target shareholders immediately, thus limiting incentives.

Further, building on the motives by Berkovitch and Narayanan (1993), agency motives imply that takeovers are motivated by the self-interest of acquirer management. For example, a management group may seek to acquire assets which they possess specialized knowledge about. This limits the ability of the board of directors to fire the management, as this will result in a loss of valuable knowledge. Additionally, managers may want to run a bigger firm as a way of validating their abilities. Lastly, the hubris motive states that management makes mistakes in the evaluation of targets, and thus engages in M&A with no synergies. This results in a total net-zero gain for both parties, as the transaction becomes a mere wealth transfer between acquirer and the target.

## 2.2 Theoretical Framework

This section aims to provide insight into pivotal theories that are fundamental to understanding our research question, and subsequently, the hypotheses derived from it. Our attention is directed towards two primary frameworks, namely, informational asymmetry in corporate financial decisions and the hierarchy of capital. Decision-makers suffer from biased perceptions of reality and discrepancies in degree of information obtained. As such, players in the market for corporate acquisitions make decisions that would otherwise be irrational if all available information was present in the decision-making process. This is relevant for our thesis as an understanding of the theory gives a more coherent perspective on decisions. Moreover, the macroeconomic environment

such as interest rates and inflation are important determinants in a firm's financing choice. Understanding when and why a firm chooses a given financing option is thus relevant as the option chosen are largely driven by variables mentioned in this thesis, both testable variables and control variables.

### 2.2.1 The market for "lemons"

The market for lemons, or lemon theory, is a model built on discrepancies in information between market participants, originally presented by Akerlof (1970). Although the model is centered around an example of used car sales, it is also used to explain market reactions to equity offerings, as well as the M&A payment method. In a cash offering scenario, when the target has some information about the state and quality of its assets, the lemons problem arises (Hansen, 1987). Change of control in the company will only happen if their asset's worth is less than the offer made. This is an example of adverse selection and might lead to the breakdown of a transaction although it may be mutually beneficial for the parties. Consequently, a solution for the acquiring firm is to offer stock as this will make the target sell regardless of the degree of information asymmetry. This is important to consider when studying payment methods in M&A. If severe information asymmetry is present, managers may adapt as they know from theory that their optimal choice is highly contingent on what other market participants perceive of them. Additionally, the manager's subjective view of their own business can lead to adverse selection problems. This is supported by Andrade et al. (2001), whose main result, amongst others, states that the method of payment acts as a signaling effect in whether the target is over or undervalued. Moreover, Martin (1996) states that in the event where a target's value is highly contingent on future growth prospects, information asymmetry regarding the value of the target will increase. This materializes in the acquirer's increased preference for stock payment to share the risk of uncertain growth prospects.

### 2.2.2 Pecking order theory

The pecking order theory comes from the idea that investors will anticipate the wealth effect of an equity issue. Issuance of equity is for investors a signal of a firm's belief that its equity is overvalued. Hence, the price should go down (Myers and Majluf, 1984). As a result, raising new capital follows a hierarchy, a "pecking order", based on the degree of information asymmetry. The theory is building on a breakdown of key assumptions in the non-friction model presented by Modigliani and Miller (1958). More recent research on the method of payment in M&A studies the effect of not only the mean of payment

(cash or stock), but the source of payment for financing the mean (debt, internal funds) (Martynova and Renneboog, 2009).[1] Pecking order theory is relevant for our study as it explains how an acquiring firm's state and health are viewed by the market based on the financing choice it decides to use in acquisition financing. We will in this thesis assume that the pecking order theory holds, which essentially implies that information asymmetries are present. Since related to the pecking order theory, we also consider the trade-off theory, which states that firms choose their capital structure based on a balancing act of the advantages and disadvantages of borrowing, related to tax savings and bankruptcy costs (Baxter, 1967; Kraus and Litzenberger, 1973).

## 2.3 Literature Review and Hypothesis Development

In this section, we provide a comprehensive review of the existing research questions and studies. We take into account the most significant ones from the literature in order to examine acquirers' abnormal returns and its relationship to methods of payment in the context of economic and policy factors. We also include our hypothesis development on the basis of our findings in this section.

### 2.3.1 Method of payment and abnormal returns

There is a strong consensus among scholars that one of the key elements in M&A transactions is the choice of payment, i.e. its choice between cash, stock, or a mix of both payments. Cash and stock have opposing effects on acquisition performance, so to achieve the highest announcement returns, firms take into account their cash liquidity and their ability to raise new cash to optimally finance the M&A transaction (Faccio and Masulis, 2005; Kanungo, 2021). Hence, the choice of payment is largely influenced by the acquirer's capital structure, corporate control, and asymmetric information (Huang et al., 2016; Hansen, 1987).

Acquirers' risk considerations in the choice of payment and its resulting abnormal returns are intriguing because of the different ramifications. Faccio and Masulis (2005) focus on threats to acquirer corporate control and acquirer financial strength. They argue that acquiring firms face a trade-off between concerns of issuing stock or cash, based on financial restrictions tied to their capital structure. Thus, if preserving control is important to acquirers, they

[1] For an overview of the methods of payment with its financing sources, please see Appendix A1.3.

tend to offer cash payment instead of stock payment. This is particularly evident in the case where the acquirer's corporate control is significantly threatened (Stulz, 1988). Furthermore, Hansen (1987) reveals an interesting finding that acquirers prefer to pay with stocks when information asymmetry exists due to their relative lack of knowledge about target valuation. However, when the acquirer and target firm are in equilibrium, the likelihood of stock payment decreases as the acquirer's size increases relative to target's size. This confirms that the method of payment is greatly influenced by the uncertainty inherent to both firms in the transaction.

Fuller et al. (2002) extends on this research claiming that cash payment has preemptive advantage over stock payment and that the choices are associated with signaling considerations, i.e. that the acquiring firm sends a signal of its future prospects, financial strengths, and its belief on the target firm valuation. Hence, payments with cash, which in most cases are debt-financed, may signal confidence in the acquirer's expected acquisition performance. Consequently, if the acquirer rather chooses stock payment, it may signal uncertainty in its ability to achieve a performance that aligns with the expectations and is therefore inclined to mitigate risk by sharing ownership with the target firm instead. As per Hansen (1987), this is played out due to the fact that stocks function as a contingent payment mechanism in negotiations between the acquirer and the target firm. Indeed, it is evident in previous papers that market reacts significantly more favourably to cash payments (Andrade et al., 2001). Furthermore, it has been discovered that the largest number of M&A transactions have been financed with cash in the past three decades, particularly in Europe (Klitzka et al., 2022; Kanungo, 2021; Faccio and Masulis, 2005).

Literature on abnormal returns proves that the most credible explanation on whether M&A transactions create value for shareholders draws upon short-term event studies (Hackbarth and Morellec, 2008; Andrade et al., 2001). Overall, evidence on acquirer returns in M&As are varied. Dodd (1980) finds a significant abnormal return of -1.09% in a two-day window $[-1, 0]$; indicating that acquirers on average face a negative outcome. In contrast, applying same two-day window, Asquith (1983) and Eckbo (1983) report slightly positive, but small and statistically insignificant returns; indicating that acquires on average have a nonproductive outcome. A common and potential cause of such discrepancy may be due to the fact that they do not distinguish between the payment options. Andrade et al. (2001) states that it is important to separate transactions by stock and cash payments to make appropriate conclusions

on M&A abnormal returns, especially for acquiring firms. The latter paper studied a sample of acquirer abnormal returns between 1973-1998, using a three-day window $[-1, +1]$, and discovered that acquiring firms using stock payment have significantly negative average abnormal return of -1.5% at a five percent level, while those acquirers that abstain from stock payment had average abnormal returns of 0.4%, of which were insignificantly different than zero for all conventional levels.

As such, prior literature on the method of payment focuses primarily on firm- and deal-specific factors to make causal statements for each of the payment options in an M&A transaction. Our study underpins these theories and attributes to further evoke the acquirer stock performances by each method of payment under different conditions in the Norwegian economy. In doing so, we measure the cumulative abnormal return (CAR) for each payment method around the announcement date. Past studies on CARs certainly have numerous inconsistencies and competing results that may cause ambiguity in the choice of payment that aims to maximize return, particularly in the context of economic and policy uncertainty.

### 2.3.2 Economic uncertainty and M&A performance

In a recent study on 44.756 domestic and 20.917 cross-border M&A transactions, Vissa and Thenmozhi (2022) found that macroeconomic factors are the key drivers to do M&A in a country. Flannery and Protopapadakis (2002) studied a series of 17 macroeconomic news indicators, and established significant evidence that macroeconomic variables exert important effects on stock returns. Similar but closer to the M&A literature, Kumar et al. (2023) asserted that economic prosperity has a direct relationship between M&A activity and the macroeconomy. Their study focuses on those factors that lead to M&A abandonment. Few studies have considered the link between macroeconomic effects and M&As, most of which have focused on the M&A activity, and certainly less on payment methods. Our study aims to determine the impact of economic factors on M&A performance, and as we expect each payment method to have different results given different economic conditions, we also distinguish the payment methods to explain the different economic rationales for each.

A novel study that measures M&A performance with economic factors is found in a paper by Barbopoulos et al. (2020). They studied how major economic indicators affect abnormal returns in U.S. domiciled public companies between

1986-2026.[2] They find that the average abnormal returns in acquirer M&A announcements perform different during a period of recent economic news release compared to a period of no economic news release. In a three-day window, the difference between these periods showed that acquirers realized a negative but insignificant return of approximately -0.04% in cash-financed transactions, a significant return of approximately 1.25% in stock-financed transactions (1% level), and a significant return of approximately 0.62% in mixed-financed transactions (10% level). A weakness in the aforementioned study is that they create a single variable that aggregates all of the selected news releases such as "New Home Sales", "Unemployment Rates", and "Consumer Confidence Index", which can have opposing market reactions. This may cause ambiguity in the effort to explain the distinguishable uncertainty in each of the methods of payment. Our study differentiates by regressing the effect of several leading economic factors over time, rather than the economic news indicators, on the M&A announcement.

Given the importance of macroeconomic factors on M&A performance, our study includes the most influential economic variables used in past papers, which are gross domestic product (GDP), interest rate, and inflation rate. We extend the topic by analyzing how these variables affect the cumulative abnormal returns in Norwegian M&As.

#### 2.3.2.1 Gross Domestic Product

In the M&A literature, GDP is used as a proxy for a country's economic growth condition and market size (Barbopoulos et al., 2020). Higher levels of financial market development are associated with lower financing costs (Huang et al., 2016). Moreover, Choi and Jeon (2011) concludes in their study on U.S. M&A activity that M&As benefit from an expanding economy with an increase in GDP. Higher levels of GDP tend to increase acquirers' profits as well as its cash reserves, making it financially stronger for acquisitions within and outside the country (Uddin and Boateng, 2011). Hence, since favorable growth in the economy can lower cost of financing and increase firms' prosperity, we believe the market will react positively to acquirers using cash payment. On the other hand, we believe the market will react negatively from negative signalling when using a stock payment. The first hypothesis thus will state the following:

[2]The authors used U.S. Economic Indicator calendars as a proxy.

**H1**: An increase in the Norwegian real GDP growth leads to:

**(a)** a *positive* cumulative abnormal return in cash payment

**(b)** a *negative* cumulative abnormal return in stock payment

#### 2.3.2.2 Interest rate

Fama and Schwert (1977) examined the relationship between common stocks and interest rates (proxy: U.S. treasury bills), and found reliable negative association between stock returns and the level of treasury bills. Moreover, the financing of M&A transactions is contingent upon the interest rate prevailing at the time (Ibrahim and Raji, 2018), for which they find that with lower interest rates cheap debt is likely to be more available. In a sample of transactions between 1985-2013, Boone et al. (2014) observes that the share of stock payment compared to cash payment decreased from its peak of 60% in the 1990s to under 20% post-2008 financial crisis. This may be drawn to the fact that cash payments are often issued with debt financing, and since the aggregate level of interest rates has declined dramatically, acquirers have become more accessible to finance transactions with cash payments in the most recent decades. Yagil (1996) studies U.S. transactions and makes a significant finding that an increase in interest rates decreases stock payment in favor of an increase in cash payments. Hence, due to the negative association between an increase in interest rates and debt financing, we expect that the market will react negative to acquirers using cash payment. Further, we believe the market will react negative to payments with stock for the difficulty to issue equity, and the decline in valuations, with higher interest rates. The second hypothesis thus will state the following:

**H2**: An increase in the Norwegian interest rate leads to:

**(a)** a *negative* cumulative abnormal return in cash payment

**(b)** a *negative* cumulative abnormal return in stock payment

#### 2.3.2.3 Inflation rate

Similar to interest rate, the influential paper by Fama (1981) finds significant evidence that current and expected inflation are both associated negatively with stock returns. Inflation affects cost of capital and return on investment, thereby affecting the acquisition decision of the acquirer (Boateng et al., 2017). Evidently, when inflation rate declines, both cost of debt and acquisition prices decline, which consequently motivates acquirers to seek prospective targets

(Ibrahim and Raji, 2018), for which could make cash payment the preferred choice of payment when the economy is growing with a sustainable inflation rate. In the Norwegian context, the inflation rate maintained levels of approximately 14% during early 1980s, to a sustainable level of 2-3% during 1992-2001 (Boateng et al., 2015). The latter paper finds that during periods of low inflation, there is an increased demand for Norwegian targets due to the signal of economic stability. As a result, we account that increased inflation increases the costs associated with the financing of both debt and equity. We believe this will have a negative reaction in the market as investors' increased uncertainty and required rate of return deters the future prospects of the transaction's potential outcomes. The third hypothesis thus will state the following:

**H3**: An increase in the Norwegian inflation rate leads to:

**(a)** a *negative* cumulative abnormal return in cash payment

**(b)** a *negative* cumulative abnormal return in stock payment

### 2.3.3 Policy uncertainty and M&A performance

An emerging literature confirms that policy uncertainty impacts the global economy (Bonaime et al., 2018). At the macroeconomic level, policy uncertainty drives the business cycle (Bloom et al., 2018), impacts capital flows for different election cycles (Julio and Yook, 2016), and it deters investment outlook (Baker et al., 2016). At the firm-level, policy uncertainty impacts cash holdings (Julio and Yook, 2012), stock price volatility and premium (Baker et al., 2016; Pastor and Veronesi, 2012), and payment decisions (Bonaime et al., 2018).

Nguyen and Phan (2017) studies the connection between policy uncertainty and M&As. They find that there is an inverse relation between policy uncertainty and firm acquisitiveness, i.e. the desire to acquire other companies. A study on booming and depressed stock markets by Bouwman et al. (2009) reveals that acquirers perform better during high-value markets compared to low-value markets two years post-acquisition. In this paper, we will further examine how facets of policy uncertainty, regarding geopolitical risk and taxation influence acquirer's announcement return with the different payment methods.

#### 2.3.3.1 Geopolitical risk

Julio and Yook (2012) argues that when political risk increases, acquirers tend to hoard cash. These findings suggest that acquirers tend to use stock payment during heightened political uncertainty, which is also consistent with the risk-sharing hypothesis postulating that acquirers use stock to minimize

their risk (Hansen, 1987; Martin, 1996). Many of the papers that study M&A performance with policy uncertainty most often apply the economic policy uncertainty (BBD) index by Baker et al. (2016), which uses newspaper frequency to measure events that influence policy uncertainty (e.g. Bonaime et al. (2018); Paudyal et al. (2021); Gregoriou et al. (2021); Dang et al. (2022); Adra et al. (2020)). Gregoriou et al. (2021) observes acquirers' CARs over the three-day event window and finds a positive but insignificant CAR of 3.2%. Using the same event window, Bonaime et al. (2018) finds a positive and significant CAR of 1.27% and 1.47% both at the 1% level, during low and high uncertainty, respectively. Nguyen and Phan (2017) says that acquirer's are more prudent to select M&A investments that will have safer outcomes during periods of higher uncertainty. They find a positive and significant CAR of 0.7% at the 1% level, which indicates a positive relationship between policy uncertainty and acquirer shareholder value. Adra et al. (2020) contradicts these papers with negative and significant results showing an increase in the BBD Index leads to a -0.40% decrease in acquirer´s CAR at the 5% level. The latter paper uses the same BBD Index but does rather only focus on monetary policy uncertainty.

There exist some inconsistencies in the previous results that try to explain policy uncertainty in the context of M&A performances. Baker et al. (2016) argue that the BBD index does not reliably capture notable political events, but it shows reliable results for shocks to a nation's economy. As a result, we want to employ another index as a measure for policy uncertainty by focusing on newspaper frequency associated with geopolitical factors instead, i.e. the Geopolitical Risk (GPR) Index by Caldara and Iacoviello (2022). To also capture shocks to the market as previous papers, we instead define a control variable for economic shocks such as a dummy variable (see Section 4.2.4).[3] The GPR index also allows us to appropriately address the policy uncertainty based on Norwegian events, which makes our results more reliable under the Norwegian conditions. We are aware that acquirers will become more conservative when selecting M&A investments during increased uncertainty. Assuming that acquirers are selecting safer M&A targets, we believe that investors will have a positive reaction to acquirers using payments with cash due to acquirer's confidence in their decision. Thereby, we expect that investors will react negatively to acquirers using stock amid increased geopolitical uncertainty as they are less certain in acquirers investment selection when the acquirers want to share the risk with target shareholders. The fourth hypothesis thus will state the following:

[3]On our control variable *Economic Shock*, please see the explanation in Section 4.2.4 and the calculation in Appendix A2.7.

**H4**: An increase in the Norwegian GPR Index leads to:

**(a)** a *positive* cumulative abnormal return in cash payment

**(b)** a *negative* cumulative abnormal return in stock payment

#### 2.3.3.2 Corporate tax

From a policy perspective, Ayers et al. (2003) finds that tax policy has great influence on M&A outcome and that any change would alter acquirer's cost of acquisition. Indeed, the different payment methods have distinguishing effects on the acquirer. Payments with cash require immediate taxation to target firms' shareholders, whereas it can defer its tax obligation when receiving stock instead. Therefore, as the target shareholders require compensation for this, acquirers must thus pay a higher acquisition price when paying with cash compared to stock (Travlos, 1987). Moreover, Boone et al. (2014) conclude that high prevailing tax rate increases the probability of stock payment relative to cash and mixed payments. In an earlier study, Brown and Ryngaert (1991) argue that high valuation acquirers offer cash payment to avoid undervalued stock issuance, and low valuation acquirers offer stock to avoid the capital gains tax penalty. This aligns with Hansen (1987) stating that acquirers offer stock when faced with adverse selection and possibility of overpayment. Travlos (1987) observes that the market reaction to acquirers paying with stock (tax-free) is most often negative, whereas the market more often reacts positive to acquirers paying with cash (taxable). A study on long-term performance found evidence that acquirers using cash performed significantly positive while acquirers using stock performed significantly negative (Loughran and Vijh, 1997).

We are interested in studying the tax effect on acquirer's abnormal returns given changes in tax rates. Hayn (1989) finds evidence that the tax attributes of target firms do explain abnormal returns to acquirer shareholders during an announcement. When testing tax gains for target firm on the acquirer's CAR, her results show that the five-day CAR is 2.2% and significant at the 1% level for cash, whereas it is 1.1% but insignificant for stock. Blouin et al. (2021) considers only the cash payments and test reductions in taxes on acquirer's three-day CAR. The corresponding CAR is 2.3% and significant the 5% level. Very little research has been done to explain acquirers' abnormal returns with taxes, and rarely with the payment methods included. Despite the difficulty, research suggests that cash payments should perform better than stock payments, but an increase in corporate taxes, or when target's tax gain is reduced, it should still result in a decrease in the acquirer's CAR for both payment types. The

fifth hypothesis thus will state the following:

**H5**: An increase in the Norwegian corporate tax rate leads to:

**(a)** a *negative* cumulative abnormal return in cash payment

**(b)** a *negative* cumulative abnormal return in stock payment

# 3 Methodology

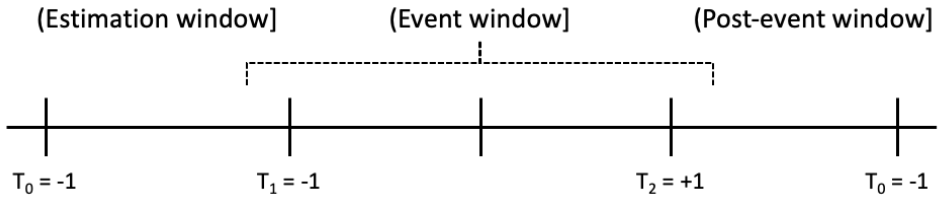
In this section, we describe the models applied to our data, using the conventional event study method to explain the abnormal returns during the announcement period for each of the three payment methods.

## 3.1 Event Study Method

Our research setting examines the acquirer's abnormal returns for a three-day window around the announcement period. Literature on abnormal returns proves that the most credible explanation on whether M&A transactions create value for shareholders draws upon short-term event studies (Hackbarth and Morellec, 2008; Andrade et al., 2001). Thereby, we use the commonly used event study methodology, which proposes using financial market data to measure the impact of a specific event on the value of a firm by using stock prices observed over a short interval (MacKinlay, 1997). The methodology assumes that, given rationality in the marketplace, the effect of an event will be immediately reflected in stock prices.

As proposed by MacKinlay (1997), the first task in an event study is to define the event of interest and determine the period (event window) over which the stock prices of the firms involved in this period will be examined. Our event of interest is the market reaction to an acquirer's stock from the announcement of an M&A transaction in Norway. Further, as stated earlier, we set the event period for a three-day window $[-1, +1]$. One day prior to an announcement lets us capture the market reaction to potential information leakages. The closing price at announcement day allows us capture the immediate market reaction and sentiment. One day post-announcement also lets us capture the continued reaction when news and information are more advanced in the market. There are papers in the M&A literature that extends this with several weeks or months. However, our specified interval is suitable for the objective to make inferences to economic and policy-related variables. (MacKinlay, 1997) does also assert that the predictive power of the study will increase when fewer days are included in the event window. Our study only examines within the event window, and we mainly report the cumulative abnormal return from day -1 to $+1$. To increase the robustness, we will also test the sensitivity in the abnormal returns in the intervals $[-1, 0]$ and $[0, +1]$. Figure 3.1 shows our defined event study timeline.

**Figure 3.1:** *Event Study Timeline*




### 3.1.1 Cumulative abnormal return (CAR)

We use cumulative abnormal return (CAR) to quantify the market reaction on the acquirers announcements. The CAR will allow us to understand if the acquirer performs positive or negative, for each payment method, with the influence of the economic and policy variables in this study. CAR is a conventional measure for capturing the stock performance and market reaction of the acquirer firm when analyzing M&As. In accordance with MacKinlay (1997), we specify our predetermined time intervals for $CAR_i(\tau_1, \tau_2)$ from $\tau_1$ to $\tau_2$, constrained by $T_1 < \tau_1 \leq \tau_2 \leq T_2$. We have:

$$CAR_i(\tau_1, \tau_2) = \sum_{\tau=\tau_1}^{\tau_2} AR_{i\tau}, \tag{3.1}$$

where $AR_{i\tau}$ is the abnormal return for acquirer firm $i$ in a specified event window. Abnormal return (AR), measures the ex-post return for a given M&A announcement. We calculate the AR by using the market model, since the market model allows us to better encapsulate the stock market's volatility to the acquirer's return performance. Then, the AR is defined as:

$$AR_{i\tau} = R_{i\tau} - E(R_{i\tau} \mid X_\tau), \tag{3.2}$$

where $R_{i\tau}$ is the actual return of stock $i$ and $E(R_{i\tau} \mid X_\tau)$ is its expected return on the MSCI World Index. The former is calculated by taking the arithmetic return of the given stock's daily price change. Consistent with the market model, it is assumed for the latter that there is a consistent and linear relationship between the returns of the market and the returns of a given stock (MacKinlay, 1997). Hence, for each stock, we calculate it as

$$E(R_{i\tau} \mid X_\tau) = R_{it} = \alpha_i + \beta_i \cdot R_{mt} + \epsilon_{it} \tag{3.3}$$

$$E(R_{i\tau} \mid X_\tau) = R_{it} = \alpha_i + \beta_i \cdot R_{mt} + \epsilon_{it} \tag{3.4}$$

$$E(\epsilon_{it} = 0),\ var(\epsilon_{it}) = \sigma^2_{\epsilon_t}, \tag{3.5}$$

where $\alpha_i$ is the intercept, and the product of $\beta$ and $R_{mt}$ reflects the sensitivity of the acquirer firm's stock price to the MSCI World Index, lastly, $\epsilon_{it}$ captures the unsystematic risk stemming from firm-specific factors (Zhu and Jog, 2012).

## 3.2 OLS Regression

Subsequent to conducting calculations on acquirer's CAR with respect to the payment methods (cash, stock, and mix), we advance our analysis by gathering comprehensive data on economic and policy variables. Then, we perform a linear multiple regression analysis using the Ordinary Least Squares (OLS) regression method. The OLS regression estimates the relationship between our independent variables and the dependent variable. It minimizes the sum of the squares in the differences between the observed and predicted values of the dependent variable (Wooldridge, 2019).

We divide our regression analysis into two distinct categories: (i) includes economic and control variables, and (ii) includes policy and control variables. Both categories consistently use the same control variables, which are firm-, deal, and market-specific characteristics. Further, each of the two regression categories uses acquirer's CAR as the dependent variable, but they are both categorised by the payment methods: (i) Cash, (ii) Stock, and (iii) Mix. This allows us to investigate the market reaction on the acquirer's CAR with respect to the payment methods in a ceteris paribus condition. To make our models reliable and valid, we use several techniques to handle multicollinearity, outliers, biases, and inference quality. These techniques are presented and discussed in Section 6 on robustness.

Our regression equation analysing macroeconomic variables (3.6a) and policy variables (3.6b) are defined as:

$$\mathrm{C}AR_{k,i} = \beta_0 + \beta_1 \cdot \mathrm{EconomicVar}_i + \beta_2 \cdot \mathrm{ControlVar}_i + u_i \tag{3.6a}$$

$$\mathrm{C}AR_{k,i} = \beta_0 + \beta_1 \cdot \mathrm{PolicyVar}_i + \beta_2 \cdot \mathrm{ControlVar}_i + u_i, \tag{3.6b}$$

where $i = 1, 2, ...N$. Further, we set $k \in \{Cash, Stock, Mix\}$ to group for the method of payment. Thus, we obtain five main regressions in our analysis,as

there are three for Equation 3.6a and two for Equation 3.6b.

## 3.3 Fixed Effects

In order to control for the possibility of unobserved heterogeneity in our models, we include fixed effects estimations. A fixed effects regression is implemented by including a pooled OLS estimator based on demeaned variables: a fixed effects estimator (Wooldridge, 2019). By doing so, the fixed effects estimator captures entity-specific effects that are constant over time but vary over entities. The entity fixed equation in general form can be written as:

$$Y_{it} = \alpha + \beta_0 X_{it} + \theta_1 D_{1i} + \theta_2 D_{2i} + ... + \theta_n D_{ni} + \epsilon_{it} \tag{3.7}$$

where $D_{1i}, D2i + ... + Dni$ are dummy variables representing fixed effects for entities. We specify industry fixed effects to control for industry fixed effects. By controlling for these effects, we incorporate the systematic differences and characteristics associated with different industries. Companies within the same industry may have certain commonalities or face similar market conditions, regulations and competitive landscape, which can affect CAR. Including these fixed effects enables us to isolate the relationship between CAR and the independent variables within each respective industry.

## 3.4 Two-sample t-test

To further solidify our findings on the differences in the payments between using cash and stock, we provide an additional statistical test using the two-sample t-test. The two-sample t-test is a method to test whether the means of two groups are significantly different from another or not (Wooldridge, 2019). Our groups are based on the payment by cash and stock, while the selected variables that define the two groups are those defined for economic, policy, and control variables (see Appendix A2.7).

To perform our two-sample t-test, we define the null and alternative hypothesis respectively as (i) $H_0 : \mu_1 = \mu_2$ and (ii) $H_A : \mu_1 \neq \mu_2$. Then, we calculate the selected variable's mean, standard deviation, and observation number, in each the Cash- and Stock-samples. In the following, since we have unequal variances, the test-statistic (3.8) and degrees of freedom (3.9) are defined as follows:

$$t = \frac{\text{sample difference - hypothesized difference}}{\text{standard error of the difference}} = \frac{\overline{x}_1 - \overline{x}_2 - (\mu_1 - \mu_2)}{\sqrt{\frac{s_1^2}{N_1} + \frac{s_2^2}{N_2}}} \tag{3.8}$$

$$\text{df} = \frac{\left(\frac{s_1^2}{N_1} + \frac{s_2^2}{N_2}\right)^2}{\frac{\left(\frac{s_1^2}{N_1}\right)^2}{N_1 - 1} + \frac{\left(\frac{s_2^2}{N_2}\right)^2}{N_2 - 1}}, \tag{3.9}$$

where $\overline{x}_1$ and $\overline{x}_2$ are the sample means, $s_1$ and $s_2$ are the sample standard deviations, and $N_1$ and $N_2$ are the sample observations. While the critical value is defined as $t_{\text{crit}} = t^{\text{df}}_{\alpha/2}$, where $\alpha \in \{1\%, 5\%, 10\%\}$, we can compare this with the test-statistic (3.8) to see if it is in the critical region. Thus, we have that the sample means are significantly different if:

$$|t| > t_{\text{crit}}, \tag{3.10}$$

otherwise we conclude that they are not significantly different.

## 3.5 Validity

### 3.5.1 Heteroskedasticity

In the event where heteroskedasticity is present, an observable relation in the residuals of the model is present. This is a problem as it can lead to inefficient and biased parameter estimates, inaccurate standard errors, invalid hypothesis tests and general model misfit (Wooldridge, 2019). In order to test our data for heteroskedasticity, we use White's test to check if the variance of the residuals is constant in our model:

$$H_0 \ : \ \sigma_i^2 \ = \ \sigma^2 \tag{3.11}$$

$$H_A \ : \ \sigma_i^2 \ \neq \ \sigma^2 \tag{3.12}$$

In the event where we keep the null hypothesis, the residuals are homoskedastic. This is the case when variance is constant, and consequently do not vary significantly when predicted value change. If, on the other hand, the alternative hypothesis is accepted, the variance is not constant, and hence heteroskedasticity is present. When the residuals in an OLS model are heteroskedastic, it violates one of the Gauss-Markov assumptions for OLS regression, resulting in biased predictors.

### 3.5.2 Multicollinearity

High correlation between independent variables leads to a multitude of problems, whereas the presence of multicollinearity is one of the prevailing. This leads to artificially inflated R-squared, as well as larger standard errors. Additionally, the confidence interval widens, which might lead to wrong conclusions in significance tests. To check for multicollinearity, we employ a Variance Inflation Factor (VIF) for each variable, calculated as:

$$VIF = \frac{1}{1 - R_i^2} \tag{3.13}$$

This tests each slope coefficient by regressing the independent variable in question on the other independent variables in the model. Generally, setting cut-off values of what is deemed a "too high" VIF can be highly problematic as we are rarely given the choice of reducing the VIF (Wooldridge, 2019). However, it is argued that a VIF of 1 implies minor to no correlation, whereas a VIF between 1-5 implies moderate correlation. Lastly, a VIF with a value larger than 5 indicates high correlation.

# 4 Data

In this section, we present our data collection and interpret its pertinence for our research objective. In our effort to reveal new evidence to the field, we have rigorously maintained the reliability and validity in the data process by closely aligning it with established practices from the literature. This reinforces the robustness and the data quality.

## 4.1 Sample Selection

We initially examine transactions in Norway announced between January 1986 to December 2022. The primary source of our sample is provided by Securities Data Company's (SDC) database, i.e., SDC Platinum, where we applied the following criteria that (i) the acquiring firm is publicly listed from any country, (ii) the target firm is Norwegian, (iii) the announcement date of the transaction is in the range from 01/01/1986 to 12/31/2022. Moreover, we included relevant information on deal and firm characteristics that are available in SDC Platinum. To increase information richness and in some cases, correct the SDC information, we use company and news sources about the transaction. The sample created consists of a total of 3551 transactions, of which 1780 are domestic (51.13%), whereas 1771 are cross-border (49.87%).

Since our objective is to calculate acquirer's cumulative abnormal return (CAR) for a three-day window $[-1, +1]$, we omit all missing values for acquirer share price on (i) the announcement day, (ii) one day prior to announcement, and (iii) one day post announcement. Further, as we categorize the CARs by method of payment, we omit all missing values in (i) '% of Cash' and (ii) '% of Stock'. This process leads to a new total sample of 710 transactions, of which 360 are cash only (50.70%), 137 are stock only (19.30%), and 213 are mixed (30.00%).

Macroeconomic data related to economic and policy variables are collected from Bloomberg Terminal, Federal Reserve Economic Data (FRED), the World Bank's database (DataBank), Statistics Norway (SSB), and Bank for International Settlements (BIS).

## 4.2 Data Variables

In this subsection, we analyze and interpret the data variables chosen in our study. The dependent variable is a measure of acquirer's performance, while the independent variables include economic and policy variables. We further

summarize our independent control variables at the very end, and our data variables are outlined in Appendix A2.7.

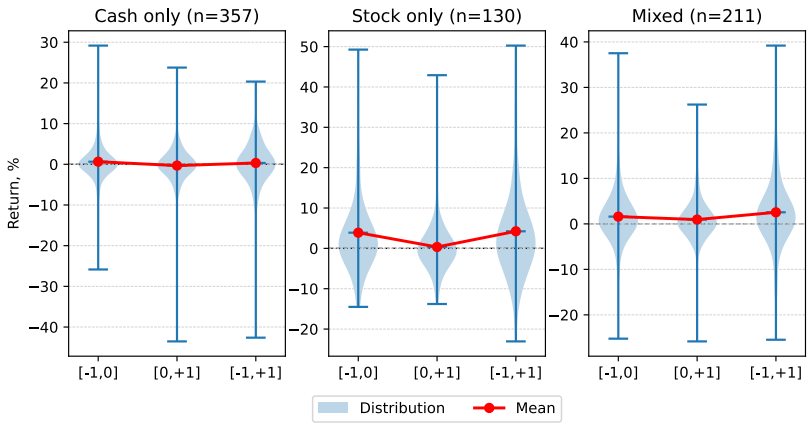
### 4.2.1 Dependent variable

***Cumulative abnormal return (CAR)***

Our research objective is to measure acquirer's M&A performance by calculating its *CAR*, consistent with Asquith (1983), Amihud et al. (1990), Fuller et al. (2002), Hackbarth and Morellec (2008), and Bonaime et al. (2018). The acquirer stock prices (1d prior to ann.; at ann.; 1d post ann.) are obtained using SDC Platinum, and the returns for our benchmark, MSCI World Index, with the corresponding trading dates are collected from Bloomberg.

Being at a researcher's own discretion, we determine the appropriate length of our event window of three days based on two distinct factors, namely statistical considerations and economic considerations. The former consideration accounts the reasoning from the event study section where MacKinlay (1997) found evidence on that shorter event windows increase the predictive power. The latter consideration is based on the fact that we are studying variables which tend to be more sticky. Our independent variables on economic and policy factors include information that tends to stay constant over a month, or a quarter. Therefore, we argue that a three-day event window will allow us to appropriately analyze the acquirer performance around the announcement period. For each method of payment, we calculate the ARs to obtain the CAR, as explained in Subsection 3.1.1. Our calculations are presented in Figure 4.1.[4].

**Figure 4.1:** *AR's/CAR's Distribution and Mean for Each Window and Payment Method*




*Note.* The average weights of cash and stock used in the "Mixed" payment are 52.67% and 47.14%.

[4]For a summary of the calculations given the dependent variable $CAR_{-1,+1}$, including its mean, volatility, and observations, please see Appendix A2.1

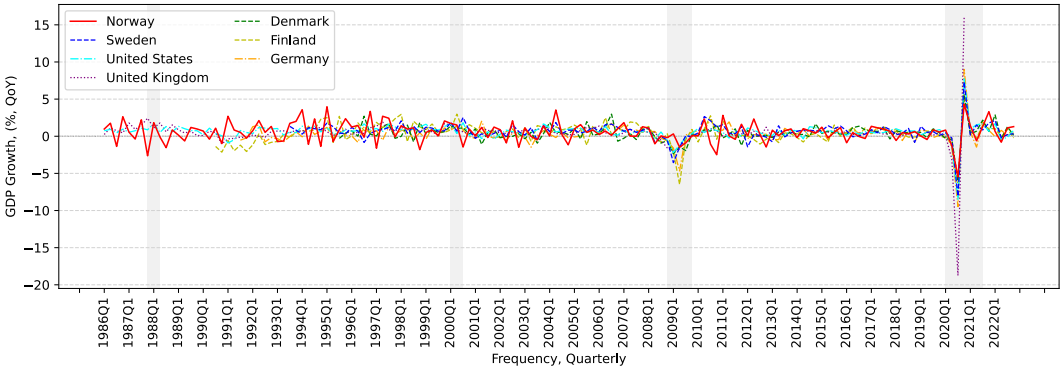
The event windows $[-1, 0]$ and $[0, +1]$ are the abnormal returns (ARs) one day before and after an announcement, respectively. The window for $[-1, +1]$ is the cumulative abnormal return (CAR) and serves as our main dependent variable for acquirer's performance in this study. By average, payments with stock outperform the other two across all windows, except for in the case of $[0, +1]$. In this scenario, the mixed payment demonstrates a slight performance advantage over stock, while cash payments have a negative performance. On volatility, payments with cash outperform the other two and are particularly great in the window $[-1, +1]$. On the other hand, payments involving stock exhibit significantly higher volatility across all windows.

### 4.2.2 Independent variables: Economic

#### *GDP Growth (T)*

Consistent with past literature, we use the target nation's real gross domestic product (GDP) as a proxy for its economic growth (Bonaime et al., 2018; Barbopoulos et al., 2020; Adra et al., 2020). Norway is the target nation in our study, and we calculate the *GDP Growth (T)* on a year-on-year (YoY) growth rate, lagged by a quarter. The data is retrieved from the Federal Reserve Bank of St. Louis (FRED), using quarterly and seasonally adjusted values in chained national currency. In Figure 4.2, the real GDP is presented for the top seven nations with the highest number of transactions in Norway.[5]

**Figure 4.2:** *Real GDP Growth by Top Serial Acquirer Nations in Norway*




*Note.* 1987Q4: Black Monday. 2000Q1: Dot-com. 2008Q4 Financial Crisis. 2020Q1: Covid-19 Pandemic.

The Norwegian economy has become a less volatile economy only in the past decade and a half. Between 1987 and 1992, the economy was relatively vulnerable to shocks, as seen in the event of Black Monday. However, recently, Norway is considered as one of the most resilient economies. Despite facing

[5]For a data summary of the number of announcements made in Norway for each country in our sample, please see Appendix A2.2.

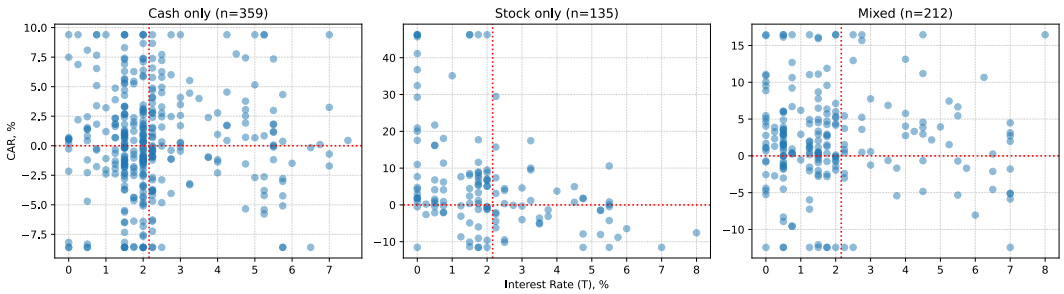
economic challenges with the rest of the world, Norwegian targets remain relatively attractive to domestic and cross-border acquirers (Wiersholm, 2023).

In our sample period, we find that acquirers using stock payment experience the highest volatility in CAR compared to payments with cash. When the Norwegian economy is expanding, the cash payment resulted in an average CAR and STD of 0.55% and 4.39%, compared to that of stock with 3.91% and 13.00%. When economy is contracting, the corresponding results are -0.25% and 4.79% for cash payment, whereas, the results are 9.49% and 15.80% for stock. The ability to mitigate risk with stock payment is evidently perceived to attract investors compared to acquirers using cash as payment. However, when we further test with a shock to the market, stock payment resulted in an average CAR and STD of 6.21% and 14.76%, whereas cash payment was followed by 0.38% and 4.38%. When given shocks to the market, the outcome for stock and cash payments were respectively 1.87% and 7.35%, versus, 0.23% and 5.80%. Financial distress induces heightened uncertainty to investors, resulting in lower CAR for both payments, but increased volatility only for cash payment.

### *Interest Rate (T)*

The Norwegian key policy rate serves as a proxy for our target interest rate. This is an important measure in our analysis for its effect on the cost of financing the payments, as researchers have found that cheaper debt increases cash payments, and equity issuance is more difficult with adverse changes in the interest rate. Hence, it makes it interesting for us to study the relationship between the interest rate and CAR by each payment methods. We use data on daily policy rate retrieved from Bank for International Settlements (BIS). Figure 4.3 reveals the sensitivity in acquirers' CAR compared to the level of interest rate.

**Figure 4.3:** *The Relationship Between the Norwegian Interest Rate and Acquirer CAR*



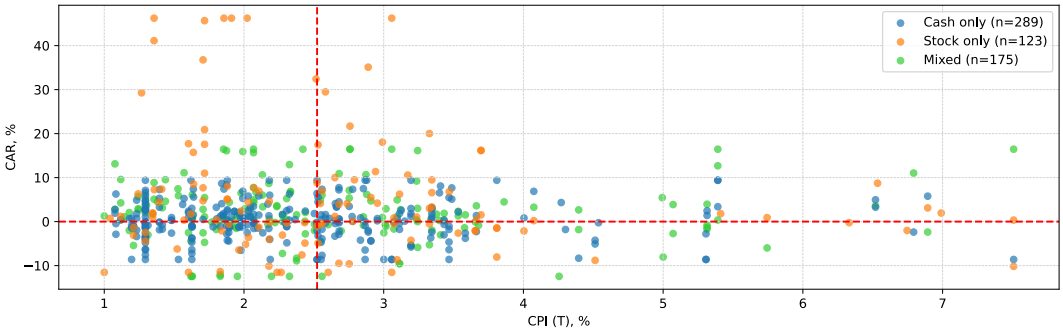

*Note.* The line from the x-axis is the average Norwegian interest rate (2.16%), while the line from the y-axis separates positive and non-positive CAR observations.

Despite much fewer observations in stock payments, we first notice that the magnitude of observations at the lowest interest rate (here: 0%) is largely prone to payments with stock. The zero-percent interest rate was applied in the period between 05/08/2020 and 09/23/2021, and payments with stock (n=22) experienced an average CAR of 18.51% compared to that of -0.70% for cash (n=12). This can be attributed to the increasingly uncertain market sentiment during this period, making acquirers choose stock payment to mitigate the prevailing market risk, which favourably increased investors demand for firms that performed acquisitions with stock payment. Secondly, we notice that when the interest rate is larger than 2%, payments with cash do in fact earn higher average CAR compared to stock payment. For interest rate above 2%, payments with cash (n=140) demonstrated an average CAR of 0.77% compared to that of -0.15% for stock (n=46).

### *Inflation Rate (T)*

As a proxy for inflation rate, we use the targets 12-month development in consumer price index (CPI) for goods and services by private households. The data is retrieved from Statistics Norway (SSB) and Bank for International Settlements (BIS), calculated on a year-over-year (YoY) growth rate, lagged by a month. Like interest rate, the inflation rate is an important economic variable in the context of financing decisions amid uncertainty. A key difference from the former is its frequent variation per observation over our sample period.

**Figure 4.4:** *The Relationship Between the Norwegian Inflation Rate and Acquirer CAR*




*Note.* The line from the x-axis is the average Norwegian CPI (2.52%), while the line from the y-axis separates positive and non-positive CAR observations.

From Figure 4.4 we notice that the average inflation rate in our sample is close to Norway's current target rate of 2% (previous target was 2.5% until 2018). The CAR for payments with stock is highly sensitive during low inflation periods (<2%). In this type of inflationary environment, payments with stock (n=42) experience much higher returns of 9.26% compared to that of 0.36% in

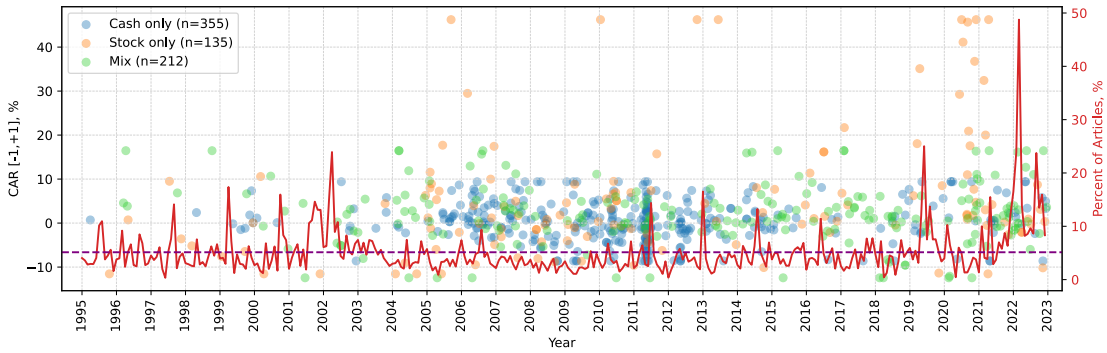
cash payment (n=130). When inflation exceeds the target level of 2%, payments with stock (n=81) substantially reduces to 3.6%, whereas payments with cash (n=159) slightly increase to 0.38%. During high inflationary environments (>2%), uncertainty rises and of which increases number of payments with stock (from 24.42% of observations in low inflation to 33.75% in high inflation). However, by our observation there is indeed an indication of a reduction in CAR for acquirers paying their transactions with stock when uncertainty rises.

### 4.2.3 Independent variables: Policy

#### *GPR Index (T)*

To measure the effect of geopolitical events such as wars, tensions, disasters, and crises, we employ the geopolitical risk index constructed by Caldara and Iacoviello (2022). The data is retrieved from the researchers' website, and it is a daily news-based measure driven by both the threat and the realization of adverse geopolitical events.[6] The GPR index has become increasingly relevant in association with stock market returns Smales (2021), and we are thus interested to study it on the three-day CAR in M&As. Our study uses a country-specific GPR index, which is based on the Norwegian GPR. In Figure 4.5, we present CAR by each payment method with the Norway GPR Index.

**Figure 4.5:** *The Relationship Beteen the Norway GPR Index and Acquirer CAR*




*Note.* The line from the y-axis is the average GPR rate (5.13%).

From past papers, we found that higher policy uncertainty increases number of stock payments relative to cash payments. Our sample shows that when the GPR index is below average (<5.13%), stock payments are higher represented by 20.93% (n=112/535), compared to that of 13.77% (n=23/167) when the GPR index is above its average (>5.13%). The average CAR for stock is 6.22% during low uncertainty and 3.67% during high uncertainty. For cash payments, it is also higher represented at 51.12% (n=274/535) when the GPR

[6]Data source: https://www.matteoiacoviello.com/gpr.htm

is below its average compared to that of 48.50% (n=81/167) when the GPR is above its average. The average CAR for cash is then 6.22% during low uncertainty and 3.67% during high uncertainty. It is worth noting that the volatility in stock is considerably higher compared to cash (Table 4.3). Our observation is quite interesting and aligned with past evidence that heightened uncertainty should decrease number of observations. Acquirers doing M&A amid heightened uncertainty should become more prudent in their selection with regards to its success of gaining desired synergies. This will be further examined by looking at how the market reacts to these decisions with an OLS regression in Subsection 5.2.

### *Tax Rate (T)*

Since empirical results from the literature have found that acquirers' CAR is associated with the target firm's corporate tax rate, we use the Norwegian corporate tax rate to measure in our study. We retrieved our data from the Bloomberg Terminal. This will allow us to measure how the level of tax rate influences acquirer's CAR by each method of payment. Table 4.1 shows our observations on the average CAR with its assigned corporate tax rate.

**Table 4.1:**

*Average Acquirer Three-day CAR [-1,+1] Split on Norwegian Tax Rates*

| | **Cash** | | **Stock** | | **Mix** | |
|---|---|---|---|---|---|---|
| | **CAR** | **n** | **CAR** | **n** | **CAR** | **n** |
| **Tax Rate (T) - %** | | | | | | |
| 22 | 1.9753 | 36 | 12.4310 | 37 | 2.6789 | 52 |
| 23 | 0.9534 | 9 | -0.4515 | 1 | -3.4664 | 14 |
| 24 | -8.6049 | 1 | 10.8703 | 3 | 4.6729 | 13 |
| 25 | -0.0648 | 5 | 9.1306 | 5 | 2.0408 | 8 |
| 27 | 1.0497 | 19 | 5.5559 | 4 | 4.2869 | 19 |
| 28 | 0.1436 | 283 | 3.0624 | 79 | 1.9821 | 106 |
| 48 | NaN | 0 | NaN | 0 | -0.8409 | 1 |
| 50 | -1.7962 | 1 | NaN | 0 | NaN | 0 |
| 50.8 | NaN | 0 | -0.0328 | 2 | NaN | 0 |

Table 4.1 displays the mean of all transaction's Three-day CAR [-1,+1] under each payment method based on different tax policies. All numbers except number of observations (n) in percentages.

The corporate tax rate declines from 50% to 48% in 1988, but shortly after, it reduces to 28% in 1993. This rate stays constant until 2013, and from there the rate reduces step-wise down to 22% in 2019. Most of our observations are given at the 28% corporate tax rate (n=468), of which 60.47% is cash payment and 16.88% is stock payment. Cash has an average CAR of 0.14% and a STD of 4.37%, while stock has respectively higher but much more volatile results

of 3.06% and 12.65%. Given a corporate tax rate of 22%, we obtain a total of 125 observations. The representation by cash (n=36) and stock (n=37) are respectively 28.80% and 29.60%. As seen in Table 4.1 again, the values of CAR for both results in cash and stock increase at the 22% tax rate, and moreover, payments with stock are notably higher now but the spread between the payments is now close to equal compared to before.

### 4.2.4 Independent variables: Control

In the following, we present our control variables used in all our regressions. Their their descriptive statistics will be presented in Subsection 4.3 and calculations are presented in Appendix A2.7. We are consistent with past researchers, and all our control variables are selected based on factors that will alter the explanatory power for the payment methods.

#### *Firm-specific*

We use acquirer firm's characteristics in our study, and similar to Faccio and Masulis (2005), we use *Collateral (A)* as a variable to control for acquirer's ability to pay cash, of which are mostly financed with additional debt borrowing (Appendix A1.3). We also use *Cash/Assets (A)* to control for acquirer's liquidity, which is an important measure to explain its ability to pay its short-term obligations. Further, we use *MVE/BVE (A)* to measure acquirer's valuation by the investors in the market, as we will gain a better understanding of how the market reacts around an announcement to firms that have high valuations and expensive compared to its book value of equity.

#### *Deal-specific*

The larger the size of the target firm relative to the acquirer, the better reaction to the acquirer's announcement in the market. To control these effects, we use the variable *Relative Size*. Additionally, we added the logarithm of the deal value offered, denoted as *LN Deal Value*, to capture the market effects that a deal's size has with the payment methods.

#### *Market-specific*

Since we are investigating variables for economic and policy uncertainty, we also account for acquirer's currency strength using the variable *Exchange Rate*. The foreign exchange (FX) rate affects market activity and gauges the purchasing power and financing difficulties of the acquirer. As such, we can control how

investors react to an announcement given an appreciation or depreciation in the prevailing FX used in the offer. Further, we apply the VIX Index to measure the markets expectation of future volatility. The effect is controlled in the variable *VIX Index*, which helps us understand how market uncertainty affects the announcements for each payment.

#### *Dummies*

We apply an indicator variable, *Intra-industry*, to control if the acquirer and target firms are in the same industry (if 4-digit SIC codes coincides).[7] This is an important variable that captures the market reaction on the acquirers abnormal returns when uncertainty arises with information asymmetry. Further, in cross-border deals, acquirers have different risk exposure and information compared to firms in the target nation. This may increase uncertainty to the market investors during an announcement, so we control this effect in *Cross-border*.[8] To capture the effect of uncertainty on the acquirer's abnormal returns that results from corporate control threats to its shareholders we control for the target firm's listing status in *Private (T)*. Lastly, we use *Economic Shocks* as an indicator to control for acquirer's abnormal returns when the financial market is faced with sudden distress (e.g. the 2008 Global Financial Crisis and 2014 Norwegian Oil Crisis).[9]

## 4.3 Descriptive Statistics

### 4.3.1 Sample overview

Table 4.2 presents a summary of the sample used for all our regressions. In our full sample starting in 1996, we obtain 700 observations in total, of which cash, stock, and mix, are respectively represented by 50.57%, 19.14%, and 30.29%. In the mixed payment, the average proportion of cash is 52.67%. In Faccio and Masulis (2005), they found in a sample of European M&As that cash is used for 80.23%, stock is used for 8.43%, and mixed is used for 11.34%. Also, the average percent of cash in mixed payment was reported at 56.9%. Thus, while our results are similar, the sample distribution in our study is more spread between the payment options. This statement does in fact also hold true to the observations seen for Norwegian M&As in the aforementioned paper.

[7] Our sample identified 313 observations with matching 4-digit SIC, of which 208 used cash, 41 used stock, and 64 used mixed.

[8] Our sample identified 320 cross-border observations, of which 137 used cash, 66 used stock, and 117 used mixed.

[9] The economic shocks identified can have influence to the acquirers either at the global-level and/or country-level. Our study identified 54 observations announced when there was identified a shock to the market, of which 27 used cash, 16 used stock, and 11 used mixed.

**Table 4.2:**

*Year-By-Year Sample Summary by Payment Method*

| Year | All | Cash | Stock | Mix |
|---|---|---|---|---|
| 1996 | 4 | 0 | 1 | 3 |
| 1997 | 3 | 0 | 2 | 1 |
| 1998 | 3 | 1 | 1 | 1 |
| 1999 | 10 | 6 | 3 | 1 |
| 2000 | 8 | 2 | 2 | 4 |
| 2001 | 3 | 0 | 1 | 2 |
| 2002 | 12 | 5 | 0 | 7 |
| 2003 | 7 | 3 | 1 | 3 |
| 2004 | 18 | 3 | 4 | 11 |
| 2005 | 33 | 15 | 12 | 6 |
| 2006 | 46 | 30 | 8 | 8 |
| 2007 | 42 | 21 | 6 | 15 |
| 2008 | 33 | 22 | 8 | 3 |
| 2009 | 41 | 26 | 8 | 7 |
| 2010 | 55 | 35 | 12 | 8 |
| 2011 | 85 | 67 | 6 | 12 |
| 2012 | 35 | 29 | 1 | 5 |
| 2013 | 29 | 16 | 4 | 9 |
| 2014 | 28 | 16 | 3 | 9 |
| 2015 | 19 | 6 | 3 | 10 |
| 2016 | 20 | 5 | 7 | 8 |
| 2017 | 17 | 1 | 3 | 13 |
| 2018 | 24 | 9 | 1 | 14 |
| 2019 | 17 | 7 | 5 | 5 |
| 2020 | 39 | 7 | 15 | 17 |
| 2021 | 34 | 11 | 9 | 14 |
| 2022 | 35 | 11 | 8 | 16 |
| **Total** | **700** | **354** | **134** | **212** |

Regarding time trends, it is seen in the above table that the activity increases significantly in 2005. Norway implemented a law pursuant to the EU Council Regulation (EC) No. 2157/2001 on January 4, 2005, of which importantly incentivizes activity between the members of European Economic Area (EEA) and European Union (EU).[10] This promoted acquisitions in Norway, and for cross-border acquirers it reduced costs, such as administration fees as well as financing of debt in Norway. Evidently, the activity rises substantially in 2011 due to a favourable tax legislation effected in January 1, 2011, allowing Norwegian acquirers as well as acquirers in the EU and EEA to do non-immediate tax-neutral mergers (Ole Kristian, Aabø-Evensen, 2017; KPMG, 2014). Moreover, we note that the activity spikes and remains high between 2020 and 2022, mainly due to the Covid-19 outbreak in March, 2020. Despite lower financing costs at the time, the pandemic greatly increased uncertainty in the global financial markets. As such, most acquirers preferred stock payments (38%) compared to cash payment (18%) to mitigate the downside risk inherent to its acquisition performance. In 2021, uncertainty decreased moderately,

[10] Lov om europeiske selskaper, § 1 (2005)

and investors gained optimism, resulting in more frequent payments with cash (31%) compared to stock (23%) again.

### 4.3.2 Data correlation

In Appendix A2.8, a correlation matrix where we include all the variables in Subsection 4.2 is presented. We seek to handle correlations above 0.7 in absolute terms, consistent with Saunders et al. (2019). The correlation matrix show a correlation of 0.88 for *Interest Rate (T)* and *Tax Rate (T)*. This is considered highly correlated, which might lead t the issue of multicollinearity in our models. In order to keep all the relevant variables, we do not omit any from our study, so we rather split the models into economic and policy variables. As a result, Appendix A2.9 and A2.10 provide the correlation matrices for economic and policy variables separately but using the same control variables. In the former, the highest correlation is between *GDP Growth (T)* and *Interest Rate (T)*, given at -0.14, which is considered low. The correlation for the policy variables *GPR Index (T)* and *Tax Rate (T)* is -0.61, which is considerably higher, but not an issue in our statistical inferences. Further, all the other variables in the two matrices have notably low correlations. As a result, our models are considered robust. For robustness checks as well as discussion on data quality and issues such as multicollinearity, please consider looking at Section 6 for further detail.

### 4.3.3 Two-sample mean differences result

Here we provide a statistical summary of all variables used in our study. We also perform a two-sample t-test on the differences in the means. The acquirer's three-day CAR is winsorized at the top and bottom 5th percentile to limit the effect of outliers, which helps increasing the robustness in our analyses (see Subsection 6.1.

In Table 4.3, the reported statistics on $CAR_{-1,+1}$ show a mean and STD of 0.91% for cash compared to that of 5.96% and 12.93% for stock. The mean difference test is significant at the 1% level, indicating that acquirer's CAR is quite different for the two payment methods. Regarding the economic variables, *GDP Growth (T)* has a higher mean for cash compared to stock (0.49% vs. 0.35%), which can be attributed to that acquirer's prefer cash when the economy is growing. However, the test shows no significant differences in our sample. The mean differences between cash and stock given *Interest Rate (T)* are significantly different at the 5% level. This variable has a higher mean for payments with cash compared to stock (2.56% vs. 2.08%), which

is mostly due to higher number of cash observations during periods of high inflation in Norway. Likewise, the difference in means are significant given *Inflation Rate (T)*, but the mean is lower for cash compared to stock (2.16% vs. 2.46%). When inflation goes up, the central bank puts action to reduce aggregate demand, and thus when the market contracts, acquirers will prefer paying with stock. Regarding the policy variables, the difference in means between cash and stock given *GPR Index (T)* is not significant. However, we observe that the mean is lower for cash compared to stock (4.14% vs. 5.03%), which is not unexpected because acquirer's tend to use stock to mitigate risk and uncertainty in the prospective outcome from the offer with the target firm. The difference in means given *Tax Rate (T)* is significant at the 1% level, but can also be due to the relative higher number of cash observations compared to stock when the tax rate was substantially higher, especially until 2013.

With regards to the control variables, the mean differences are mostly significant and prove there exists differences between payments with cash and stock. At the 1% level, we have the variables *MVE/BVE (A)* and *Cash/Assets (A)*. At the 5% level, we have *LN Deal Value*, *Cross-border*, and *Private (T)*. At the 10% level, we have *Relative Size*. We want to acknowledge that since our sample size is relatively smaller than past research papers in the M&A field, our variables can thus have relatively lower reliability in certain variables for interpretation.

**Table 4.3:**

*Descriptive Statistics and the Two-Sample Mean Difference T-Test for All Variables in the OLS Regressions*

| | (1) Cash | | (2) Stock | | (3) Mix | | (1) - (2) Difference |
|---|---|---|---|---|---|---|---|
| | **Mean** | **STD** | **Mean** | **STD** | **Mean** | **STD** | **t-stat** |
| $CAR_{-1,+1}$ | 0.9169 | 4.1607 | 5.9604 | 12.9337 | 2.2342 | 6.5911 | $-3.626^{***}$ |
| GDP Growth (T) | 0.4936 | 1.0791 | 0.3589 | 2.0424 | 0.6229 | 1.6437 | 0.589 |
| Interest Rate (T) | 2.5694 | 1.6791 | 2.0879 | 1.7547 | 1.9064 | 1.8593 | $-2.164^{**}$ |
| Inflation Rate (T) | 2.1623 | 1.3444 | 2.4636 | 1.3521 | 2.1753 | 1.4877 | $-1.736^{*}$ |
| GPR Index (T) | 4.1475 | 2.2693 | 5.0313 | 7.2375 | 5.1831 | 5.4825 | $-1.137$ |
| Tax Rate (T) | 27.1833 | 1.8453 | 25.9891 | 2.6746 | 25.6952 | 2.6302 | $-3.824^{***}$ |
| Exchange Rate | 0.2522 | 3.5571 | -0.1429 | 3.5932 | -0.0216 | 3.3819 | 0.858 |
| VIX Index | 19.9924 | 8.6256 | 20.9756 | 8.5628 | 18.9751 | 6.4089 | $-0.890$ |
| LN Deal Value | 3.5170 | 2.2155 | 2.8677 | 2.2400 | 3.2529 | 2.1593 | $2.262^{**}$ |
| Relative Size | 0.2518 | 1.6351 | 1.8205 | 8.8942 | 0.5797 | 1.6595 | $-1.668^{*}$ |
| MVE/BVE (A) | 10.4408 | 14.0961 | 6.2253 | 11.1974 | 8.8072 | 11.7969 | $2.676^{***}$ |
| Collateral (A) | 0.3105 | 0.2914 | 0.2622 | 0.2746 | 0.3207 | 0.3277 | 1.340 |
| Cash/Assets (A) | 0.1530 | 0.1494 | 0.2325 | 0.2366 | 0.1961 | 0.1981 | $-2.923^{***}$ |
| Cross-border | 0.5667 | 0.4955 | 0.4066 | 0.4912 | 0.5241 | 0.4994 | $2.526^{**}$ |
| Private (T) | 0.5889 | 0.4920 | 0.7363 | 0.4407 | 0.8984 | 0.3021 | $-2.499^{**}$ |
| Intra-industry | 0.3167 | 0.4642 | 0.2747 | 0.4464 | 0.3102 | 0.4626 | 0.720 |
| Economic Shock | 0.0778 | 0.2678 | 0.1319 | 0.3383 | 0.0535 | 0.2250 | $-1.329$ |

*Note.* The table shows data values for the variables used in the regressions. The values are observed for each payment method. Thus, the table provides information about the mean and volatility for the values observed given a payment with cash, stock, and mix. The means and STDs are denoted in percentages. (T) stands for 'Target' and (A) stands for 'Acquirer'.

# 5 Empirical Results

In this section, we present our findings along with the hypotheses regarding the effect of economic and policy uncertainty on acquirers' M&A performance, as measured by its three-day CAR and examined for the payment methods with cash, stock, and mixed. We also provide results on the abnormal returns around one day before and after the announcement. Our empirical analysis is divided into two subsections. In Subsection 5.1, we analyse the results in the model with economic variables. In Subsection 5.2, we analyse the results in the model with policy variables.

## 5.1 Economic Uncertainty

Model 4 in Table 5.1 reports the full sample OLS regression examining the effects of economic variables as well as the control variables, on the acquirer's three-day CAR $[-1, +1]$. We get the following statistics that the total number of observations is 458, and the R-squared of 9.70% suggests that the model has a low predictive power. For its results on the economic variables, we find that *GDP Growth (T)* is insignificantly different from zero, *Interest Rate (T)* is significantly different from zero at the 1% level, and *Inflation Rate (T)* is insignificantly different from zero.[11] In our main results, we are interested in studying the three-day CAR by each method of payment as our research objective has been outlined. Model 1, 2, and 3, in Table 5.1, show the results from the OLS regression provided in Equation 3.6a for payments with cash, stock, mixed, respectively. As seen in the mentioned table, all our regressions show a stronger predictive power when grouping for each payment compared to the full sample regression.[12] The corresponding numbers of observations are 180, 91, and 187.

### *GDP Growth (T)*

The result for the independent variable, *GDP Growth (T)*, is positive and significant at the 5% level for cash payment, whereas it is negative but insignificant for stock payment, and positive but insignificant for mixed payment. Accordingly, we reject the null hypothesis for **H1a** and keep the null hypothesis for **H1b**. Our inference for the former hypothesis shows reliable evidence that a 1.00% quarter-on-year growth in the real GDP leads to a 0.5688% increase in

[11] Two-tailed t-test on *Interest Rate (T)*; t-stat = -2.942 and t-crit = ±2.5866 (model 4, Table 5.1).

[12] The R-squared for regressions with cash, stock, and mix, are respectively 17.40%, 36.80%, and 12.30% (model 1-3, Table 5.1)

acquirer's three-day CAR using cash payment, all else equal. This supports our expectation that acquirers using cash payment will experience a positive market reaction with a growing economy, given that the growth in GDP makes firms financially stronger and it makes the cost of financing a cash payment with debt cheaper (Huang et al., 2016; Choi and Jeon, 2011; Uddin and Boateng, 2011). Our hypothesis for H1b shows insignificant results, however, the negative sign is economically meaningful. This can be explained by the reason that acquirers tend to use stock payment to mitigate risk (Myers and Majluf, 1984), and when the economy is in a recession, our regression shows that the market reacts positive and may increase the acquirer's CAR given a recession.

Model 1-3 in Table A2.3 reports each payment's abnormal returns one day before $[-1, 0]$ and after $[0, +1]$ the announcement day. Given the variable, *GDP Growth (T)*, the AR prior to announcement is positive and significant at the 10% level for cash payment, while negative but insignificant for both stock and mixed payments. Moreover, the AR after the announcement is negative and insignificant for all payments, except that mixed is now positive (model 4-6, Table A2.3). For payments with cash, these results may indicate that information leakage does exist and the market is reacting positive to the anticipated event given a cash transaction.

#### *Interest Rate (T)*

Our second economic variable, *Interest Rate (T)*, is negative and significant at the 5% level for cash payment, negative and significant at the 5% level for stock payment, and negative but insignificant for mixed payment (model 1-3, Table 5.1). This implies that we reject the null hypothesis for both **H2a** and **H2b**. Our results show that the Norwegian interest rate does have an effect on acquirer's three-day CAR, being especially sensitive to those using stock payment. We get that a 1pp increase in the Norwegian interest rate rate leads to a -0.3780% decrease for acquirers using cash payment, whereas, a -2.0397% decrease for acquirers using stock payment. This is not surprising, as interest rates have an inverse relationship with returns (Fama and Schwert, 1977). In line with past literature, our results support the theory that payments with cash are negatively affected by increases in interest rates owing to the fact that it becomes more expensive to finance the cash payment with debt (Ibrahim and Raji, 2018). In the case of acquirers using stock, it is not surprising that they are more sensitive to the interest rate as stock valuations and ability to issue equity in the market decreases with higher interest rates (Yagil, 1996).

As can be seen in models 1-3 in Table 5.1, *Interest Rate (T)* is negative for all payments but only significant for cash payment (5% level) given the event window one day before an announcement. Given the event window one day after an announcement (model 4-6, Table A2.3), *Interest Rate (T)* is negative for all payments, but this time only significant for payments with stock (5% level). These results imply that information leakage exists and that the prevailing interest rate level influences the market reaction for acquirers using cash payment. Further, there is also an implication that the delayed market reaction is of importance to return after the announcement for acquirers using stock. This is however difficult to infer, but might prevail due to the time it takes for the signalling effect to be fully absorbed in the market, as explained by (Myers and Majluf, 1984).[13]

***Inflation Rate (T)***

Our last economic variable, *Inflation Rate (T)*, is negative but insignificant for cash payment, negative and significant at the 5% level for stock payment, and negative but insignificant for mixed (model 1-3, Table 5.1). Both signs for the cash and stock were expected, but we must keep the null hypothesis for **H3a** and reject the null hypothesis for **H3b**. A 1.00% month-over-year increase in the Norwegian CPI leads to a -1.7046% decrease in acquirer's three day CAR using stock payment. Economically, the result is meaningful as theory on inflation suggests that it should have an inverse relationship with returns for its adversity in acquirer's future growth prospects from the M&A transaction Fama (1981); Uddin and Boateng (2011); Boateng et al. (2017); Kanungo (2021). High inflation increases acquirer's cost of acquisition and future capital costs. Subsequently, this increases investors' required rate of return and they become uncertain in acquirer's ability to grow and capture the desired synergies. Thus, as our results indicate, acquirers will experience a negative market reaction with increased inflation.

The AR one day before an announcement is positive but insignificant for cash payment, negative but insignificant for stock payment, whereas it is negative and significant at the 10% level for mixed payment (model 1-3, Appendix A2.3). This indicates that there may exist some information leakage and the role of inflation has a declining influence on acquirer' returns using mixed payment. In the case for AR after the announcement, cash and mixed payments are both

[13]Based on the pecking order theory, an acquirer's financing decision follows a hierarchy, where equity financing comes last and may thus have a negative signalling effect to the market about the acquirer's belief of its acquisition performance and valuation relative to the target.

negative but insignificant, whereas it is negative and significant at the 1% level for stock payment (model 4-6, Appendix A2.3). The lack of insignificance in the first case for stock may be subject to the fewer number of observations. However, from this we can only infer that the inflation has a strong influence in the period after the announcement for acquirers using stock payment.

**Table 5.1:**

*OLS Regression w/ Economic Variables*

| **Dep. var:** $CAR_{[-1,+1]}$ | **(1) Cash** | **(2) Stock** | **(3) Mix** | **(4) Full sample** |
|---|---|---|---|---|
| Industry FE | Y | Y | Y | Y |
| Constant | -2.5411 | -9.5960 | 5.6455 | 0.3538 |
| | (-1.017) | (-0.611) | (1.425) | (0.155) |
| GDP Growth (T) | 0.5668** | -0.2810 | 0.0193 | 0.1150 |
| | (1.983) | (-0.383) | (0.062) | (0.595) |
| Interest Rate (T) | -0.3780** | -2.0397** | -0.3049 | -0.5249*** |
| | (-1.804) | (-2.334) | (-1.022) | (-2.942) |
| Inflation Rate (T) | -0.0343 | -1.7046** | -0.2216 | -0.3204* |
| | (-0.133) | (-1.675) | (-0.626) | (-1.486) |
| Exchange Rate | 0.0029 | 0.1375 | -0.4373*** | -0.1431** |
| | (0.030) | (0.339) | (-2.895) | (-1.669) |
| VIX Index | 0.0553 | 0.1074 | -0.0988 | 0.0248 |
| | (1.285) | (0.572) | (-1.151) | (0.588) |
| LN Deal Value | 0.0390 | 1.4479** | -0.0913 | 0.1279 |
| | (0.235) | (1.839) | (-0.289) | (0.825) |
| Relative Size | 0.3310** | 0.3378** | 0.2351 | 0.1902*** |
| | (1.695) | (2.112) | (0.674) | (2.702) |
| MVE/BVE (A) | -0.0155 | -0.0562 | -0.0040 | -0.0210 |
| | (-0.603) | (-0.384) | (-0.083) | (-0.780) |
| Collateral (A) | 0.7503 | 4.7244 | -1.2368 | 0.3545 |
| | (0.498) | (0.648) | (-0.432) | (0.244) |
| Cash/Assets (A) | 3.9653** | -1.4742 | -1.3857 | 0.7851 |
| | (1.670) | (-0.212) | (-0.437) | (0.454) |
| Cross-border | 0.3225 | -2.8940 | -0.8627 | -0.4215 |
| | (0.498) | (-0.865) | (-0.736) | (-0.633) |
| Private (T) | 0.7204 | 4.0233 | -0.8423 | 0.7322 |
| | (1.049) | (0.983) | (-0.429) | (0.975) |
| Intra-industry | 0.2048 | -4.9650* | -0.5286 | -0.2042 |
| | (0.276) | (-1.489) | (-0.457) | (-0.307) |
| Economic Shock | -3.3157** | -3.8557 | -0.5863 | -1.6707* |
| | (-2.516) | (-0.811) | (-0.253) | (-1.443) |
| R2 | 0.174 | 0.368 | 0.123 | 0.097 |
| n | 180 | 91 | 187 | 458 |

Table 5.1 presents results of the entity fixed effects regression model of acquirer CAR for variables defined under economic uncertainty, including firm and deal-specific control variables. (T) stands for 'Target' and (A) stands for 'Acquirer'. Model 1, 2, and 3 include all M&A transactions where cash, stock, and mixed payment are used, respectively. ***, **, and * denote significance at the 1%, 5%, and 10% levels. T-stat is presented in brackets under each observation.

## 5.2 Policy Uncertainty

In this subsection, the OLS regression is based on Equation (3.6b) using the policy variables. The full sample (model 4, Table 5.2) OLS regression has 467 observations with an R-squared of 7.60%. Among the two testable policy variables, only *Tax Rate (T)* demonstrates statistical significance from zero (10% level).[14] In model 1-3, each of our main regressions show greater predictive power than the full sample regression.[15] As in the regressions with economic variables (see Table 5.1), we prove that effects on acquirer's CAR is more appropriately examined when grouping for each payment method.

### *GPR Index (T)*

Our first policy variable, *GPR Index (T)*, is positive but insignificant for cash, negative and significant for stock at the 1% level, and positive but insignificant for mixed payment. Thereby, we keep the null hypothesis for **H4a** and reject the null hypothesis for **H4b**. From this, we can infer that a 1pp increase in the Norwegian GPR Index leads to a -0.5660% decrease in acquirer's three-day CAR using stock payment. The GPR index for Norway varies substantially during periods of high uncertainty compared to periods with low uncertainty, which is why we can argue from our results that acquirer's return given high uncertainty can lead to unprecedented and adverse levels of acquirer CAR, in ceteris paribus. Despite no significance, the sign for cash is positive as we expected. Economically this would support the theory and evidences that acquirers are more conservative with heightened uncertainty and will thus select M&A targets that is expected to have a certain outcome for its shareholders even though there may be increased market volatility (Nguyen and Phan, 2017; Bonaime et al., 2018; Gregoriou et al., 2021). Our result for stock is reliable and economically meaningful. We argue that investors are attentive to the heightened market uncertainty and will therefore have a negative market reaction for announcements with stock payment given its signaling effects about its incentive to mitigate risk (Fuller et al., 2002; Hansen, 1987)

Model 1-3 in Appendix A2.4 reports ARs for each payment method one day before $[-1, 0]$ and after $[0, +1]$ an announcement. The results for stock are negative and significant at the 5% level both before and after the announcement, meanwhile cash and mixed payments are insignificant in all cases. However,

[14] Two-tailed t-test on *Tax Rate (T)*; t-stat = -1.847 and t-crit = ±1.6483 (model 4, Table 5.2).

[15] The R-squared for regressions with cash, stock, and mix, are respectively 38.20%, 11.30%, and 16.60% (model 1-3, Table 5.2)

an intriguing finding is that the sign on cash payment is negative one day before the announcement, but turns positive one day after the announcement. This may be a reason for the insignificant evidence on acquirer's CAR with cash. The economical reasoning can be explained by the investors' degree of information about the payment decision prior to an announcement. In many cases prior to the announcement, investors are not given the information about the acquirer's strategic goals of the M&A, of which can cause uncertainty about the prospects from the anticipated announcement. Subsequently, when the investors are given information about the payment decision of cash as well as strategic goals, the investors react confidently to the acquirer's decision by the signalling effect. Therefore, we argue that the payment decision of an acquirer plays a crucial role in understanding its abnormal returns.

#### *Tax Rate (T)*

Our last variable, *Tax Rate (T)* is negative but insignificant for cash payment, negative and significant at the 1% level for stock payment, and negative but insignificant for mixed payment. To our surprise, the market reaction only has a significant effect on acquirer's using stock payment. As such, we keep the null hypothesis for **H5a** and reject the null hypothesis for **H5b**. The inference states the following that a 1pp increase in the Norwegian corporate tax rate leads to a -1.6375% decrease in acquirer's three-day CAR. This is highly reliable and shows great influence to acquirer's CAR when using stock payment, but this is notably quite distinctive from the results in Hayn (1989). We observed with a three-day window as opposed to hers seven-day window. Our results are only economically similar to the significant results in Blouin et al. (2021), as they also found that acquirer's CAR decreases with an increase in tax when using cash payment. On a payment with stock, our result does not only show evidence that an increase in tax rates induces negative reactions, but it can also support the reasoning that stock payment should be lower than cash and mixed payments Brown and Ryngaert (1991). With respect to the "lemons" problem, acquirers who believe their own private valuation is undervalued will choose payments with stock, and will thus have a negative signaling effect to investors in the market (Brown and Ryngaert, 1991; Hansen, 1987).

Our results on the AR before an announcement show that the Tax Rate (T) is negative but insignificant for cash payment, negative and insignificant at the 5% level for stock payment, and negative but insignificant for mixed payment (model 1-3, Appendix A2.4). This indicates that there exists some information leakage prior to the announcement and has an influence to acquirers paying with stock.

For our results on AR after an announcement, the aforementioned variable is positive but insignificant for all payment methods (model 4-6, Appendix A2.4). There is no solid evidence from which to draw conclusions about how the announcement of an increase in corporate taxes affected the response that followed.

**Table 5.2:**

*OLS Regression w/ Policy Variables*

| **Dep. var:** $CAR_{[-1,+1]}$ | **(1) Cash** | **(2) Stock** | **(3) Mix** | **(4) Full sample** |
|---|---|---|---|---|
| Industry FE | Y | Y | Y | Y |
| Constant | -0.7078 | 40.7171 | 6.9382 | 6.6243 |
| | (-0.104) | (2.138) | (1.078) | (1.595) |
| GPR Index (T) | 0.0281 | -0.6646*** | 0.0220 | -0.0819 |
| | (0.188) | (-2.996) | (0.211) | (-1.263) |
| Tax Rate (T) | -0.0701 | -1.6375*** | -0.1118 | -0.2482** |
| | (-0.343) | (-2.698) | (-0.541) | (-1.847) |
| Exchange Rate | 0.0134 | 0.1255 | -0.3801*** | -0.1078 |
| | (0.140) | (0.334) | (-2.616) | (-1.270) |
| VIX Index | 0.0256 | -0.1556 | -0.1173* | -0.0268 |
| | (0.633) | (-0.880) | (-1.490) | (-0.677) |
| LN Deal Value | 0.0956 | 1.6371** | -0.4762* | 0.0500 |
| | (0.567) | (2.045) | (-1.512) | (0.325) |
| Relative Size | 0.3049* | 0.3893*** | 0.3936 | 0.2096*** |
| | (1.553) | (2.516) | (1.176) | (2.970) |
| MVE/BVE (A) | -0.0236 | -0.2977** | -0.0182 | -0.0362* |
| | (-0.917) | (-2.023) | (-0.382) | (-1.375) |
| Collateral (A) | 0.9856 | 5.0660 | -0.1744 | 0.5508 |
| | (0.675) | (0.832) | (-0.070) | (0.407) |
| Cash/Assets (A) | 3.7988* | 6.5069 | -1.9646 | 1.1664 |
| | (1.559) | (0.896) | (-0.650) | (0.659) |
| Cross-border | 0.4107 | 1.1524 | -0.7782 | -0.1992 |
| | (0.552) | (0.356) | (-0.687) | (-0.297) |
| Private (T) | 0.4692 | -0.7791 | -1.0913 | 0.5998 |
| | (0.697) | (-0.192) | (-0.584) | (0.809) |
| Intra-industry | 0.4606 | -3.6914 | 0.0080 | 0.1460 |
| | (0.655) | (-1.145) | (0.007) | (0.225) |
| Economic Shock | -3.8408** | 1.6535 | -1.3157 | -1.4330 |
| | (-3.077) | (0.319) | (-0.560) | (-1.209) |
| R2 | 0.113 | 0.382 | 0.156 | 0.076 |
| n | 185 | 92 | 190 | 467 |

Table 5.2 presents results of the entity fixed effects regression model of acquirer CAR for variables defined under economic uncertainty, including firm and deal-specific control variables. (T) stands for 'Target' and (A) stands for 'Acquirer'. Model 1, 2, and 3 include all M&A transactions where cash, stock, and mixed payment are used, respectively. ***, **, and * denote significance at the 1%, 5%, and 10% levels. T-stat is presented in brackets under each observation.

# 6 Robustness

In this section, we present robustness checks in Subsections 6.2 and 6.3, as well as an alternative measure connected to our primary analysis presented in Subsection 6.4. The goal is to validate our main results by its economic implications and theoretical relatedness.

## 6.1 Data Quality & Assurance

To collect observations that are valid in the field of M&A research, we collected and processed the data in SDC Platinum's database similar to the most influential papers. Our sample size is substantially smaller than those papers observing M&As outside Norway, which is naturally due to the number of transactions that occur in Norway, and our observations decrease considerably from 3351 to 710 after removing all observations that do not fit for our research objective. After grouping these observations into payments with "Cash," "Stock," and "Mix," we find that the proportion of observations for each group do in fact closely resemble the group-sample distribution in top-ranked journals, as discussed in Subsection 4.3. To ensure that our group samples are unbiased, we use a standard method by winsorizing the top and bottom 5th percentile of the distribution in acquirer's CAR. As a result, the outliers are now stabilized and will contribute to increasing the reliability of our OLS regressions. However, the number of observations for the group sample 'Stock' contain approximately half of the observations in both 'Cash' and 'Mix' group samples (see Table 5.1 and 5.2). The sample size is not considered too small, but since it is relatively smaller and that the observations in stock have much larger deviations from its mean, the reliability is somewhat reduced compared to the observations in 'Cash' and 'Mix'.[16] However, our predictive power for the regressions grouped by 'Cash' outperforms the other two in every case, and we have no problem making statistical and economic inferences to make findings to our research questions and comments regarding finance theory.

## 6.2 Heteroskedasticity

We test for heteroskedasticity to ensure that the variance of the residuals drawn from our sample is not constant, or else this could result in biased estimations and misleading inferences. We use White's test for heteroskedasticity for our OLS regressions using Equation 3.6a and 3.6b. Our results are presented in Table 6.1, which provides us the information that heteroskedasticity is not

[16] See Appendix A1.5 for PDF distributions.

present in any of our regression models at the 5% level. In Panel A, we have p-values of 0.46, 0.45, and 0.42 for each group of OLS regression regarding our study on economic uncertainty. In Panel B, we have corresponding p-values of 0.39, 0.45, and 0.49 regarding our study on policy uncertainty. All results show strong evidence that heteroskedasticity is not a problem in our analysis.[17]

**Table 6.1:**

*White's test: Chi-Squared Test on the OLS Regressions*

| | alpha | p-value | Sign of HET? (Y/N) |
|---|---|---|---|
| **Panel A: Economic** | | | |
| Cash | 0.05 | 0.46 | N |
| Stock | 0.05 | 0.45 | N |
| Mix | 0.05 | 0.42 | N |
| **Panel B: Policy** | | | |
| Cash | 0.05 | 0.39 | N |
| Stock | 0.05 | 0.45 | N |
| Mix | 0.05 | 0.49 | N |

Panel A in Table 6.1 reports the White's test results based on Equation 3.6a for the corresponding variables observed in Table 5.1. Panel B reports the results based on Equation 3.6b for the corresponding variables observed in Table 5.2.

## 6.3 Multicollinearity

Furthermore, we employ a variance inflation factor (VIF) check to potentially expose multicolored multicollinearity problems. This is also applied with our OLS regressions using Equation 3.6a and 3.6b. With our results in Table 6.2, we can verify that none of our variables in any of the regression models suffer from multicollinearity problems. In Panel A, we get that the highest VIF is 2.2156 and this is the control variable *Collateral (T)*, while in Panel B, the highest VIF is 2.2230 and this time this is for *LN Deal Value*. Most of our VIFs are really low and the two aforementioned VIF values are neither a problem since they are still below five ($<5$) and close to uncorrelated ($=1$).[18] Despite absence of any problems, we want to reassure that the two variables are also our control variables and typically related for their economic properties for a given firm, and so the results are not unexpected. Overall, Table 6.2 suggests a good selection of variables in our models.

[17] See Appendix A1.6 and A1.7 for plots of the residuals for all OLS regressions.

[18] For an explanation of the criteria that is used for a VIF check, see Subsection 3.5.2.

**Table 6.2:**

*Variance Inflation Factors*

| Variables | Panel A | | | Panel B | | |
|---|---|---|---|---|---|---|
| | **Cash** | **Stock** | **Mix** | **Cash** | **Stock** | **Mix** |
| GDP Growth (T) | 1.1200 | 1.4683 | 1.1382 | | | |
| Interest Rate (T) | 1.3600 | 1.5352 | 1.3282 | | | |
| Inflation Rate (T) | 1.3152 | 1.2360 | 1.1956 | | | |
| GPR Index (T) | | | | 1.3272 | 1.7450 | 1.4920 |
| Tax Rate (T) | | | | 1.5052 | 1.7923 | 1.3516 |
| Exchange Rate | 1.2609 | 1.3900 | 1.1237 | 1.2277 | 1.2720 | 1.1372 |
| VIX Index | 1.5102 | 1.6872 | 1.3041 | 1.3074 | 1.5523 | 1.1633 |
| LN Deal Value | 1.4794 | 2.1161 | 1.9980 | 1.4862 | 2.2230 | 2.1029 |
| Relative Size | 1.1204 | 1.3226 | 1.4418 | 1.0867 | 1.2798 | 1.4020 |
| MVE/BVE (A) | 1.4474 | 1.7526 | 1.4353 | 1.4104 | 1.8374 | 1.4386 |
| Collateral (A) | 1.7678 | 2.2156 | 2.0906 | 1.6288 | 1.6043 | 1.6618 |
| Cash/Assets (A) | 1.3815 | 1.7643 | 1.6951 | 1.4194 | 1.9361 | 1.6318 |
| Cross-border | 1.4455 | 1.4623 | 1.4741 | 1.4564 | 1.7345 | 1.4745 |
| Private (T) | 1.2436 | 2.1228 | 1.5140 | 1.1900 | 2.1752 | 1.4492 |
| Intra-industry | 1.3112 | 1.4472 | 1.2343 | 1.1593 | 1.4047 | 1.1913 |
| Economic Shock | 1.3681 | 1.6883 | 1.1714 | 1.2533 | 2.0827 | 1.2702 |

Panel A in Table 6.2 reports the Variance Inflation Factors based on Equation 3.6a for the corresponding variables observed in Table 5.1. Panel B reports the results based on Equation 3.6b for the corresponding variables observed in Table 5.2.

## 6.4 Alternative Analysis: Incentivized Variable Differentials

An alternative measure for examining the effect of economic and policy uncertainty to acquirer's three-day CAR by the method of payment can be considered by looking at the differential rates in acquirer's and target's economic and policy variables. Using the same method as (Huang et al., 2016), we can measure the relative uncertainty associated with the differences in our variables, e.g. *Interest Rate (T-A)* is the difference in the interest rate level for the acquirer and target countries. If the value is different from zero, there may exist incentives to do M&A in Norway, and such we will test if the market reacts to acquirer's three-day CAR when incentives exist. Norwegian acquirers can never have incentives as opposed to those cross-border acquirers doing M&A in Norway. As a result, our following analysis tries to solidify the theories that explain the market reaction by looking at incentives from an increase or decrease in our variables.

### *Economic uncertainty*

Model 1-3 in Appendix A2.5 presents regressions with the new measures by cash, stock and mix. Their corresponding R-squared are now 16.1%, 30.2%, and 10.1%, which are notably lower than the values we found in our main analysis

(see Table 5.1). This is likely due a lower predictive power for observations with Norwegian acquirers. However, the new results provide reliable evidence that there do exist incentives for the variable *GDP Growth (T-A)*, but only for payments with cash. The variable is positive and significant at the 10% level, indicating that acquirer's using cash experience a positive three-day CAR when the economy in Norway is growing at a higher rate than its home country. This coincides well with our finding in the empirical analysis that acquirers should have a positive gain on a relative increases in the GDP Growth. Moreover, the results on *Interest Rate (T-A)* have no effect on stock and mixed payment, but are negative and significant for cash at the 5% level. This implies that acquirers using cash are negatively influenced by a higher interest rate in Norway compared to their home country. This aligns with our theory and evidence that acquirers paying with cash (mostly financed with debt) are adversely affected with a higher interest rate (For further information on the modes of financing each payment method, see Appendix A1.3). Our last economic variable, *Inflation Rate (T-A)*, shows no reliable evidence of the market reaction to incentives in any of the payments methods. Although, all our signs are economically meaningful and do support the primary analysis along with previous literature.

***Policy uncertainty***

In Appendix A2.6 we obtain the R-squared for cash, stock, and mixed, with values of 11.5%, 31.6%. and 15.2%, respectively. Although this is quite similar to our main analysis (see Table 5.2, the predictive power is now generally lower. This must also be due to lower predictive power for observations with Norwegian acquirers. Further, the variable *GPR Index (T-A)* provides reliable evidence that incentive exists, but only for stock payment. Stock payment is negative and significant at the 5% level, whereas both cash and mixed are significantly positive but insignificant for cash and mixed payments. The signs and reliability observed for all payments resembles the findings in our main analysis. We can deduce from this that acquirers who pay with stock are reliably influenced by the level of uncertainty in Norway than in their home country, and given that the prevailing uncertainty is higher in Norway compared to acquirer's home country, the market will react negatively to an announcement. This further supports our main analysis and the theory that, in times of increased uncertainty, the market should react negatively due to a negative signaling effect brought on by the acquirer's awareness that there is some uncertainty regarding the likely outcome of the M&A. On the other hand, the variable *Tax Rate (T-A)* shows no evidence for any of the payment methods that there

exists a significant market reaction to the incentives with lower taxes in Norway compared to acquirer's home country. This supports our main analysis and the theory that acquirer's announcement return should only depend on the target's corporate tax rate, and not acquirer's home country tax rate (Hayn, 1989).

# 7 Conclusion

Using a sample of 700 domestic and cross-border M&A announcements in Norway, we conduct an event study from 1996-2022 to examine the impact of economic and policy factors on acquirer's three-day cumulative abnormal return $[-1, +1]$. We make inferences by payments with cash and stock, but we also lay out the results for payments with a mix of both. We find that economic and policy uncertainty does influence abnormal returns for the acquirer, and the result in acquirer's CAR is significantly different at the 1% level between cash and stock. Investors in the market react differently to payments with cash and stock. A payment with cash acts as a positive signal in contrast to stock, since the latter is mainly used to mitigate risk about the M&As future synergies.

Our findings concerning economic variables yield that *GDP Growth (T)* positively increases CAR by 0.5688% for payments with cash, implying that the market reacts favourably given a positive signalling with a growing economy. When *Interest Rate (T)* increases, both payments have negative reactions in the market. Stock is more sensitive with a CAR of -2.0397% compared to that of -0.3780% for cash. The impact is more severe to the former due to increased difficulty to issue equity since valuations are decreasing adjacently. In the case for *Inflation Rate (T)*, it reduces CAR with -1.7046% in payments with stock, and cash is negative as expected but not reliable. Market reacts negatively to stock as higher inflation leads to unfavourable acquisition costs and declining valuations with a higher required rate of return for investors.

On our findings concerning policy variables, the *GPR Index (T)* indicates that the market reacts negatively by -0.5660% to an announcement with stock payment. This supports past papers explaining that acquirers become conservative in their investment decision, of which should make payments with cash positive and those with stock negative due to their signalling effects. During heightened policy uncertainty, investors lose confidence in announcements with stock, while attracted to those with cash. Despite that our cash is not significant, it is still economically meaningful. Our ultimate variable, *Tax Rate (T)*, has unexpectedly only an impact to acquirer's CAR using stock. Our results do although support previous evidence that payments with stock is strongly sensitive as opposed to cash. The market reacts negative given the "lemons" problem, i.e. acquirers who believe their own private valuation is undervalued chooses stock.

Our results are strong and they profoundly fill the gap between evidence on acquirer's payment determinants and the following reactions it draws in the market given economic and policy uncertainty. Furthermore, our robustness tests provides an even more sound support to the existing literature, to solidify our conclusions on the market reactions during announcements. A further research suggestion is to include a larger sample size to ensure even stronger statistical reliability. A method would be to include other Nordic countries as they are similarly considered the most resilient economies in the world during uncertain periods. Further, we could suggest to examine implications from the sources of financing in the payment methods and implement more firm-specific characteristics of the acquiring firms. A view on acquirers by industry can also be of great importance to future research, to examine how the market reacts to acquirers with cash constraints in capital intensive industries compared to capital light industries. The area of study is gaining much traction, and has intriguing aspects in which are yet unfolded.

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# Appendix

## A1 Figures

**Figure A1.1:**

*M&A Transactions in Norway from 1986-2022.*

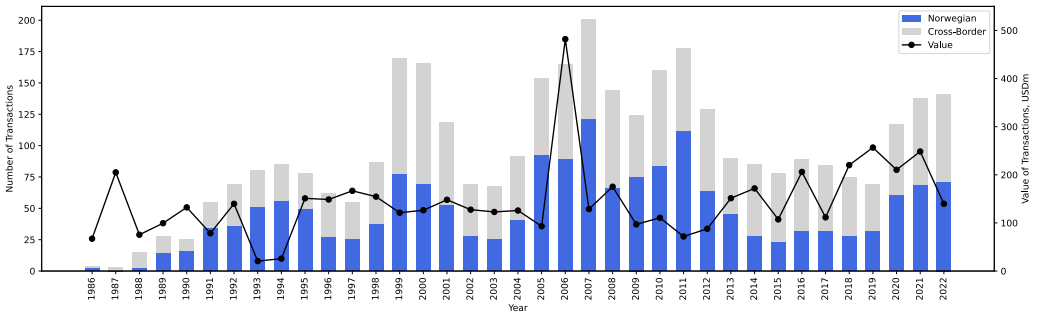
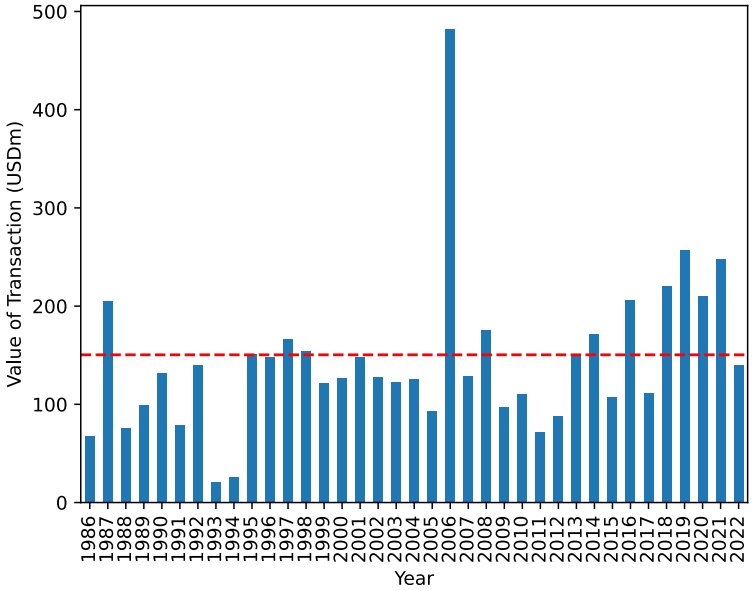



**Figure A1.2:**

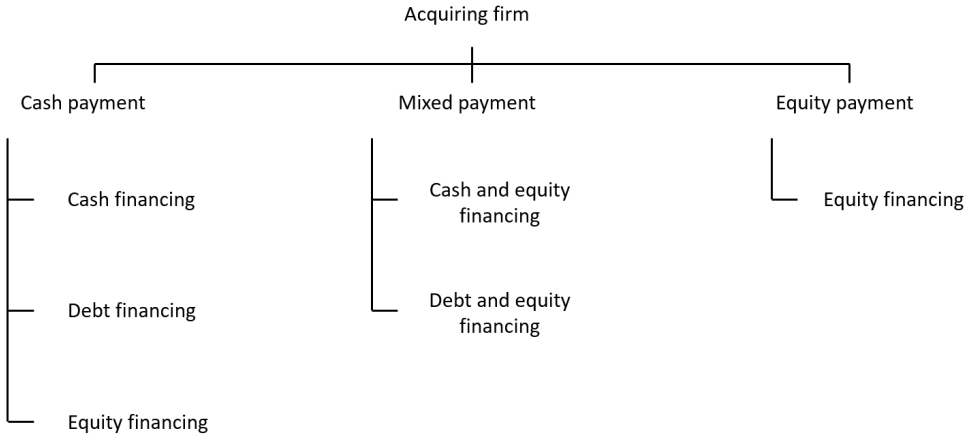
*Average Value of Transaction per Year from 1986-2022*




*Note.* The red line shows the total average value for the whole period. The total average value is 150.41 USDm.

**Figure A1.3:**

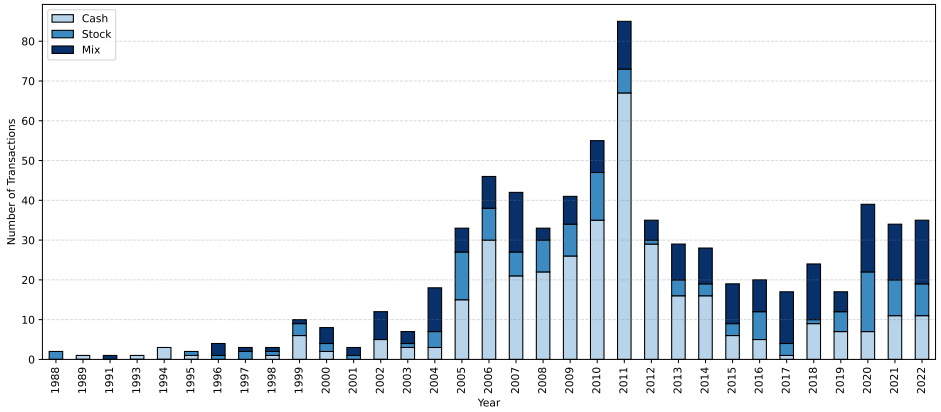
*Payment Methods and Their Means of Financing*




*Note.* See Power et al. (2022) for further explanation and theories.

**Figure A1.4:**

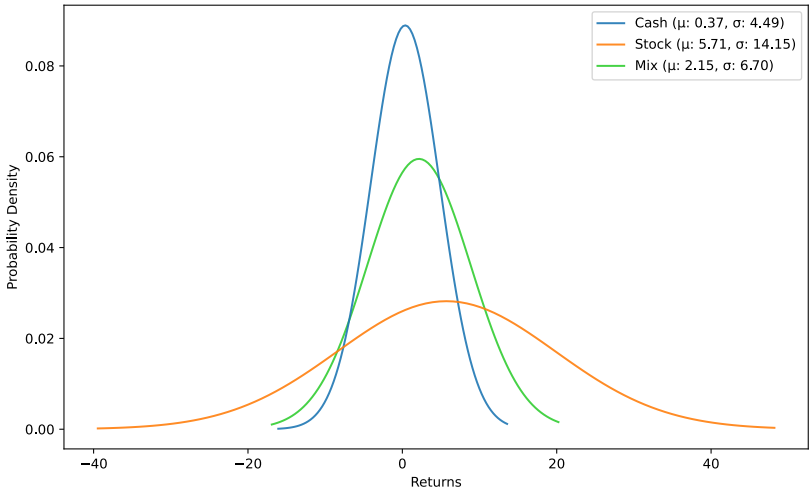
*Number of Transactions from 1986-2022 Observed on the Payment Methods*




*Note.* Figure A1.4 includes 710 observations.

**Figure A1.5:**

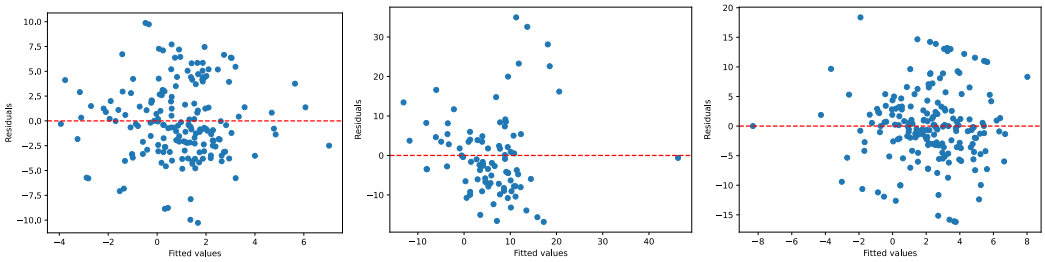
*Probability Density Function (PDF) of Acquirer Three-Day CAR$_{-1,+1}$*




*Note.* Payments with cash (blue line) have a relatively high kurtosis, while payments with stock are relative low (orange line). Payments with mix are a combination of both, but skewed more to the left with cash payments.

**Figure A1.6:**

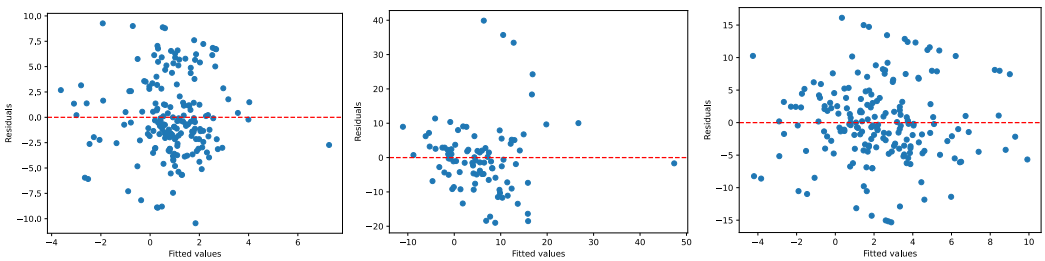
*Residual Plots of Economic Uncertainty Regression*




**(a)** *Cash* **(b)** *Stock* **(c)** *Mix*

**Figure A1.7:**

*Residual Plots of Policy Uncertainty Regression*




**(a)** *Cash* **(b)** *Stock* **(c)** *Mix*

# A2 Tables

**Table A2.1:**

*Data Summary: $CAR_{-1,+1}$*

| Method | Obs. | Mean | Standard Deviation |
|---|---|---|---|
| Cash (-1,0) | 357 | 0.6393 | 4.6544 |
| Cash (0,+1) | 357 | -0.3171 | 5.0899 |
| Cash (-1,+1) | 357 | 0.3222 | 6.4554 |
| Stock (-1,0) | 130 | 3.8863 | 10.943 |
| Stock (0,+1) | 130 | 0.3431 | 6.8152 |
| Stock (-1,+1) | 130 | 4.2294 | 12.4498 |
| Mix (-1,0) | 211 | 1.5967 | 6.7582 |
| Mix (0,+1) | 211 | 0.9491 | 4.858 |
| Mix (-1,+1) | 211 | 2.5458 | 8.4515 |

*Note.* Values show the mean and standard deviation for the dependent variable variable $CAR_{-1,+1}$.

**Table A2.2:**

*Serial Acquirers in Norway*

| Country | Announcements |
|---|---|
| Norway | 390 |
| Sweden | 97 |
| United States | 72 |
| United Kingdom | 43 |
| Canada | 21 |
| Finland | 14 |
| Germany | 12 |
| Denmark | 11 |
| France | 5 |
| Australia | 5 |
| Netherlands | 5 |
| Greece | 3 |
| Indonesia | 2 |
| Malaysia | 2 |
| India | 2 |
| Singapore | 2 |
| Switzerland | 2 |
| Belgium | 2 |
| Malta | 1 |
| China | 1 |
| Italy | 1 |
| Austria | 1 |
| Thailand | 1 |
| Japan | 1 |
| Colombia | 1 |
| Luxembourg | 1 |
| Iceland | 1 |

*Note.* Table A2.2 shows all countries involved in our analysis and number of M&A announcements in the period between 1996 to 2022.

**Table A2.3:**

*Table 5.1 Repeated with $AR_{[-1,0]}$ and $AR_{[0,+1]}$ Event Window*

| | $AR_{[-1,0]}$ | | | $AR_{[0,+1]}$ | | |
|---|---|---|---|---|---|---|
| | **(1) Cash** | **(2) Stock** | **(3) Mix** | **(4) Cash** | **(5) Stock** | **(6) Mix** |
| Industry FE | Y | Y | Y | Y | Y | Y |
| Constant | -2.0776 | -7.3107 | 5.5522 | -0.6080 | -6.1551 | 0.9132 |
| | (-1.083) | (-0.476) | (1.920) | (-0.354) | (-1.082) | (0.445) |
| Interest Rate (T) | -0.2802** | -0.9635 | -0.1866 | -0.1571 | -0.7344 | -0.0351 |
| | (-1.743) | (-1.129) | (-0.857) | (-1.090) | (-2.321) | (-0.277) |
| GDP Growth (T) | 0.3176* | -0.7320 | -0.1702 | 0.0723 | -0.0845 | 0.1994 |
| | (1.398) | (-1.020) | (-0.746) | (0.355) | (-0.318) | (1.230) |
| Inflation Rate (T) | 0.0886 | 0.2692 | -0.3708* | -0.0813 | -0.8866 | -0.0040 |
| | (0.448) | (-0.271) | (-1.435) | (-0.459) | (-2.406) | (-0.022) |
| Exchange Rate | 0.0002 | 0.5084 | -0.2555** | 0.0085 | -0.1781 | -0.1281 |
| | (0.003) | (1.282) | (-2.318) | (0.130) | (-1.211) | (-1.637) |
| VIX Index | 0.0156 | -0.0783 | -0.0815* | 0.0498** | 0.1456 | -0.0156 |
| | (0.473) | (-0.427) | (-1.301) | (1.684) | (2.141) | (-0.350) |
| LN Deal Value | 0.1240 | 1.1631* | -0.2624 | -0.1182 | 0.2632 | 0.0864 |
| | (0.975) | (0.4304) | (-1.140) | -1.037 | (0.904) | (0.529) |
| Relative Size | 0.2896** | 0.4304*** | 0.2416 | 0.0743 | -0.0812 | 0.0471 |
| | (1.931) | (2.753) | (0.949) | (0.553) | (-1.402) | (0.261) |
| MVE/BVE (A) | -0.0308* | -0.0755 | 6.038e-05 | 0.0168 | 0.0304 | -0.0024 |
| | (-1.557) | (-0.528) | (0.002) | (0.949) | (0.573) | (-0.095) |
| Collateral (A) | 1.1419 | 6.8298 | -0.7891 | -0.2847 | 1.7593 | -0.6911 |
| | (0.987) | (0.959) | (-0.377) | (-0.275) | (0.667) | (-0.466) |
| Cash/Assets (A) | 4.1267** | -0.1822 | 0.2798 | -0.5206 | 0.2011 | -2.7037 |
| | (2.263) | (-0.027) | (0.121) | (-0.319) | (0.080) | (-1.647) |
| Cross-border | 0.4000 | -3.2282 | -0.4187 | 0.2603 | 1.1293 | -0.2588 |
| | (0.562) | (-0.988) | (-0.490) | (0.517) | (0.932) | (-0.426) |
| Private (T) | 0.5740 | 4.9817 | -0.6904 | 0.0881 | -0.8321 | -0.3945 |
| | (1.089) | (1.246) | (-0.482) | (0.186) | (-0.562) | (-0.388) |
| Intra-industry | -0.2179 | -1.5540 | 0.1700 | 0.1413 | -2.5744 | -0.4907 |
| | (-0.382) | (-0.477) | (0.201) | (0.277) | (-2.131) | (-0.818) |
| Economic Shock | -0.8294 | -2.3169 | 1.2966 | -2.5120** | -2.2480 | -0.5900 |
| | (-0.820) | (-0.499) | (0.766) | (-2.771) | (-1.306) | (-0.491) |
| R2 | 0.133 | 0.310 | 0.122 | 0.129 | 0.306 | 0.111 |
| n | 180 | 91 | 187 | 180 | 91 | 187 |

Table A2.3 presents results of the entity fixed effects regression model of acquirer AR for variables defined under economic uncertainty, including firm and deal-specific control variables. '(T)' stands for 'Target' and (A) stands for 'Acquirer'. Model 1, 2, and 3 include all M&A transactions where cash, stock, and mixed payment are used, respectively. The same applies for Model 4, 5 and 6. ***, **, and * denote significance at the 1%, 5%, and 10% levels. T-stat is presented in brackets under each observation.

**Table A2.4:**

*Table 5.2 Repeated with $AR_{[-1,0]}$ and $AR_{[0,+1]}$ Event Window*

| | $AR_{[-1,0]}$ | | | $AR_{[0,+1]}$ | | |
|---|---|---|---|---|---|---|
| | **(1) Cash** | **(2) Stock** | **(3) Mix** | **(4) Cash** | **(5) Stock** | **(6) Mix** |
| Industry FE | Y | Y | Y | Y | Y | Y |
| Constant | 1.7692 | 27.2904 | 5.3671 | -2.9955 | 2.7154 | -0.6437 |
| | (0.343) | (1.520) | (1.139) | (-0.658) | (0.379) | (-0.187) |
| GPR Index (T) | -0.0270 | -0.3859** | -0.0517 | 0.0814 | -0.1473** | 0.0544 |
| | (-0.239) | (-1.846) | (-0.675) | (0.813) | (-1.763) | (0.975) |
| Tax Rate (T) | -0.1426 | -1.3593** | -0.0798 | 0.0821 | 0.0542 | 0.0905 |
| | (-0.921) | (-2.376) | (-0.527) | (0.600) | (0.237) | (0.819) |
| Exchange Rate | 0.0079 | 0.4033 | -0.2408** | -0.0072 | -0.1495 | -0.0939 |
| | (0.110) | (1.138) | (-2.262) | (-0.112) | (-1.056) | (-1.210) |
| VIX Index | -0.0007 | -0.1371 | -0.0871* | 0.0425* | 0.0211 | -0.0293 |
| | (-0.022) | (-0.823) | (-1.511) | (1.568) | (0.317) | (-0.697) |
| LN Deal Value | 0.1787* | 1.4591** | -0.4777** | -0.1209 | 0.1798 | -0.0641 |
| | (1.401) | (1.934) | (-2.080) | (-1.071) | (0.596) | (-0.383) |
| Relative Size | 0.0.2648** | 0.4240** | 0.3205* | 0.0640 | -0.0159 | 0.1318 |
| | (1.783) | (2.908) | (1.307) | (0.553) | (-0.273) | (0.737) |
| MVE/BVE (A) | -0.0396** | -0.2331** | 0.0063 | 0.0183 | -0.0095 | -0.0196 |
| | (-2.034) | (-1.681) | (0.182) | (1.064) | (-0.172) | (-0.769) |
| Collateral (A) | 1.3120 | 5.1822 | -0.3333 | -0.0915 | 2.6430 | 0.2535 |
| | (1.189) | (0.903) | (-0.184) | (-0.094) | (1.153) | (0.191) |
| Cash/Assets (A) | 4.0522** | 3.1663 | 0.1671 | -0.6084 | 2.5663 | -2.9122** |
| | (2.199) | (0.470) | (0.075) | (-0.373) | (0.953) | (-1.801) |
| Cross-border | 0.5170 | -0.7686 | -0.6869 | 0.2163 | 1.9212* | 0.0943 |
| | (0.919) | (-0.252) | (-0.827) | (0.435) | (1.577) | (0.156) |
| Private (T) | 0.4470 | 2.7517 | -0.9513 | -0.0133 | -2.5461* | -0.4580 |
| | (0.877) | (0.719) | (-0.695) | (-0.030) | (-1.665) | (-0.459) |
| Intra-industry | -0.0734 | -1.7320 | 0.4117 | 0.2896 | -1.1029 | -0.2263 |
| | (-0.138) | (-0.570) | (0.509) | (0.616) | (-0.909) | (-0.384) |
| Economic Shock | -1.0675 | 1.2603 | 1.2122 | -2.5743*** | -1.9491 | -0.9792 |
| | (-1.131) | (0.258) | (0.704) | (-3.082) | (-0.999) | (-0.780) |
| R2 | 0.106 | 0.372 | 0.145 | 0.123 | 0.254 | 0.111 |
| n | 185 | 92 | 190 | 185 | 92 | 190 |

Table A2.4 presents results of the entity fixed effects regression model of acquirer AR for variables defined under policy uncertainty, including firm and deal-specific control variables. '(T)' stands for 'Target' and '(A)' stands for 'Acquirer'. Model 1, 2, and 3 include all M&A transactions where cash, stock, and mixed payment are used, respectively. The same applies for Model 4, 5 and 6. ***, **, and * denote significance at the 1%, 5%, and 10% levels. T-stat is presented in brackets under each observation.

**Table A2.5:**

*Table 5.1 repeated with differentials (T-A)*

| **Dep. var:** $CAR_{[-1,+1]}$ | **(1)** **Cash** | **(2)** **Stock** | **(3)** **Mix** | **(4)** **Full sample** |
|---|---|---|---|---|
| Industry FE | Y | Y | Y | Y |
| Constant | -2.8085 | -17.9787 | 3.9618 | 1.0999 |
| | (-1.155) | (-1.106) | (1.007) | (-0.489) |
| GDP Growth (T-A) | 0.4373* | 0.9698 | -0.3782 | 0.0560 |
| | (1.294) | (0.552) | (-0.693) | (0.179) |
| Interest Rate (T-A) | -0.5561** | -1.5921 | -0.1822 | -0.6101** |
| | (-1.754) | (-0.829) | (-0.326) | (-2.004) |
| Inflation Rate (T-A) | -0.0690 | 1.6092 | -0.1920 | 0.0236 |
| | (-0.213) | (0.953) | (-0.405) | (0.084) |
| Exchange Rate (T-A) | 0.0406 | -0.0251 | -0.6213** | -0.2913** |
| | (0.248) | (-0.022) | (-2.007) | (-1.752) |
| VIX Index | 0.0318 | 0.0295 | -0.1023 | -0.0023 |
| | (0.787) | (0.150) | (-1.186) | (-0.056) |
| LN Deal Value | 0.1035 | 1.4909** | -0.1254 | 0.1473 |
| | (0.624) | (1.735) | (-0.390) | (0.943) |
| Relative Size | 0.2762* | 0.4337*** | 0.3884 | 0.2040*** |
| | (1.424) | (2.704) | (1.110) | (2.917) |
| MVE/BVE (A) | -0.0339* | -0.1595 | -0.0005 | -0.0327 |
| | (-1.316) | (-1.027) | (-0.010) | (-1.231) |
| Collateral (A) | 0.9250 | 9.0112 | -0.4966 | 0.4692 |
| | (0.597) | (1.194) | (-0.170) | (0.317) |
| Cash/Assets (A) | 3.9050* | 0.1744 | -0.5271 | 1.0014 |
| | (1.621) | (0.024) | (-0.165) | (0.576) |
| Crossborder | 0.6943 | -3.4465 | -1.0020 | -0.3983 |
| | (0.924) | (-0.974) | (-0.840) | (-0.588) |
| Private (T) | 0.7797 | 4.1937 | -0.6802 | 0.9705* |
| | (1.120) | (0.999) | (-0.429) | (1.285) |
| Intra-industry | 0.3053 | -3.6941 | -0.4550 | 0.0001 |
| | (0.412) | (-1.028) | (-0.382) | (0.000) |
| Economic Shock | -3.5561*** | -5.5836 | -1.5280 | -1.8819* |
| | (-2.777) | (-1.087) | (-0.651) | (-1.642) |
| R2 | 0.161 | 0.302 | 0.101 | 0.086 |
| n | 180 | 91 | 187 | 458 |

Table A2.5 presents results of the entity fixed effects regression model of acquirer CAR for variables defined under economic uncertainty, including firm and deal-specific control variables. The model is using differentials where T-A is specified. '(T)' stands for 'Target' and '(A)' stands for 'Acquirer'. Model 1, 2, and 3 include all M&A transactions where cash, stock, and mixed payment are used, respectively. ***, **, and * denote significance at the 1%, 5%, and 10% levels. T-stat is presented in brackets under each observation.

**Table A2.6:**

*Table 5.2 repeated with differentials (T-A)*

| **Dep. var:** $CAR_{[-1,+1]}$ | **(1)** **Cash** | **(2)** **Stock** | **(3)** **Mix** | **(4)** **Full sample** |
|---|---|---|---|---|
| Industry FE | Y | Y | Y | Y |
| Constant | -3.1827 | -5.2004 | 3.8698 | -0.3286 |
| | (-0.977) | (-0.492) | (1.084) | (-0.157) |
| GPR Index (T-A) | 0.1233 | -0.3923** | 0.0160 | -0.0338 |
| | (0.884) | (-1.823) | (0.160) | (-0.550) |
| Tax Rate (T-A) | 0.0029 | 0.0748 | 0.1420 | 0.0324 |
| | (0.038) | (0.140) | (1.115) | (0.433) |
| Exchange Rate (T-A) | -0.1430 | -0.0676 | -0.6124** | -0.2914** |
| | (-0.911) | (-0.609) | (-2.075) | (-1.803) |
| VIX Index | 0.0304 | -0.0676 | -0.1008 | -0.0260 |
| | (0.757) | (-0.365) | (-1.236) | (-0.655) |
| LN Deal Value | 0.0701 | 1.8827** | -0.4189* | 0.1003 |
| | (0.433) | (2.147) | (-1.325) | (0.653) |
| Relative Size | 0.2990* | 0.4599*** | 0.4453* | 0.2248*** |
| | (1.538) | (2.900) | (1.351) | (3.219) |
| MVE/BVE (A) | -0.0166 | -0.2225* | 0.0009 | -0.0286 |
| | (-0.635) | (-1.338) | (0.019) | (-1.071) |
| Collateral (A) | 0.8998 | 8.8549* | -0.4822 | 0.5545 |
| | (0.612) | (1.414) | (-0.189) | (0.406) |
| Cash/Assets (A) | 3.3566* | 6.8023 | -0.9954 | 1.5437 |
| | (1.349) | (0.905) | (-0.328) | (0.871) |
| Cross-border | 0.4031 | -0.3782 | -0.7916 | -0.4484 |
| | (0.537) | (-0.111) | (-0.699) | (-0.663) |
| Private (T) | 0.6129 | 1.4611 | -1.4582 | 0.8536 |
| | (0.900) | (0.338) | (-0.772) | (1.136) |
| Intra-industry | 0.5438 | -2.3419 | 0.1740 | 0.3879 |
| | (0.783) | (-0.692) | (0.156) | (0.595) |
| Economic Shock | -3.4474*** | -1.8342 | -2.0632 | -1.5633* |
| | (-2.836) | (-0.316) | (-0.879) | (-1.340) |
| R2 | 0.115 | 0.316 | 0.152 | 0.075 |
| n | 183 | 92 | 184 | 459 |

Table 5.2 presents results of the entity fixed effects regression model of acquirer CAR for variables defined under policy uncertainty, including firm and deal-specific control variables. The model is using differentials where T-A is specified. (T) stands for 'Target' and (A) stands for 'Acquirer'. Model 1, 2, and 3 include all M&A transactions where cash, stock, and mixed payment are used, respectively. ***, **, and * denote significance at the 1%, 5%, and 10% levels. T-stat is presented in brackets under each observation.

**Table A2.7:**

*Variable Description and Data Source*

| | |
|---|---|
| **Acquirer performance (Dep. var.)** | |
| $CAR_{-1,+1}$ | CAR is the sum of the abnormal returns ($AR_{i,t}$). Calculated over the three-day window. |
| **Economic variables (Ind. var.s)** | |
| Inflation Rate | Monthly consumer price index (CPI), i.e., the weighted average cost of acquiring a basket of goods and services. Calculated as year-over-year changes. *Source: BIS, SSB.* |
| Interest Rate | Daily central bank policy rate. *Source: BIS, Norges Bank.* |
| GDP Growth | Inflation and seasonally adjusted gross domestic product. Calculated as quarter-over-quarter changes. *Source: FRED.* |
| **Policy variables (Ind. var.s)** | |
| GPR Index | Measures the occurrence of impactful geopolitical events, threats, and conflicts, using keywords from press news. A country-specific index. *Source: Matteo and Caldara (2023).* |
| Tax Rate | A country's corporate tax rate. *Source: Bloomberg, KPMG.* |
| **Control variables (Ind. var.s)** | |
| Cash/Assets | Ratio of the acquirer's cash over its total assets, using the most recent financial information prior to the announcement date. *Source: SDC.* |
| Collateral | Ratio of the acquirer's total property, plant, and equipment over its total assets, using the most recent financial information prior to the announcement date. *Source: SDC.* |
| Cross-border | A dummy variable that takes a value of 1 if the acquirer is non-Norwegian and 0 otherwise. *Source: SDC.* |
| Intra-industry | A dummy variable that takes a value of 1 if the acquirer's and target's 4-digit SIC codes coincide and 0 otherwise. *Source: SDC.* |
| LN DealValue | Logarithm of the deal value, i.e., the consideration offered by the acquirer in USD, excluding fees and expenses. *Source: SDC.* |
| MVE/BVE | Ratio of the acquirer's market value of equity over its book value of equity, using information one day before the announcement. *Source: SDC.* |
| Private | A dummy variable that takes a value of 1 if the target is a private/subsidiary company and 0 otherwise. *Source: SDC* |
| Relative Size | Ratio of the deal value offered over the acquirer's total assets, using the most recent financial information prior to the announcement date. *Source: SDC.* |
| VIX Index | Measures the market's expectation of future volatility. Calculated as the monthly return in the CBOE Volatility Index. *Source: Bloomberg.* |
| Exchange Rate | Monthly growth in nominal effective exchange rate in USD terms, adjusted for inflation. FX denoted as FC/USD, where FC is the acquirer's currency. *Source: Bloomberg.* |
| Economic Shock | A dummy variable that takes a value of 1 if acquirer has an announcement within three months after an economic shock incurs and 0 otherwise. *Source: Bloomberg.* |

**Table A2.8:**

*Correlation Matrix of All Variables; Economic, Policy, and Control Variables*

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. GDP Growth (T) | 1.00 | | | | | | | | | | | | | | | |
| 2. Interest Rate (T) | -0.15 | 1.00 | | | | | | | | | | | | | | |
| 3. Inflation Rate (T) | -0.04 | -0.26 | 1.00 | | | | | | | | | | | | | |
| 4. GPR Index (T) | 0.13 | -0.46 | 0.55 | 1.00 | | | | | | | | | | | | |
| 5. Tax Rate (T) | -0.07 | **0.88** | -0.51 | -0.63 | 1.00 | | | | | | | | | | | |
| 6. Exchange Rate | 0.22 | -0.23 | 0.25 | 0.11 | -0.21 | 1.00 | | | | | | | | | | |
| 7. VIX Index | -0.29 | 0.05 | 0.31 | 0.05 | -0.16 | 0.08 | 1.00 | | | | | | | | | |
| 8. LN Deal Value | 0.02 | -0.06 | -0.03 | 0.12 | -0.09 | -0.13 | -0.10 | 1.00 | | | | | | | | |
| 9. Relative Size | -0.11 | -0.28 | -0.07 | 0.04 | -0.26 | -0.13 | -0.07 | -0.03 | 1.00 | | | | | | | |
| 10. MVE/BVE (A) | -0.27 | 0.44 | -0.36 | -0.40 | 0.38 | -0.26 | -0.11 | 0.03 | -0.15 | 1.00 | | | | | | |
| 11. Collateral (A) | 0.04 | -0.07 | -0.06 | 0.04 | -0.02 | -0.07 | -0.06 | 0.54 | -0.17 | -0.13 | 1.00 | | | | | |
| 12. Cash/Assets (A) | -0.23 | -0.09 | -0.18 | -0.16 | -0.07 | -0.23 | -0.08 | -0.41 | 0.23 | 0.22 | -0.64 | 1.00 | | | | |
| 13. Cross-border | -0.09 | 0.34 | -0.23 | -0.32 | 0.26 | 0.06 | -0.23 | 0.01 | -0.08 | 0.51 | 0.05 | -0.16 | 1.00 | | | |
| 14. Private (T) | 0.03 | -0.14 | 0.04 | -0.04 | -0.13 | 0.25 | -0.29 | -0.49 | 0.09 | -0.20 | -0.39 | 0.18 | 0.34 | 1.00 | | |
| 15. Intra-industry | -0.19 | -0.12 | -0.08 | -0.09 | -0.02 | -0.27 | 0.22 | 0.04 | -0.10 | 0.14 | 0.02 | 0.13 | -0.49 | -0.65 | 1.00 | |
| 16. Economic Shock | 0.06 | -0.16 | 0.27 | 0.29 | -0.24 | 0.29 | 0.57 | 0.02 | -0.15 | -0.26 | 0.06 | -0.20 | -0.26 | -0.20 | -0.01 | 1.00 |

(T) stands for 'Target' and (A) stands for 'Acquirer'.

**Table A2.9:**

*Correlation Matrix of Economic Variables and Control Variables*

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. GDP Growth (T) | 1.00 | | | | | | | | | | | | | |
| 2. Interest Rate (T) | -0.14 | 1.00 | | | | | | | | | | | | |
| 3. Inflation Rate (T) | -0.06 | -0.10 | 1.00 | | | | | | | | | | | |
| 4. Exchange Rate | 0.21 | -0.20 | 0.23 | 1.00 | | | | | | | | | | |
| 5. VIX Index | -0.30 | 0.14 | 0.30 | 0.05 | 1.00 | | | | | | | | | |
| 6. LN Deal Value | 0.02 | -0.01 | -0.07 | -0.15 | -0.13 | 1.00 | | | | | | | | |
| 7. Relative Size | -0.12 | -0.25 | -0.12 | -0.16 | -0.10 | -0.05 | 1.00 | | | | | | | |
| 8. MVE/BVE (A) | -0.27 | 0.45 | -0.34 | -0.27 | -0.12 | 0.04 | -0.15 | 1.00 | | | | | | |
| 9. Collateral (A) | 0.04 | -0.07 | -0.07 | -0.07 | -0.07 | 0.54 | -0.18 | -0.13 | 1.00 | | | | | |
| 10. Cash/Assets (A) | -0.24 | -0.09 | -0.20 | -0.25 | -0.11 | -0.42 | 0.22 | 0.22 | -0.65 | 1.00 | | | | |
| 11. Cross-border | -0.09 | 0.36 | -0.21 | 0.05 | -0.25 | 0.01 | -0.09 | 0.50 | 0.04 | -0.18 | 1.00 | | | |
| 12. Private (T) | 0.02 | -0.12 | 0.02 | 0.24 | -0.32 | -0.50 | 0.07 | -0.20 | -0.40 | 0.17 | 0.35 | 1.00 | | |
| 13. Intra-industry | -0.19 | -0.14 | -0.08 | -0.29 | 0.21 | 0.03 | -0.11 | 0.13 | 0.01 | 0.12 | -0.52 | -0.65 | 1.00 | |
| 14. Economic Shock | 0.05 | -0.10 | 0.23 | 0.28 | 0.56 | 0.01 | -0.18 | -0.25 | 0.06 | -0.21 | -0.26 | -0.21 | -0.01 | 1.00 |

(T) stands for 'Target' and (A) stands for 'Acquirer'.

**Table A2.10:**

*Correlation Matrix of Policy Variables and Control Variables*

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. GPR Index (T) | 1.00 | | | | | | | | | | | | |
| 2. Tax Rate (T) | -0.61 | 1.00 | | | | | | | | | | | |
| 3. FX (T) | 0.07 | -0.16 | 1.00 | | | | | | | | | | |
| 4. VIX Index | 0.04 | -0.21 | 0.09 | 1.00 | | | | | | | | | |
| 5. LN Deal Value | 0.13 | -0.10 | -0.13 | -0.11 | 1.00 | | | | | | | | |
| 6. Relative Size | 0.03 | -0.25 | -0.14 | -0.07 | -0.05 | 1.00 | | | | | | | |
| 7. MVE/BVE (A) | -0.36 | 0.33 | -0.23 | -0.15 | 0.02 | -0.17 | 1.00 | | | | | | |
| 8. Collateral (A) | 0.04 | -0.00 | -0.07 | -0.06 | 0.53 | -0.19 | -0.14 | 1.00 | | | | | |
| 9. Cash/Assets (A) | -0.16 | -0.08 | -0.23 | -0.10 | -0.42 | 0.21 | 0.21 | -0.67 | 1.00 | | | | |
| 10. Cross-border | -0.29 | 0.21 | 0.09 | -0.25 | 0.00 | -0.08 | 0.49 | 0.04 | -0.18 | 1.00 | | | |
| 11. Private (T) | -0.06 | -0.11 | 0.24 | -0.30 | -0.49 | 0.08 | -0.19 | -0.40 | 0.18 | 0.36 | 1.00 | | |
| 12. Intra-industry | -0.10 | 0.01 | -0.29 | 0.21 | 0.03 | -0.13 | 0.14 | 0.00 | 0.11 | -0.51 | -0.66 | 1.00 | |
| 13. Economic Shock | 0.28 | -0.22 | 0.28 | 0.58 | 0.02 | -0.18 | -0.26 | 0.05 | -0.21 | -0.26 | -0.21 | -0.02 | 1.00 |

'(T)' stands for 'Target' and '(A)' stands for 'Acquirer'.