Effects of Economic Policy Uncertainty on M&A Deals – Macroeconomic Example of the US Market

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Abstract

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Key Words: Economic Policy Uncertainty, Mergers and acquisitions, US Market

The aim of this thesis is to investigate the relationship between economic policy uncertainty (EPU) and merger and acquisition (M&A) deal characteristics. At first, the relationship between EPU and the likelihood of deal withdrawal among national M&A deals in the US market is studied. Secondly, this thesis intends to investigate the effects of EPU on the deal premium paid for the target company. Thirdly, this thesis aims to study the effects of EPU on the acquiring company's performance – namely the acquiring company's cumulative abnormal returns surrounding the deal announcement day. For further perception, three uncertainty indicators – monetary policy uncertainty (MPU), market volatility (VIX) and financial stress (FSI) – are included in the study likewise. The study has found a significant negative effect on the likelihood of a deal withdrawal in times of high economic policy uncertainty. Next to this, high EPU showed to have a positive effect on the acquiring company's cumulative abnormal returns. No significant effect of EPU on the deal premium paid by the acquiring company was found, however, market volatility and financial stress show significant results to some extent, indicating deal premiums paid in the M&A process are indeed sensitive to market uncertainty but EPU is outperformed as an indicator.

Efeitos da Incerteza da Política Econômica em Negociações de Fusões e Aquisições - Exemplo Macroeconômico do Mercado dos EUA

Hannah Vera Bauernfeind

Incerteza da Política Econômica, Fusões e Aquisições, Mercado dos EUA

O objetivo desta tese é investigar a relação entre a incerteza da política econômica (EPU) e as características das fusões e aquisições. Primeiramente, é estudada a relação entre a EPU e a probabilidade de retirada de uma negociação entre empresas nacionais no mercado dos EUA. Em segundo lugar, esta tese pretende investigar os efeitos da EPU sobre o prêmio pago pela empresa adquirente à empresa-alvo. Em terceiro lugar, o objetivo desta tese é estudar os efeitos da EPU sobre o desempenho da empresa adquirente, nomeadamente os retornos anormais acumulados da empresa adquirente em torno do anúncio da negociação. Para uma melhor percepção, três indicadores de incerteza - incerteza da política monetária, volatilidade do mercado e estresse financeiro - também são incluídos no estudo. O estudo constatou um efeito negativo significativo na probabilidade de retirada de uma negociação em momentos de alta incerteza da política econômica. Além disso, alta EPU mostrou ter um efeito positivo sobre os retornos anormais acumulados da empresa adquirente. Não foi encontrado um efeito significativo da EPU sobre o prêmio pago pela empresa adquirente, no entanto, a volatilidade do mercado e o estresse financeiro mostram resultados significativos em certa medida, indicando que os prêmios pagos no processo de M&A são de fato sensíveis à incerteza do mercado, mas a EPU é superada como indicador.

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1 Introduction

Merger and acquisition transactions (M&As) display a considerable type of investments undertaken by companies, with a sharp increasing volume in the US, ending with around $1.07 trillion in 2022[1]. This displays an enormous reallocation of assets within and across industries. As for all company investments, there is a market sensitivity to some extent. Looking at recent macroeconomic market shocks, the COVID pandemic, the war in Ukraine, terror threats, skyrocketing energy prices and refugee crises are creating major challenges for domestic and international politics as well as economic market stability. This uncertainty about the future directly affects the financial decision-making behaviour of all economic agents (Bloom, Bond and Van Reenen, 2007). To intervene in a national economy, the government develops and adjusts economic policies related to the economic environment and company setting. Economic Policy Uncertainty distinguishes a certain type of uncertainty related to these economic and financial policy decisions. A rise of the index can be triggered by various exogen reasons, like natural disasters, changes in government policies, geopolitical tensions, regulatory changes, financial market fluctuations, unexpected shifts in public opinion, and technological disruption (Baker, Bloom and Davis, 2016).

Uncertainty related to these economic policies in the future leads to an equally interesting change in investment behaviour. The primary goal of the extant literature is to understand how uncertainty in national economic policy affects the investment behaviour of firms on the microeconomic level. According to Wang et al. (2014) EPU depresses firm-level investment decisions and Arouri et al. (2016) found a negative impact of EPU on stock returns in the US. Bordo, Duca and Koch (2016) found that EPU has a negative impact on the growth of US bank loans overall as well as on consumption and investment. Investment choices in the merger and acquisition market rely on the risk management of the involved organizations and are formed using information that seeks to provide the most accurate view of the economy in the future. High EPU makes it more difficult and riskier for those companies to predict the standalone value and synergy value of the transaction properly (Al-Thaqeb, Algharabali and Alabdulghafour, 2022). As a result, uncertainty is seen unfavorably by the market and tends to be an indicator of higher risk in the M&A deal itself. Due to their financial interest in the transaction, investment banks and other deal advisors are motivated to understand the complex

[1] Based on Data from Refinitiv Eikon – Deal Screener for US-based acquiring companies' total

nature of all factors influencing specific deal outcomes, such as deal withdrawal or earned deal premium (Kang et al., 2018). As a consequence, there is a growing demand and financial support for research that assesses the performance of M&A investments during times of market uncertainty.

Anyhow, what drives the momentum of economic policy uncertainty in academic research, over the prevalence of many types of market uncertainty? Two main factors can be named, which lead to an increasing amount of research based on economic policy uncertainty in recent academic literature. First of all, over the last decade, EPU has increased during the past decade and is still rising. Beginning with the aftermath of the 2008 financial crisis, the unpredictability of global economic policy surpassed previous all-time highs. Recently, the world has seen major challenges like most recently as mentioned the COVID pandemic and the Ukraine War, which brought the global policy uncertainty to a new all-time high (Baker, Bloom and Davis, 2016). A second reason why EPU has gained increased attention in literature is due to the enhanced new assessment approach of economic policy uncertainty provided by Baker, Bloom and Davis (2016). To quantify economic policy uncertainty (EPU) Baker, Bloom and Davis (2016) constructed a pioneering index that relies on the occurrence of keywords in newspaper coverage: the EPU index. The index superseded the implied market volatility index (VIX), as a measure of market uncertainty which is more related to the stock options market. The Baker, Bloom, and Davis (2016) EPU index can overcome certain present restrictions of the VIX like measurement or availability problems (Al-Thaqeb and Algharabali, 2019).

This article's objective is to present an alternative perspective on the variation in M&A outcomes based on Baker, Bloom, and Davis' (2016) EPU index. The US is employed as the setting of this research in order to look at the relationship between EPU and the outcome of domestic M&A. The findings are intended to demonstrate the effects of uncertainty on the national level. In order to analyze the impact of EPU on M&A outcomes, the risk of an M&A deal withdrawal, the deal premium paid and the acquirer's abnormal returns during the announcement period are studied. As a result, the study's practical importance is mainly given to companies and deal advisors involved in merger and acquisition transactions as well as to decision-makers for monetary, fiscal, and regulatory policies.

2 Theoretical Framework

2.1 Empirical Evidence

As stated in the introduction, this thesis will demonstrate the relationship between EPU and three distinct M&A characteristics. First, the impact of EPU on the probability of domestic M&A deal withdrawal is investigated. Second, it will be studied how EPU affects the premium paid for domestic M&A deals. Finally, the relationship between EPU and the acquirer's cumulative abnormal returns (CAR) surrounding the day of the acquisition announcement is investigated. I am going to look through the previously published empirical studies on those three relationships in the following part. Three fundamental hypotheses (H1 - H3) will then be formed based on the previous empirical evidence discovered.

Since Baker, Bloom, and Davis (2016) published their study on quantifying economic policy uncertainty, a broad spectrum of influencing factors driven on by EPU has been looked into.

As an example, Bonaime, Gulen and Ion (2018) discovered a negative association between EPU and M&A agreements at the macro level and firm level. By comparing multiple sorts of policies, they examined the root cause of uncertainty. The authors find a more precise strong negative impact of EPU on M&A activity as a consequence of uncertainty regarding monetary policy, fiscal policy and regulation uncertainty. Uncertainty concerning health care, entitlement programs, national security, trade policy and sovereign debt did not appear to have a substantial impact. This indicates that the type of uncertainty does indeed matter. They additionally find evidence that while EPU is high, companies are more likely to choose cross-border or vertical mergers as risk management tools. Finally, Bonaime, Gulen, and Ion (2018) find that policy uncertainty has a higher impact on M&A deals requiring more irreversible capital investments and less of an effect on deals that cannot be easily delayed in their real options channel. Their findings indicate that high EPU increases the risk for all parties involved in M&As by increasing the likelihood that they will become stranded in the process. Additionally, they interpret that companies making purchases while EPU is high are the ones for whom waiting would be exorbitantly expensive.

Next, Bhagwat, Dam and Harford (2016) reveal a negative impact of overall price uncertainty as measured by the International Organization for Economic Cooperation and Development (OECD) in the Volatility Index (VIX) by constructing a time-series OLS regression of the

monthly percentage change in the number of M&A announcements to the percentage change in the volatility index and several control variables. The effects on both private and subsidiary targets cannot be considered statistically significant, but the effects on public targets notably show significant negative results. In addition, they discover a substantial adverse effect in their OLS regression of the percent change in the tender window length on the percent change in the VIX and control variables. They find that the results are stronger for transactions involving larger publicly traded firms in their sub sample tests, indicating the value at risk needs to be economically significant enough for the marginal deal to be affected by volatility.

Focusing on China's market studying cross-border M&A transactions with China as the host nation, Li, Su and Wang (2022) discover, among other things, that EPU significantly affects the magnitude of cross-border M&A transactions of Chinese businesses and has a detrimental effect on mid-term M&A performance of companies. Interestingly, Sha, Kang and Wang (2020), who studied domestic M&A agreements in China as well, showed conflicting results two years earlier. They found that Chinese companies are more willing to make acquisitions at times of high EPU. On the whole, we are able to see that the literature on the relationship between EPU and M&A is not only restricted, but also partly contradictory.

Having a closer look at monetary policy uncertainty, Adra, Barbopoulos and Saunders (2020) observed a relationship between M&A announcements made during times of high monetary policy uncertainty (MPU), as determined by Baker, Bloom and Davis (2016) in the US market, and a significant decline in acquirer value. For example, deals rendered during times of high monetary policy uncertainty are likely to result in lower risk-adjusted returns for the acquirers. Additionally, they discover a strong correlation between increasing federal funds rates and a higher risk of deal withdrawal. As a third conclusion, they state that high MPU is likely to reduce the negotiation power of the acquirer and consequently results in a considerable increase in the takeover premium.

On the foundation of these three observations, I will build up my theory that EPU, which includes monetary policy uncertainty among others, is having an equivalent effect on deal characteristics like the deal premium, the likelihood of a deal withdrawal, and finally the cumulative abnormal returns of the acquirer. Following, recent literature is listed, which observes those three important deal characteristics in relation to EPU so far. No paper solely studies the US domestic deal market so far which makes this empirical work an additional

approach to understand the impact of economic policy uncertainty on M&A outcomes in the national US market.

2.2 Hypothesis Building

2.2.1 EPU on Likelihood of Deal Withdrawal

Mergers and acquisitions are unique and substantial forms of corporate investments. They require significant cash resources, in addition to time resources, and still bring the risk of being unsuccessful due to improper management. Unsurprisingly, not every announced merger and acquisition is completed. Because of information asymmetry and inadequate firm transparency, investment decisions can display a substantial risk for the acquiring company. According to Nagar, Schoenfeld and Wellman (2019), EPU can lead to more incorrect assessments of government policies and lower information accessibility, resulting in even larger risks for companies. This could trigger acquiring businesses to reconsider M&A negotiations and postpone or even withdraw from them. Further, Nguyen and Phan (2017) found that, companies are likely to slow down their investments in reaction to high EPU indicating that an increase in EPU directly reduces the likelihood of a firm seeking a merger or acquisition. In the Chinese cross-border M&A deal market, Gregoriou et al. (2021) discovered a connection between EPU and an increasing likelihood of deal withdrawal, as well as longer time periods required to execute M&A deals. Dang et al. (2022) showed a substantial relationship between EPU and M&A deal cancellation for US target firms but international acquirers. Based on all of these findings, the following first hypothesis for this study is stated:

H1: An increasing level of economic policy uncertainty in the US increases the likelihood of domestic M&A deal withdrawal.

2.2.2 EPU on Deal Premium

In general, market uncertainty can make M&A transactions riskier and more difficult to execute, resulting in lower deal premiums as investors become more conservative in their bid pricing. One possible explanation is that high levels of EPU might lead to market financing limits, making it more difficult for companies to raise external capital. Furthermore, a high EPU can weaken a target firm's negotiation power, potentially forcing them to consent to a lower purchasing price. Previous research has proven that EPU has a negative influence on M&A deal

premiums paid. For example, Nguyen and Phan (2017) identified a negative relationship between EPU and M&A bid premium offers in domestic M&A negotiations. This finding is stronger for acquirers that lack access to the external capital market. Furthermore, Gregoriou et al. (2021) discovered evidence from the global M&A market demonstrating a substantial relationship between a rise in EPU and lower premium payments for the target by analyzing cross-border mergers and acquisitions. They also discovered a negative link between high EPU and incoming acquisition volume, as well as a positive correlation between high EPU and outward acquisition volume. Based on the published literature, the second hypothesis for the present research is the following:

H2: An increasing level of economic policy uncertainty in the US decreases the deal premium of domestic M&A deals.

2.2.3 EPU on CAR

Finally, in order to monitor the shift in shareholder value, I will observe the relationship between economic policy uncertainty and the acquiring companies' stock returns in the announcement period. Prior work, such as Bonaime, Gulen and Ion (2018), reveals no significant differences in the acquirer's announcement period abnormal returns between periods of high or low economic policy uncertainty. Nguyen and Phan (2017), on the opposite, find an important favourable connection between foreign M&A deals disclosed during periods of high policy uncertainty and the acquirer's operating performance – evaluated as the cumulative anomalous returns surrounding the announcement date. In addition, Sha, Kang and Wang (2020) examine how EPU affects acquirer's shareholder wealth and reach the same conclusion in the Chinese M&A market. They observe that M&A deals announced during high EPU periods are associated with an increase in abnormal returns on the Shanghai and Shenzhen stock exchanges. According to their research, EPU is a credible driver of an acquirer's stock returns. As a consequence, the third hypothesis is stated as follows:

H3: Economic policy uncertainty in the US increases the cumulative abnormal returns of the acquiring company's stocks.

3 Data and Methodology

In this chapter, I will discuss the empirical research approach. First, the data sources are presented, followed by an explanation of how economic policy uncertainty is measured in my research and which constraints one should be aware of. Next, other included measures of uncertainty are explained. Finally, the applied research design is presented.

3.1 Data Sources and Modification

I obtained data regarding M&A deals announced by companies in the US between 01/1994 and 01/2023 from Refiniv Eikon – Deal Screener. This data set includes the announcement date, deal value, deal status, target- and acquirer industry, and the target - and acquirer market value four weeks prior to announcement. As per earlier literature, the analysis comprises transactions worth a minimum of $1 million wherein the acquiring firm held less than 50% ownership of the target company before the announcement, and subsequently gained 100% ownership post-transaction (Bonaime, Gulen and Ion, 2018; Sha, Kang and Wang, 2020; Nguyen and Phan, 2017; Li, Liang and Zhang 2021).

Table 1 - Descriptive Statistics – The table provides a summary of the complete set of 13.506 merger and acquisition transactions, with an average deal size of $699 million. However, the distribution of deal sizes is skewed, with the median deal size being only $60 million.

	N	Mean	Median	Min	Max	St. Deviation
Deal Value in million US Dollar	13506	699.24	60.00	0.01	145785.30	3986.94
Relative Deal Size	1536	0.46	0.15	0.00	213.42	5.31
Deal Withdrawal 0 if the deal is completed, 1 if not	13506	0.04	0	0	1	0.19
Premium in %	521	35.32	25.71	-95.76	1937.04	93.93
CAR in %	1536	0.05	0.04	0.00	0.5	0.06
Acquirer AT in million US Dollar	13506	9699.89	1092.21	0.04	2354507	52047.39
Acquirer Returns on Assets in %	13506	-0.00	0.06	2.20	-35.01	0.62

Acquirer Sales Growth in %	13506	3.34	1.16	0.00	10434.67	115.73
Acquirer Book Leverage	13506	0.29	0.26	0.00	20.51	0.32
Acquirer Market to Book (M/B)	13506	-29.28	3.34	-84711.9	3035.84	1246.37
Acquirer Cash to Total Assets in %	13506	0.13	0.06	-0.00	0.97	0.16
Target AT in million US Dollar	1536	20661.00	2450.10	444097	0.74	52453.31
Target Returns on Assets (ROA) in %	1536	0.02	0.06	0.55	-1.31	0.15
Target Sales Growth in %	1536	0.01	0.01	0.00	0.16	0.01
Target Market to Book (M/B)	1536	2.11	1.30	0.00	161.08	7.42
Target Book Leverage	1536	0.27	0.25	0.00	1.30	0.19
Target Cash to Total Assets	1536	0.13	0.08	0.00	0.93	0.16

Like Bonaime, Gulen and Ion (2018), I will control for firm-level variables at the acquirer and target side to ensure that the effect of economic policy uncertainty is distinct from the effect of wider firm conditions. Firm control variables are evaluated at the end of the acquirer's previous fiscal year of the acquisition. The firm control variables Total Assets (AT), Return on Sales (ROA), Sales Growth, Cash/Total Assets, Market/Book (M/B) and Book Leverage for the target- and acquiring company were obtained from Compustat – Fundamentals Annual. Compustat Fundamentals is a widely recognized source in academic research of standardized financial statement and market data providing essential data.

The acquiring company's cumulative abnormal returns in a 5-day event window surrounding the deal announcement day were retrieved from Event Study by WRDS. The expected return has been determined using the Fama-French 3 Factor Risk Model over a 100-trading day period. Event Study is frequently utilized by empirical researchers in a variety of business disciplines, including economics, finance, accounting, and law, to examine the market response to both company-specific and market-wide events by analyzing either returns or volume over the event's time frame. Finally, all data sets were merged with the deal announcement day and the acquirer ticker symbol as the common variable.

Finally, the dataset was adjusted in the following ways: (i) All deals in which the acquirer acquired less than 50% of the target were excluded; (ii) All cross-border M&A transactions in which the target's headquarters were not located in the United States were excluded due to disparities in accounting standards, legal systems, and corporate cultures. These disparities hinder risk management decisions and target value and have a significant effect on transaction outcomes (Li, Liang and Zhang, 2022). (iii) All missing observations after merging all data sets were removed. Finally, the independent variable EPU is logarithmically transformed, as in most recent research (Nguyen and Phan, 2017; Bonaime, Gulen and Ion, 2018; Sha, Kang and Wang, 2020).

The data collection process for analysing EPU, MPU and Financial Stress is based on Baker, Bloom and Davis' published monthly EPU data on their website, available to the public: policyuncertainty.com. EPU and MPU are measured at the end of the respective month of the deal announcement. The daily CBOE Volatility Index is gathered from the Federal Reserve Bank of St. Louis and publicly available under https://fred.stlouisfed.org. The VIX is evaluated on the deal announcement date itself. Financial Stress is considered at the end of the respective quarter based on the deal announcement date.

Table 2: The table provides the descriptive statistic of EPU, MPU, VIX and FSI respectively from 01/1994 to 01/2023.

	N	Mean	Median	Min	Max	St. Deviation
EPU	349	115.74	102.64	57.20	350.46	44.04
MPU	349	89.12	71.71	16.57	407.94	57.55
VIX	7145	19.98	18.35	9.14	82.69	8.22
FSI	92	101.21	101.18	99.88	104.50	0.85

In the following subsection, I will explain the uncertainty indicators and their measurement methodology in detail.

3.2 How to Measure EPU

Uncertainty has long been acknowledged as an important factor influencing different aspects of economic activity, such as investment, trade as well as mergers and acquisitions. As a result, for decades, understanding and analyzing uncertainty has been a significant issue of interest for academics and policymakers. In the past, diverse approaches regarding various forms of uncertainty prevailed. However, when considering how to evaluate market uncertainties on stock and company market levels, the most widely accepted and oldest proxy may be the Chicago Board Options Exchange's (CBOE) implied market volatility index (VIX), which has been regularly published since 1993. The index specifically measures the implied volatility in standard deviation of 30-day maturity put and call options. Consequently, the VIX index focuses on financial and stock market events rather than economic policy events and is generally known as limited in measuring a broad range of uncertainty like geopolitical risks, changes in interest rates, or sudden changes in market sentiment. I will include the VIX in my empirical work to observe the relationship between short-run financial uncertainty as assessed by the VIX and long-run economic policy uncertainty measured by EPU.

Baker, Bloom, and Davis (2016) developed the EPU index in 2016, constituting a pioneering novel technique for capturing economic policy uncertainty that incorporates both policy and economic components. The EPU index is a monthly measure that is available to the public on the publisher's website. As a news-based index, the EPU searches top-selling newspapers[2] in a specific country for terms such as "economy" or "uncertainty", as well as more policy-related terms such as "White House", and "Federal Reserve", which provide more information about the political system in the nation observed respectively. This implies, that their methodology can be used to calculate an individual EPU index for numerous nations.

Baker, Bloom and Davis (2016) designed the EPU measure as a weighted average of three components:

1. The first component is based on the frequency of newspaper articles that contain one or more of three keywords: "economy", "uncertainty", and one of a list of policy-relevant

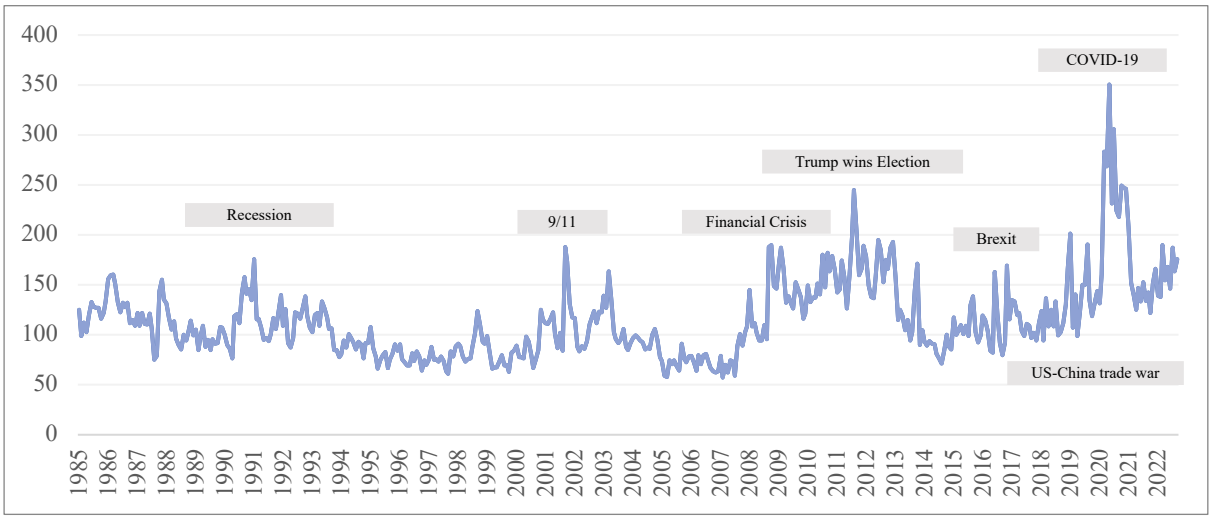
[2] *USA Today*, the *Miami Herald*, the *Chicago Tribune*, the *Washington Post*, the *Los Angeles Times*, the *Boston Globe*, the *San Francisco Chronicle*, the *Dallas Morning News*, the *New York Times*, and the *Wall Street Journal*

terms linked to the political system of the country observed (such as “White House”, “Congress” and “Federal Reserve” in the US). The more frequently these keywords appear in the news, the higher the EPU measure.

2. The second component is based on the number of times that economic forecasters disagree about future levels of policy-related macroeconomic variables like the Consumer Price Index, Federal Expenditures or State and Local Expenditures. The survey used to obtain the date is the Federal Reserve Bank of Philadelphia's Survey of Professional Forecasters. The higher the degree of forecast disagreement, the higher the EPU measure.
3. The third component is a measure of the level of uncertainty about the future direction of the federal tax code. Baker, Bloom, and Davis utilize CBO reports that accumulate lists of temporary federal tax code provisions by creating annual dollar-weighted numbers of tax code provisions that will expire over the following ten years causing uncertainty in the market.

All three of these components are combined in order to produce a single EPU index, which operates from zero (showing no economic policy uncertainty) to high degrees of uncertainty. The EPU index varies significantly over time, with highs and lows reflecting economic and political situations. The index, for example, surged during big political and economic events such as the Brexit referendum in 2016, the US-China trade war in 2018, and the COVID-19 pandemic starting in 2020. Uncertainty about economic policies and their impact on the economy and financial markets became particularly high during these time periods. The index, on the other hand, has seen periods of stable performance during phases of political and economic stability. The elevated and depressed levels of the index can provide important insights into market sentiment and expectations regarding economic policy. Consequently, the index can help policymakers and investors likewise to evaluate decisions.

Graph 1: Monthly EPU index starting in 1985 until 2022



The EPU index by Baker, Bloom and Davis (2016) is widely used to analyze the consequences of economic policy uncertainty on a variety of economic outcomes, including investment, employment, and economic growth (Bonaime, Gulen and Ion, 2018; Nagar et al., 2019; Sha, Kang and Wang, 2020; Gregoriou et al., 2021; Dang et al., 2022; Li, Su and Wang, 2022). Following the authors' findings, I will utilize EPU as the primary independent variable in my research as well.

Even though, the EPU measure provides a useful snapshot of the uncertainty related to economic policy, it has several limitations. Firstly, it may not capture all sources of uncertainty that can affect the economy, such as natural disasters or technological disruptions. Secondly, the EPU measure relies on subjective interpretations of news articles and data, leading to variations in results between researchers. Lastly, it may be affected by noise – information or action that confuses or distorts actual underlying patterns, which makes it difficult to accurately measure the level of economic policy uncertainty.

3.3 Other Measures of Uncertainty

Further, the Monetary Policy Uncertainty measure (MPU) by Baker, Bloom and Davis (2016) as a variation of their original Economic Policy Uncertainty (EPU) index will be incorporated as an additional uncertainty proxy in my research. The MPU measurement is based on the frequency of newspaper stories discussing policy uncertainty, as well as the degree of disagreement among economic forecasters on future economic conditions as well. However,

the MPU index focuses on news items about monetary policy, fiscal policy, and economic regulations. The index is built in the same way as the EPU index, with a weighted average of three components:

1. The number of newspaper articles that contain the keywords “monetary”, “fiscal” and “regulation”, as well as terms relating to uncertainty, policy, and the economy.
2. The degree of disagreement among economists about short-term inflation and output growth expectations.
3. The implied volatility of options on the S&P 500 stock index.

The MPU index, like the EPU index, starts from 0, with higher values reflecting greater uncertainty about monetary, fiscal, and regulatory policy. Again, this indicator is frequently utilized in recent research, justifying my decision to include MPU in my model to examine the relationship between economic- and monetary policy uncertainty on the selected M&A transactions (Husted, Rogers and Sun, 2019; Adra, Barbopoulos and Saunders, 2020; Borthwick, Ali and Pan, 2020).

Finally, by including Financial Stress as a fourth independent variable for measuring uncertainty in the research design, I am going to investigate the relationship between Economic Policy Uncertainty and financial instability and risk. For this purpose, I will use the Financial Stress Indicator (FSI) developed by Püttmann (2018). The FSI indicator, which is published on the Baker, Bloom, and Davis website, likewise depends on newspaper headlines to assess financial market sentiment. Püttmann employs a three-step procedure that is rigorous and systematic.

1. The first phase involves identifying eleven financial market topics consisting of 120 words and classifying articles as financial market-related if they contain any of these words. This method assures that the publications classified as financial market-related are comprehensive and neutral.
2. In the second step, Püttmann uses four sentiment dictionaries to evaluate the sentiment of each title flagged in the previous step. Since the approach is based on a predetermined set of criteria, this approach makes sentiment analysis objective and replicable. Püttmann is able to estimate the level of stress in the financial system by evaluating the perceived negative connotation of each newspaper headline.

3. In the third stage, Püttmann standardizes the unprocessed monthly FSI for each newspaper-dictionary pair from 1889 to 2016 to a mean of 100 and a unit standard deviation. This method ensures that the FSI remains comparable across time periods and newspapers.

The end result is a monthly and quarterly FSI that reflects overall instability and risk in the US economy. I seek to evaluate uncertainty as a market state as precisely as possible by displaying all four components, FSI, VIX, EPU, and MPU, in my model, with the indicated differences and advantages.

3.4 Empirical Methodology

In order to create a sufficient model, I retrieved data from several different data sources in order to create three different multiple regression models. The independent variable of interest for all of my statistical model is is Economic Policy Uncertainty (EPU) measured by Baker, Bloom and Davis (2016). Next to this, I will use the same model with the Volatility Index (VIX), the Financial Stress Indicator (FSI) and Monetary Policy Uncertainty index (MPU) to investigate how different types of uncertainty affect the dependent variables. The dependent variables vary between each of the models. For the first regression, I will use the likelihood of M&A withdrawal (Deal Withdrawal) as a dummy variable to determine whether or not a deal was completed. For the second equation, I will use M&A Deal Premium (Premium), and for the third regression, I will employ the acquirer's cumulative abnormal returns (CAR) in a five-day event window. All three regressions are constructed using the OLS estimator, including multiple control variables, and are checked for accuracy using standard econometric statistical tests.

For the first research question, the following regressions were performed:

(1) $Deal\ Withdrawal_i = \alpha_i + \beta_1\ ln\ EPU_i + \beta_j X_i + error$

(2) $Deal\ Withdrawal_i = \alpha_i + \beta_1\ MPU_i + \beta_j X_i + error$

(3) $Deal\ Withdrawal_i = \alpha_i + \beta_1\ VIX_i + \beta_j X_i + error$

(4) $Deal\ Withdrawal_i = \alpha_i + \beta_1\ FSI_i + \beta_j X_i + error$

with X_i being a 7-dimensional row vector referring to the i-th observation and consisting of all included control variables. The dependent variable M&A Deal withdrawal is measured as a

dummy taking the value of 0 if the deal is completed and 1 if the announced M&A deal is withdrawn in the later process.

The second regression is stated as follows:

(5) $Premium_i = \alpha_i + \beta_1 \, ln \, EPU_i + \beta_j X_i + error$

(6) $Premium_i = \alpha_i + \beta_1 \, MPU_i + \beta_j X_i + error$

(7) $Premium_i = \alpha_i + \beta_1 \, VIX_i + \beta_j X_i + error$

(8) $Premium_i = \alpha_i + \beta_1 \, FSI_i + \beta_j X_i + error$

With the Deal Premium paid being calculated as the percentage difference between the Deal Value and the Target Market Value 4 Weeks Prior to Announcement divided by the latter times 100. The 7-dimensional row vector X_i referring to the i-th observation, again, consists of control variables measured on the day of the deal announcement.

Finally, the third hypothesis is tested with the following regression:

(9) $CAR_i = \alpha_i + \beta_1 \ln \mathrm{EPU_i} + \beta_j X_i + error$

(10) $CAR_i = \alpha_i + \beta_1 \mathrm{MPU_i} + \beta_j X_i + error$

(11) $CAR_i = \alpha_i + \beta_1 \mathrm{VIX_i} + \beta_j X_i + error$

(12) $CAR_i = \alpha_i + \beta_1 \mathrm{FSI_i} + \beta_j X_i + error$

with X_i again being the 9-dimensional row vector of control variables referring to the i-th observation and CAR, measuring, the acquirer's cumulative abnormal returns surrounding the announcement period within an event window of five days. The calculation of $\mathrm{CAR_i}$ for acquirer i is calculated summing the risk-adjusted returns over a five-day period (t - 2 to t + 2) that encompasses the M&A announcement day (t = 0) as outlined in Eq. (13) below:

(13) $$\mathrm{CAR_{i\,t}} = \sum_{t-2}^{t+2} \mathrm{AR_{i\,t}}$$

where $\mathrm{CAR_i}$ is the cumulative abnormal return for the acquiring company, AR is the abnormal return for acquiring company i at time t, and the sum is taken over the five-day period surrounding the announcement day (t = 0). The abnormal return for the acquiring company is

defined as the difference between the actual return of the company at time t and the expected return of the company at time t, given its risk exposure to the market and other factors. The model uses abnormal returns of each acquiring company defined with respect to the Fama-French 3-factor model:

$$(14)\ \mathrm{AR_{it}} = \mathrm{R_{it}} - \mathrm{E(R)_{ft}} = \alpha_{it} + \beta_1\left(R_{mt} - R_{ft}\right) + \beta_2 \mathrm{SMB}_t + \beta_3 \mathrm{HML}_t$$

Where R_f is the risk-free rate of return, R_m is the return of the market portfolio and β_1, β_2, and β_3 are the sensitivity coefficients of the acquiring company i to the three Fama market factors. Subtracting the expected return from the actual return yields the abnormal return AR. The sum of the abnormal returns over the event window gives the cumulative abnormal return, which measures the distinct impact of the M&A announcement on the stock price of the acquiring company.

I will base my conclusions on the common macroeconomic assumption of market efficiency, in which (i) stock prices represent all publicly accessible information and (ii) new information is quickly reflected as soon as it becomes available (Fama, 1970). In the case of market transactions, I suppose the acquirer's CAR captures the value-added as a result of new information made available as a consequence of the deal announcement.

4 Results

The following chapter presents the results of the ordinary least squares (OLS) regression analyses conducted to investigate the relationships between economic policy uncertainty and the deal characteristics.

Table 3: Likelihood of deal withdrawal

	1	2	3	4
Ln EPU	-0.02***			
	(-2.66)			
MPU		-0.00**		
		(-2.19)		
VIX			0.00*	
			(1.73)	
FSI				0.01***
				(3.29)
Deal Value	0.00***	0.00***	0.00***	0.00***
	(14.37)	(14.35)	(4.32)	(13.00)
Acquirer AT	0.00	0.00	-0.00	-0.00**
	(0.05)	(-0.01)	(0.10)	(-2.06)
Acquirer ROA	-0.01**	-0.01**	-0.01**	-0.01**
	(-2.03)	(-2.00)	(-1.98)	(-2.06)
Acquirer Sales Growth	0.00	0.00	-0.01	-0.00
	(-0.07)	(-0.06)	(-0.36)	(-0,04)
Acquirer Book Leverage	-0.00	0.00	-0.00	0.00
	(-0.03)	(-0.04)	(-0.08)	(0,02)
Acquirer M/B	0.00	-0.05*	-0.04**	0.00
	(0.60)	(-1.90)	(-2.20)	(0,68)
Acquirer Cash to Total Assets	0.02*	0.02*	0.02*	0.01
	(1.83)	(1.81)	(1.69)	(1.06)
Industry fixed effects	yes	yes	yes	yes
N	13506	13506	13506	13506
Adjusted R2	0.02	0.02	0.02	0.01

Note: This table reports the ordinary least square regression results of equations (1), (2), (3) and (4) respectively. T-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively. The definitions for all control variables are reported in the Table 6.

The results of the first four stated distinct ordinary least squares (OLS) regression models are shown in Table (3). Each model examines the relationship between the likelihood of a merger

and acquisition (M&A) withdrawal (the dependent variable), an uncertainty indicator (the independent variable of interest) and numerous control variables relating to the deal and the acquiring company.

In terms of regression results, the first model (Model 1) uses Economic Policy Uncertainty (EPU) as the independent variable of interest. The results obtained from the model indicate that EPU is the most influential independent variable in explaining the likelihood of an M&A withdrawal. Notably, in Equation 1, a negative estimated coefficient of -0.02 is statistically significant with a t-value of -2.66, showing that a one-unit rise in EPU is connected with an overall decrease in the likelihood of a deal being withdrawn. This conclusion contradicts existing literature findings as well as the stated hypothesis (H1), which implies that increasing economic policy uncertainty in the United States indicates raises the risk of domestic M&A deal withdrawal. One possible explanation for this finding is that in times of significant economic policy uncertainty, corporations may be more likely to proceed with M&A transactions despite the risks associated. This could be because they believe that the potential benefits of the transaction outweigh the potential dangers, or they are under pressure to expand their business in a difficult economic situation. Another hypothesis is that in uncertain economic times, corporations are less likely to withdraw from negotiations since they have already committed major resources in the deal, such as time, money, and human capital. As a result, they may be more eager to finalize the transaction.
It is crucial to notice that the model's R-squared value is very low, implying that other factors reducing the risk of a deal withdrawal were not taken into account by the model. Regulatory or legal considerations are examples of potential non-measurable or -includable elements. Factors like this may be influencing the relationship between EPU and the risk of a deal being withdrawn in M&A transactions substantially.

The independent variable of interest in the second model (2) is Monetary Policy Uncertainty (MPU). According to the calculated coefficient of -0.0001, a one-unit rise in MPU is connected with a slight decrease in the likelihood of an M&A deal being withdrawn. The VIX is added as an uncertainty measure in the third regression, yielding identical outcomes. Even if the coefficients are significant at the 10% level, the estimated coefficient of 0.0003 suggests that a one-unit rise in the risk of a deal withdrawal has just minimal impact.

Financial Stress as an uncertainty indicator performs marginally better in the model with an estimated coefficient of 0.01 but still has very low explanatory power. The results demonstrate that EPU has the strongest explanatory power as a measure of uncertainty when predicting the chance of a deal withdrawal among the independent variables of interest.

Furthermore, all four models incorporate control variables (Acquirer Deal Value, Acquirer AT, Acquirer ROA, Acquirer Sales Growth, Acquirer Book Leverage, Acquirer M/B, and Acquirer Cash to Total Assets) for the acquiring company, the deal, and the industry. However, in all four models, only Acquirer ROA and Deal Value exhibit statistically significant connections with M&A withdrawal, indicating that the control variables included have limited predictability power and that future research should consider a broader range of characteristics that may lead to M&A withdrawal.

Table 4: Impact of Economic Policy Uncertainty on premium paid

	5	**6**	**7**	**8**
Ln EPU	13.76			
	(1.04)			
MPU		0.01		
		(0.22)		
VIX			0.80*	
			(1.70)	
FSI				15.35**
				(2.07)
Target Deal Value	-0.00	-0.00	0.00	0.00
	(-0.41)	(-0.46)	(0.03)	(-1.00)
Target AT	0.00	0.00	0.00	0.00
	(1.41)	(1.48)	(1.36)	(0.82)
Target ROA	-33.99	-33.56	-32.18	-25.92
	(-1.12)	(-1.10)	(-1.00)	(-0.65)
Target Sales Growth	36.70	19.94	-47.88	46.10
	(0.11)	(0.06)	(-0.14)	(0.12)
Target Book Leverage	0.61	-0.37	2.82	-0.46
	(0.03)	(-0.02)	(0.11)	(-0.01)
Target M/B	0.10	-0.07	-0.06	-0.03
	(0.17)	(0.12)	(-0.10)	(-0.04)
Target Cash to Total Assets	9.86	11.21	-3.57	-15.06
	(0.35)	(0.40)	(-0.11)	(-0.38)
Industry fixed effects	yes	yes	yes	yes
N	521	521	521	521
R2	0.01	0.02	0.02	0.02

Note: This table reports the ordinary least square regression results of equations (5), (6), (7) and (8) respectively. T-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively. The definitions for all control variables are reported in the Table 6.

Table 4 summarizes the findings of the OLS regression study (5), (6), (7), and (8), which again evaluated the impact of all four distinct uncertainty measurements on the deal premium paid. The deal premium is computed as the percentage difference between the deal value and

the closing stock price of the target firm four weeks prior to the initial announcement date. Control variables for the target firm are included. Similarly to the prior model, the study incorporated control variables relevant to deals and industry.

The first regression model (5) uses Economic Policy Uncertainty (EPU) as an independent variable of interest. Unfavorably, coefficients – and hence EPU – do not reach statistical significance at conventional levels. The tiny magnitudes of the coefficients in comparison to their standard errors imply that the independent variables have little to no effect on the deal premium. This discovery could be ascribed to a variety of circumstances. For example, due to the merging of numerous data sets and missing observations, the sample size is rather small, which may have restricted the capacity of the analysis to discover significant connections between the independent variables and the deal premium. Another potential problem is the omission of important variables affecting the deal premium, which I either was not able to access or which were not measurable. The omission from the model, could be an explanation for the non-significant results.

MPU is included as a new independent variable of interest in the second regression model (6), which has an estimated coefficient of 0.01 and a t-statistic of 0.02. Similarly to the previous model, none of the calculated coefficients, including the MPU coefficient, achieve statistical significance at conventional levels. The bare magnitudes of the coefficients in relation to their standard errors imply that MPU has no meaningful impact on the deal premium paid.

Similarly, the third regression (7), which includes VIX as an independent variable of interest, yields no significant coefficients for any of the independent control variables. The uncertainty metric VIX, on the other hand, has a tiny but significant association with the deal premium. With a t-statistic of 1.70, the predicted coefficient of 0.80 is significant at the 10% level. According to the estimated coefficient, for every one-point increase in the VIX index, deal premiums increased by 0.80 units on average. Nonetheless, the R-squared value of 0.02 indicates that the independent factors in the regression only explain a small percentage of the variation in deal premium.

Finally, the fourth regression study (8), with the Financial Stress Indicator as the uncertainty measurement of interest, provides statistically significant results at the 5% level, with a t-statistic of 2.07. Specifically, the computed coefficient of 15.35 suggests that for every unit

increase in the Financial Stress Indicator, deal premiums rise by 15.35 units on average, all else being equal. This research implies that financial stress, perhaps as a result of increasing risk and uncertainty in the financial markets, may play a role when assessing the cost of acquiring another company. One possible explanation for the finding is that during periods of financial crisis, investors may demand higher premiums for selling their company's stock. This could be caused by enhanced market uncertainty and associated risk, as well as a desire to compensate for possible losses in other assets. As a result, corporations seeking to buy a company may have to pay greater premiums to achieve a transaction during times of high financial stress in the market.

However, with an R-squared value of 0.02, the included variables still only explain a small percentage of the variation in the deal premium. As a result, the impact of FSI, EPU, MPU, and VIX on deal premium should be evaluated with caution, while additional research is needed to properly understand the causal relationship between these variables.

Table 5: Impact of Deal Activity on the acquirer's cumulative abnormal returns (CAR)

	9	**10**	**11**	**12**
Ln EPU	0.20**			
	(1.97)			
MPU		0.00*		
		(1.76)		
VIX			0.02***	
			(4.73)	
FSI				0.13***
				(3.23)
Ln Deal Value	0.13***	0.00*	0.00	0.00***
	(4.17)	(1.65)	(1.53)	(2.69)
Acquirer AT	-0.19***	0.00***	-0.00***	-0.00***
	(-6.21)	(-3.40)	(-3.13)	(-4.31)
Acquirer ROA	-0.51***	-0.63***	-0.60***	-0.68***
	(-2.59)	(-3.41)	(-3.12)	(3.48)
Acquirer Sales Growth	0.02	-0.03***	0.03***	-0.03***
	(0.38)	(-3.59)	(-3.69)	(3.48)
Acquirer Book Leverage	0.01	-0.02	0.04	0.01
	(0.03)	(-0.10)	(0.83)	(0.03)
Acquirer M/B	0.00	-0.00	-0.00	-0.00
	(-0.24)	(-0.55)	(-0.60)	(-0.29)
Acquirer Cash to Total Assets	0.02	0.54**	0.56***	0.47**
	(0.60)	(2.50)	(2.63)	(2.03)
Ln Relative Deal Size	0.12***	0.22***	0.22***	0.19***
	(3.99)	(11.57)	(11.83)	(9.14)
Premium	0.01	0.00	0.00	0.00
	(0.24)	(-0.39)	(-0.51)	(0.92)
Industry fixed effects	yes	yes	yes	yes
N	1536	1536	1536	1536
Adjusted R2	0.16	0.14	0.15	0.14

Note: This table reports the ordinary least square regression results of equations (9), (10), (11) and (12) respectively. T-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively. The definitions for all control variables are reported in the Table 6.

Table 5 presents the findings of the OLS regression analysis that assesses the impact of uncertainty on the acquirer's cumulative abnormal returns (CAR) surrounding the day of the merger and acquisition (M&A) announcement. Four alternative regressions are used in the analysis, each with a different uncertainty measure as an independent variable of interest.

In the first regression (9), the Economic Policy Uncertainty (EPU) measurement is added as an independent variable. The table shows that EPU has a substantial positive influence on the acquirer's CAR, with a coefficient estimate of 0.20 and a t-statistic of 1.97. This means that rising EPU is associated with higher cumulative abnormal earnings for the purchasing company, supporting the previous findings and the stated hypothesis (H3) for a 5 % significance level. Possible explanations for this relationship include the hypothesis, that due to overall market turbulence or risk aversion during periods of significant economic policy uncertainty, the market may view the target company's worth to be undervalued or discounted. As an outcome, when an acquiring business announces the purchase during such a period, it may be perceived as exploiting the state of uncertainty and acquiring the target business at a discount. Another explanation could be that under certain circumstances, rising economic policy uncertainty might lead to optimistic market sentiment and investor optimism. If the market believes that the uncertainty will be handled in a positive way, it can create an optimistic outlook and drive up the stock prices of acquiring firms. Therefore, uncertainty may also result in abnormally high cumulative abnormal returns for the acquiring corporation. Overall, the study's empirical findings show the importance of economic policy uncertainty in creating the risk profile of M&A deals for acquiring firms, and hence influencing their chances to generate value through M&A deal transactions. However, the adjusted R-squared of the model is 0.16, implying that EPU and the other control variables in the model explain only 16 % of the variation in the acquirer's cumulative abnormal returns.

The second regression (10) results show a statistically significant relationship between MPU and the acquirer's cumulative abnormal returns. The MPU coefficient estimate is positive and statistically significant at the 10% level, but with 0.001 it is rather small. This suggests that an increase in monetary policy uncertainty is connected with a modest increase in the absolute acquirer's cumulative abnormal returns. The trend is only marginally supporting the findings of Adra, Barbopoulos and Saunders (2020).

The third regression (11) findings show a positive coefficient estimate of 0.02 using VIX as the independent variable of interest, which is statistically significant at the 1% level. This suggests that greater market volatility is related to greater cumulative abnormal returns for acquirers. As a result, investors might consider M&A transactions as an opportunity for corporations to manage risk and uncertainty during moments of high market volatility.

Finally, the findings of the fourth regression (12) reveal that the Financial Stress Indicator has a statistically significant effect on the acquirer's cumulative abnormal returns. Financial stress has a positive and statistically significant coefficient estimate of 0.13 at the 1% level. This suggests that a rise in financial stress is connected to an increase in the acquirer's cumulative abnormal returns, although with a smaller degree of statistical confidence than the other independent variables. Furthermore, the coefficient is relatively small, and the R-squared of the model is 0.14, implying that the model can only explain 14% of the variation in the acquirer's cumulative abnormal returns.

The results of the study show that, among the four uncertainty variables examined, Economic Policy Uncertainty has the most impact in influencing acquirer's returns during M&A transaction announcements. As a result, this research highlights the potential utility of Economic Policy Uncertainty in changing decision-making processes and valuations.

5 Discussion

Naturally, the study has several limitations. First and foremost, the data constraint must be addressed. Deals have to be eliminated given insufficient information as a result of the merger of numerous separate data sources. This resulted in relatively small data sample sizes, which reduced the robustness of the results. Increasing the sample size would improve the robustness and thus the explanatory power of the results. At the same time, the sample period, which runs from 1994 to 2023, is quite limited, which may restrict the findings' generalizability to other time periods or market conditions. Furthermore, the study is based on a sample of M&A transactions in the United States, which may restrict the findings' generalizability to other nations.

Additionally, the study only evaluates a limited number of control variables, whereas additional aspects that potentially influence M&A deal outcomes are not considered in the analysis.

Finally, the study only examines four measures of uncertainty; additional measurements or variables may exist and may be utilized to capture uncertainty more fully. Geopolitical or technological uncertainty are two possible types of uncertainty. The EPU index can also be seen critically in assessing economic policy uncertainty properly. Its limits in capturing all causes of uncertainty, reliance on subjective interpretation of data and news items as well as sensitivity to noise suggest that when analyzing economic policy uncertainty, caution should be exercised when depending entirely on a single factor.

The low R-squared values obtained in all three models represent the study's primary weakness. Despite applying rigorous statistical approaches and a large range of variables analogue to resent literature, the models only explained just a portion of the variance in the dependent variables. This could imply that other unmeasured or non-accessible variables play a substantial role in determining the reported M&A deal features. Furthermore, the low R-squared values may limit the findings' generalizability to other contexts. Future studies may look into additional variables or alternative methods to improve the models' explanatory ability.

6 Conclusion

The aim of this thesis is to look at the relationship between economic policy uncertainty and the characteristics of M&A transactions. Three hypotheses on the relationship between economic policy uncertainty and M&A deal features were investigated in the study. To start with, the findings imply that economic policy uncertainty has a small but statistically significant negative effect on the likelihood of M&A deal withdrawal, which contradicts recent literature findings. Furthermore, EPU was found to be the most effective in forecasting a deal withdrawal among the four measures of uncertainty employed in the analysis, namely MPU, VIX, FSI, and EPU. Moreover, the study discovered that economic policy uncertainty had no substantial impact on the deal premium paid. While MPU and VIX also exhibited no significant relationship, financial stress was discovered to have positive effects on the deal premium.

Finally, the findings revealed that M&A transactions announced at times associated with greater economic policy uncertainty tended to increase the acquirer's cumulative abnormal returns. In conclusion, the study's regression results revealed a relatively modest R-squared value, indicating that the models explain only a small portion of the variance in the likelihood of deal withdrawal, the acquirer's abnormal returns, and the deal premium. As a result, future academic research should look into additional explanatory variables as control variables and use more

sophisticated models to gain an improved understanding of the relationships under consideration.

However, the study proves to make a significant contribution. Changes in political leadership, shifts in global trade and economic policies as well as emerging technologies and industries might all contribute to rising market uncertainty and volatility in the future. When developing and carrying out policies affecting the broader economic environment, policymakers and regulators may want to examine the possible impact of economic policy uncertainty on M&A deal outcomes. Furthermore, given the study's findings on the impact of economic policy uncertainty on M&A deal outcomes, deal participants and stakeholders may be interested in closely tracking and managing this form of uncertainty in their decision-making processes. Overall, economic policy uncertainty is likely to remain a dynamic and constantly evolving factor in the M&A deal market, as firms and politicians deal with continuous changes and challenges in the global economic landscape, making the studied relationships momentous.

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8 Appendix

Table 6: Comprehensive overview of the variables used in the study, along with their description and data sources.

Measuring Uncertainty	Information	Source
EPU	Economic Policy Uncertainty measured by Baker, Bloom and Davis (2016)	Baker, Bloom, Davis
MPU	Monetary Policy Uncertainty measured by Baker, Bloom and Davis (2016)	Baker, Bloom, Davis
VIX	Volatility Index	Federal Reserve Bank of St. Louis
FSI	Financial Stress Indicator published by Püttmann (2018)	Baker, Bloom, Davis
Measuring deal characteristics		
Deal Value	Total value paid by acquirer excluding fees and expenses. Includes amount paid for common stock, preferred stock, debt, options, assets, warrants, and stake purchases within 6 months of announcement.	Refinitiv Eikon – Deal Screener
Industry	Industry classification at a macro-level, based on the Standard Industrial Classification (SIC) Codes,	Refinitiv Eikon – Deal Screener

	North American Industry Classification System (NAIC) Codes, and overall company business description.	
Relative Deal Size	Deal Value divided by Acquirer Market Value 4 Weeks Prior to Announcement.	Refinitiv Eikon – Deal Screener
Premium	Deal Value minus Target Market Value 4 Weeks Prior to Announcement, divided by the later times 100.	Refinitiv Eikon – Deal Screener and Compustat
Deal Withdrawal	0 if the deal is completed and 1 if the deal is withdrawn after the announcement	Refinitiv Eikon – Deal Screener
Firm Data		
Cumulative Abnormal Return (CAR)	Acquirer's abnormal returns in a five-day event window surrounding the deal announcement day. Measured with regards to the Fama and French three factor model.	Event Study Wharton
Acquirer AT	Assets Total − Compustat Annual item AT	Compustat − Fundamentals Annual analogous Bonaime et al. 2018
Acquirer ROA	Return on Assets − Total Interest and Related Expense (item IB) plus Income Before Extraordinary Items (item	

	XINT) divided by Assets Total (item AT).	
Acquirer Sales Growth	Percentage difference in sales – Compustat Annual item SALE	
Acquirer Cash to Total Assets	Cash and Short-Term Investments (item CHE) divided by Total Assets (item AT).	
Acquirer M/B	Market value of equity divided by book value of equity where market value of equity is share price (item PRCC_F) times common shares outstanding (item CSHO). Book value of equity is Current Assets (item ACT) minus Current Liabilities (item LCT).	
Acquirer Book Leverage	Long-term debt (item DLTT) plus debt in current liabilities (item DLC), all divided by Assets Total (item AT).	
Target AT	Assets Total − Compustat Annual item AT	Compustat − Fundamentals Annual analogous Bonaime et al. 2018
Target ROA	Return on Assets − Total Interest and Related Expense (item IB) plus Income Before Extraordinary Items (item XINT) divided by Assets Total (item AT).	

Target Sales Growth	Percentage difference in sales – Compustat Annual item SALE	
Target Cash to Total Assets	Cash and Short-Term Investments (item CHE) divided by Total Assets (item AT).	
Target M/B	Market value of equity divided by book value of equity where market value of equity is share price (item PRCC_F) times common shares outstanding (item CSHO). Book value of equity is Current Assets (item ACT) minus Current Liabilities (item LCT).	
Target Book Leverage	Long-term debt (item DLTT) plus debt in current liabilities (item DLC), all divided by Assets Total (item AT).	