

ERASMUS UNIVERSITY ROTTERDAM
Erasmus School of Economics

**Bachelor Thesis [International Bachelor Economics and Business
Economics]**

**Covid-19 and the Impact of Corporate Acquisitions on Acquiring Firms'
Performance**

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Date final version: 11.07.2024

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ABSTRACT

Mergers and acquisitions are a very common sight in the corporate world, the impacts of which have not been unanimously ascertained in prior literature. The purpose of this paper is to evaluate the impact of corporate acquisitions as a strategy for firms to recover from adverse impacts of covid-19 with regards to profitability. The sample consisted of billion-dollar firms from various industries. First, parallel trends were proven, followed by Difference-in-Difference (DiD) regressions and propensity matching techniques to reach the conclusion. It was found that both local and international acquisitions had no significant impact of firm profitability. It was also found that partial acquisitions were associated with a significant negative impact on firm profitability.

Chapter 1: Introduction

1.1. General information about mergers

The term mergers and acquisitions (M&A) refers to the combination of companies or their major assets through financial transactions. USA leads the world in the number of M&As by far, with 4717 deals in 2018, which is much more than the UK, which comes in second place with 775 in the same year (Statista). Global M&A deal value was \$3.2 trillion in 2023. Although this is a large number, it was 15% lower than the total deal value the year before. In 2021, the total value of M&A deals was at its peak of \$6 trillion (Bain.com). This exemplifies how these transactions are very significant in the business world, so it is crucial that we understand more about their impact on firm performance. There is a lot of existing research on how these transactions influence the performance of both the acquiring and target firms and I would like to expand current literature by

providing new knowledge on how these transactions impact the profitability of the acquirer. Profits are a very important facet of evaluating business for a myriad of reasons: they provide companies with money to reinvest into themselves so that better products or services can be provided; high profits are a signal which imply that a company is producing something of value. They are also incentives for companies to innovate and for individuals to put their time and effort into creating and improving goods and services. Abnormal profits motivate new firms to enter a market, increasing competition and efficiency, further improving the quality of products and services. Essentially, profits motivate firms to keep producing and ensures that people get the highest quality goods and services (tutor2u.net). So, I thought it would be a good variable to measure regarding performance. A company may purchase and absorb another company fully, merge with it to create a new company, acquire some or all its major assets, make a tender offer for its stock, or stage a hostile takeover. In this paper I will be focusing on acquisitions, where the acquiring company buys all or a large amount of the target company's shares. Acquisitions are done for a variety of reasons, some of which include diversification, economies of scale, increasing market share, offering new niche products, entering foreign markets, and cutting the existing competition.

1.2. My Research Question

The research question I formulated is as follows:

What was the impact of a corporate acquisition during the Coronavirus pandemic on the acquiring firm's profitability in the years following the transaction?

1.3. The scope of my thesis

In M&A deals, there are two parties involved: the target and the acquirer. In my thesis I want to see the impact of acquisitions on the acquirer, rather than the target. This is because whether targets continue to exist as an entity depends on several factors like whether it is a stock purchase (whereby firms may continue to exist as a subsidiary, fully controlled by the acquirer) or an asset purchase (in which case the company may cease to exist if all assets are bought). Retention as a subsidiary depends on the acquisition percentage, strategic goals, regulatory requirements, and other plans of the acquiring company. As a result, it may be hard to determine post-performance for companies since some of them cease to exist after the transaction takes place. However, Stiebale et al. (2011) were able to isolate targets that continued to exist and found that foreign acquisitions had a large and significant negative impact on the formation of new innovative activities and R&D expenditures of the target firms involved from a sample of German SMEs. This was one of the

studies in which the impact of deals on the target was analyzed. On the other hand, the acquirer grows even bigger after the transaction and the impact of this new union is a topic that has attracted the curiosity of many a researcher. I wish to continue this trend, not just because of the lack of specifics on the targets' post deal status in my database, but also because I believe that the acquirers' status is more significant in determining the effectiveness of the deal. Studies on the impact of deals on acquirers will be specified in the literature review below.

1.4. Academic views on acquisitions

Ali-Yrkkö (2002) said that economic performance and efficiency are what firms need to maximize their profits and that this strongly relates to the neoclassical theory which states that firm behavior is focused on maximizing their profits. As a result they look at target firms that can lead them to profit maximization after an acquisition. This includes firm level factors such as cost reductions, market power from reducing competition, acquiring the target's resources, etc. as mentioned above. The neoclassical theory of profit maximization further supports my choice of profits as the firm performance indicator in my thesis. Additionally, they also talk about the role of potential short-term benefits via increases in share value after the transaction. There could be significant differences in present value expectations between current shareholders and potential future shareholders that are interested in buying shares of the company. Managers are also motivated by their self-interest (to different extents) instead of just their company's growth. Managers usually gain increased prestige, power, and compensation when a company grows in size or sales increase. Mergers and acquisitions provide much faster growth in these departments than internal expansion does. Roll (1986) came up with the hybrid hypothesis that suggests that managers could make mistakes when estimating the value of target firms. This could lead to an under or overestimation of the target's value and lead to very low or high bids respectively. If the bid is too low, the target firm will deny their absorption. However, if the acquirer's management overestimates the value of the company and its possible synergies, this excessively high bid is enough motive for a potential target firm to agree to the acquisition, suggesting that the deal value would impact the probability of an acquisition going through. Hitt et al. conducted a study in 2009 where they identified the main reason for two companies to go through with a deal. The main motive for the target firm is the acquisition premium paid by the acquirer, which refers to the part of the deal value that exceeds the target's pre-acquisition market value. On the other hand, the equivalent of this for the acquirer are extra synergies created from the union, which should exceed the acquisition premium for the

acquirer to benefit. This does not happen in a lot of cases and hence those mergers are considered failures.

According to the Harvard Business Review, 70-90% of M&As fail. This statement is made regarding most M&As inability to gain market share and generate share value. This thesis will not be looking at impacts of acquisitions on share value, but the following logic also applies to my case. According to a study by Koi-Akrofi (2016), there are several reasons for failed acquisitions. One reason is the lack of proper post-M&A integration, which refers to difficulties in functioning due to the differences in organizational structures and cultures of the two firms involved. Another reason is the lack of empathy for the target employees' interests by the acquiring company and about two thirds of mergers fail to achieve intended results due to this reason. Koi-Akrofi says that, in a survey completed by Fortune 500 CFOs, 'post-deal people problems' seem to be the cause behind the failure of 45% of M&As. This was due to reasons ranging from corporate governance issues to lack of employee satisfaction due to culture gaps between the two involved organizations. Uncertainties about the future can also have positive or negative psychological effects on employees, which impacts the performance of firms. After all, employees are what make companies, and discord between employees would lead to the failure of any organization. The study also says that poor strategies by the management of the acquiring firm are bound to make deals fail. Management should thoroughly study the features of the acquired firm before the deal goes through so that valid strategies can be implemented post-merger. This suggests that the acquirer's management also plays a crucial role in the success of M&As. Other than these main two reasons mentioned in his study, there were several studies by other researchers outlining the reasons for M&A failure mentioned in his work. Overpaying for the target company, lack of risk management strategies, lack of communication and training for new employees and loss of talented employees were some of the other reasons mentioned. Based on these findings, I expect a lot of M&As to have a negative impact on firm profitability. However, there is a lot of research done which shows the opposite in terms of effects on firm performance.

There are many acquirer-specific factors that come into play when deciding whether to acquire another firm. These include business criteria like location, scale, ownership, partners, suppliers, etc. Financial criteria like the target's revenue, profit, cash flow, balance sheet, valuation and share price are also looked at before choosing a business to buy. Acquirers also must fully understand the type of business it is that they are trying to acquire and if it would make sense to make the deal and continue its operations themselves. Acquirers try to get as much information about the target as possible so that they can get a realistic estimate of how much the firm is worth.

A study by Bae et al. (2013) found that considering cross border acquisitions by US firms, the typical acquisition deal for private firms was smaller in size and the target firms were more high-tech than when a public firm was acquired. They also found that acquirers were more likely to buy private firms in low transparency countries. Capron and Shen (2007) found some more interesting results when it comes to target selection. Acquirers prefer private targets in familiar industries and public targets when they want to enter new business domains or industries with a high level of intangible assets. It was also found that acquirers of private targets performed better than those of public targets on merger announcement in terms of share prices. Since buying a company is such an expensive transaction, combined with the fact that most acquisitions end up failing to live up to expectations, it is essential to fully evaluate how the future of the acquiring company will be affected by the transaction, before going through with it.

1.5. Relevance of acquisitions

Acquisitions are significant transactions which require large amounts of resources and can significantly impact the financial health of acquiring companies and ultimately, the economy as a whole. Understanding how and through what mechanisms acquisitions impact profitability is very useful for helping policymakers, investors and managers make more informed decisions about resource allocation. Analyzing the response of firm profitability should shed some light on how market dynamics evolve based on firms' decisions regarding acquisitions, leading to more insights on competitive strategies and regulatory decisions. This research could also have implications on government policy, promoting competition and protecting consumers.

An example of a corporate union that resulted in lawsuits and concerns from antitrust regulators was when Time Warner merged with AT&T in 2018. Time Warner was one of the largest media and entertainment companies in the world, owning many popular brands like HBO, TNT, CNN and Warner Bros. enterprises. The concern was that if this transaction was to go through, AT&T, the acquirer, could use its massive telecommunications system (consisting of worldwide wireless network, cell phone, digital television, internet, and landline telecommunication services) for marketing Warner's enormous pool of content. The main problem with this was that the new and upgraded entity could use their dominance, in the form of a large number of users, to collect usage data from viewing their content and would be able to make a digital advertising wing to compete with giants in the industry like Facebook and Google. With this much power in the market, they could aim to increase their profits by charging consumers higher prices, knowing that they would

not have many other alternate sources of entertainment. This merger ultimately went through but there were attempts to 'unmerge' the two giants in court due to too much market power being concentrated with 1 entity and its adverse impact on competition (Investopedia). This case tells us that in pursuit of profits, companies could acquire other related companies in hopes of expanding their market power to a huge extent and set high prices, which is bad for consumers. By gaining more insights on the mechanisms through which firms achieve higher profits through mergers, policymakers could be able to make new regulations that encourage the union of companies while maintaining high competition. Facebook's acquisition of Oculus VR in 2014 for \$2 billion has led to incredible developments in VR in gaming, education, and healthcare over the years. This has happened through the invention and development of VR headsets (like the Oculus Rift and the Oculus Quest), new hand tracking and VR headset safety mechanisms to prevent collisions with real world objects(marketingweek.com). Facebook Reality Labs have also been developed, which focus on advancing VR through long term projects and bringing such technology to improve peoples' everyday lives. This particular example shows that mergers could lead to new innovations that could reshape society entirely. By studying more about these transactions, we could learn more about how to optimize acquisitions in a way that leads to benefits to parties other than the two companies involved. These were just some of the many examples in which mergers and acquisitions have made a lasting impact on society, further supporting the societal relevance of my thesis and other similar studies.

There is a good amount of existing literature on the impact of mergers and acquisitions on the performance of companies. These studies look at either the target or the acquiring firm to test their hypothesis. I would like to test if all the hypotheses from my chosen studies, which are mentioned in the literature review, will hold for acquiring firms. I will also likely have a large database with thousands of observations, which some of these studies are lacking. Additionally, my study will be able to contribute to literature helping firms decide whether acquisitions can be reliable instruments to increase firm profitably and in turn, benefit all its stakeholders. The acquisitions that I will be evaluating in this research are all in the context of the covid-19, which was classified as a pandemic in 2020. In particular, I would like to develop insights on using acquisitions as a way to recover from the economic downturn caused by shocks like the pandemic. I hope that my results can corroborate some previous literature and hopefully lead to insights on new directions of research on the impact of acquisitions on firms.

1.6. Methods and findings

I used the Orbis firm level database in tandem with the Orbis M&A database to arrive at my final dataset consisting of billion-dollar firms. First, I made sure to optimize my sample so that the parallel trends assumption, which is crucial for Difference-in-Difference (DiD) analyses would hold. I initially tried to answer my first hypothesis through a DiD analysis, which suggested that acquisitions have a negative but insignificant impact on net income. Running a robustness check using the same model but a slightly different control group confirmed an insignificant coefficient for acquisitions, though it was positive. As a follow up robustness check, three propensity score matched regressions were conducted to confirm that acquisitions had no significant impact on firm profitability. The DiD method was also used to test the second and third hypotheses. In both cases, the results were similar for the original DiD regression and the robustness check. Partial acquisitions were found to have a negative significant impact on net income while international acquisitions had no significant impact on net income. So, the answer to my research question is as follows: *Complete Corporate acquisitions have no significant impact and partial corporate acquisitions have a significant negative impact on the profitability of the acquiror in the years following the transaction.*

Chapter 2: Literature review

In this section, I will outline some key studies in the field of M&As, based on which I have formulated my hypotheses for this thesis. In a study by Siegel et al. (2010), they analyzed the impact of acquisitions on firm performance and plant and worker productivity using human capital theory (instead of using firm level data). They used longitudinal, linked employer-employee data for virtually all Swedish manufacturing firms and employees, which they used to test several hypotheses. They found that mergers and acquisitions enhance the productivity of plants although they result in firm downsizing. This is because only the most productive workers are retained and trained further, enabling them to make the most of plants. This notion of a good match between firms, plants and workers is a key concept of the human capital theory which was the basis of their study. They had data on output and inputs, that is, capital, labor, and materials, which they used to make an equation determining total factor productivity. They also used profit (value-added per employee) and market share to assess the performance of plants. Their methodology consisted of

running a series of regressions to test each of their hypotheses. I am interested in hypotheses 6 and 7 from their study, which are given below:

Plants experience an increase in performance after an M&A. They found that acquired plants are less productive before than after the acquisition, confirming the original hypothesis. The difference increases as more time passes. I will be trying to replicate the same but for the firm as a whole rather than individual plants. I will measure the impact on profitability instead of performance, via net income due to its previously established indicative qualities.

A partial acquisition leads to more substantial improvement in performance than a full acquisition. They found that plants acquired in a partial acquisition experienced slightly higher (2.6%) productivity growth than establishments purchased as part of a full acquisition (1.4%), confirming their hypothesis. This was hypothesized because the researchers thought that there may be information asymmetry problems regarding plant quality between the target and the acquirer. The explanation they gave was that since the buyer is unlikely to know everything about all the target firm's plants, the problem of information asymmetry is likely to be reduced for partial acquisitions. The researchers also hypothesize that in case of partial acquisitions, the acquirers might 'cherry pick' certain facilities that they deem to be more effective under their organization. I want to test if the same is true in the context of my research, under covid conditions.

In a study by Chari et al. (2009), the impact of international acquisitions of US firms by emerging countries was examined. Their theory, which was supported by previous research, was that the acquisition of firms in developed countries brings with it an inflow of advanced foreign technology, organizational capital, and access to international capital markets (Caves, 1996). They used Difference-in-Difference (DiD) to find the impact of acquisitions on target firms. They used age, size (measured by log of total assets, log of sales and log of employment), operating income, debt, cash, net income, and net property, plant, and equipment as control variables in their regression. To make good counterfactuals, they used propensity score matching techniques to make a control group of non-acquired US firms that closely match the treatment group of acquired firms. A propensity score is the probability of an event happening given all relevant covariates. In the context of my study, the propensity score will be that of a firm acquiring another. For my thesis, I hope to match firms with similar scores on probability to acquire another firm. This should make my results more robust and help in addressing selection bias by making the treatment and control groups more comparable (even though it sacrifices some of the unmatchable observations). In their analysis, Chari et al. used age, cash, sales, assets, employment, debt, income, state, and year to

generate propensity scores. Then by comparing the firms that got acquired to their counterfactuals with similar propensity scores that did not, they got a reliable estimate of the impact of acquisitions on performance. They matched similar propensity scores using the Mahalanobis distance metric before running their regressions. Their results state that in the years following the acquisition, sales and employment declined while profitability rose, suggesting that the target firms were restructured. This aspect of differences in ownership fascinates me and I would like to also analyze the impact of foreign acquisitions on outcomes. However, I am more interested in looking at this from the acquiring firms' perspectives.

Wan et al. (2009), studied the impact of corporate acquisitions during the Asian Economic Crisis (in the late 1990s) on firms in Hong Kong and Singapore. They conducted this research to add to prior literature on the impact of acquisitions of firm performance, the results of which were mixed. Mergers and acquisitions were said to have positive or negative effects depending on different mechanisms. They also wanted to look at the impact of an 'environmental jolt' (such as an economic crisis) on the success of mergers. They found strong support for their hypothesis stating that corporate acquisitions are positively related to firm performance during an environmental jolt. This got me thinking whether firms could better recover in the years following an environmental jolt using acquisitions as their main instrument. So, in this study I will be comparing firms who went through acquisitions during covid and those who did not during the same period and comment on corporate acquisitions' effectiveness as a recovery method. The Corona virus was first detected in China in December 2019, from where it rapidly started proliferating to other parts of the world. The WHO declared covid a public health emergency in January 2020 and the outbreak was classified as a pandemic in March 2020(who.int). However, local governments of several countries started taking measures such as implementing lockdowns or travel restrictions before the pandemic officially started. In my study, I am going to assume that covid-19 'started' on January 1st, 2020. Although the pandemic continued till 2023, I have only considered acquisitions that happened in 2020 to have enough post-treatment years to make valid conclusions.

Chapter 3: My Hypotheses

Hypothesis 1: Acquisitions during the coronavirus pandemic (2020) increased the profitability of acquiring firms in the years that followed.

In addition to my main reference study by Siegel et al., my intuition tells me that this must be the case, especially for large firms that do their research on targets' prospects. I think that cost savings through economies of scale, tax benefits and cost synergies, combined with increase in revenue via access to new technology, diversification of products and services and revenue synergies (benefits in sales and revenue through the combination of both firms' customer base, marketing, distribution, and product development) will lead to higher net income in the years following the acquisition. I think this finding should be especially true for the pandemic due to an intuition like that of buying shares: you should buy shares when the price is low and profit through the increase in share value that follows. In this case, the pandemic may have been the perfect time for one firm to acquire another at a rate cheaper than they would have if not for the pandemic. They would have done this in the hopes of covid being temporary and eventually ending. Once the pandemic ended, they would then be able to continue their own operations while integrating with the new company (and improving their products and services) that they got for a cheap price and be able to earn higher profits than if they bought the company in the absence of covid, at a higher price.

Bauer et al. (2021) found that companies had several strategic changes in response to the pandemic. There was the Hide strategy (adopted by 30% of firms surveyed), in which some firms completely seized their merger activities. The Cost strategy (31.5% of firms), where firms did not actively pursue acquisitions (stopped screening) but consulted investment banks to be on the lookout for firms available for a good price. There was the Run strategy, followed by only about 11% of firms with a bullish attitude towards the M&A market. These companies looked for new opportunities for investment even during the pandemic. Finally, the Marathon strategy, which was used by 26.9% of their sample, meant that they were balanced in their outlook, and did not change their screening attitude due to the pandemic. Because only the runners and the marathoners (comprising less than 40% of firms) continued screening during the pandemic, the demand for acquisitions was low then. This lack of demand can be seen when comparing M&A deals over the years where a sharp dip can be found for 2020 (Statista). The dip from 53594 deals (2019) to 47301 deals (2020) and the rise to 58308 deals (2021) again suggests that the peak of the pandemic had an adverse effect on these transactions. According to a study by Kooli et al. (2021), the main challenge regarding M&As at the time was the inability of analysts to form a model

predicting future cash flows due to lack of historical precedents and completely contracting predictions from world leaders about the future of business. So, acquirers that acted during this time of high risk and unpredictability could also have reaped higher rewards in the years that followed. They refer to risk and reward using what followed the 2008 financial crisis as an example where it was found that companies who were bold enough to transform their businesses through divestitures had median shareholder returns that were 61.5% greater than companies that did not divest. In this case, they were better off selling underperforming departments, but it is also possible the contrary could be true, which could have been the case during covid. During those tough times, companies with the resources and risk tolerance to acquire another company may have obtained higher profits in the future. This is what Wan et al. found in the context of the Asian Economic Crisis and this is what I would like to test with my research.

Hypothesis 2: Partial acquisitions during the coronavirus pandemic were more profitable than 100% acquisitions.

I am led to think so because of the study by Siegel et al, which said that partial acquisitions were related to higher acquirer performance as a result of ‘cherry picking’ of the most appropriate departments of the target. However, Wang et al. (2020) is different in opinion. This study found that probability of firm survival is not significantly different with partial acquisitions vs full acquisitions. They also found that, relative to partial acquisitions, in full acquisitions, the likelihood of survival is positively related with acquisition experience of the acquirer. This implies that large firms with lots of prior acquisition experience would be better off when fully buying a company than small firms because of their history of prior acquisitions. So, in case of my specific sample consisting of large firms, Wang et al.’s findings may hold true instead and full acquisitions may result in higher profitability than partial ones.

Hypothesis 3: International acquisitions during the coronavirus pandemic were more profitable than local ones.

This hypothesis is backed up by the findings of Chari et al., as mentioned in the literature review, but was also formulated because I believe that international technology and management practices from advanced countries may have been a saving grace for a lot of companies trying to continue operations effectively despite the pandemic. I think that by intentionally acquiring international

companies, especially technology-oriented companies, firms might have been able to better cope with the pandemic and end up better off in the post-treatment years. These 'spillovers' of technology and knowledge have been proven in other studies evaluating the interaction of firms from different countries. For example, Keller (2010) found evidence for technological spillovers facilitated by the international activities of U.S Multinational Corporations. He also found that firms that engage in international trade and Foreign Direct Investment (FDI) tend to be larger and more productive than firms that only operate locally. If his conclusions were to be generalized to my context, it could be said that international acquisitions have the potential to improve the productivity of the acquiring company through technological spillovers. I suspect that increased productivity is unlikely to be completely uncorrelated to increased profitability. These spillover effects could have been the catalyst for a competitive edge for firms that underwent international acquisitions, and I want to find out whether this was reflected in their profitability.

Chapter 4: Data and Methodology

Data selection and merging

I used the Orbis M&A database, which has details on acquisitions such as the organizations involved, date of completion, deal size, etc. I also used the Orbis database for firm level data to get values of indicator variables like net income for three years before and after the acquisition year, 2020. I assumed that the coronavirus started affecting business from the beginning of 2020 onwards. I would have liked to include a few more years of data in my analysis but due to availability of data only till 2023, I will only be considering deals that happened in the year 2020. With this, I had a balanced sample with indicator data being considered for three years before and three years after the deal. Hence, I looked at net income of firms from 2017 to 2023 as the dependent variable for the analysis of my panel data. To make sure that there was a degree of overlap between firms in the two databases, I only filtered in deals where the acquiring firm had a turnover of one billion USD or more in the most recently observed financial year while doing the same for the firm level database. I then matched the firms in the two datasets using a unique ID variable and merged the two datasets into a single final comprehensive dataset using Python. I then imported the merged dataset into Stata for analysis. Other than the ease of making the final database, there are other good reasons to only consider large firms in my dataset. I presume that

due to larger availability of resources like more talented management and more money, larger companies all probably do extensive research on how the targets could influence the firm and make sure that it is a good match with their existing capabilities before finalizing a deal. Hence, I expect that it is even more likely that the results of the merger are positive. Due to the greater regulatory scrutiny faced by them, large companies are also more likely to accurately disclose their other indicator variables, which I would be using for propensity scores and to run my final regression(s). Using more accurate data would increase the internal validity of my analysis. Also, focusing on firms of a specific size would reduce the variability that could arise in the analysis by comparing firms with fundamentally different size-related characteristics. Hence, I would be eliminating the effects of unobserved variables that correlate with varying firm sizes. Larger firms are key members of their respective industries, so, analyzing the impacts of acquiring a target on them would be more insightful regarding economic trends and implications. I will still have thousands of rows of data for my analysis, meaning that the sample size will not be compromised by only selecting billion-dollar firms. One disadvantage of using this method would be the lack of generalizability of the results when applying them to smaller firms, who start off with fewer resources and lower levels of many other indicator variables. Hence, my results could be biased upwards. However, I am standing by my methodology despite the lack of external validity due to the high internal validity, which means that through my analysis, I should be able to get very accurate results focusing on this specific population, ie. firms with more than one billion USD in turnover.

Difference-Difference regression

Before running a DiD regression, it is essential to see if there are any differences in the trends of net income between the two groups. The parallel trends assumption must hold for DiD estimations to be valid. To check this, I plotted the net income means of the treatment and control groups on the same graph to see if the trend from 2017 to 2020 was similar for both groups. The control variables I used for my DiD regression are total assets, Debt/Equity (D/E) ratio, current ratio, number of employees, operating revenue, return on R&D expenses and age of the acquiring company. Most of these variables were used by Chari et al. in their analysis since they are good indicators of market power, productive capacity, profitability, and internal structure of firms. These variables should be able to provide a good overview of different companies in the M&A scene¹.

¹ The definitions of variables can be found in summary table 1 in the appendix.

After finalizing the variables to include in the database, importing it into Stata and properly naming and formatting the variables, it was time to run the analysis². This final database consisted of 3378 billion-dollar companies who were involved in acquisition activity. Their acquisition statuses were classified into one of the following categories: completed, withdrawn, announced, rumored, and pending, as of 2020³. According to my hypotheses, I hope to find significant positive coefficients for the dummy variables indicating an acquisition, international acquisition, and partial acquisition. Net income in million USD is my dependent variable. Summary table 3 in the appendix states its mean, standard deviation, frequency, skewness, minimum and maximum values along with the same measures for key independent variables in my data. This table made me realize that there could be outliers in the data due the large deviations of the minimum and maximum values from the mean. I plotted a histogram of net income to see that there were indeed many outliers in my final sample. I dropped the outliers and checked the parallel trends again but was surprised to see that the assumption no longer held with the new sample. So, I went back to my original sample for the DiD analysis. I created a binary variable called 'acquisition', which was 1 for completed acquisitions and 0 for the others. This would be the treatment variable in the analyses to follow. Then I reshaped the data into long format to run my first DiD regression. DiD is a good method to use with panel data. It also helps control for time-invariant unobserved heterogeneity that might bias the estimates if a normal regression was run instead. Using DiD, fixed effects should account for firm factors that are unobserved and stay constant over time too. For these reasons, I think a DiD regression is a viable option for this analysis.

I also made a binary variable called 'international_acquisition' which was 1 for when a company completed the acquisition of another company from a different country. Along with that I also created a variable indicating the acquisition percentage for the different transactions. These variables would be needed for hypotheses two and three respectively. I will be using a DiD model accounting for firm and time fixed effects to isolate any changes in net income to the acquisitions themselves. Firm fixed effects control for time invariant firm characteristics specific to each firm which could influence the outcome, for example, work culture and quality of management. Time fixed effects control for time specific events that influence all firm in the same way, for example, the implementation of new covid regulations and macroeconomic trends. These fixed effects will remove the confounding influence of omitted variables and yield more robust estimates for the treatment effect. Fixed effects cause firm and time specific factors to be absorbed into the

² Check the appendix to find all tables mentioned but not displayed with the main body.

³ Details about the groups can be seen in summary table 2 in the appendix.

coefficient of the model. Due to this, the year coefficients, along with company specific factors like company age and the treatment group coefficient are absorbed into the constant term and not expressed numerically. I also clustered the regression by firm id and time to adjust the standard errors obtained in the output. This accounts for within cluster variation, for example, when a firm's profitability in the current year may influence its profitability in the future, and between-firm-variation over time. By accounting for these sources of correlation in the standard errors, we obtain more accurate p-values and confidence intervals, which enhances the validity of our findings. Using this highly robust model, our main coefficient of interest will be the interaction between acquisitions and the post-acquisition period (β_1), which will tell us the Average treatment effect on the treated (ATT).

Regression Model:

$$\begin{aligned}
 NetIncome_{i,t} = & \beta_0 + \beta_1 \cdot (PostAcquisition \times Acquisition)_{i,t} + \beta_2 \cdot TotalAssets_{i,t} + \beta_3 \cdot DERatio_{i,t} \\
 & + \beta_4 \cdot CurrentRatio_{i,t} + \beta_5 \cdot NumberOfEmployees_{i,t} + \beta_6 \cdot OperatingRevenue_{i,t} \\
 & + \beta_7 \cdot ReturnOnRDExpenses_{i,t}
 \end{aligned}$$

Propensity score matching

Much like in the study by Chari et al., I will subsequently be using propensity score matching to make sure that a pair of firms will only differ significantly in terms of the treatment variable (acquisition). This would be a good robustness check to confirm my initial findings from the DiD model. Ideally, matched pairs should be counterfactuals of each other, meaning that they are the 'same' in terms of all observable covariates used in making the propensity score. So, comparing the net incomes of these pairs should be like comparing two twins who only differ in terms of the treatment. The propensity score matched pairs will then be put in a DiD regression with net income as the dependent variable to find the average treatment effect on the treated (ATT). By doing so, we can control for the time-invariant and unobserved differences between the pairs, attributing all the difference in net income changes between the pairs as the impact of acquisitions. For this reason, I think my choice of propensity score matching and use of the DiD method is valid. Although matching is useful, it does not negate the impact of unobserved confounders. I think choosing only billion-dollar firms in my sample will help overcome this weakness of the method as it would be reasonable to assume that any unobserved confounders would be at similar levels for the firms in my sample. In this way, my different choices in the data section compensate for each other's

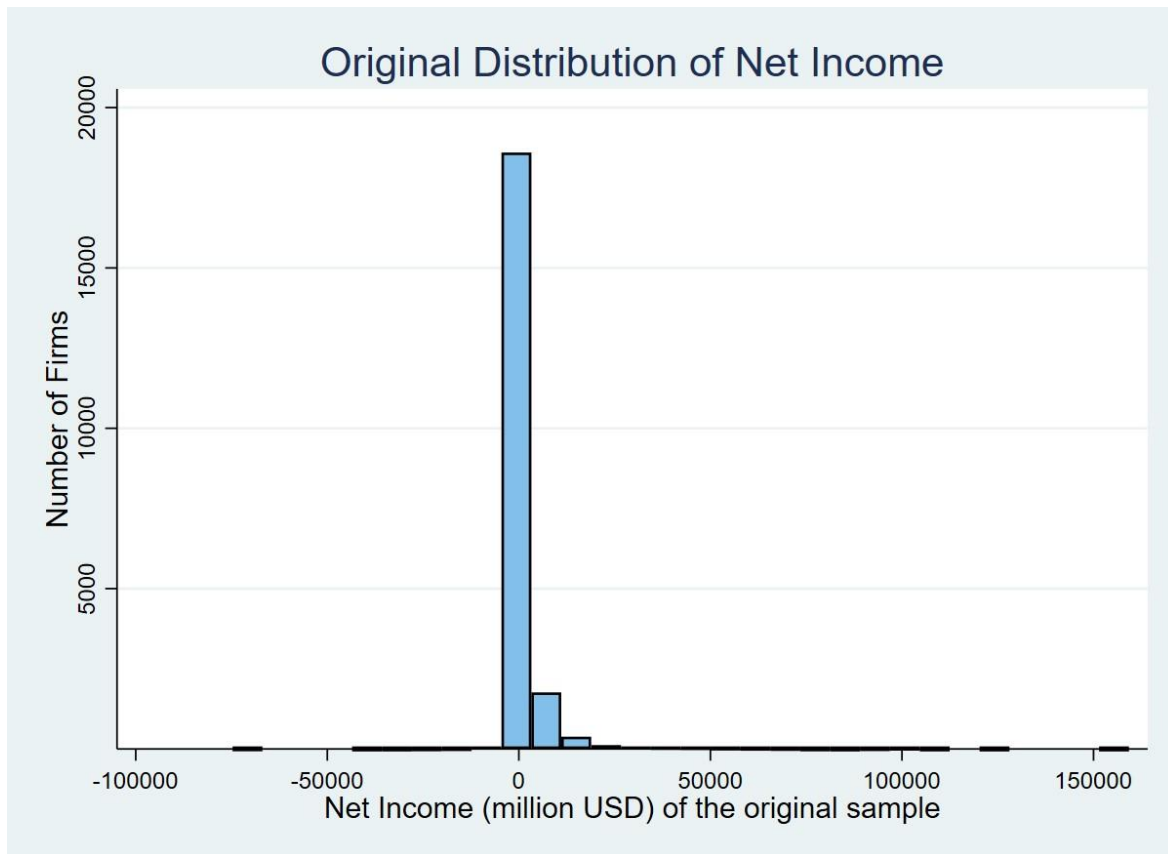
weaknesses. The variables being used for the propensity score will be from 2019 as it is one year behind the acquisition date for all firms (2020), under the assumption firms' most recent years' indicator variables (which probably correlate with their previous years' values) are the only thing considered by them while making acquisition decisions. The 2019 variables I will be considering will be age, total assets, debt equity ratio (D/E ratio), number of employees and operating revenue. These variables should be enough to further differentiate the firms in terms of size and the scale of their activities. I will also be using the deal value as one of the covariates, assuming that a higher deal value causes targets to be more likely to accept the deal. Based on the value of all these covariates, all the firms will have different probabilities of acquisition. Propensity scores matching pairs up firms with similar probabilities of acquisition that only differ in terms of treatment value. We then compare the firms with a regression using the change in net income of firms between 2019 and 2023 as the dependent variable, to isolate the impact of acquisitions and find the ATT.

Chapter 5: Results

Hypothesis 1: Impact of acquisitions

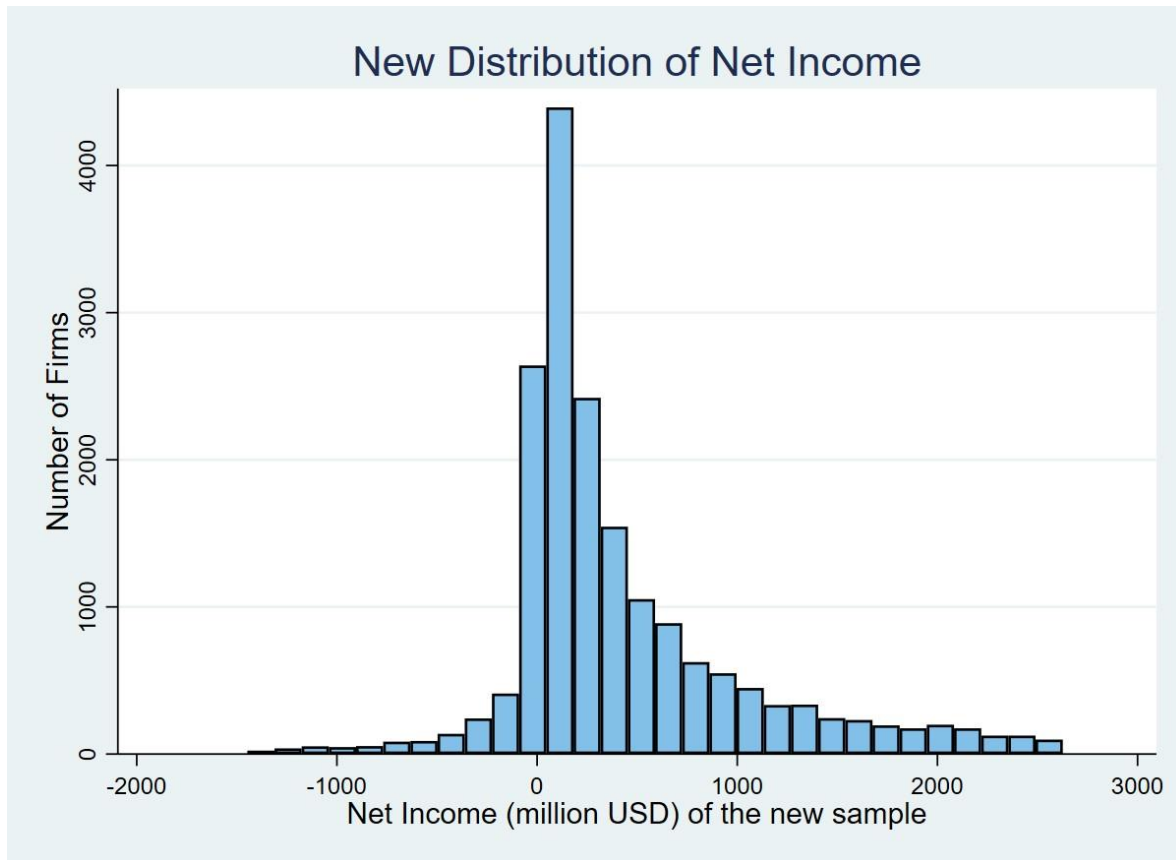
The impact of outliers

Looking at the descriptive statistics and a histogram of net income, it was obvious that there were some large outliers in my sample, which had to be addressed. The very small densities of values seen far away on both sides of the mean represent the outliers in my original sample.



Histogram 1: Distribution of Net income in the original sample

To make my findings unaffected by large outliers, I had to remove them. Interquartile range (IQR) refers to the distance between first (Q1) and third quartiles (Q3) of a distribution. All data points with net income falling below $(Q1 - 1.5 \text{ IQR})$ or above $(Q3 + 1.5 \text{ IQR})$ are considered outliers using this IQR method. 40 percent of data points were classified as outliers using this rule and were removed. The distribution of the remaining observations was as follows.



Histogram 2: Distribution of Net income in the new sample

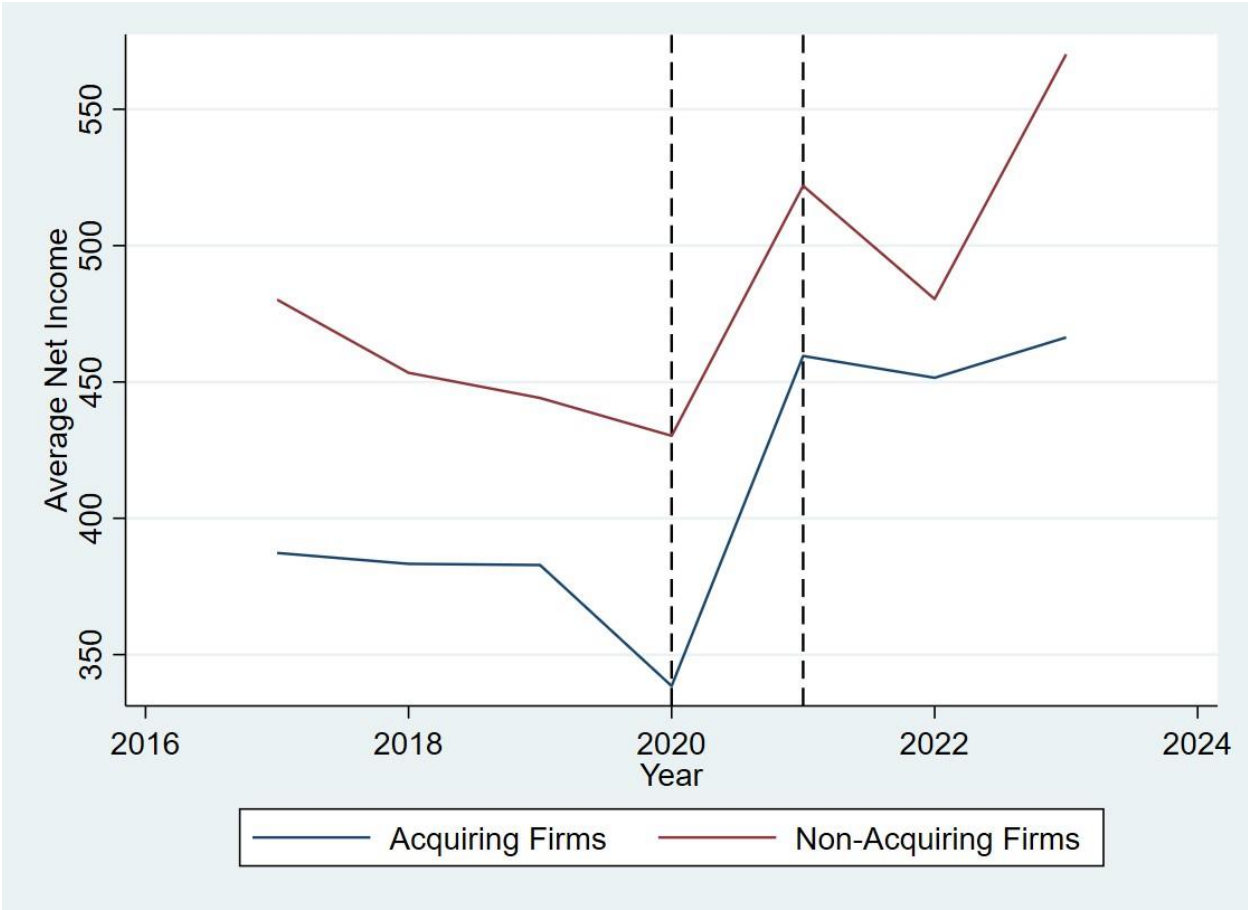
My data was still slightly skewed to the right but extreme variations from the mean were no longer present⁴. It was now time to check for parallel trends with this reduced sample.

Parallel trends and the Difference-in-Difference regression

It is essential that the trends of the two groups be parallel to one another prior to the treatment for a DiD estimate of ATT to hold. To confirm this, I plotted average Net income over the years by group to check for parallel trends. It was rather surprising to see that parallel trends did not hold for my new sample of firms (line graph 1). It can be clearly seen in line graph 1 that prior to the acquisitions, which happened in 2020, the two groups were not following the same trends. While the control group showed a consistent gradual drop in net income from 2017 to 2020, the treatment group's net income remained relatively unchanged from 2017 to 2019, followed by a

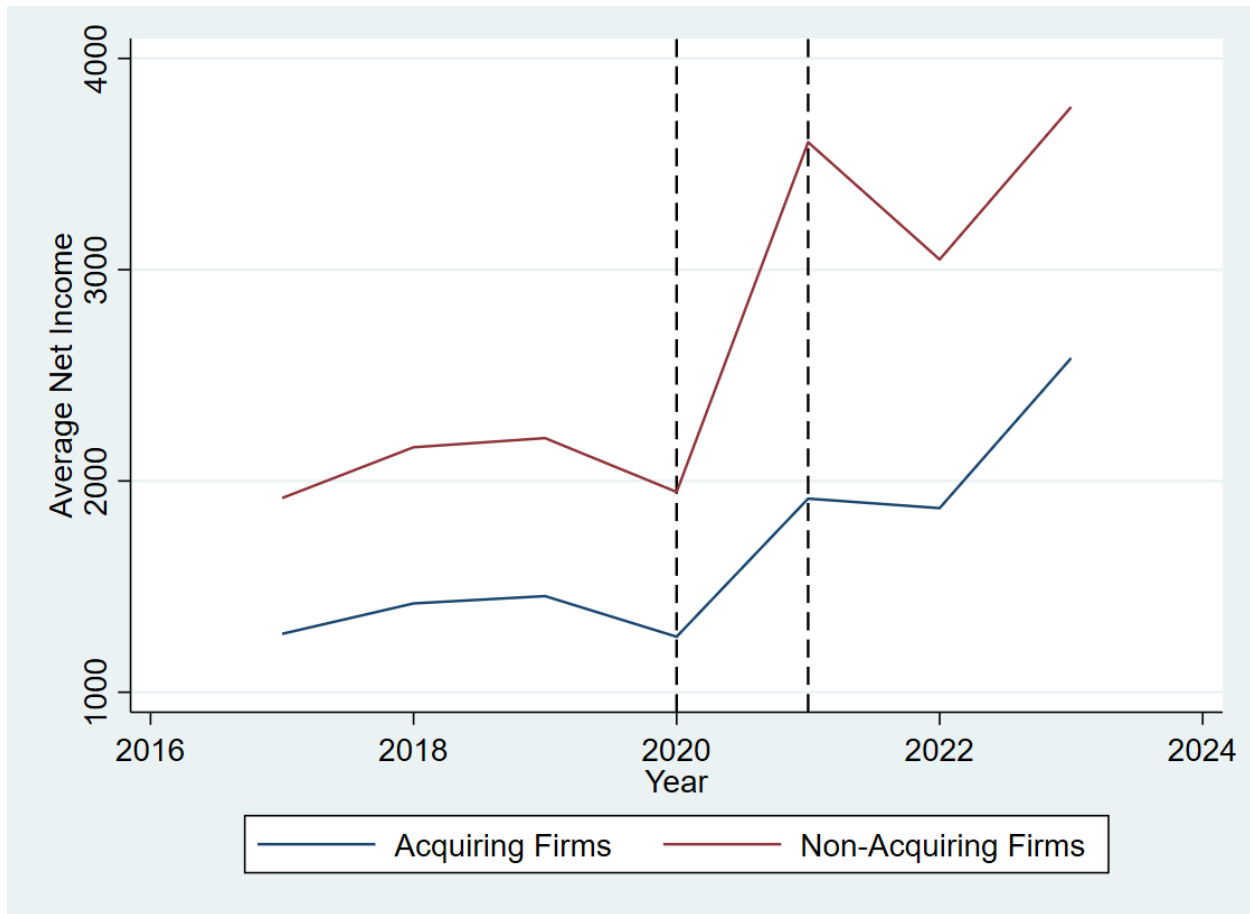
⁴ This can also be seen in the descriptive statistics of the new sample in Summary table 4 in the appendix.

sharp decline between 2019 and 2020. This disproves the parallel trends assumption for my new sample, free of outliers.



Line graph 1: Checking for parallel trends with the new sample.

Since the trends of the groups were not parallel for the new sample, there was no point in continuing my analysis with it. So, I decided to restore the outliers that were dropped in the previous step and see whether parallel trends would hold with my original sample by plotting another line graph.



Line graph 2: Checking for parallel trends with the original sample.

As seen in line graph 2, although the control group was higher than the treatment group in terms of average net income, the trends of net income are basically identical prior to 2020. For both groups there is a slight, gradual rise of net income between 2017 and 2019, followed by a dip approaching 2020. This shows that the parallel trends assumption is met with my original sample. The baseline differences between the two groups also suggests that DiD would be preferred over a normal regression. The combination of these two factors further supports DiD as the ideal method to analyze this data. I am interested in the impact on net income after the acquisition period, which is represented by the dotted lines. Although large outliers are present in this sample, parallel trends, which is a fundamental assumption for running a DiD regression was easily identifiable, which led me to choosing my original sample with outliers for further DiD analysis.

I controlled for the total assets, debt/equity ratio, current ratio, number of employees, operating revenue and return on R&D expenses in the regression, while accounting for year and firm fixed effects. The main term of interest was the interaction effect between acquisition and post-

acquisition periods (years following the acquisition- 2021, 2022, 2023). The coefficient for this term indicates the ATT, which is the impact of an acquisition on the acquisition group in the years following it (where it is expected).

As seen in regression table 1 in the appendix, the interaction term suggests that firms that acquired others made about \$390 million less net income than firms that did not go through with an acquisition during 2020. However, this is not significant at the 95% level. This regression shows that the number of employees and operating revenue are the only significant determinants of a company's net income. The results so far suggest that acquisitions could have a negative impact on acquiring firm profitability in the years that follow, but we cannot confirm this due to the lack of significance of the estimate. As the first part of my robustness check, I kept the treatment group the same (completed acquisitions) but changed the control group to include only companies whose acquisition attempts were withdrawn. I think withdrawn transactions are better control groups because of the anti-speculative nature of withdrawn acquisitions, as opposed to the other acquisitions with non-concrete statuses. Assuming that all bias is eliminated, with this method I would be estimating how the net income of the control group would have changed if their acquisition attempt had gone through. Hence, I dropped observations that were pending, rumored, or announced and ran the same regression again. The results of the robustness check⁵ now show a positive estimate of \$664 million as the impact of acquisitions in the post period or the ATT. However, this coefficient is still insignificant at the 95% level. This can be ascertained by its p value of 0.173. So, the robustness check also suggests that there is no significant impact of acquisitions on the net income of acquiring firms.

Propensity score matching as a further robustness check.

As a result of the mixed results (though, both insignificant) from my analysis so far, I decided to use propensity scores to match similar companies from the control and treatment groups and then compare them using a DiD regression. By doing this, we can make sure to further eliminate selection bias by only comparing very similar firms who only differ on treatment. For the propensity-score-matched regression, I created a new variable called diff2023, which shows the difference in net income for each company between 2019 and 2023. This was my new dependent variable for this part of the analysis. In this part, I reshaped my data back into its wide form and used covariates from 2019 to determine the propensity score for each company. The covariates I

⁵ Regression table 2 in the appendix.

used were total assets, D/E ratio, current ratio, number of employees, operating revenue, return on R&D expenses and company age for the year 2019 along with the value of the deal. The propensity score matching method usually involves sacrificing some observations in exchange for eliminating selection bias. In my case my earlier sample size was reduced to 577 observations using the pscore command on Stata⁶. Matching table 2 in the appendix shows the distribution of the newly generated propensity scores. I was surprised to see that I had lost so many of the original 3378 observations due to lack of common support. However, I believed this analysis would be a good supplement the prior DiD analysis. I then used 3 different types of matching to estimate the average treatment effect on the treated (ATT) using the pscore Stata package. Each of these methods has its own benefits. I included all these matching techniques to see if their results were corroborated by each other.

Nearest-neighbor matching: This method matches each treated firm to the closest control firm in terms of the propensity scores and hence creates the best counterfactual for each treated unit. Since my database has many degrees of freedom, the absolute t-value corresponding to a 95% confidence level is 1.96. Hence, nearest neighbor matching showed that the average treatment effect on the treated was insignificant at the 95% level due to my low absolute t-value of 0.625.

n. treated	n. control	ATT	Std. Error	t
510	51	<u>-470.307</u>	751.987	<u>-0.625</u>

Matching table 3: Average treatment effect via nearest-neighbor matching

Kernel matching: It is a technique where a weighted regression for each treated observation is run using the control group observation as matches. The weights are assigned based on an observation's distance from its counterfactual. I thought that this extra element of weight could be insightful in my analysis. Kernel matching gave a positive but insignificant ATT with a t-value like that obtained in the previous method.

n. treated	n. control	ATT	Std. Error	t
510	67	<u>438.097</u>	707.590	<u>0.619</u>

Matching table 4: Average treatment effect via Kernel matching

⁶ See Matching Table 1 in the appendix.

Stratification matching: Only compares firms in the same block to each other using the 5 blocks made earlier using the pscore command. Since the matching algorithm had already made blocks, I thought this method could also be used to further (in)validate to my findings so far. It gave a smaller absolute ATT estimate than before, but was insignificant, like the results of the other two matching methods.

n. treated	n. control	ATT	Std. Error	t
509	68	<u>133.688</u>	611.753	<u>0.219</u>

Matching Table 5: Average treatment effect via Stratification matching

Through all my analyses so far, it was safe to say that my original hypothesis of acquisitions having a positive impact on firm performance had been disproven. The DiD analyses showed that acquiring firms may have a negative impact on the acquirer’s net income, but this could not be confirmed since the coefficient was insignificant. However, this was again true for my robustness check using a narrowed down sample, which showed an insignificant but positive coefficient for the ATT. The matching methods further corroborated that acquisitions had no significant impact by giving insignificant ATTs (at a 95% level) all 3 times. Hence, my conclusion is that acquisitions have no significant impact on the net income of the acquiring firm in the years following the acquisition. What firms could learn from this is that by optimizing the controllable variables that did have a significant impact on net income, like number of employees and operating revenue, they could increase their net income. Perhaps more research could be done on the impact of these variables on firm profitability.

Hypothesis 2: Impact of partial acquisitions

Next, I ran the same DiD regression for my second hypothesis, only substituting acquisitions with partial acquisitions, which refers to those transactions where the percent acquired is less than 100%⁷. Here, the control group consists of firms who underwent 100% acquisitions and those who did not go through with acquisitions at all. Regression table 3 suggests that firms who partially acquired another firm made about \$693 million less net income than those who did not, and this result is valid at the 95% significance level. The robustness check using only completed and withdrawn acquisitions also shows similar results, where partial acquisitions still have a significant

⁷ See regression table 3 in the appendix.

negative impact (of \$541 million this time) on net income⁸. The p value for this estimate is 0.051, which implies that in this particular case, we can say that this result holds 94.9% of times. Although there is a slight discrepancy in the significance levels between the original regression and the robustness check, it is still relatively safe to conclude that partial acquisitions have a significant negative impact on firm profitability and that the initial estimate was fairly robust. Hence, we can say that the second hypothesis has been disproven without the use of matching, and on the contrary, partial acquisitions seem to be worse for firm profitability than full acquisitions. So, firms would be better off fully acquiring another firm or not acquiring a firm at all rather than undergoing a partial acquisition.

Hypothesis 3: Impact of international acquisitions

Similarly, I also tested the third hypothesis by replacing the acquisition variable with the international acquisition variable in the DiD setting and running a robustness check on the same⁹. The control group here consisted of firms with local acquisitions and those with no acquisitions. The regression output shows that international acquisitions had no significant impact on the net income of acquiring firms. The robustness check I performed was the same as before, whereby I only included completed and withdrawn transactions in my analysis. The results are similar for both regressions, showing that international acquisitions have no significant impact on net income at the 95% level, suggesting that the original estimate was robust. With this, hypothesis 3, stating that international acquisitions are more beneficial for acquiring firms had been disproven. The group of firms that underwent a treatment via international acquisitions were not statistically different in terms of their profitability compared to the control group of firms that underwent local acquisitions and those that did not go through with an acquisition. So, international acquisitions are not a better alternative to local ones, or no acquisitions, since they failed to yield any special benefits in profitability, at least, for the firms in my sample.

Chapter 6: Discussion and Conclusion

Covid-19 and limited generalizability of the results

All the acquisitions in my study happened during 2020, which was also when the coronavirus pandemic was at its peak and many companies were in tough situations. The aim of my research

⁸ See regression table 4 in the appendix.

⁹ See regression tables 5 and 6 in the appendix.

was to consider the effectiveness of corporate acquisitions as a strategy to overcome business downturn because of this environmental shock. What I found was that partial acquisitions had a negative impact on profitability and that local and international acquisitions made no significant difference to profitability. I used the DiD model accounting for time and firm fixed effects, which should have absorbed the effect of the coronavirus (which affected all businesses). So theoretically, these estimates could also hold true for normal business scenarios in the absence of any environmental jolts. However, there could have been limitations to the confounding factors that the fixed effects regression accounted for. For example, although most traditional firms were negatively impacted by the pandemic, some companies like Netflix grew during the time. Netflix gained 10 million customers in the second quarter of 2020(vox.com), because people needed a source of entertainment while stuck at home. This did wonders for their profitability. Applying the same fixed effects to all firms regardless of how they were affected by the pandemic would be problematic. To illustrate this, in 'normal times', the distance between the mean net income and the firm-specific intercept for Netflix's net income would be much lower than it would be during the pandemic. This would suggest that if such exceptional firms were also included in my dataset, the same conclusions might not hold during normal times, even with fixed effects. So, I would say that the external validity of this study is limited. To be certain of this, more research could be conducted on the same topic using acquisitions that happened in earlier years as the treatment.

Insignificant impact of (international) acquisitions on acquirer profitability: This is a finding I was surprised with, given the findings of the studies in my literature review. However, this view was also backed up by many studies stating that most M&As fail. One of the definitions of the word 'failure' in the Merriam-Webster dictionary is the inability to 'perform a duty or expected action.' In this case, acquisitions are expected to lead to positive synergies beneficial to companies (through a higher net income in my study) in the future. Anything short of this would be considered a failure. So, causing no significant difference in net income is also considered a failure. A lot of research must go into whether a target company is suitable for acquisitions and these results show that if the match between firms is not right, the union will end in failure. My research shows that, on average, acquisitions do not bring enough added value with them to increase the profitability of the acquiring company. This would also imply that there is a lack of research on the part of the acquirer and/or unexpected elements which cannot be accounted for, which strongly influence the impact of a merger. However, due to the presence of millions of variables, which cannot all be accounted for

in prior research, it is safe to say that a deal of uncertainty still lies in these transactions no matter how much research and resources that billion-dollar companies put into them.

Negative significant impact of partial acquisitions on acquirer profitability: This could be due to limited control of the acquired firm combined with differences in future objectives between the two entities, which could lead to conflicts regarding firm strategies. An example of this is seen in the case of Yahoo's \$1 billion, 40% acquisition of Alibaba in 2005 (SoftBank also acquired 30% of Alibaba's shares around the same time). However, in 2012, the Chinese e-commerce company bought back 50% of the shares it had initially sold Yahoo, to regain control of the company. This was mainly because of the culture gap between the two firms. Management in China felt like the leaders of the American multinational did not understand the local market and headquarters took too long to approve new ideas, which led to Chinese competitors beating Alibaba by rapidly introducing new and innovative products and services. So, Yahoo also realized that they had to give back control of operations to the locals and sold off 50% of their shares for around \$7 billion in 2012. Yahoo continued to benefit financially from the remaining shares they owned, which they gradually sold in the following years (Harvard Business Review). Ultimately, the West's intrusion on the East's strategic policies was what led to frictions between the executives of both companies and poor synergies between the two entities (post-deal people problems, as discussed in the introduction). This was a case where control was handed back to the acquired firm via buyback, which could have been the saving grace in an otherwise dire situation. Both companies would have probably lost out on future profits if control over Alibaba's strategic decisions continued to be in the hands of Yahoo. This could be especially true in times of financial difficulties like the covid-19 pandemic, which is when the firms in my database made acquisitions. This case, along with the findings of my analysis, shows that firms should really do their research before considering to (partially) acquire another firm if they want to benefit post-acquisition, even in international markets. To conclude, acquisitions during covid were, by no means a guarantee for success. On the contrary, a lack of research by the acquirers, especially in case of partial acquisitions could lead to negative outcomes in terms of acquiring firm profitability. I believe that the best a firm could do is research everything to do with its compatibility with the target to maximize the chance of a successful union.

Chapter 7: Limitations and further research

My sample consisted of only billion-dollar firms. The same results may not be generalizable to smaller firms with deals that are worth less. I would like to replicate the same research methods on smaller firms if I were to do a similar study again. There was also some missing data I saw when browsing through my final dataset, which could have compromised the validity of my results. Another caveat to the generalizability of my research is that acquisitions happened at the peak of the coronavirus. Such extreme business restrictions are very unlikely to occur in the future (hopefully) and it would be insightful to run a similar methodology on acquisitions further in the past to find the impact of acquisitions under normal economic conditions. Time constraints for acquisitions during covid may have also played a role in skewing my results. There may not have been enough time for the synergies of the acquisitions to fully take effect since data was only available for three years after the acquisition. By considering earlier acquisitions, for example those that occurred in the early 2010s, we would leave little room for benefits not fully materializing in the results. This is another reason to look at acquisitions further in the past. I knew that the matching would lead to a lower sample size as some treatment entries would not have a propensity score that matched with others in the control group. However, I did not think that my sample would be cut down to a fifth of what it was for the DiD regressions. In hindsight, I should have initially sampled over 10000 companies to still have over 1000 left for propensity score matching. The actual matching algorithm on Stata was somewhat arbitrary in terms of the formation of comparable blocks and weighting of observations. To address this problem, it might be wise to conduct a sensitivity analysis or use a balance test for matching. Overall, I think my analysis went well and there were enough statistics to back up my conclusions, but I would want to be mindful of these limitations if I were to do research within the same field again.

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Appendix

Variable definitions and statistics

	Variable Definition
NetincomemUSD	Net income in million US dollars
TotalassetsmUSD	Total assets owned by the firm in million US dollars
DERatio	Debt equity ratio
Currentratio	Current assets divided by current liabilities
Numberofemployees	Number of employees
Operating_revenue_	Revenue generated through a firm's primary business activities
ReturnonRDExpensesUSD	Current gross profits divided by the prior year's R&D expenditure
company_age	Current year minus firms' founding year
acquisition	Dummy variable indicating a completed acquisition
partial_acquisition	Dummy variable indicating a completed acquisition, less than 100 percent
international_acquisition	Dummy variable indicating a completed acquisition where the acquirer and target are from different countries
post_acquisition	Dummy variable indicating the years in which the mergers had been completed/withdrawn (2021, 20200, 2023)

Summary Table 1: Variable definitions

Tabulation of Dealstatus

Deal status	Freq.	Percent	Cum.
Announced	91	0.38	0.38
Completed	18865	79.78	80.17
Pending	49	0.21	80.37
Pending - awaiting regulatory approval	21	0.09	80.46

Rumour	49	0.21	80.67
Rumour - Analyst Speculation	7	0.03	80.70
Rumour - Expired	3836	16.22	96.92
Rumour - Withdrawn	217	0.92	97.84
Rumour - informal offer/non-binding	7	0.03	97.87
Withdrawn	504	2.13	100.00
<hr/>			
Total	23646	100.00	
<hr/>			

Summary Table 2: Number of observations for each deal type (Note: In long format so the actual number of observations is 7 times less)

Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max	Skew.
NetincomemUSD	21230	1902.5	7433.843	-74700	159000	7.659
DealvaluemUSD	12033	1640.843	7298.25	0	185000	13.843
NetincomemUSD	21230	1902.5	7433.84	-74700	159000	7.659
TotalassetsmUSD	21215	78093.728	299000	0	6260000	8.588
DERatio	18516	.62	20.835	-1650.3	1699.778	1.702
Currentratio	18617	1.537	1.079	.005	43.409	7.632
Numberofemployees	17707	47921.581	113000	0	2300000	7.803
Operating revenue	21329	17094.359	41208.371	-4389.066	648125	6.703
ReturnonRDExpenses	8344	303.104	4494.254	-357.604	200000	35.166
company age	22904	44.662	41.779	-6	369	2.161

Summary Table 3: Descriptive statistics of key variables in the original sample

Variables	Obs	Mean	Std. Dev.	Min	Max	Skew.
NetincomemUSD	17980	423.799	609.796	1447.341	2626	1.279
DealvaluemUSD	8523	1054.994	4119.675	0	96273.158	12.857
NetincomemUSD	17980	423.799	609.796	-1447.341	2626	1.279
TotalassetsmUSD	17900	24838.32	73590.29	0	1770000	10.203
DERatio	16106	.547	11.601	-557.159	381.418	-7.37
Currentratio	16189	1.542	1.078	.005	43.409	8.056
Numberofemployees	14645	24666.8	45472.31	0	596452	5.419
Operating revenue	17975	7736.434	11928.551	0	215436	4.459
ReturnonRDExpenses	6640	356.176	5009.37	-357.604	200000	31.803
company age	16598	43.654	39.998	-6	369	2.134

Summary Table 4: Descriptive statistics of key variables in the new sample

Regression tables

NetincomemUSD	Coefficient	Robust std. err.	P> t 	95% Confidence interval	
post_acquisition#acquisition	-389.943	397.195	0.364	-1361.843	581.957
TotalassetsmUSD	-0.033	0.017	0.106	-0.076	0.009
DERatio	2.255	2.866	0.461	-4.759	9.270
Currentratio	-157.824	133.188	0.281	-483.723	168.075
Numberofemployees	-0.038	0.006	0.001	-0.053	-0.023
Operating_revenue_	0.251	0.017	0.000	0.210	0.292
ReturnonRDExpensesUSD	0.009	0.010	0.404	-0.016	0.034
_cons	797.986	799.257	0.357	-1157.724	2753.697
Observations			6986		

Regression table 1: Impact of acquisitions on Net income

NetincomemUSD	Coefficient	Robust std. err.	P> t 	95% Confidence interval	
post_acquisition#acquisition	664.284	429.944	0.173	-387.753	1716.320
TotalassetsmUSD	-0.044	0.019	0.060	-0.090	0.003
DERatio	2.907	2.384	0.268	-2.925	8.740
Currentratio	-120.113	128.580	0.386	-434.736	194.510
Numberofemployees	-0.030	0.005	0.001	-0.042	-0.018
Operating_revenue_	0.243	0.021	0.000	0.192	0.294
ReturnonRDExpensesUSD	0.020	0.016	0.265	-0.020	0.059
_cons	459.813	849.254	0.608	-1618.237	2537.864
Observations			5923		

Regression table 2: Impact of acquisitions on Net income- robustness check

NetincomemUSD	Coefficient	Robust std. err.	P> t 	95% Confidence interval	
post_acquisition#partial_acquisition	-693.793	231.575	0.024	-1260.437	-127.148
TotalassetsmUSD	-0.033	0.018	0.111	-0.076	0.010
DERatio	2.354	2.898	0.448	-4.737	9.446
Currentratio	-147.647	131.267	0.304	-468.845	173.552
Numberofemployees	-0.038	0.006	0.001	-0.054	-0.023
Operating_revenue_	0.251	0.017	0.000	0.210	0.292
ReturnonRDExpensesUSD	0.009	0.010	0.363	-0.014	0.033
_cons	679.097	819.553	0.439	-1326.277	2684.471
Observations			6986		

Regression table 3: Impact of partial acquisitions on Net income

NetincomemUSD	Coefficient	Robust std. err.	P> t 	95% Confidence interval	
post_acquisition#partial_acquisition	-541.507	222.251	0.051	-1085.335	2.322
TotalassetsmUSD	-0.043	0.019	0.061	-0.089	0.003
DERatio	3.046	2.416	0.254	-2.866	8.958
Currentratio	-112.408	127.052	0.410	-423.293	198.477
Numberofemployees	-0.030	0.005	0.001	-0.042	-0.018
Operating_revenue_	0.243	0.021	0.000	0.192	0.294
ReturnonRDExpensesUSD	0.017	0.015	0.317	-0.021	0.054
_cons	752.931	829.625	0.399	-1277.089	2782.950
Observations			5923		

Regression table 4: Impact of partial acquisitions on Net income- robustness check

NetincomemUSD	Coefficient	Robust std. err.	P> t 	95% Confidence interval	
post_acquisition#international_acquisition	11.560	200.334	0.956	-478.640	501.760
TotalassetsmUSD	-0.033	0.018	0.110	-0.076	0.010
DERatio	2.220	2.853	0.466	-4.761	9.200
Currentratio	-156.182	132.797	0.284	-481.124	168.759
Numberofemployees	-0.038	0.006	0.001	-0.053	-0.023
Operating_revenue_	0.251	0.017	0.000	0.210	0.292
ReturnonRDExpensesUSD	0.012	0.010	0.276	-0.012	0.036
_cons	650.913	825.139	0.460	-1368.13	2669.956
Observations			6986		

Regression table 5: Impact of international acquisitions on Net income

NetincomemUSD	Coefficient	Robust std. err.	P> t 	95% Confidence interval	
post_acquisition#international_acquisition	25.331	218.285	0.911	-508.794	559.455
TotalassetsmUSD	-0.044	0.019	0.061	-0.090	0.003
DERatio	2.934	2.405	0.268	-2.950	8.818
Currentratio	-120.325	128.067	0.384	-433.694	193.043
Numberofemployees	-0.030	0.005	0.001	-0.042	-0.018
Operating_revenue_	0.243	0.021	0.000	0.192	0.294
ReturnonRDExpensesUSD	0.019	0.016	0.270	-0.020	0.058
_cons	725.005	842.660	0.423	-1336.90	2786.919
Observations			5923		

Regression table 6: Impact of international acquisitions on Net income- robustness check

Matching Tables

Inferior of block of pscore	acquisition		
	0	1	Total
.2	2	1	3
.4	3	5	8
.6	11	28	39
.8	26	156	182
.9	25	320	345
Total	67	510	577

Matching Table 1: Number of matched observations

Variable	Obs	Mean	Std. Dev.	Min	Max
myscore	578	.883	.091	.003	1

Matching Table 2: Mean propensity scores