Erasmus University Rotterdam

MSc Accounting, Auditing and Control

The impact of management forecasts on shareholder value in times of crisis

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1. Introduction

Companies have different stakeholders. This can be a group of people, but also the environment, for example. Shareholders are one of the main stakeholders of a company. They own the company's shares and are therefore its owners. Buying these shares is mainly done as an investment. Shareholders are rewarded for making this investment. This reward is awarded in two ways i.e., receiving a dividend or an increase in the share price (Hayes, 2021).

A company's share price can be affected in many ways. One of these ways are predictions that management makes about the future of the company, called management forecasts. Firstly, it is important to know that what are management forecasts? "Management forecasts are one of the primary ways managers voluntarily disclose private, future-oriented financial information to capital market participants" (Healy & Palepu, 2001). Management forecasts are a form of forward-looking information. This is information that gives an insight of what might possibly happen in the future. Management uses a combination of past data and current market developments to make the best predictions for the future. Due to them being predictions, management cannot be certain enough to predict what will happen to the company. Nevertheless, these management forecasts provide all stakeholders with the necessary information for the future (Alkhatib, 2013). For several decades, management forecasts were not often published. The reason for this is that these kinds of forecasts were not credible enough to be published, hence the SEC banned it from making these kinds of forecasts. This changed after research into the relation between investors' reactions and management earnings forecasts. There was significant evidence that investors did respond to corporate earnings forecasts (e.g., Hutton et al., 2003; Patell, 1976). As a result, the Securities and Exchange Commission lifted the ban, after which management earnings forecasts were widely used as a tool for information dissemination (Bozanic et al., 2017).

In times of crisis, there is a high degree of uncertainty. The information that is disseminated does not possess a high degree of reliability. Which causes the dissemination of information in the market not to occur in an efficient manner (Healy & Palepu, 2001). This introduces the information asymmetry in a market. To overcome this asymmetry, additional information needs to be offered in the market. One of these solutions are management forecasts. These forecasts cause private information about a company to be published. This has the effect of increasing the amount of reliable information within a market, which in turn reduces the information asymmetry problem (Bhat & Jayaraman, 2009). On the other hand, it is very difficult to make forecasts in times of crisis. The reason behind this is that the management of a company in times of crisis mainly shows reclusive behavior. This is contrary to publishing management forecasts, as this can also have adverse effects on a company. As Patell's (2017) research indicates, management forecasts that do not meet expectations result in a negative stock price change. Since a company already performs worse than normal during a crisis, these negative price changes will have an increased negative effect on the company. This shows that management can be "punished" by publishing forecasts during a crisis. To investigate this, our research tries to answer the following question:

Does disclosing management forecasts during crises have a positive effect on shareholder value?

This research contributes to the current literature by examining the association between management forecasts and shareholder value in times of crisis. The explicit focus on crises makes this research valuable to the literature, as the impact of a crisis on the publication of a management forecast has not been examined before. The results of this research may allow managers to better time their forecasts during a crisis, which could ultimately ensure that the company is as little affected by a crisis as possible. This will be investigated by using companies that were involved in two major crises. The first crisis that will be used is the COVID crisis and the second will be the Financial Crisis of 2008. These two crises were chosen because they both had a very large impact on the world economy. The COVID crisis is the last major crisis that took place. Although not all the consequences of this crisis are known, it can be said with certainty that many companies have been severely affected by this crisis. Also, there has been relatively little research done regarding this crisis, which means that this research will contribute to the COVID crisis literature. In addition, the Financial Crisis of 2008 was chosen because it was the largest crisis in almost 80 years and will be a good comparison for the COVID crisis.

The research design for this study first includes finding the necessary management forecasts and the corresponding stock prices of the companies. After that, using an event study, in combination with a difference-in-difference design, and a regression analysis, results will be obtained that will allow us to examine the relation between the publication of a management forecast and the change in stock prices.

First, it will be analyzed how likely it is that a management forecast will be published during a crisis and in normal times. The analysis will be conducted by collecting management forecasts from during the COVID crisis, the 2008 financial crisis, and data from a period without a crisis. Dates on which management forecasts have been published will be used. These forecasts can be found through the Institutional Brokers' Estimate System (IBES) database, which can be found through the Wharton Research Data Services website. The valuation of a stock will be measured by abnormal stock returns. These returns allow for a clear pattern to be established in the change of stock prices. This change is assessed based on the publication of a management forecast in times of crisis. If a management forecast is published during a crisis, the effect on stock prices will be examined. The returns of these stock prices will then be determined, as well as whether they deviate from normal returns. This deviation generates the abnormal returns, which can be directly related to changes in shareholder value.

To conduct the actual research, an event study combined with a difference-in-difference design will be used. An event study is an analysis of the price of an effect before and after the occurrence of a particular event. The difference-in-difference design will use three datasets. The first dataset looks at the COVID crisis, the second looks at the 2008 Financial Crisis, and the last looks at times without a crisis. First, these datasets will be split into a Treatment group and a Control group. The Treatment group consists of companies that have been affected by the crisis and the Control group consists of companies that have not been affected by the crisis, or have been affected only marginally. Management forecasts will be collected from the

companies that were published during the crisis and will act as the "after" effect of the event. Management forecasts will also be collected for the same companies in normal times, i.e. when there is no crisis, which will act as the "before" effect of the event. The results of both analyses will be compared to measure the difference-in-differences, which will be done using a regression analysis. This gives the opportunity to measure the joint effect of the independent variables on the dependent variable. The dependent variable in this study will be the Cumulative Average Abnormal Return. The independent variables in this study are: time and handled. To calculate the difference-indifference (did), we look at the interaction effect between the two independent variables. This interaction effect is calculated by multiplying the variables time and treated, from which the variable did derives.

The study of the relation between management forecasts and the change in stock prices yields mixed results for all event windows of both the COVID dataset and the FC2008 dataset. Consequently, it is also not possible to conclude that the longer it takes after the publication of a management forecast in times of crisis, the greater the positive effect on stock prices will be. Combined with the non-significant results of the regression analysis, this provides insufficient evidence to reject both the first and second hypotheses. This suggests that a follow-up study is needed. The follow-up study could then use a larger sample without sample selection bias and with more control variables.

2. Literature Review and Hypothesis Development

This research will ensure that a better insight is gained of the relation between management forecasts and shareholder value under special circumstances. Not only will be examined whether this relation exists, but also the magnitude of this relation. This could enable companies to optimize their management forecasts in terms of content and timing. Because the consequences of management forecasts have been studied before, the focus will be mainly on investigating this relation in times of crises. During crises, there is a lot of uncertainty, which could mean that management forecasts could produce different outcomes for companies.

2.1 Information asymmetry in general

The lack of clarity during crises is caused by information asymmetry. Asymmetric information is when one party has more information than the other party during a transaction. Since the party with less information does not want to be disadvantaged, this party will have to incur costs to obtain more information. These fees are called transaction fees and increase the overall cost of the transaction. To reduce this information asymmetry, companies publish information about themselves. There are two forms of information dissemination by companies: mandatory disclosure and voluntary disclosure (Healy & Palepu, 2001).

2.2 Voluntary disclosure

This research will mainly focus on voluntary disclosure. The reason for this is that mandatory disclosure is mandatory for all companies in a particular industry, which ensures that no distinction can be made between companies in a specific industry regarding this form of disclosure. Since voluntary disclosure is voluntary, companies can choose to implement it themselves. Voluntary publication will give them either an advantage or a defeat against the companies that do not voluntarily publish information.

Not every published management forecast is seen as credible. One reason for this is that managers can use these types of forecasts to their own advantage. Which leads the users of these forecasts to have doubts about using these forecasts. The extent to which voluntary management forecasts have an effect is related to the credibility of the information published with them. Also, this information may not have been published previously, thus the companies need to bring new information to the market. To increase the credibility of voluntary management forecasts, two different procedures can be used. The first procedure consists of validating new information by using previously published information. This can be done by comparing management forecasts with realized numbers. If management had made a worthy forecast, the realized numbers should be close to the forecast. If this is not the case, it could mean that management deliberately made the wrong forecast. This procedure is only useful if managers are punished for deliberately publishing an incorrect forecast. The second procedure that could increase the credibility of management forecasts is to have them "approved" by third-party intermediaries (Healy & Palepu, 2001). This shows that it is not only publishing forecasts by management But in addition to this, these forecasts must also have a high degree of credibility, so that the effect of these forecasts is maximized.

A distinction can be made between the different types of voluntary disclosure. As a result, voluntary disclosure can be divided into the following categories: strategic disclosure, disclosure using historical data, forward-looking disclosures and non-financial disclosures. These forms of voluntary disclosure all have a different effect. In the study by Lim et al. (2007), the effect of these forms of voluntary disclosure is measured against the composition of a company's board of directors. They examined whether having an independent director influences the extent and quality of voluntary disclosure. The reason behind this is the fact that managers/directors of a company have very important information regarding the future of the company. This information can be used in one's own interest. This phenomenon, called information asymmetry, wants to be minimized by the shareholders of a company. This can be achieved by having an independent manager. The independence of a manager ensures that one is more able to represent the shareholders. It is also concluded that independent managers publish more information voluntarily. This ultimately ensures that the information asymmetry between managers and shareholders is significantly reduced. The study found that the more independent directors/managers there are on the board of a company, the more information is voluntarily published by management. To elaborate on the various forms of voluntary disclosure, the study concludes that the ratio of independent directors has a positive effect on the publication of strategic and forward-looking information. In contrast, no relation was found

for the ratio of independent directors on the company's board and its effect on the publication of financial information using historical data and non-financial information.

2.3 Managers' voluntary disclosure decisions

Managers may have different incentives to voluntarily publish information. According to Healy and Pelapu (2001), there are six drivers behind voluntary disclosure by managers: stock compensation, capital market transactions, litigation, management talent signaling, proprietary costs and corporate control contests. These forces will be furtherly explained to better understand why companies publish information voluntarily. First, we will look at stock performance. Managers are directly rewarded via a variety of stock-based pay programs (e.g., stock option grants). Because managers are paid based on the value of stock, organizations that employ stock compensation extensively are likely to provide greater transparency to avoid the danger of misvaluation. They use these steps to reveal confidential information in order to comply with insider trading prohibitions, boost the liquidity of the company's stock, and reduce contractual expenses connected with stock compensation for new personnel. The capital market transaction force is based on the idea that investors' impressions of a company are vital to management planning to issue public debt/equity or purchase another company in a stock transaction. This can influence managers to minimize information asymmetry and cut the firm's external financing costs. Litigation could result in legal proceedings against management for inadequate or late disclosures which can motivate corporations to enhance voluntary disclosure. However, litigation can reduce managers' incentives to disclose, because they publish forward-looking information. Talented managers have an incentive to reveal their type by making voluntary earnings estimates, which summarizes the management talent signaling force. The proprietary costs force is explained by the fear that voluntary disclosures will harm/strengthen their competitive position in markets, which influences firms' decisions to disclose information to investors. The final force behind managers' voluntary disclosure decisions is the corporate control contest. This can be explained by the fact that managers are held accountable for current stock performance by boards of directors and investors. In addition poor stock/earnings price performance increases the likelihood of hostile takeovers. These consequences can influence managers' decisions regarding the voluntary disclosure of information.

2.4 Information asymmetry during crises

The degree of information asymmetry deteriorates during a crisis. This results in one group of individuals possessing more information than another group. This phenomenon is better explained by the research of Bhat and Jayaraman (2009). The excess of information allows the group with more information to make more accurate predictions that will enable it to better anticipate future events in a market. This is reflected in the fact that after the earnings announcements in 2007, bid-ask spreads have already increased significantly. This difference was greater than during non-crisis periods. Thus, due to the anticipatory ability of financial analysts, the consequences of the crisis can already be seen in the prices of securities before the crisis even started. Once the crisis started in 2008, bid-ask spreads fell again. This is due to

earnings announcements in which loss recognition was published. The publication of this information lowers the information asymmetry in the market, which also lowers the bid-ask spreads. So here an example can be seen of the consequences of information asymmetry during a crisis.

To tackle the problem of information asymmetry during a crisis, companies publish private information. This publication is not mandatory and is therefore called voluntary disclosure. If one looks at the proprietary costs force behind managers' voluntary disclosure decisions, two views can be seen. On the one hand, there is little money available in times of crisis to facilitate voluntary disclosure in addition to mandatory disclosure. As a result, little information is voluntarily published during and after a financial crisis. But on the other hand, companies in a financial crisis are being pushed to be more involved in social activities. These activities in turn must be published, which ensures that there is additional voluntary disclosure (Haji & Ghazali, 2012).

2.5 Economic consequences of disclosure

In producing voluntary disclosures, management has two options. They can choose to disseminate information that will raise the company's expectations of the public, or conversely, information that will lower the company's expectations of the public. The difference between these two types of techniques is that the former will increase the current market value of the company. The second technique, where the expectations of the company are lowered, will ensure that the future worthiness of the company will be increased. In Dontoh's (1989) research, users of the first technique are called Type A firms and users of the second technique are called Type B firms. Here, Type A firms spread good news to ensure that the current market value will increase immediately. Type B companies do not spread 'extremely' good news about the company so that the market value of the company will not increase in the short term. But by lowering the expectations of the company, this will ensure that positive information will be more appreciated by investors in the future. As a result, the company's future cash flows will increase more in the long run. Companies can be classified as Type B for most of its life cycle. Companies will behave like Type A companies if there is a need to raise money in the short term or escape bankruptcy. In this type of situation, it is necessary to increase short-term profits. This will make the company look better financially, allowing the company to sell its shares at a higher price or apply for higher loans. The choice between these two types of disclosure techniques is made based on the costs involved. Also called proprietary costs, these are not only costs incurred while producing these disclosures, but also costs related to potentially losing a competitive advantage by publishing these disclosures. Here, it can be see that companies can increase their market value by disclosing private information. However, the company must make a trade-off between the costs and benefits of disclosing its private information.

Another look at the literature of voluntary disclosure shows that there are several consequences following the voluntary disclosure of private information. Three of the most well-known consequences are: reduced cost of raising capital, value stable shares and an increase in the number of analysts following the company. To begin, an explanation of the aspect of reduced

cost in raising external capital will be provided. In the event that the voluntarily disseminated information is complete, reliable and clear, the consequence is that analysts do not have to incur additional costs while using this information. This ensures that the information asymmetry and information risk between the company and others is reduced. This reduced risk lowers the threshold for investors to invest money in the company (Barry & Brown, 1984-1986). But this effect, according to Botosan (1997), is only present if the firm is not initially followed by many analysts. The second consequence of voluntary disclosure is the creation of value stable shares. As mentioned above, spreading private information about the firm has the effect of lowering the information asymmetry between firms and investors. This gives investors the chance to make better predictions, which also means that the threshold for investing in this type of company is lowered. The increasing number of investors will eventually also increase the liquidity of the shares of these types of companies (Diamond & Verrecchia, 1991). Finally, the increase in the number of analysts will be explained. Voluntary disclosure of information that was not previously available on the market ensures that investors have more information with which to make better predictions. This increase in information and the ability to make better predictions increases the number of analysts willing to follow the company (Bhushan, 1989). These consequences show that companies must make a careful choice with respect to voluntary disclosure.

To this end, the main focus has been on studies related to information asymmetry and voluntary disclosure. We will now look at a link between these two concepts. One form of voluntary disclosure that a company's management uses are management forecasts. This is managers' way of voluntarily publishing forward-looking information about the company. The research of Coller and Yohn (1997) examines the link between these two concepts. Rising information asymmetry is causing managers to consider publishing management forecasts. The result of the research supports this consideration, because after the publication of a management forecast there is a significant decrease in the bid-ask spreads. Where these were significantly higher before publication. This proves that management forecasts have a positive effect on lowering information asymmetry.

Above a study of the concepts of information asymmetry, information asymmetry during crises, voluntary disclosure, voluntary disclosure during crises and the link between management forecasts and information asymmetry has been conducted. These are all concepts that can influence the relation between management forecasts and stock performance (during crises). As discussed above, the components of this relationship have been studied separately, but the direct relation has not been investigated before. This research aims to investigate the direct relation between these components.

2.6 Hypothesis Development

As appointed above, the problem starts with information asymmetry in a market. This ensures that transactions cannot be completed fairly, which brings additional costs into play. All these additional costs result in a reduction in an investor's profits. Every shareholder in a company is an investor because they put money into the company in hopes of getting something in return (Hayes, 2021). This phenomenon of information asymmetry is even greater in times of crisis.

As mentioned earlier, during crises there is a high degree of uncertainty and therefore more information asymmetry than normal. To solve this problem of information asymmetry, techniques have been developed to bring extra information to the market. One of these techniques are management forecasts. With the help of these forecasts, private information is transferred from companies to the market, thus the whole market has enough information instead of only a small group (Bhat & Jayaraman, 2009). Reducing the information asymmetry can make more investors feel that there can be fairer trading in the market, which results in the investors being more interested in these kinds of stocks (Healy & Palepu, 2001). Increased interest results in more demand for this stock and thus an increase in the price. To investigate the effect of management forecasts on shareholder value in times of crisis, The following hypothesis can be stated:

H1: Publishing a management forecasts in times of crises results in an increase in shareholder value.

After a management forecast is published, it still needs to be analyzed by investors. After analyzing the forecast, these investors have the opportunity to make their forecasts regarding these shares. With the help of this management forecast, investors get new information with which they can make better and more accurate forecasts (Healy & Palepu, 2001). But it does take time for the investors to take this new information and make forecasts, which means that it also takes time to see results in the stock prices after publishing a management forecast. This means that the more time that passes, the more investors can make their own forecasts. This will eventually cause more shares to come under the interest of investors, which will increase the price of these shares. All this results in the following hypothesis:

H2: The more time elapses after publishing a management forecast, the more the positive effect on shareholder value increases.

3. Methodology and Research Design

This section will explain the methods and materials used while conducting the study. Firstly, the probability of publishing management forecast during a crisis and in normal times will be calculated. This will be followed by an explanation of how management forecasts are found and used in this research. And lastly, the shareholder value will be measured and combined with the management forecasts. This will be done partly with the help of an event study, which will also be discussed extensively in this section.

3.1 Probability analysis

First, an analysis of the probability of publishing a management forecast during a crisis and during normal times will be conducted. The analysis will be performed by collecting management forecasts from during the COVID crisis, the Financial Crisis of 2008 and data from a period without a crisis. Collecting data from times without a crisis will give an insight

of the likelihood of a management forecast being published under normal circumstances. The data during the crises will help to see the probability of a management forecast being published during a crisis. This data will then be compared to each other, which will allow to see the actual probability of publishing a management forecast during the COVID pandemic and the Financial Crisis of 2008.

3.2 Management Forecasts

This research will be conducted using statistical analysis on data, or empirical archival research. Dates on which management forecasts were published will be used. These forecasts can be found through the Institutional Brokers' Estimate System (IBES) database, which can be found through the website of the Wharton Research Data Services. This is a database of forecasts made by the management of a company. After the management forecasts are obtained, they are classified by crisis. This gives an understanding the number of forecasts that were published per crisis. Or which crisis experienced the most positive/negative effects as a result of these forecasts. The content of the forecasts is not important in this research, so it is sufficient to look at whether a management forecast has been published. The reason for not looking at the content of a management forecast only the effect of the publication of a management forecast on shareholder value matters and not what kind of management forecast triggers this effect.

3.3 Shareholder value

To measure the effect of management forecasts on shareholder value, an operationalization must be found for shareholder value. The reason behind this is that this concept by itself is not directly measurable. As already explained in the introduction, the change in share price will be used. Shareholders, as the name implies, own shares of a company. These shareholders experience positive effects in two possible ways. The first is receiving dividends and the second is the increase in the value of a stock (Hayes, 2021). In this study, the latter way will be explored in more detail. The appreciation of a stock will be measured using abnormal stock returns. This will allow to identify a clear pattern in the change of stock prices. This change is assessed based on the publication of a management forecast in times of crisis. If a management forecast is published during a crisis, the effect on stock prices will be examined. The returns on these stock prices will then be determined, as well as whether they deviate from the normal returns. This deviation generates the abnormal returns, which can be linked directly to changes in shareholder value. Looking at the Libby box in the Appendix, it can therefore be seen that the concepts for this research consist of "management forecasts in times of crisis" and "shareholder value". These concepts are operationalized by means of "the publication of a management forecast in times of crisis" and with "abnormal stock returns. The publications are used as a measurement for a management forecast and the abnormal returns are used as a measure of shareholder value.

3.4 Event Study

To conduct the actual research, an event study will be used. An event study is an analysis of the price of a security before and after the occurrence of a certain event. The event study owes its theory mainly to the study of Ball and Brown (1968). They investigated the effect of an earnings announcement on the price of a security. This study concluded that a large part of the price change of the security could be observed before the earnings announcement was even published. This eventually caused Bowman (1983) to develop the methodology behind the event study. Using an event study, prices of securities are analyzed in response to a particular event. It mainly looks at three different periods of price change: the estimation window, the event window and the post-event window. In the estimation period one can measure what the normal return should be after the event. The event window is the period in which the event actually occurs. In this period, you can see the actual price changes, which will be used to calculate the abnormal returns (= actual returns - expected returns). The last period is the post-event period, in which the long-term changes can be measured as a result of the event (Binder, 1969).

Conducting an event study involves a number of consecutive steps. The first step is to find an event in which you are interested. In this study, the focus is on management forecasts. The event of interest is the publication of management forecasts. The day on which the management forecast is published is referred to as event date (t=0). Next, based on this event, the change in share price will be calculated/modeled. This will be done based on a (-20 ; 20) event window. This means that the price changes will be tracked 20 days before to 20 days after the event. In addition, the following event windows will be used to examine more detailed changes per time period: (-10 ; 10) (-1 ; 1) (-1 ; 0) (0 ; 1) (0 ; 60). The next step calculates the abnormal returns following the event. In this research, this will be done using the 'market model'. This is the most widely used model within the group of risk adjusted event studies. This model uses the formulas and variables listed below:

Expected Returns: $Rit=\alpha i+\beta i \cdot Rmt+\varepsilon it$,

Abnormal Returns: $ARit=Rit-(\alpha i+\beta i \cdot Rmt)$

Cumulative Abnormal Returns: $CARi=\sum ARi,t$

Cumulative Average Abnormal Returns: $CAAR=1/N*\sum CARi$

Finally, the results are classified using 'Cumulative Abnormal Returns' and 'Cumulative Average Abnormal Returns'. This will help to combine all the abnormal returns of all the companies into one statistic. The CAR is calculated by adding up all the abnormal returns from an event window. After this, this CAR must be divided by the number of companies in the sample to get the CAAR. For interpretation purposes, the CAAR is multiplied by 100% to arrive at a percentage value of the effect size. The CAARs will then be analyzed according to the direction and size of the statistic. This will allow to conclude whether the publication of a management forecast in times of crisis has a positive or a negative effect on stock prices.

3.5 Difference-in-Differences

A relation between two different concepts can be found and measured in different ways. One can simply use data before an event and data after an event to measure the consequence of this event. Because this method is simple, it also has its drawbacks. One of the biggest disadvantages of this method is that it is not clear whether the event caused the change in the data or whether other factors are involved. To minimize these factors, a Difference-in-Differences method is used in this study. This method uses one group that is impacted by an event (treatment) and one group that is not impacted by this event (control). The change in both groups is measured before and after the event. This provides four different types of outcomes: Treatment group before event, Treatment group after event, Control group before event and Control group after event. This allows to create a baseline of what the outcomes would look like if the event had never happened. This baseline is the change that would happen anyway, which is attributable to other factors involved in this relation. Thus, the change on top of this baseline, also called Difference-in-Differences, is considered the actual change in response to the event (Schwerdt & Woessmann, 2020).

Three datasets will be used in this study. The first dataset will look at the COVID crisis, the second will look at the Financial Crisis of 2008 and the last will look at times without a crisis. First, the COVID dataset will be split into a Treatment group and a Control group. The Treatment group will consist of companies that have had an impact from this crisis and the Control group will consist of companies that have had no or little impact from this crisis. The division of these groups will be further explained in section 4.1. The event that will be examined in this research is the publication of a management forecast. From the companies, management forecasts are collected that have been published during the crisis, which will act as the 'after' effect of the event. For the same companies, management forecasts will also be collected during normal times, i.e., when there is no crisis, which will act as the 'before' effect of the event. The results of both analyses will be compared in order to measure the Difference-in-Differences. The same is done with the data related to the Financial Crisis of 2008. This will be done with the use of a regression analysis.

3.6 Regression Analysis

To calculate the difference-in-difference, a regression analysis will be used. This gives the opportunity to measure the joint effect of the independent variables on the dependent variable. The dependent variable in this study will be the Cumulative Average Abnormal Return. This variable is used to calculate the change in shareholder value. A more detailed explanation of this variable can be found in section 3.4. The independent variables in this study are: *time* and *treated*. The variable *time* is a dummy variable that takes the value 1 if the management forecast is published in times of crisis and 0 if this forecast is published in normal times. In addition, the variable *treated* is also a dummy variable. This variable takes a value of 1 if the company in question has experienced impact from the crisis and 0 if it is a company that has had no or only little impact from this crisis. Here, the firms in the Treatment group are given a value of 1 and the firms in the Control group are given a value of 0. The actual variable of interest is

the difference-in-difference (did). To calculate the did, we look at the interaction effect between the two independent variables. This interaction effect is calculated by multiplying the variables time and treated, from which the variable did arises. Below is the regression model with the variables used:

$CAAR = \alpha + \beta 1 time + \beta 2 treated + \beta 3 did + e$ (did = time*treated)

4. Data Collection

This section of the study focuses on the collection of the data that will be used in the study. First, it will be explained how the management projections were found. Then it will be discussed how share prices of the studied companies were collected.

4.1 COVID-Crisis

First, let us look at the method by which the management forecasts were collected. The database called I/B/E/S, which is linked to a tool of the Wharton Research Data Services, was used. To use this database, you have to follow a number of steps. The first step is to choose between three different data types. In this study, the following option was chosen: "Announce date when data was announced by the company". This data type ensures that the management forecasts that will be obtained have as their date the day they were published. The reason for choosing this option is that using this date, an event study can be performed for the effect of these management forecasts on stock prices. During this step, the range in which you want to obtain the data needs to be filled in. According to the World Health Organization, the first signs of the COVID crisis were seen in the month of January in the year 2020 (World Health Organization, 2020). Thus, the data range will begin at 01-2020. The end of the range will be put to 04-2022. This will be done because the COVID crisis has not officially ended yet, so the data should continue until the day this study is conducted. However, since the event study will have an event window of (0;60), there should also be data available from 60 days after the publication of a forecast. As a result, a data range is chosen that runs from 01-2020 to 04-2022.

The second step of the database is to enter the companies that will be studied. This database uses its own kind of tickers, so the correct IBES ticker of each company had to be found manually. In this study, 100 companies from the United States will be used. These companies are the largest 200 companies in the US and were chosen from the Fortune 500 list (Fortune Editors, 2022). Because a DiD design is used, these companies are divided into two groups. This distribution was made based on the matrix in Figure 2 of the Appendix. This matrix shows to what extent the different sectors have been affected by the COVID crisis. Initially, this matrix was created to show the impact on small and medium sized companies. However, in this study we will use this matrix to classify large companies as well. The reason for this is that if small companies within a sector are affected, this shows that this sector is sensitive to the impact of this crisis. If this is looked at on a larger scale, the larger companies within this sector will also be equally or more affected. All companies belonging to the sectors on the right side of the matrix are put in the Treatment group. And all companies belonging to the left side of

the middle of the matrix are put in the Control group. For each company, the sector in which it operates is checked manually and, based on this information, the company is assigned to one of the two groups. The Treatment group consists only of companies that were substantially impacted by the COVID crisis. In contrast, the Control group consists of companies that have had less impact from this crisis. Normally, the Control group consists of companies that have had no impact from the phenomenon under study. However, during a crisis, everyone experiences some degree of impact. As a result, while assembling the Control group, companies that have had less impact from the COVID crisis were chosen. The classification of the sample of companies has led to a Treatment and a Control group of 50 companies each.

The third and final step of using the database is to obtain the management forecasts. To do this, it is first necessary to choose which variables are to be obtained as outputs. For the sake of completeness, it was decided to include all variables in the output. But actually, the date of the forecast is the only variable that will be needed in this study. The WRDS tool then searches for the desired management forecast. Some companies have several forecasts per year. In this study, we chose to choose one management forecast per year. As a result, one company may have forecasts for the years 2020, 2021 and 2022. If a company has more than one forecast, they were all included in the study to increase the number of forecasts. This will increase the overall sample size of management forecasts, which will result in the overall error term being reduced. There are also companies that did not publish a forecast during the COVID crisis. All in all, this has resulted in 88 management forecasts for the Treatment group and 40 management forecasts for the Control group. Each management forecast is saved and placed next to its own ticker, after which they will be used further in the study to conduct the event study.

4.2 Financial Crisis of 2008

To ensure that the results from the COVID data accurately reflect reality, a second study is being conducted. This study will act as a robustness test to increase the reliability of the overall study. The robustness test will be conducted using data from the 2008 Financial Crisis. This research will follow the same roadmap as above, only with different data as input. It will also use a Difference-in-Differences design and therefore two different groups. The distribution of these groups follows a slightly different method than above. The housing market had collapsed during this crisis, which caused all sectors that had a link to the housing sector to have a heavy impact (Kenzie Academy, 2022). As a result, all companies belonging to these sectors were put in the Treatment group. In contrast, during the COVID crisis, the health sector experienced a high degree of impact from this crisis, while this was not the case during the 2008 Financial Crisis. As a result, these companies were not put into the Treatment group during the second study. For the remaining companies, the division of the two groups can be based on Figure 2 of the Appendix. All in all, this has resulted in 50 firms and 35 management forecasts for the Treatment group. In addition, the Control group has 33 firms and 34 management forecasts. From here on, this dataset will be referred to as FC2008.

4.3 NO CRISIS

To perform the Difference-in-Differences method, in addition to the usual data, there must be information in times without crisis. In this way, the before and after effect of the treatment can be determined. To accomplish this during this study, management forecasts published during the years 2013 to 2016 are used. During these years there was no crisis in the United States, which makes the forecasts obtained during this time suitable for this research. The companies from the COVID crisis dataset are used again here, but for this dataset, management forecasts are sought during the period from 2013 to 2016. This dataset is called NO CRISIS COVID. The same is done for the FC2008 dataset. So instead of using management forecasts from the period of December 2007 to 2009, here the period of 2013 to 2016 is used. This dataset is referred to as NO CRISIS FC2008. The reason for using this period is that we can measure the effect of publishing management forecasts before a crisis has occurred. So, this effect would be the "normal" effect, after which we will compare this effect with the effect of the management forecasts in times of crisis.

As explained in the sections above, the companies were manually divided into the Treatment group and the Control group. This is based on the criteria of Figure 2 of the Appendix. The entire population of this study is all companies in the United States. In this study, a sample was taken from the 200 largest companies in the US. The medium and small companies are thus not included in the study. This ensures that the sample is not an overall reflection of the population. In addition, all these companies were manually divided between the Treatment group and the Control group, which means that there is no random sampling, resulting in a sampling selecting bias. This is a problem for the generalizability and thus the external validity of this study. The problem here is that the results of the study may be biased to this single study, making these results more difficult to apply in other studies (Showkat, 2017). The reason for choosing this method of sampling is that no other option was possible in this case. For example, since the COVID crisis is still quite new and its impact on companies is not yet clear, there were almost no criteria of this crisis present. The criteria used in this study was one of the few available options. Thus, a disadvantage of these criteria is that the companies have to be compared and divided manually. Besides the disadvantage, this sampling technique also has its advantage, which is that unlike the external validity, the internal validity can be high. By manually selecting these companies, a clearer analysis can be made of what kind of company it is and whether the company has actually been impacted by the crisis. So despite the bias, this unique research design can create valuable insights.

4.4 Stock returns

As explained earlier, the WRDS tool will be used to perform the event study. This tool contains share prices of companies, which can be used to calculate the change in these share prices based on a certain event. The dates of all management forecasts with corresponding tickers are used as input. Then the tool performs an event study which results in the abnormal returns for each event window. Finally, these abnormal returns will be used to measure the effect of the management forecast on stock prices.

5. Results

This section will discuss the results of the study. The results will be presented in tables where some information will be provided. It will start by discussing the probability of publishing a management forecast during a crisis. In addition to the datasets with data in times of crisis, a dataset will also be used in times without crisis. After this the results of the event study will be presented. Finally, the robustness test and its results will be presented.

5.1 Probability of Management Forecasts

Dataset	**Number of Management forecasts**	**Total per dataset**	**% of total number of Management forecasts**
COVID-Crisis *Treatment Group*	88	128	29,4
COVID-Crisis *Control Group*	40		
NO CRISIS COVID *Treatment Group*	96	142	32,6
NO CRISIS COVID *Control Group*	46		
Financial Crisis of 2008 *Treatment Group*	35	69	15,8
Financial Crisis of 2008 *Control Group*	34		
NO CRISIS FC2008 *Treatment Group*	55	97	22,2
NO CRISIS FC2008 *Control Group*	42		
TOTAL		**436**	**100**

Table 1 - This table shows the probability of publishing a management forecast. Six different datasets have been used in this process. This looks at the individual numbers of management forecasts per dataset. Then the Treatment group and the Control group are linked to show the overall effect of the linked dataset. Finally, the number of forecasts is shown as a percentage of the total number of management forecasts.

Above are the results of the study on the likelihood of publishing a management forecast in times of crisis. Six datasets from which management forecasts are obtained were used. The reason for adding both the Treatment and Control groups is that these datasets contain different companies. In order to visualize the effect of a crisis as well as possible, it was decided to add as many management forecasts as possible. This also has the function of increasing the overall sample size of this analysis, which in turn has the effect of reducing the errors.

The table above shows that there is a difference between publishing management forecasts in times of crisis and publishing them in normal times. This may have several causes, such as the management of a company being more cautious during a crisis. Also, this difference can be due to the number of analysts that the company follows. If a company brings new information to the market, analysts will be able to make better forecasts with this information, which causes the number of analysts following the company to increase as well (Bhushan, 1989). Thus, in times without crisis when more forecasts are published, this may result in the number of

analysts multiplying. If the company then publishes an incorrect forecast in times of crisis, a larger number of analysts will notice. This can cause a very negative reaction, which can cause the company's shares to fall heavily. This would therefore be a reason for companies to choose not to publish a forecast in times of crisis.

To compare the COVID crisis with the Financial Crisis of 2008, a significant difference can be seen in the number of published management forecasts. During this financial crisis, few forecasts were published compared to normal times. One reason for this may be that this crisis was extremely far-reaching for its time. There had not been such a large crisis/recession in years, in fact this was the largest recession since the Great Depression. This may have caused management to be reluctant to publish these forecasts.

Looking in more detail, it can also be seen that for the Treatment Group the difference between the number of management forecasts in normal times and in times of crisis is greater than the same difference for the Control group. The number of forecasts for the Treatment group decreases more than for the Control group. The companies included in the Treatment group are those that have had a relatively large impact from the crisis. This can be a reason for the management of the company to choose not to publish forecasts, as publishing a forecast in these times can have a very negative impact on the company on top of the impact already present.

5.2 COVID Data

Regression Results				
Statistics	**Observations**	**Std. Error**	**Adjusted R-squared**	**Multiple R-squared**
(-20 ; 20)	264	0.1027	-0.0085	0.0030
(-10 ; 10)	266	0.0699	-0.0035	0.0078
(-1 ; 1)	265	0.0470	0.0017	0.0131
(-1 ; 0)	266	0.0351	0.0071	0.0183
(0 ; 1)	266	0.0448	0.0018	0.0131
(0 ; 60)	229	0.1209	0.0013	0.0144
	Coefficients	**Std. Error**	**P>|t|**	
(-20 ; 20)	-0.0020	0.0272	0.942	
(-10 ; 10)	0.0048	0.0184	0.794	
(-1 ; 1)	-0.0004	0.0124	0.976	
(-1 ; 0)	0.0007	0.0093	0.940	
(0 ; 1)	0.0006	0.0118	0.958	
(0 ; 60)	0.0040	0.0352	0.909	

Table 2 - This table contains the regression statistics of all event windows. The COVID dataset was used for this regression. These four statistics are from running the regression explained in Section 3.6. This table also contains the difference-in-differences of all event windows. The variable of interest is the difference-in-difference (did). From left to right, the estimate of the coefficient is shown first. The standard deviation of this estimate is shown on the right. And finally, the significance level can be observed. All values in this table have a very low significance, indicating that there is not enough evidence to conclude that there is a relationship between the dependent variable and the independent variables. This table is a summary of tables 1-6 from the Appendix.

Above are the results of the regression statistics. Hereby, a brief overview of all statistics can be found in the Appendix. All event windows have almost the same number of observations, with the exception of the event window (0 ; 60), which has about 40 fewer observations. It can

also be clearly seen that the larger the event window, the larger the standard deviation. If the price of a stock is tracked for a longer period of time, the result will be that more factors can come into play. This can cause outliers, which will raise the overall standard deviation. In addition, there are also the adjusted R-squared and the multiple R-squared. The adjusted R-squared is used to determine how well the variance in the dependent variable is explained by the independent variables. The table above shows quite low values of the adjusted R-squared. To look at these results in even more detail, it can be seen that the highest R-squared can be seen in the event window of (-1 ; 0). This is the only event window that only looks at the days before the management forecast was published. The other event windows, which have very low values of R-squared, do include the day the forecast was published. The effect of publishing the management forecasts on the abnormal returns is only partly explained by this model. With this, it can be concluded that this model explains only a small part of the variance of the independent variable.

Table 3 also shows the difference-in-differences (did) of each event window. The coefficients indicate the extent to which the CAAR will increase/decrease if a management forecast is published in times of crisis. The standard deviation indicates the range in which these coefficients can be deviated from. And finally, the p-values of the coefficients are shown. It is immediately noticeable that there are mixed results. The event windows (-20 ; 20) and (-1 ; 1) both give negative results. This indicates that publishing a management forecast in times of crisis, has a negative effect on stock prices. In contrast, the other event windows show a positive result. Also, no distinction can be made between the lengths of the event windows, as they too have mixed results. Hereby, it cannot be concluded that the longer the event window, the greater/smaller the effect on stock prices. Also, none of these results are statistically significant when looking at the p-values. All in all, based on these results it cannot be concluded whether publishing a management forecast in times of crisis has a positive effect on stock prices.

5.3 FC2008 Data

In this section of the study, the results of the FC2008 dataset will be discussed. In order not to consider the previously obtained COVID crisis results as the only data for crises, a different crisis is used in this analysis. By conducting a second test with completely different companies and criteria, it can be ensured that a better picture of the consequences of a crisis can be created.

Regression Results				
Statistics	**Observations**	**Std. Error**	**Adjusted R-squared**	**Multiple R-squared**
(-20 ; 20)	164	0.1256	0.0734	0.0904
(-10 ; 10)	164	0.1185	0.0069	0.0252
(-1 ; 1)	164	0.0703	-0.0141	0.0046
(-1 ; 0)	164	0.0514	-0.0062	0.0123
(0 ; 1)	164	0.0667	-0.0124	0.0062
(0 ; 60)	164	0.1574	-0.0061	0.0124
	Coefficients	**Std. Error**	**P>|t|**	
(-20 ; 20)	0.0863	0.0400	0.033*	
(-10 ; 10)	0.0345	0.0378	0.363	
(-1 ; 1)	-7.551e-03	2.242e-02	0.737	
(-1 ; 0)	0.0098	0.0164	0.550	
(0 ; 1)	0.0006	0.0213	0.978	
(0 ; 60)	-0.0633	0.0502	0.209	

Table 3 - This table contains the regression statistics of all event windows. The FC2008 dataset was used for this regression. These four statistics are from running the regression explained in Section 3.6. This table also contains the difference-in-differences of all event windows. The variable of interest is the difference-in-difference (did). From left to right, the estimate of the coefficient is shown first. The standard deviation of this estimate is shown on the right. And finally, the significance level can be observed. All values in this table have a very low significance, indicating that there is not enough evidence to conclude that there is a relationship between the dependent variable and the independent variables. This table is a summary of tables 7-12 from the Appendix.

Above are the results of the regression statistics. A brief overview of all statistics can be found in the Appendix. For this dataset, all event windows have the same number of observations. It is also clear to see that also for this dataset, the larger the event window, the larger the standard deviation. The table above shows rather low values of the adjusted R-squared for all event windows except the event window (-20 ; 20). This event window has a fairly high result compared to the others. This means that for the event window (-20 ; 20), the model explains the change in stock prices to a significant extent. In contrast, the other event windows all show very low values of the R-squared. All in all, it can be concluded that the overall model explains only a small part of the variance of the independent variable.

The table above also shows the difference-in-differences (did) of each event window. Similar to the results of the COVID dataset, it is immediately noticeable that there are mixed results. The event windows (-1 ; 1) and (0 ; 60) both give negative results. This indicates that publishing a management forecast in times of crisis has a negative effect on stock prices. In contrast, the other event windows give positive results. For this dataset, no distinction can be made between the lengths of the event windows either, as they too give mixed results. Thus, it cannot be concluded that the longer the "event window", the greater/smaller the effect on stock prices.

The only event window with a statistically significant result is the event window (-20 ; 20). This result indicates that if a management forecast is published in time of crisis, stock prices will increase by 8.63% with a significance level of 5%. For the other event windows, none of these results are statistically significant when looking at the p-values. All in all, based on these results, it cannot be concluded whether publishing a management forecast in times of crisis has a positive effect on stock prices.

6. Conclusion

The purpose of this study was to identify the relation between management forecasts and shareholder value in times of crisis. The COVID crisis and the Financial Crisis of 2008 were used to measure this effect in times of crisis. Here the publication of a management forecast and share prices of the same company were used. After the publication of a forecast the effect of this on the share price was measured. An event study combined with a Difference-in-Differences design was used to conduct a study with as few outside factors as possible. During this study, manual selection of companies was used for the sample. This has caused a sampling selecting bias and thus the external validity of this research will be low. In contrast, this unique research design allows for the measurement of this previously unexamined relationship.

The COVID dataset has very low values of R-squared for all event windows. This means that the model used explains the change in the dependent variable for only a small part. To supplement the model, additional control variables should be used. This is a challenge for researchers who want to further investigate this relationship. Also, the COVID dataset produces mixed results that are also not statistically significant. As a result, it is not possible to conclude whether publishing a management forecast in times of crisis results in an increase in stock prices.

The 2008 Financial Crisis dataset has very low values of the R-squared for all event windows except the event window of (-20 ; 20). This means that for the other event windows, the model used only explains a small part of the change in the dependent variable. The event window of (-20 ; 20) is the only one that has a very high R-squared and a statistically significant positive result following the regression analysis. Thus, this is also the only event window with which it can be concluded that publishing a management forecast results in a positive change in stock prices. Nevertheless, the other event windows do not produce statistically significant results nor do they have high values of the R-squared, which means that the regression model is not suitable enough to investigate the relation between management forecasts and stock prices. To supplement the model, additional control variables must be used. This, as with the COVID dataset, is a challenge for researchers who want to investigate this relation further. All in all, even for the 2008 Financial Crisis dataset, it is not possible to conclude whether publishing a management forecast in times of crisis leads to an increase in stock prices.

Overall, this study provides mixed results for all event windows from both the COVID dataset and the FC2008 dataset. As a result, it is also not possible to conclude that the longer it takes after a management forecast is published in times of crisis, the greater the positive effect on stock prices will be. This combined with the insignificant results of the regression analysis do

not provide enough evidence to reject both the first and second hypotheses. This suggests that a follow-up study is needed. The follow-up study could then use a larger sample with perhaps no sample selection bias and more control variables.

References

Alkhatib, K. (2014). The determinants of forward-looking information disclosure. Procedia-Social and Behavioral Sciences, 109, 858-864.

Barry, C. B., & Brown, S. J. (1984). Differential information and the small firm effect. *Journal of financial economics*, *13*(2), 283-294.

Barry, C. B., & Brown, S. J. (1985). Differential information and security market equilibrium. *Journal of financial and quantitative analysis*, *20*(4), 407-422.

Barry, C. B., & Brown, S. J. (1986). Limited information as a source of risk. *The Journal of Portfolio Management*, *12*(2), 66-72.

Bhat, G., & Jayaraman, S. (2009, December). Information asymmetry around earnings announcements during the financial crisis. In *Accounting Research Conference*.

Binder, J. (1998). The event study methodology since 1969. *Review of quantitative Finance and Accounting*, *11*(2), 111-137.

Botosan, C. A. (1997). Disclosure level and the cost of equity capital. *Accounting review*, 323-349.

Bowman, R. G. (1983). Understanding and conducting event studies. *Journal of Business Finance & Accounting*, *10*(4), 561-584.

Bozanic, Z., Roulstone, D. T., & Van Buskirk, A. (2018). Management earnings forecasts and other forward-looking statements. *Journal of Accounting and Economics*, *65*(1), 1-20.

Bhushan, R. (1989). Firm characteristics and analyst following. *Journal of accounting and economics*, *11*(2-3), 255-274.

Coller, M., & Yohn, T. L. (1997). Management forecasts and information asymmetry: An examination of bid-ask spreads. *Journal of accounting research*, *35*(2), 181-191.

Diamond, D. W., & Verrecchia, R. E. (1991). Disclosure, liquidity, and the cost of capital. *The journal of Finance*, *46*(4), 1325-1359.

Dontoh, A. (1989). Voluntary disclosure. *Journal of Accounting, Auditing & Finance*, *4*(4), 480-511.

Fortune Editors. (2022, May 24). *Fortune 500*. Fortune. https://fortune.com/fortune500/2022/search/

Haji, A. A., & Mohd Ghazali, N. A. (2012). The influence of the financial crisis on corporate voluntary disclosure: Some Malaysian evidence. *International Journal of Disclosure and Governance*, *9*(2), 101-125.

Hutton, A. P., Miller, G. S., & Skinner, D. J. (2003). The role of supplementary statements with management earnings forecasts. *Journal of Accounting Research*, *41*(5), 867-890.

Hayes, A. (2021, December 8). What Is a Shareholder? Investopedia. Retrieved March 18, 2022, from https://www.investopedia.com/terms/s/shareholder.asp

Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. Journal of accounting and economics, 31(1-3), 405-440.

Kenzie Academy. (2022, 12 May). *Which Industries Will be Most Affected by a Recession?* Geraadpleegd op 28 juni 2022, van https://kenzie.snhu.edu/blog/which-industries-will-be-most-affected-by-a-recession/

Lim, S., Matolcsy, Z., & Chow, D. (2007). The association between board composition and different types of voluntary disclosure. *European Accounting Review*, *16*(3), 555-583.

Patell, J. M. (1976). Corporate forecasts of earnings per share and stock price behavior: Empirical test. *Journal of accounting research*, 246-276.

Schwerdt, G., & Woessmann, L. (2020). Empirical methods in the economics of education. *The Economics of Education*, 3-20.

Showkat, N. (2017). Non-probability and Probability Sampling. *ResearchGate*.

World Health Organization. (2020, 28 april). *Archived: WHO Timeline - COVID-19*. Geraadpleegd op 28 juni 2022, van https://www.who.int/news/item/27-04-2020-who-timeline---covid-19

Appendix

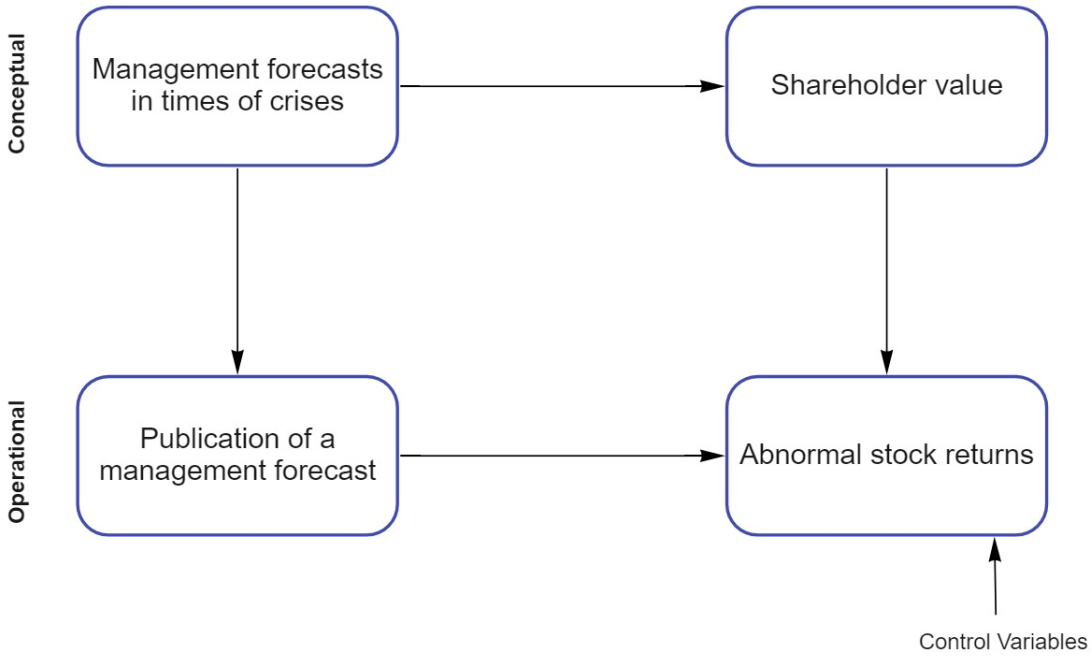

Figure 1 - Above is the Libby box that will be used in this research. The concepts for this research will be "management forecasts in times of crisis" and "shareholder value". These concepts will be operationalized through "the publication of a management forecast in times of crisis" and with "abnormal shareholder returns." The publications are used as a measure of a management forecast and the abnormal returns are used as a measure of shareholder value. There may also be other factors involved in the occurrence of this causal relation, these are added to the relation using control variables.

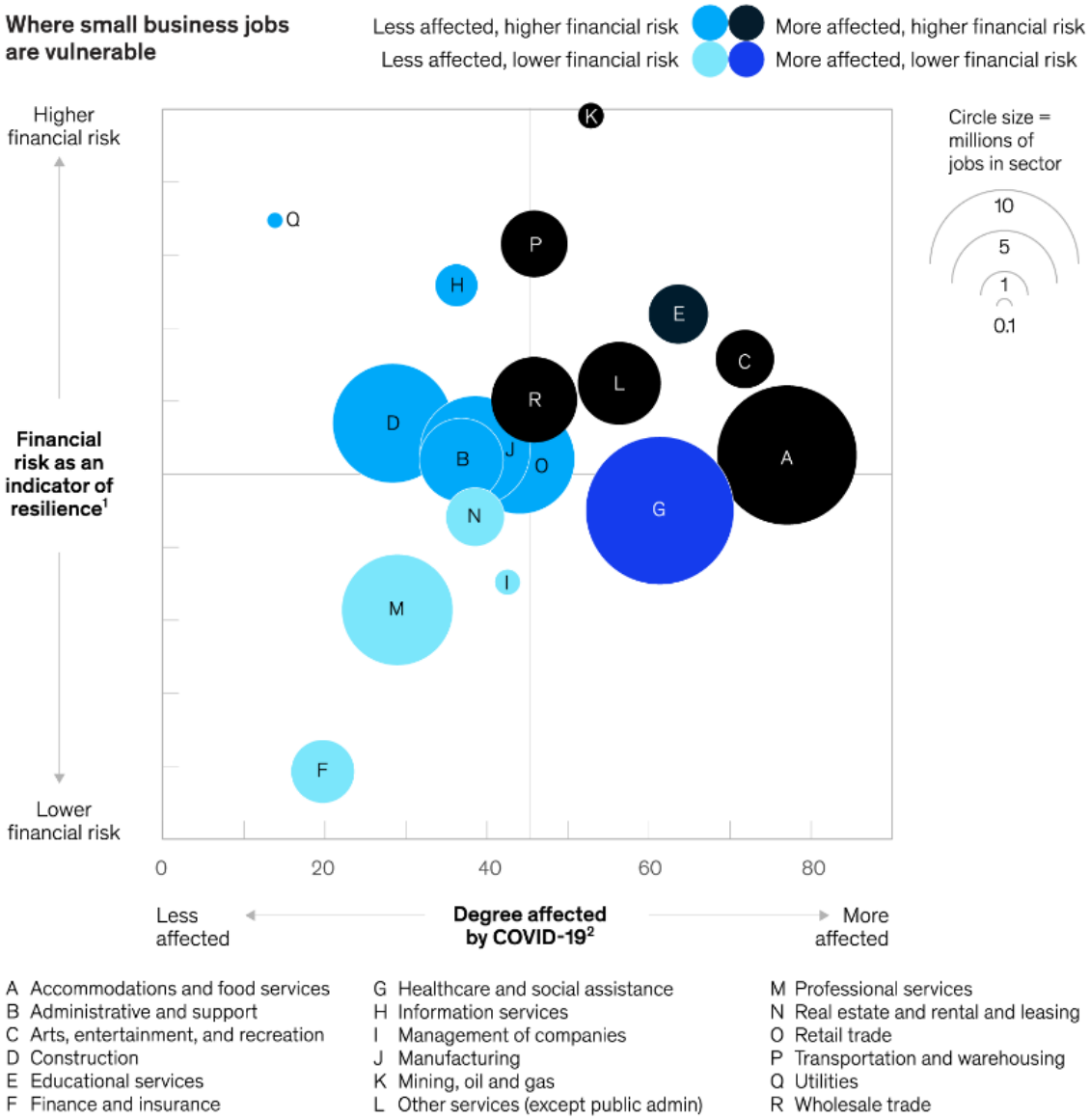

Figure 2 - This figure shows the impact that companies experienced from the COVID crisis. For the purposes of this study, only the x-axis is of interest because it indicates the extent to which an industry was affected by this crisis. Companies that are on the right of the center of this matrix are selected as having been substantially impacted by this crisis. And companies that are on the left side are selected as having had little impact from this crisis. Companies that have had substantial impact then are put in the Treatment group and companies that have had less impact from the crisis are put in the Control group.

== COVID ==

Regression Statistics			
Multiple R-squared	0.0030		
Adjusted R-squared	-0.0085		
Standard Error	0.1027		
Observations	264		
	Coefficients	**Std. Error**	**P>|t|**
Intercept	0.0144	0.0151	0.344
treated	0.0039	0.0184	0.831
time	-0.0095	0.0224	0.670
did	-0.0020	0.0272	0.942

Table 1 - This Table shows the regression statistics of the event window (-20 ; 20). The COVID dataset was used for this regression. These four statistics come from running the regression explained in section 3.6. This table also shows the coefficients of the event window (-20 ; 20). The variable of interest is the difference-in-difference (did). From left to right, the estimate of the coefficient is shown first. This indicates that if a company was impacted by the crisis and the company published a management forecast during these times, this results in a 0.2% decrease in abnormal returns (CAAR). The standard deviation of this estimate is shown on the right. And finally, the significance level can be observed. All values in this table have a very low significance, indicating that there is not enough evidence to conclude that there is a relationship between the dependent variable and the independent variables.

Regression Statistics			
Multiple R-squared	0.0078		
Adjusted R-squared	-0.0035		
Standard Error	0.0699		
Observations	266		
	Coefficients	**Std. Error**	**P>|t|**
Intercept	0.0066	0.0103	0.521
treated	0.0106	0.0125	0.400
time	-0.0012	0.0152	0.938
did	0.0048	0.0184	0.794

Table 2 - This Table shows the regression statistics of the event window (-10 ; 10). The COVID dataset was used for this regression. These four statistics come from running the regression explained in section 3.6. This table also shows the coefficients of the event window (-10 ; 10). The variable of interest is the difference-in-difference (did). From left to right, the estimate of the coefficient is shown first. This indicates that if a company was impacted by the crisis and the company published a management forecast during these times, this results in a 0.48% increase in abnormal returns (CAAR). The standard deviation of this estimate is shown on the right. And finally, the significance level can be observed. All values in this table have a very low significance, indicating that there is not enough evidence to conclude that there is a relationship between the dependent variable and the independent variables.

Regression Statistics			
Multiple R-squared	0.0131		
Adjusted R-squared	0.0017		
Standard Error	0.0470		
Observations	265		
	Coefficients	**Std. Error**	**P>|t|**
Intercept	0.0001	0.0070	0.984
treated	0.0116	0.0085	0.171
time	-0.0010	0.0103	0.922
did	-0.0004	0.0124	0.976

Table 3 - This Table shows the regression statistics of the event window (-1 ; 1). The COVID dataset was used for this regression. These four statistics come from running the regression explained in section 3.6. This table also shows the coefficients of the event window (-1 ; 1). The variable of interest is the difference-in-difference (did). From left to right, the estimate of the coefficient is shown first. This indicates that if a company was impacted by the crisis and the company published a management forecast during these times, this results in a 0.04% decrease in abnormal returns (CAAR). The standard deviation of this estimate is shown on the right. And finally, the significance level can be observed. All values in this table have a very low significance, indicating that there is not enough evidence to conclude that there is a relationship between the dependent variable and the independent variables.

Regression Statistics			
Multiple R-squared	0.0183		
Adjusted R-squared	0.0071		
Standard Error	0.0351		
Observations	266		
	Coefficients	**Std. Error**	**P>|t|**
Intercept	-0.0006	0.0052	0.914
treated	0.0099	0.0063	0.118
time	-0.0005	0.0076	0.951
did	0.0007	0.0093	0.940

Table 4 - This Table shows the regression statistics of the event window (-1 ; 0). The COVID dataset was used for this regression. These four statistics come from running the regression explained in section 3.6. This table also shows the coefficients of the event window (-1 ; 0). The variable of interest is the difference-in-difference (did). From left to right, the estimate of the coefficient is shown first. This indicates that if a company was impacted by the crisis and the company published a management forecast during these times, this results in a 0.07% increase in abnormal returns (CAAR). The standard deviation of this estimate is shown on the right. And finally, the significance level can be observed. All values in this table have a very low significance, indicating that there is not enough evidence to conclude that there is a relationship between the dependent variable and the independent variables.

Regression Statistics			
Multiple R-squared	0.0131		
Adjusted R-squared	0.0018		
Standard Error	0.0448		
Observations	266		
	Coefficients	**Std. Error**	**P>|t|**
Intercept	0.0021	0.0066	0.753
treated	0.0102	0.0080	0.206
time	-0.0036	0.0098	0.711
did	0.0006	0.0118	0.958

Table 5 - This Table shows the regression statistics of the event window (0 ; 1). The COVID dataset was used for this regression. These four statistics come from running the regression explained in section 3.6. This table also shows the coefficients of the event window (0 ; 1). The variable of interest is the difference-in-difference (did). From left to right, the estimate of the coefficient is shown first. This indicates that if a company was impacted by the crisis and the company published a management forecast during these times, this results in a 0.06% increase in abnormal returns (CAAR). The standard deviation of this estimate is shown on the right. And finally, the significance level can be observed. All values in this table have a very low significance, indicating that there is not enough evidence to conclude that there is a relationship between the dependent variable and the independent variables.

Regression Statistics			
Multiple R-squared	0.0144		
Adjusted R-squared	0.0013		
Standard Error	0.1209		
Observations	229		
	Coefficients	**Std. Error**	**P>|t|**
Intercept	-0.0037	0.0178	0.835
treated	0.0213	0.0217	0.327
time	0.0173	0.0290	0.551
did	0.0040	0.0352	0.909

Table 6 - This Table shows the regression statistics of the event window (0 ; 60). The COVID dataset was used for this regression. These four statistics come from running the regression explained in section 3.6. This table also shows the coefficients of the event window (0 ; 60). The variable of interest is the difference-in-difference (did). From left to right, the estimate of the coefficient is shown first. This indicates that if a company was impacted by the crisis and the company published a management forecast during these times, this results in a 0.4% increase in abnormal returns (CAAR). The standard deviation of this estimate is shown on the right. And finally, the significance level can be observed. All values in this table have a very low significance, indicating that there is not enough evidence to conclude that there is a relationship between the dependent variable and the independent variables.

== COVID ==

== FC2008 ==

Regression Statistics			
Multiple R-squared	0.0904		
Adjusted R-squared	0.0734		
Standard Error	0.1256		
Observations	164		
	Coefficients	**Std. Error**	**P>|t|**
Intercept	0.0028	0.0194	0.887
treated	0.0216	0.0257	0.402
time	-0.0745	0.0290	0.011*
did	0.0863	0.0400	0.033*

Table 7 - This Table shows the regression statistics of the event window (-20 ; 20). The FC2008 dataset was used for this regression. These four statistics come from running the regression explained in section 3.6. This table also shows the coefficients of the event window (-20 ; 20). The variable of interest is the difference-in-difference (did). From left to right, the estimate of the coefficient is shown first. This indicates that if a company was impacted by the crisis and the company published a management forecast during these times, this results in a 8.63% increase in abnormal returns (CAAR). The standard deviation of this estimate is shown on the right. And finally, the significance level can be observed. The difference-in-difference for this event window has a statistically significant outcome (P<0.05).

Regression Statistics			
Multiple R-squared	0.0252		
Adjusted R-squared	0.0069		
Standard Error	0.1185		
Observations	164		
	Coefficients	**Std. Error**	**P>|t|**
Intercept	0.0037	0.0183	0.840
treated	0.0162	0.0243	0.506
time	-0.0306	0.0273	0.264
did	0.0345	0.0378	0.363

Table 8 - This Table shows the regression statistics of the event window (-10 ; 10). The FC2008 dataset was used for this regression. These four statistics come from running the regression explained in section 3.6. This table also shows the coefficients of the event window (-10 ; 10). The variable of interest is the difference-in-difference (did). From left to right, the estimate of the coefficient is shown first. This indicates that if a company was impacted by the crisis and the company published a management forecast during these times, this results in a 3.45% increase in abnormal returns (CAAR). The standard deviation of this estimate is shown on the right. And finally, the significance level can be observed. All values in this table have a very low significance, indicating that there is not enough evidence to conclude that there is a relationship between the dependent variable and the independent variables.

Regression Statistics			
Multiple R-squared	0.0046		
Adjusted R-squared	-0.0141		
Standard Error	0.0703		
Observations	164		
	Coefficients	**Std. Error**	**P>|t|**
Intercept	-6.714e-05	1.085e-02	0.995
treated	1.161e-02	1.440e-02	0.422
time	6.699e-03	1.622e-02	0.680
did	-7.551e-03	2.242e-02	0.737

Table 9 - This Table shows the regression statistics of the event window (-1 ; 1). The FC2008 dataset was used for this regression. These four statistics come from running the regression explained in section 3.6. This table also shows the coefficients of the event window (-1 ; 1). The variable of interest is the difference-in-difference (did). From left to right, the estimate of the coefficient is shown first. This indicates that if a company was impacted by the crisis and the company published a management forecast during these times, this results in a 0.76% decrease in abnormal returns (CAAR). The standard deviation of this estimate is shown on the right. And finally, the significance level can be observed. All values in this table have a very low significance, indicating that there is not enough evidence to conclude that there is a relationship between the dependent variable and the independent variables.

Regression Statistics			
Multiple R-squared	0.0123		
Adjusted R-squared	-0.0062		
Standard Error	0.0514		
Observations	164		
	Coefficients	**Std. Error**	**P>|t|**
Intercept	-0.0002	0.0079	0.978
treated	0.0062	0.0105	0.554
time	-0.0037	0.0118	0.754
did	0.0098	0.0164	0.550

Table 10 - This Table shows the regression statistics of the event window (-1 ; 0). The FC2008 dataset was used for this regression. These four statistics come from running the regression explained in section 3.6. This table also shows the coefficients of the event window (-1 ; 0). The variable of interest is the difference-in-difference (did). From left to right, the estimate of the coefficient is shown first. This indicates that if a company was impacted by the crisis and the company published a management forecast during these times, this results in a 0.98% increase in abnormal returns (CAAR). The standard deviation of this estimate is shown on the right. And finally, the significance level can be observed. All values in this table have a very low significance, indicating that there is not enough evidence to conclude that there is a relationship between the dependent variable and the independent variables.

Regression Statistics			
Multiple R-squared	0.0062		
Adjusted R-squared	-0.0124		
Standard Error	0.0667		
Observations	164		
	Coefficients	**Std. Error**	**P>|t|**
Intercept	0.0027	0.0103	0.791
treated	0.0101	0.0137	0.459
time	0.0018	0.0154	0.907
did	0.0006	0.0213	0.978

Table 11 - This Table shows the regression statistics of the event window (0 ; 1). The FC2008 dataset was used for this regression. These four statistics come from running the regression explained in section 3.6. This table also shows the coefficients of the event window (0 ; 1). The variable of interest is the difference-in-difference (did). From left to right, the estimate of the coefficient is shown first. This indicates that if a company was impacted by the crisis and the company published a management forecast during these times, this results in a 0.06% increase in abnormal returns (CAAR). The standard deviation of this estimate is shown on the right. And finally, the significance level can be observed. All values in this table have a very low significance, indicating that there is not enough evidence to conclude that there is a relationship between the dependent variable and the independent variables.

Regression Statistics			
Multiple R-squared	0.0124		
Adjusted R-squared	-0.0061		
Standard Error	0.1574		
Observations	164		
	Coefficients	**Std. Error**	**P>|t|**
Intercept	-0.0026	0.0243	0.916
treated	0.0102	0.0323	0.752
time	0.0342	0.0363	0.348
did	-0.0633	0.0502	0.209

Table 12 - This Table shows the regression statistics of the event window (0 ; 60). The FC2008 dataset was used for this regression. These four statistics come from running the regression explained in section 3.6. This table also shows the coefficients of the event window (0 ; 60). The variable of interest is the difference-in-difference (did). From left to right, the estimate of the coefficient is shown first. This indicates that if a company was impacted by the crisis and the company published a management forecast during these times, this results in a 6.33% decrease in abnormal returns (CAAR). The standard deviation of this estimate is shown on the right. And finally, the significance level can be observed. All values in this table have a very low significance, indicating that there is not enough evidence to conclude that there is a relationship between the dependent variable and the independent variables.