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How valuable is financial flexibility? Evidence from listed Norwegian companies during the Covid-19 pandemic

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Abstract

This thesis aims to provide empirical evidence for the value of financial flexibility when a sudden and unexpected event occurs that results in a cash-flow shortfall, using the ongoing pandemic as an example. We find significant differences in abnormal stock returns for listed Norwegian companies with different degrees of financial flexibility during the period of Covid-19 restrictions. Contrary to previous research, our results show that financial flexibility had a negative effect on performance during the sell-off period. On stimulus day, we find no significant value. However, for the following recovery period, we find that financial flexibility positively affected abnormal stock returns for our data sample.

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1. Introduction

In March 2020, a new and unexpected virus first detected in China reached Norway, and on March 11th, 2020, the World Health Organization classified the outbreak as a pandemic (Tjernshaugen et al., 2021). To lower the spread of the virus, the government implemented various restrictions and enforced a massive lockdown (Helsedirektoratet, 2020). Such unexpected shocks to revenue and cash flow are a textbook example of what is expected that financially flexible firms should be able to deal with.

In an attempt to curb the negative economic impact of this shock, governments and central banks have stimulated the economy with expansionary fiscal policies (Lu, 2020). As a result, interest rates worldwide are lowered to zero or even negative rates, and major stimulus packages are distributed. The Norwegian government is without exception and distributed a total of NOK 135 billion on stimulus spending programs during 2020 (Finansdepartementet, 2021).

In this thesis, we will examine the value of having a financially flexible structure for a sample of Norwegian companies in response to the Covid-19 pandemic. To evaluate the value of financial flexibility, we run regressions on abnormal stock returns against numerical accounting data proxying for a firm's financial flexibility. Furthermore, we divide the sample into three distinct periods to examine the effect of financial flexibility before-, after- and the day the stimulus packages were first announced.

Previous shocks have affected the economy and the capital market in similar ways as the Covid-19 pandemic. As an example, Roberts (2009) studies the significance the 9/11 attack had on the economy. The author isolates the event's impact by analyzing how forecasts of US real GDP growth and unemployment rates changed in response to the attack, rather than analyzing the historical data. The article concludes that 9/11 had an economically significant negative immediate impact on the macroeconomy. The regression results show that the immediate impact on the real GDP growth for 2001 was between negative 0.4 percent and negative 0.54

percent. In addition, the results show that unemployment rates increased by 0.11 - 0.15 percent in an immediate reaction to the attack.

Subsequently, Roberts (2009) includes three war-related events in the regression analysis. The macroeconomic impact from the Gulf War and the 9/11 attack were significant and negative, while the impact from the invasion of Iraq in 2003 was not significantly different from zero. The explanation for this phenomenon can be attributed to the anticipation of the events. Unanticipated events will immediately affect the capital market, while anticipated events can be incorporated into the forecasts.

A more comparable event to the ongoing pandemic is the SARS outbreak in Taiwan in 2003. Both SARS and Covid-19 are fast spreading respiratory diseases, where infection control measures forced citizens to stay home, cancel trips and reduce spending habits (Chen et al., 2007; Petrosillo et al., 2020). This resulted in a massive decline in revenue for businesses. The hotel industry in Taiwan was one of the most affected sectors by the SARS outbreak, with a stock price decline of approximately 29 percent. Using an event study approach, Chen et al. (2007) analyzed the outbreak's impact by measuring the cumulative abnormal returns of hotel stocks ten days prior to the outbreak and comparing with returns from ten days after the outbreak had occurred. They concluded that the outbreak had an immediate negative impact on the Taiwanese hotel.

Sayed and Eledum (2021) used the same event study approach to study the Saudi Arabian stock market in response to the Covid-19 pandemic outbreak. According to this study, the announcement of the first confirmed Covid-19 case in China had a negative but not significant effect on the Saudi-Arabian stock market. However, the first confirmed Covid-19 case in Saudi Arabia had a negative and significant effect.

When sudden and unexpected cash flow shocks like these occur, having a financial flexible structure is considered to reduce the likelihood of financial failure (Yasir & Alabassi, 2020). Graham and Harvey (2001) performed qualitative research about the cost of capital, capital budgeting, and capital structure. They concluded that the most important driver for the firm's capital structure strategy, according to

American and European CFO's, is their desire to obtain and retain their financial flexibility.

Financial flexibility is defined as "... a measure of the adaptability of a business" (Koornhof, 1988). Meier et al. (2013) measure the firm's financial flexibility based on proxies such as cash and cash equivalents, short-term debt, total debt, and net debt. Similarly, Fahlenbrach et al. (2020) consider companies with more cash holdings, less debt, and less long-term debt over assets as more financially flexible. Meaning, financial flexibility represents how well a company can mobilize its financial resources in anticipation of an uncertain future (Byoun, 2011; Gamba & Triantis, 2008). Further, DeAngelo and DeAngelo (2007) show that low leverage is ex-ante optimal because it allows increasing leverage when capital needs arise, either in terms of unanticipated investment opportunities or in case of an earnings shortfall.

Oad Rajput et al. (2019) examined financial flexibility as a determinant of future stock returns, showing that an increase in financial flexibility is associated with lower stock returns for the subsequent period but higher investment growth opportunities. Furthermore, they argue that financially flexible firms have a higher Tobin's Q, are larger in size, and have greater cash holdings compared to less flexible firms. These characteristics make them better equipped to cope with cash flow shortages more effectively than firms with low flexibility.

Additionally, studies have found that when financial flexibility increases, the amount of dividend payouts increases for the subsequent period (King'wara, 2015; Kumar & Vergara-Alert, 2020). Companies will usually increase payouts when cash levels are high, debt is low, capital expenditures are low, and/or there are poor growth opportunities (Lie, 2005). Increasing payouts convey to stakeholders that the firm currently has excessive financial flexibility or that it is expected that operating cash flow will become stronger or more certain in the foreseeable future. Investors prefer a high dividend policy because such policy confers greater financial flexibility (DeAngelo & DeAngelo, 2007).

As an example of the value of financial flexibility during an external shock, Meier et al. (2013) studied whether companies with a high degree of financial flexibility prior to the 2008 financial crisis perform better during the crises. They measure financial flexibility as the average of the previous five years' amount of cash and cash equivalents, short-term- and long-term debt, and net debt. The performance is based on stock returns from September 2007 to March 2010. During this period, the study found no positive impact on firm value from high pre-crisis cash levels. However, high pre-crisis levels of debt negatively impacted firm value during the crisis period, according to this study.

Additionally, Bancel and Mittoo (2011) examined the value of financial flexibility during the global financial crisis of 2008 for listed French companies. However, they used questionnaire surveys and interviews with CFO's as their research method. With this method, they examined the crisis' impact on the firm's liquidity, capital structure, investments, and business operations for both private and publicly listed companies. Based on several financial flexibility variables from the survey data, they found that firms with a high degree of financial flexibility suffered a lower impact from the financial crisis than companies with a low degree of financial flexibility.

Furthermore, Arslan-Ayaydin et al. (2014) examined the impact of financial flexibility on the performance and investment opportunities of East Asian companies during 1994 - 2009. In this period, East Asian companies went through both the Asian crisis of 1997 and the global financial crisis of 2008. In addition, the long time period allows the study to examine the value of financial flexibility for both normal times and periods of crises. The study found financial flexibility important for both investment and performance during both crises, even though the effect is significantly lower during the global financial crisis compared to the Asian crisis. Interestingly, the researchers do not observe significant differences between financially flexible and inflexible companies during normal times regarding investment level and cash-flow sensitivity. Lastly, this study observes that the impact and value of financial flexibility may depend on the region and country the company operates in, which is probably due to different macroeconomic policies and various economic- and legal environments.

Fahlenbrach et al. (2020) researched the effects of a firm's financial flexibility on its stock prices and the credit risk reaction to the Covid-19 shock. As evident from the research, everything else equal, the revenue shortfall affects a firm's stocks and its credit default swap premiums less if the firm is more financially flexible. A similar result was reached by Bancel and Mittoo (2011), finding that firms with less flexible costs are affected more by exogenous shocks.

Using a sample of 1857 publicly listed non-financial US firms, Fahlenbrach et al. (2020) investigate the value of financial flexibility and compare their cumulative stock return for the period when the shock occurs to the day the market learned that approval of a stimulus package was likely. The researchers define a period that extends from February 3rd to March 23rd as the collapse period and March 24th as the stimulus day. The comparison of the cumulative stock returns during this collapse period evidenced that companies with a high degree of financial flexibility fell by 26 percent less than the companies with less financial flexibility. By regressing the stock returns on proxies for financial flexibility, they find significant evidence that firms with less short-term debt, more cash, and less long-term debt experience a lower stock price drop in response to the negative shock. The study also found that financially flexible firms benefited less on stimulus day than companies with low financial flexibility.

Yasir and Alabassi (2020) further validates Fahlenbrach et al. (2020)'s results. The pair bases their study on Verlekar and Kamat (2019)'s model to predict corporate financial failure caused by the Covid-19 pandemic. They used a combination of financial reports and publications issued by the Iraqi Stock Exchange, in addition to interviews with key stakeholders to detail workplace variables. A combination of debt capacity, cash, and net cash flow was used to evaluate financial flexibility. Furthermore, the Grover score (GS) was used to measure the likelihood of financial failure. Any increase in the financial flexibility increased the companies' GS, where a company with $GS \geq 0.01$ is considered not a failure (Verlekar & Kamat, 2019). After analyzing the data and hypotheses of the study, the most notable finding of the research was the need to increase the debt capacity and retain cash holdings to be able to face adverse shocks caused by abnormal circumstances.

Teng et al. (2021) focused on manufacturing companies listed on Taiwan Stock Exchange and analyzed the impact of financial flexibility on enterprise performance during Covid-19. Return on assets (ROA) was used as the measure of performance, and they defined financial flexibility as the sum of cash flexibility and debt flexibility. Cash flexibility was calculated as cash and cash equivalents divided by total assets, and debt flexibility as 1 - corporate debt ratio. By running regressions on ROA against their measure of financial flexibility, the study found a positive and significant impact of financial flexibility on overall enterprise performance for the sample companies during the Covid-19 pandemic.

Building on this, we contribute to the literature by examining the impact of financial flexibility on performance for a sample of Norwegian companies during the Covid-19 pandemic, as the impact on this market has not yet been researched. Consequently, by using a sample of Norwegian companies listed on the Oslo Stock Exchange (OSE) as a data basis, we will answer the following research question:

"Is there a difference in abnormal stock returns for listed Norwegian companies with different degrees of financial flexibility during the period of Covid-19-restrictions?"

We find that having more financial flexibility had a negative effect on cumulative abnormal returns in the period before the stimulus packages were announced, contradicting prior research on this topic. For this period, our results show that one standard deviation increase in financial flexibility resulted in a 4.76 percent lower cumulative abnormal return. A possible explanation for this contradiction is that the firms that we consider to be financially flexible had higher investment growth opportunities in advance of the shock and were consequently more affected by the sudden cash-flow shortfall, compared to the sample used by previous research. On the announcement day of the first stimulus package, we found no evidence that financial flexibility affected the performance. However, after the announcement day, our results indicate that financial flexibility positively affected abnormal returns, with one standard deviation increase in financial flexibility resulting in a 13.68 percent higher cumulative abnormal return, which is in line with our hypothesis.

This paper is organized as follows. In the following section, we introduce our hypotheses. In section 3, we elaborate on our data sample and how it has been collected. In section 4, we explain the research methodology used to investigate and answer our research question. In section 5, we list and describe the variables used in our regressions. In section 6, we present the descriptive statistics and correlations between our variables. The empirical results are presented and discussed in section 7. Finally, we conclude in section 8.

2. Hypotheses

To answer our research question, we will test three hypotheses that address different time periods.

2.1 Hypothesis 1

In response to a negative external shock, Bancel and Mittoo (2011) found that listed French firms with a high degree of financial flexibility suffered less than companies with a low degree of financial flexibility. Similarly, Arslan-Ayaydin et al. (2014) found that financial flexibility positively affected performance for East-Asian companies in response to two different external shocks. Furthermore, Fahlenbrach et al. (2020) found that listed US firms with more financial flexibility suffered less in response to the Covid-19 shock than companies with less financial flexibility. Building on these results, we expect financial flexibility to positively affect performance in response to the Covid-19 shock for listed Norwegian companies. Thus, our first hypothesis is as follows:

H_1: *"Companies with more financial flexibility perform better in response to the negative shock caused by the Covid-19 pandemic."*

2.2 Hypothesis 2

To curb the impact of the negative shock caused by the pandemic, the Norwegian government announced on March 13th a stimulus spending program (Regjeringen, 2020). Fahlenbrach et al. (2020) found that US listed companies with more financial flexibility benefited less compared to less flexible firms in response to the announcement of stimulus packages. Building on this, we expect a stimulus package from the Norwegian government to be more valuable for companies with less financial flexibility, as these are expected to suffer more in response to Covid-19. Hence, our second hypothesis is:

H2: *"Companies with more financial flexibility benefit less on stimulus day."*

2.3 Hypothesis 3

Even though we expect financially flexible companies to benefit less from news and expectations about stimulus packages, we hypothesize financial flexibility to be an important factor in a long period of uncertainties. Consequently, we will test our last hypothesis:

H3: *"Firms with more financial flexibility perform better during the recovery period."*

3. Data

In this section of our paper, we will elaborate in more detail on how we have gathered our data, what our data sample will consist of, and our screening process.

3.1 Data collection

As bad news descends into the financial market, we rely on the stock market's reaction and the government's response to evaluate the impact of the Covid-19 pandemic on companies with different levels of financial flexibility. Hence, we will investigate both numerical accounting data and stock returns.

Accounting information is collected using a combination of two databases: Proff Forvalt and Refinitiv Eikon. We retrieved yearly accounting data for the time period 2014 - 2019 for each company in our data sample. The stock returns are collected using the "STOCKHISTORY" function in Excel, retrieving historical financial data provided by Refinitiv. We collected daily stock returns for the event period, 21.02.2020 - 27.11.2020, and five years of monthly returns prior to the event period to estimate expected returns. In addition, we have extracted asset pricing data from Ødegaard (2021)'s website, which calculates asset pricing data for Oslo Stock Exchange (OSE) following Fama and French (1998)'s method.

3.2 Data screening and cleaning

We extract stock returns for every Norwegian company listed on OSE. I.e., we exclude companies headquartered outside of Norway. Furthermore, we require the companies to have public accounting information for at least five years prior to 2020 and daily stock returns for our sample period, 21.02.2020 - 27.11.2020. This gives us a sample of 168 companies before excluding outliers. Moreover, we detect and exclude extreme outliers in terms of cumulative abnormal returns as they may bring skewness to our data sample and mislead our statistical results. Thus, we exclude companies with the 2 percent highest and lowest cumulative abnormal returns for each period and end up with 153 sample companies.

4. Methodology

To investigate the value of financial flexibility during the recent pandemic, we follow Fama et al. (1969)'s construction of the event study approach. An *event study* is a statistical method used to analyze the impact of an event through changes in the stock price over a specific period of time (Ball & Brown, 1968).

We have identified March 13th, 2020, as the event day, as this day marks the announcement of the first stimulus package provided by the Norwegian government (Regjeringen, 2020). The *event window* is defined as the period the security prices are examined (MacKinlay, 1997). For our event of interest, the event window spans from the 21st of February to November 27th, 2020. To be able to examine the effect of financial flexibility before-, after-, and on the event day, we have divided the event window into three periods. Additionally, an estimation window of five years of returns before the event is used to estimate the expected returns. Next, we collect and screen the data and determine our final data sample. We started with 168 companies, which was reduced to 153 companies after excluding outliers. For each company within this sample, the actual returns are calculated as follows:

$$R_{i,t} = \frac{P_{i,t} + 1}{P_{i,t}} - 1$$

$R_{i,t}$ is the actual return for stock i at time t

$P_{i,t}$ is the stock price for stock i at time t

Furthermore, an event study measures the impact of an event in terms of abnormal returns (MacKinlay, 1997). *Abnormal return* is defined as the difference between the returns that would have been achieved if the event had not occurred (expected returns) and the actual returns that have occurred. A positive abnormal return indicates that the market believes that the event will increase the firm's value. Likewise, a negative abnormal return indicates that the market believes that the news will decrease the firm's value (Chen et al., 2007). To calculate abnormal returns, we use the following formula:

$$AR_{i,t} = R_{i,t} - E(R_{i,t})$$

$AR_{i,t}$ is the abnormal return for stock i at time t

$E(R_{i,t})$ is the expected return for stock i at time t

There exist several methods and models to calculate the expected return. In this thesis, the Carhart (1997) four-factor model is applied. This model builds on the Fama-French three-factor model, which again builds on the Capital Asset Pricing Model (CAPM) developed by Sharpe (1964), Lintner (1965), and Jensen et al. (1972). Carhart (1997) adds a fourth factor to the Fama-French three-factor model accounting for momentum (Fama & French, 1993). Adding variables to the estimation model should result in a more accurate estimation of expected returns. Hence, we apply the following four-factor model to measure the expected returns for each company as if the pandemic did not occur:

$$E(r_{i,t}) - r_{f,t} = \beta_0 + \beta_{1,i}(E(r_{m,t}) - r_{f,t}) + \beta_{2,i}SMB_t + \beta_{3,i}HML_t + \beta_{4,i}UMD_t + \varepsilon_{i,t}$$

$E(r_{i,t}) - r_{f,t}$ is the expected excess return of stock i at time t

$r_{f,t}$ is the risk-free rate at time t

$E(r_{m,t}) - r_{f,t}$ is the market risk premium at time t

SMB_t is the return on a diversified portfolio of small stocks minus the return on a diversified portfolio of big stocks at time t

HML_t is the difference between the returns on diversified portfolios of high and low book-to-market stocks at time t

UMD_t	is the difference between the returns on diversified portfolios of winners and losers (up minus down) at time t
$\varepsilon_{i,t}$	is the error term for stock i at time t

The coefficients are estimated by regressing five years of monthly excess returns of each stock against the corresponding market excess return, SMB-portfolio return, HML-portfolio return, and UMD-portfolio return, as reported in Table 8 in the appendix. Excess returns are calculated by subtracting the risk-free rate from the actual returns. Five years of monthly data is a general recommendation for calculating beta coefficients (Bartholdy & Peare, 2005). Multiplying these coefficients with daily factor returns for each day in our observation period gives us expected returns if the unexpected event did not occur. These returns are then deducted from the actual returns to obtain the daily abnormal returns.

Using abnormal returns of each day within our multiple-period event window, we can calculate the cumulative abnormal returns (CAR) (Sayed & Eledum, 2021). CAR is the sum of all abnormal returns and is used to evaluate the effect of certain events on the stock price (Chen et al., 2007). To calculate CAR, we use the following formula:

$$CAR_{i(t_1,t_2)} = \sum_{t=t_1}^{t_2} AR_{i,t}$$

To evaluate the relationship between the CARs and our selected proxies for financial flexibility, we regress the CARs on proxies for financial flexibility and other firm characteristics across the sample companies. CAR is the dependent variable regressed against three proxies for financial flexibility as independent variables. As we have a small sample size relative to the number of independent variables and control variables, we choose to run simple linear regressions for each independent variable and compare the slope coefficients and statistical significance. Furthermore, we investigate and compare the effect of financial flexibility across the different periods using multivariate cross-sectional regression and investigate whether companies that have built a financial flexible structure prior to the crisis perform differently than companies that lack this. With three dependent variables representing CARs before-, after- and the day the stimulus packages were first announced, we regress each dependent variable separately against the independent variables. Hence, the regression models used to test our hypotheses will be:

$$CAR_i = \beta_0 + \beta_1 \left(\frac{Cash}{Assets}\right)_i$$

$$CAR_i = \beta_0 + \beta_1 \left(\frac{ST\ debt}{Assets}\right)_i$$

$$CAR_i = \beta_0 + \beta_1 \left(\frac{LT\ debt}{Assets}\right)_i$$

In addition, we merge the proxies for financial flexibility (FF) into one variable giving us the following simple linear regression:

$$CAR_i = \beta_0 + \beta_1 FF_i$$

Where FF is calculated as:

$$FF = \frac{Cash}{Assets} + \left(1 - \left(\frac{ST\ debt}{Assets}\right)\right) + \left(1 - \left(\frac{LT\ debt}{Assets}\right)\right)$$

Furthermore, we add multiple control variables that we think may have had an effect on the returns, and run the following regressions:

$$CAR_i = \beta_0 + \beta_1 \left(\frac{Cash}{Assets}\right)_i + \beta_2 Payout\ ratio_i + \beta_3 EBITmargin_i + \beta_4 \left(\frac{CAPEX}{Assets}\right)_i + \beta_5 \left(\frac{COGS}{Sales}\right)_i + \beta_6 \left(\frac{SG\&A}{Sales}\right)_i + \beta_7 Investment\ grade_i + \beta_8 Payoutratio\ top\ quartile_i$$

$$CAR_i = \beta_0 + \beta_1 \left(\frac{ST\ debt}{Assets}\right)_i + \beta_2 Payout\ ratio_i + \beta_3 EBITmargin_i + \beta_4 \left(\frac{CAPEX}{Assets}\right)_i + \beta_5 \left(\frac{COGS}{Sales}\right)_i + \beta_6 \left(\frac{SG\&A}{Sales}\right)_i + \beta_7 Investment\ grade_i + \beta_8 Payoutratio\ top\ quartile_i$$

$$CAR_i = \beta_0 + \beta_1 \left(\frac{LT\ debt}{Assets}\right)_i + \beta_2 Payout\ ratio_i + \beta_3 EBITmargin_i + \beta_4 \left(\frac{CAPEX}{Assets}\right)_i + \beta_5 \left(\frac{COGS}{Sales}\right)_i + \beta_6 \left(\frac{SG\&A}{Sales}\right)_i + \beta_7 Investment\ grade_i + \beta_8 Payoutratio\ top\ quartile_i$$

$$CAR_i = \beta_0 + \beta_1 FF_i + \beta_2 Payout\ ratio_i + \beta_3 EBITmargin_i + \beta_4 \left(\frac{CAPEX}{Assets}\right)_i + \beta_5 \left(\frac{COGS}{Sales}\right)_i + \beta_6 \left(\frac{SG\&A}{Sales}\right)_i + \beta_7 Investment\ grade_i + \beta_8 Payoutratio\ top\ quartile_i$$

Where the dependent variable, CAR_i, is the cumulative abnormal return for stock i. $\left(\frac{Cash}{Assets}\right)_i$, $\left(\frac{ST\ debt}{Assets}\right)_i$, $\left(\frac{LT\ debt}{Assets}\right)_i$ and FF_i are the independent variables proxying for financial flexibility for stock i. $Payout\ ratio_i$, $EBITmargin_i$, $\left(\frac{CAPEX}{Assets}\right)_i$, $\left(\frac{COGS}{Sales}\right)_i$, $\left(\frac{SG\&A}{Sales}\right)_i$, $Investment\ grade_i$, and $Payoutratio\ top\ quartile_i$ are the control variables for stock i. We will run these regressions for our three distinct periods, where the dependent variable varies along with the CARs for the period investigated. In the subsequent section, we will further explain these variables.

5. Variables

In this section, we list and describe all the variables used in our regressions.

5.1 Dependent variable

Cumulative abnormal returns (CAR)

We will run regressions for three different time periods. The dependent variable for each regression will be the CAR for the given time period, namely CAR sell-off period, CAR stimulus day, and CAR recovery period. We define the *sell-off period* as the period extending from just before the capital markets started to react to the pandemic, February 21st, 2020, to the day before the first stimulus package from the Norwegian government was announced, March 12th, 2020. Consequently, March 13th is defined as *stimulus day* (Regjeringen, 2020). The following period from March 13th to November 27th, 2020, is what we define as the *recovery period*. November 27th is set as the end because this is the last day of available asset pricing data published by Ødegaard (2021).

5.2 Independent variables

The independent variables will be the same for each time period as they are based on fundamental accounting data reported prior to when the capital markets started to react to the current pandemic.

Cash-, Short-term debt-, and Long-term debt over assets

We follow Fahlenbrach et al. (2020) and Meier et al. (2013) and consider a firm to be financially flexible if it holds more cash over assets and less short-term debt- and long-term debt over assets. Hence, we will use those three proxies for financial flexibility as independent variables. Similar to the study conducted by Meier et al. (2013), we will use an average of each variable for five years prior to the negative shock to investigate the performance of companies that had built up financial flexibility before the Covid-19 pandemic occurred. In addition, we will merge the three proxies for financial flexibility into one variable named FF, as described in section 4.

5.3 Control variables

Payout ratio

Firms that pay dividends to their shareholders are typically profitable and mature companies with a greater proportion of earned equity (Denis & Osobov, 2008; Fama & French, 2001). In addition, firms that usually pay dividends have the ability to reduce or omit dividend payments to increase their financial flexibility, if necessary (Abdulkadir et al., 2015). Hence, we expect firms with high payout ratios prior to the shock to perform better than companies with low payout ratios when the shock occurs. Consequently, the payout ratio is included as a control variable when investigating the effect of financial flexibility, calculated as the average of a company's total dividends paid divided by its net income between 2014 and 2019. We also add a dummy variable taking the value 1 if the company's payout ratio is in the top quartile of the sample distribution and set to 0 otherwise.

EBIT-margin

We have included EBIT-margin as a control variable to our regression as we expect companies with high EBIT-margin prior to the pandemic to be better equipped to cope with a period of revenue shortfall than a company with low margins. Also here, we have calculated the variable based on a five-year average from 2014-2019.

Investment grade-rating

If a company is rated BBB- or better from Standard & Poor's or Fitch, the company is considered "investment grade", referring to the quality of the company's credit (FitchRatings, 2021; Global, 2021). We expect a company with an investment grade to have higher financial flexibility and thus perform better during the recent pandemic than a company rated below BBB-, namely "non-investment grade". Consequently, if the company is rated as investment grade or not is added as a control variable, taking the value 1 if the company is rated as "investment grade" and 0 if it is considered "non-investment grade".

CAPEX/Assets, COGS/Sales, and SG&A/Sales

Capital expenditures (CAPEX) are costs related to investments for growth or maintenance of the existing property, plants, and equipment. We follow Fahlenbrach et al. (2020) and expect that companies with more CAPEX relative to assets will find it more difficult to cut spending in a period of a sudden cash-flow shortfall and thus be more affected by the shock. Similarly, a company with more fixed costs relative to sales, such as selling, general, and administrative (SG&A), is expected to be more affected by the shock. On the other side, it is expected that firms with more variable costs relative to sales, such as the cost of goods sold (COGS), will suffer less from the shock. Like the other variables, these are based on the average of the five years prior to the pandemic. Hence, we control for these variables when investigating the effect of financial flexibility.

5.4 Financial constraint variables

We expect a firm that we consider financially flexible to be less financially constrained. Hence, we run similar regressions on common financial constraint measures to investigate how they affect performance in response to the shock. The three measurements we investigate (KZ-, WW-, and SA-index) use coefficients from regressions to predict if a firm is financially constrained or not.

The first measurement is constructed by Kaplan and Zingales (1997), commonly known as the KZ-index. The index presumes that a company is less financially constrained if it has a high cash flow, high cash, more dividends paid, low Tobin's Q, and less leverage. Kaplan and Zingales (1997) define this result as "...firms that appear less financially constrained exhibit significantly greater sensitivities than firms that appear more financially constrained". Meaning, with a low value of the measurement, it is presumed that the company is less financially constrained. The KZ-index is a linear combination of the following variables:

$$KZ = \left(-1.001909 \times \frac{CF}{K}\right) + (0.2826389 \times Q) + \left(3.139193 \times \frac{Debt}{Tot.\,cap.}\right) + \left(-39.3678 \times \frac{Div.}{K}\right) + \left(-1.314759 \times \frac{Cash}{K}\right)$$

CF	is the net income after taxes added the depreciation and amortization
K	is property, plant, and equipment lagged by one year
Q	is $\frac{total\ shareholders'\ equity + market\ captitalization}{total\ shareholders'\ equity} - \frac{total\ common\ equity + deferred\ taxes}{total\ shareholders'\ equity}$
$Debt$	is the total debt
$Tot.\,cap.$	is total liabilities and total equity
$Div.$	is the common dividends added preferred dividends
$Cash$	is cash and short-term investments

The subsequent measurement is constructed by Whited and Wu (2006), known as the WW-index. According to the index, a firm is considered more financially constrained if it has lower cash flow, if it does not pay dividends, if it has more long-term debt, if it has less assets, if its industry grows faster, and if the firm grows more slowly. Interestingly, cash is not a variable that is included in the measurements of the index. The WW-index is a linear combination of the following variables:

$$WW = (-0{,}091 \times CF) + (-0{,}062 \times DIVPOS) + (0{,}021 \times TLTD) + (-0{,}044 \times LNTA) + (0{,}102 \times ISG) + (-0{,}035 \times SG)$$

CF	is the ratio of cash flow to total assets
$DIVPOS$	is the dummy variable (value 1 if the firm pays cash dividends)
$TLTD$	is the ratio of the long-term debt to total assets
$LNTA$	is the natural logarithm of total assets
ISG	is the firm's ICB industry sales growth
SG	is the firm's sales growth

To calculate the industry sales growth, we have extracted accounting data for each Norwegian company available on Refinitiv Eikon and their corresponding ICB industry name. First, the revenue from each company within an industry is summed into total revenue for the corresponding industry. Then, the yearly change in revenue for each ICB industry is calculated to obtain each sample firm's ICB industry sales growth, needed to calculate the WW-index.

Lastly, we evaluate the Size-Age index of Hadlock and Pierce (2010), better known as the SA-index. Here, the authors only evaluate the size (log of assets) and the age (number of years the firm has been public) of the firm(s) and suggest that these two measurements present enough data to measure the financial constraints. According to this index, older and larger firms are less constrained than smaller and more recently established firms. Consequently, the SA-index is a combination of asset size and firm age:

$$SA = (-0{,}737 * Size) + 0{,}043 * Size^2 + (-0{,}040 * Age)$$

$Size$	is the logarithm of inflation-adjusted to book assets
Age	is the number of years the firm has been publicly listed with non-missing stock price

5.5 Robustness test variables

As alternative performance measures, we replace the dependent variable, CAR, with return on assets (ROA) and return on equity (ROE), for each regression. ROA is calculated as the company's net income relative to its total assets, and ROE equals net income divided by its shareholders' equity. These variables were extracted from the companies' Q1- and Q2 2020 financial statements using the Refinitiv Eikon database. As a result of missing data, the data sample for the robustness test was reduced from 154 companies down to 101. Similar to our initial hypothesis, we expect a company with more cash over assets and less debt over assets to perform better during both periods.

6. Descriptive statistics and correlations

Table 1: Descriptive statistics

This table displays descriptive statistics for all the dependent and independent variables included in our regressions. All the variables are outlined in section 5.

Variable	Obs	Mean	Std. Dev.	Min	Max
CAR Sell-off period	153	-0.364	0.22	-1.047	-0.004
CAR Stimulus day	153	0.034	0.067	-0.183	0.466
CAR Recovery period	153	0.197	0.458	-1.005	1.785
FF	153	1.555	0.381	0.717	2.65019
Cash / Assets	153	0.139	0.181	0.000	0.953
ST-debt / Assets	153	0.388	0.303	0.017	1.254
LT-debt / Assets	153	0.196	0.191	0.003	0.903
Payout ratio	153	0.188	1.504	-16.475	3.217
KZ-index	153	-510.617	2803.59	-31653.137	320.216
WW-index	153	-0.776	0.882	-11.319	0.000
SA-index	153	-1.685	1.327	-6.285	2.486
EBIT-margin	153	-19.409	174.307	-2121.213	0.928
CAPEX / Assets	153	0.116	0.393	0.000	4.081
COGS / Sales	153	25.116	302.249	0.000	3738.954
SG&A / Sales	153	15.717	87.326	0.000	886.326
Investment grade	153	0.516	0.501	0.000	1.000
Payout ratio top quartile	153	0.248	0.433	0.000	1.000

Here we report the descriptive statistics and correlations for our data sample. Table 1 reports descriptive statistics for all variables included in our dataset. From this table, we can see that the average firm has cash over assets of 13.9 percent. The average holding of short-term debt over assets is 38.8 percent, while the average holding of long-term debt over assets is 19.6 percent. The average firm holds a relatively large amount of short-term debt over the last five years compared to its cash holdings and long-term debt. The mean degree of FF is 1.555, and the average CARs in the sell-off period, on stimulus day, and for the recovery period were -36.4 percent, 3.4 percent, and 19.7 percent, respectively.

Table 2: Matrix of correlations

This table presents a correlation matrix between all the dependent and independent variables used in our regressions. All the variables are outlined in section 5.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) CAR Sell-off period	1.000																
(2) CAR Stimulus day	-0.174	1.000															
(3) CAR Recovery period	0.136	0.081	1.000														
(4) FF	-0.276	0.158	0.270	1.000													
(5) Cash / Assets	-0.279	0.285	0.266	0.714	1.000												
(6) ST-debt / Assets	0.306	-0.052	-0.093	-0.735	-0.318	1.000											
(7) LT-debt / Assets	-0.199	0.036	-0.139	-0.156	0.025	-0.419	1.000										
(8) Payout ratio	-0.070	0.015	-0.001	-0.084	-0.078	0.088	-0.045	1.000									
(9) KZ-index	-0.084	-0.051	-0.133	-0.171	-0.234	0.007	0.109	-0.020	1.000								
(10) WW-index	-0.076	0.038	0.101	-0.064	0.018	0.063	0.044	-0.003	0.040	1.000							
(11) SA-index	0.010	-0.224	-0.283	-0.380	-0.399	0.211	0.047	0.059	0.059	-0.038	1.000						
(12) EBIT-margin	0.178	-0.031	0.037	-0.194	-0.182	0.111	0.039	0.018	-0.005	0.058	0.062	1.000					
(13) CAPEX / Assets	-0.157	0.128	-0.139	0.001	0.064	-0.057	0.148	-0.040	0.037	-0.085	-0.203	0.021	1.000				
(14) COGS / Sales	-0.090	0.015	-0.108	0.111	0.016	-0.083	-0.075	-0.010	0.015	0.019	-0.013	0.007	0.109	1.000			
(15) SG&A / Sales	-0.232	0.208	-0.057	0.248	0.290	-0.138	-0.003	0.014	0.015	0.032	-0.097	-0.235	0.176	0.813	1.000		
(16) Investment grade	0.294	-0.040	0.037	-0.056	-0.012	0.181	-0.186	-0.001	-0.084	0.078	0.106	0.107	-0.118	0.078	-0.033	1.000	
(17) Payout ratio top quartile	0.166	-0.015	0.014	-0.018	-0.039	0.011	-0.017	0.351	-0.103	0.019	0.060	0.065	-0.081	-0.047	-0.027	0.284	1.000

Table 2 presents the correlations among all variables included in our regressions. The correlations among the variables proxying for financial flexibility are relatively low, but some negative correlations are noticed. Short-term debt and long-term debt are negatively correlated by 41.9 percent. This indicates that firms with high levels of short-term debt have lower amounts of long-term debt and vice versa. The correlation between short-term debt over assets and cash over assets is -0.318. Furthermore, cash over assets is negatively correlated with the SA-index by 39.9 percent. There are no noticeably high correlations between financial flexibility proxies and any of the other firm characteristics reported. There is little correlation between the financial constraint indices.

We test for multicollinearity using the Variance Inflation Factor (VIF)-command in Stata. All independent variables have a VIF value of less than 5, which indicates no multicollinearity between the independent variables (Hill et al., 2018).

We perform a Breusch-Pagan / Cook-Weisberg test for heteroskedasticity in Stata to detect heteroskedasticity between our variables. The test indicates a sign of heteroskedasticity in our data sample. However, heteroskedasticity often arises when using cross-sectional data and is not necessarily restricted for this type of regression (Hill et al., 2018).

To test whether our residuals are normally distributed, we plot a standardized normal probability graph, a histogram, and a kernel density estimate. Based on this, the residuals reasonably follow a normal distribution and fulfill the residual normality assumption. Furthermore, by plotting the residuals, they seem to be fairly randomly distributed around zero, and the assumption of strict exogeneity is fulfilled.

7. Empirical results

Figure 1: Evolution of actual stock returns for groups based on degree of financial flexibility

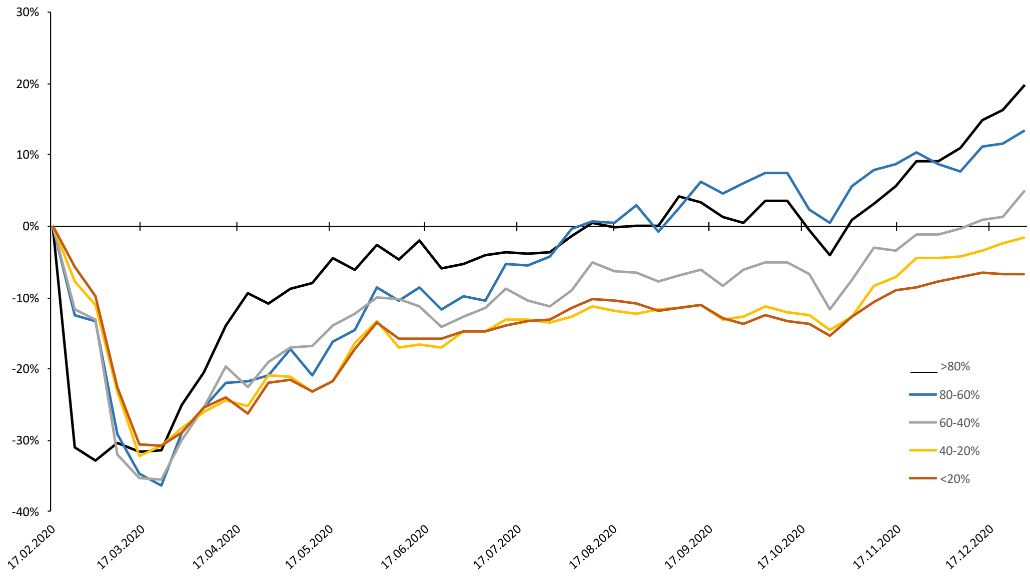

Figure 1 plots the actual stock performance of equal-weighted portfolios consisting of companies based on their degree of financial flexibility. This graph visualizes that the companies with the 80 percent highest financial flexibility experienced a rapid sell-off when the shock first hit the market but recovered faster and to a higher level than the other companies after reaching their bottom. On the other hand, the companies with the 20 percent lowest financial flexibility experienced a similar sell-off and actually performed slightly better than the other portfolios for the period 21.02 - 13.03. However, this portfolio has the lowest return for the recovery period. Towards the end of the sample period, it seems like the performance is increasing along with the companies' financial flexibility. However, correlation does not imply causation, and we cannot conclude that the variation in performance is due to variations in financial flexibility merely based on this graph.

7.1 Financial flexibility and abnormal returns

To validate the visual finding described above, we run regressions on abnormal stock returns against variables that proxy for financial flexibility to test the relationship between the variables and their significance.

Table 3: Abnormal stock returns and financial flexibility measures

The table displays regression coefficients from regressions of CARs against our different variables that proxy for financial flexibility. Columns (1) to (3) show coefficients for regressions with cash over assets as the independent variable. Columns (4) to (6) presents coefficients for regressions with short-term debt over assets as the independent variable. Columns (7) to (9) presents regression coefficients where long-term debt over assets was used as the independent variable. Lastly, columns (10) to (12) presents regression coefficients where all the variables are combined into a total measure of financial flexibility. Each independent variable is regressed against CARs for three different time periods, where the columns show coefficients for CAR in the sell-off period, on stimulus day, and for the recovery period, respectively. All variables are outlined in section 5.

	(1) CAR Sell-off period	(2) CAR Stimulus day	(3) CAR Recovery period	(4) CAR Sell-off period	(5) CAR Stimulus day	(6) CAR Recovery period	(7) CAR Sell-off period	(8) CAR Stimulus day	(9) CAR Recovery period	(10) CAR Sell-off period	(11) CAR Stimulus day	(12) CAR Recovery period
Cash /	-0.340***	0.106***	0.675***									
Assets	(-3.57)	(3.66)	(3.40)									
ST-debt /				0.222***	-0.0115	-0.141						
Assets				(3.95)	(-0.64)	(-1.15)						
LT-debt /							-0.229**	0.0128	-0.335*			
Assets							(-2.50)	(0.45)	(-1.73)			
FF										-0.159***	0.0279*	0.324***
										(-3.52)	(1.97)	(3.44)
Cons	-0.316***	0.0197***	0.103**	-0.450***	0.0389***	0.251***	-0.319***	0.0319***	0.262***	0.262***	0.262***	0.262***
	(-14.64)	(2.98)	(2.28)	(-16.26)	(4.38)	(4.17)	(-12.70)	(4.07)	(4.97)	(4.97)	(4.97)	(4.97)
N	153	153	153	153	153	153	153	153	153	153	153	153

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Columns (1) to (3) in Table 3 show coefficients for the first proxy for financial flexibility, cash over assets, for each period. We find that the coefficient for cash over assets is significant but negative for the sell-off period. On stimulus day, the coefficient is positive and significant. This implies that a firm that held one standard deviation of cash over assets more than another firm had a lower CAR in the sell-off period by 6.15 percent, and a 1.92 percent higher abnormal return on stimulus day. For the recovery period reported in column (3), we can see that the coefficient is significant and positive. A one standard deviation increase in cash over assets corresponds to a 12.22 percent higher CAR for this period.

Columns (4) to (6) show coefficient estimates for short-term debt over assets, our second proxy for financial flexibility. Column (4) shows the coefficient for the sell-off period, which is positive and significant. One standard deviation increase in short-term debt over assets resulted in a 6.73 percent higher CAR for the sell-off period. For the subsequent periods, reported in columns (5) and (6), the coefficients for short-term debt over assets are negative but insignificant.

The coefficients for our last proxy for financial flexibility, long-term debt over assets, are reported in columns (7) to (9). For the sell-off period, reported in column (7), this variable had a negative relationship with abnormal returns. This coefficient is significant, implying that a firm with one standard deviation larger portion of long-term debt over assets resulted in a 4.37 percent lower CAR in the sell-off period. For the stimulus day, the coefficient is positive but insignificant. The coefficient is significantly negative for the recovery period, implying that one standard deviation increase in long-term debt over assets is associated with a 6.40 percent lower CAR in the recovery period.

Lastly, columns (10) to (12) display coefficients for FF. As reported in column (10), the coefficient is negative and significant for the sell-off period. A one standard deviation increase in FF resulted in a 6.06 percent decrease in CAR for the sell-off period. On stimulus day, the coefficient is positive and significant, and one standard deviation increase in FF implies a 1.06 percent increase in CAR. The coefficient estimate is significantly positive for the recovery period, indicating that one standard deviation increase in FF is associated with a 12.34 percent higher CAR for the recovery period

Table 4: Abnormal stock returns, financial flexibility measures, and control variables

The table presents the same regressions as in Table 3 but includes control variables that potentially affect the regression results. All variables are outlined in section 5.

	(1) CAR Sell-off period	(2) CAR Stimulus day	(3) CAR Recovery period	(4) CAR Sell-off period	(5) CAR Stimulus day	(6) CAR Recovery period	(7) CAR Sell-off period	(8) CAR Stimulus day	(9) CAR Recovery period	(10) CAR Sell-off period	(11) CAR Stimulus day	(12) CAR Recovery period
Cash / Assets	-0.271***	0.0601*	0.789***									
	(-2.64)	(1.83)	(3.46)									
ST-debt / Assets				0.181***	-0.00510	-0.182						
				(3.30)	(-0.29)	(-1.43)						
LT-debt / Assets							-0.173*	-0.00432	-0.344*			
							(-1.95)	(-0.15)	(-1.71)			
FF										-0.125***	0.0159	0.359***
										(-2.80)	(1.10)	(3.61)
Payout ratio	-0.0194*	0.00121	0.00573	-0.0211*	0.000747	0.00241	-0.0181	0.000586	-0.00491	-0.0200*	0.00104	0.00732
	(-1.67)	(0.33)	(0.22)	(-1.84)	(0.20)	(0.09)	(-1.55)	(0.16)	(-0.19)	(-1.72)	(0.28)	(0.28)
EBIT-margin	0.0000966	0.0000464	0.000208	0.0000681	0.0000484	0.000249	0.000108	0.0000482	0.000261	0.0000652	0.0000510	0.000298
	(0.94)	(1.42)	(0.91)	(0.67)	(1.46)	(1.05)	(1.03)	(1.45)	(1.11)	(0.63)	(1.54)	(1.31)
CAPEX / Assets	-0.0505	0.0120	-0.165*	-0.0468	0.0116	-0.171*	-0.0391	0.0119	-0.148	-0.0555	0.0125	-0.151
	(-1.19)	(0.88)	(-1.75)	(-1.12)	(0.85)	(-1.76)	(-0.90)	(0.87)	(-1.52)	(-1.31)	(0.92)	(-1.61)
COGS / Sales	0.0000141	-0.0000924*	-0.0000687	0.000130	-0.000117***	-0.000399*	0.000105	-0.000118***	-0.000440*	0.0000930	-0.000113**	-0.000299
	(0.13)	(-2.66)	(-0.28)	(1.31)	(-3.63)	(-1.74)	(1.02)	(-3.63)	(-1.91)	(0.92)	(-3.49)	(-1.34)
SG&A / Sales	-0.000343	0.000396***	-0.000347	-0.000764**	0.000501***	0.000997	-0.000767**	0.000504***	0.00118	-0.000603	0.000474***	0.000418
	(-0.85)	(3.08)	(-0.39)	(-2.15)	(4.32)	(1.21)	(-2.11)	(4.34)	(1.43)	(-1.64)	(4.02)	(0.51)
Investment grade	0.102***	0.00208	0.0166	0.0723**	0.00441	0.0609	0.0822**	0.00352	0.0163	0.0909***	0.00418	0.0477
	(2.91)	(0.19)	(0.21)	(2.07)	(0.39)	(0.75)	(2.31)	(0.31)	(0.20)	(2.62)	(0.37)	(0.62)
Payoutratio top quartile	0.0621	-0.00473	-0.00606	0.0794*	-0.00618	-0.0329	0.0712*	-0.00573	-0.0124	0.0703*	-0.00625	-0.0298
	(1.47)	(-0.35)	(-0.06)	(1.90)	(-0.45)	(-0.34)	(1.67)	(-0.42)	(-0.13)	(1.67)	(-0.46)	(-0.32)
Cons	-0.377***	0.0215**	0.110*	-0.471***	0.0302***	0.263***	-0.370***	0.0293***	0.275***	-0.214***	0.00377	-0.356**
	(-13.54)	(2.43)	(1.77)	(-14.99)	(2.94)	(3.60)	(-11.52)	(2.86)	(3.78)	(-2.91)	(0.16)	(-2.18)
N	153	153	153	153	153	153	153	153	153	153	153	153

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4 presents regression estimates on the same variables as in Table 3 but control for other variables that potentially affect the difference in returns, as discussed in section 5.3. We include the payout ratio as we expect firms that pay dividends to be of such characteristics that they are well equipped to cope with a sudden cash-flow shortfall. We expect firms with a higher payout ratio over the five years prior to the shock to perform better during the sell-off period and recovery period, and benefit less on stimulus day. Columns (1), (4), and (10) show that the payout ratio coefficient is slightly negative and significant for the sell-off period. EBIT-margin adds no information. However, the coefficient for CAPEX over assets is negative and significant for the recovery period, as shown in columns (3) and (6). Columns (5), (8), and (11) show significant coefficients for SG&A over sales and COGS over sales on stimulus day. Additionally, column (2) shows a significant coefficient for SG&A over sales on stimulus day. In line with our expectations for stimulus day, COGS has a slightly negative coefficient, and SG&A has a slightly positive coefficient. Further, a dummy variable that indicates if the company has an investment grade is included. Columns (1), (4), (7), and (10) show that investment grade has a significant and positive coefficient in the sell-off period. These companies are better able to cope with a sudden cash-flow shortfall as they have easy access to external funds, which yields lower risk to shareholders. For the other periods, having an investment grade adds no information. Lastly, we add a dummy variable for companies with the 25 percent highest payouts over the previous five years. For the sell-off period, columns (4), (7), and (10) show a significant positive coefficient for this variable. However, this variable is not statistically different from zero on stimulus day and for the recovery period.

Controlling for these variables leads to minor changes in the regression results for the independent variables, compared to the results in Table 3. Column (1) reports coefficients for cash over assets in the sell-off period, showing a significant but negative relationship between cash over assets and CAR. This implies that one standard deviation increase in cash over assets resulted in a 4.91 percent decrease in CAR. Column (4) shows that CAR in the sell-off period is positively affected by short-term debt over assets. A one standard deviation increase in short-term debt over assets resulted in a 5.48 percent increase in CAR. Furthermore, in column (7), we see that CAR in the sell-off period is significant and negative, indicating that a one standard deviation increase in long-term debt over assets is associated with a

3.30 percent decrease in CAR. Although the latter is in line with our hypothesis, the results from the two previous proxies contradict our hypothesis. Finally, when combining the three proxies, column (10) shows a negative and significant coefficient for FF, contradicting our first hypothesis that companies with more financial flexibility perform better during the sell-off period. Our results show that one standard increase in financial flexibility resulted in a 4.76 percent lower CAR for this period.

Our second hypothesis expects a firm that is considered more financially flexible to benefit less from the first announcement of stimulus packages. Column (2) in Table 4 presents the regression coefficients for cash over assets on stimulus day. Column (5) and (8) shows coefficients for short-term debt and long-term debt, respectively. The coefficient for cash over assets is positive and significant, whereas short-term debt- and long-term debt over assets are negative but insignificant. This indicates that a company that held one standard deviation more cash over assets experienced a 1.09 percent higher CAR on stimulus day. In addition, when regressing CAR on stimulus day against FF, column (11) shows that the coefficient is positive but insignificant. Hence, we find no evidence that financial flexibility affected companies' abnormal returns on stimulus day.

Our third hypothesis is about the recovery period after the first stimulus package was announced. We expect financial flexibility to be positively related to CAR during this period. Column (3) in Table 4 presents coefficient estimates for cash over assets during the recovery period, which is positive and significant. This implies that one standard deviation increase in cash over assets resulted in a 14.28 percent higher CAR for this period. The coefficient for short-term debt over assets is negative but insignificant, whereas long-term debt is negative and significant, as shown in columns (6) and (9). One standard deviation increase in long-term debt over assets resulted in a 6.57 percent lower CAR. However, column (12) presents coefficients for FF, which is positive and significant at all significance levels. This indicates that one standard deviation higher degree of FF resulted in 13.68 percent higher CAR for the recovery period. Consequently, based on the regression coefficient and t-statistics in column (12), we find that higher financial flexibility leads to a lower abnormal return in the recovery period.

Similar studies that have focused on other markets found performance to be positively affected by financial flexibility in the period prior to the first stimulus package were announced (Fahlenbrach et al., 2020; Teng et al., 2021). This contradicts our findings, as we have found that financial flexibility negatively affected CARs for the sell-off period. However, we find a positive and significant coefficient for companies with a payout ratio in the top quartile of the distribution. This may indicate that companies that do not regularly pay dividends held more cash prior to the shock. Such companies typically use their cash to pay off their debt, repurchase shares, and/or invest in growth opportunities such as new assets, R&D, acquisitions, or employees, instead of paying dividends to shareholders (DeAngelo & DeAngelo, 2007). Additionally, Oad Rajput et al. (2019) finds that an increase in financial flexibility is associated with higher investment growth opportunities. Thus, a possible explanation for the negative coefficient is that planned investments expected to be realized by the shareholders were no longer reasonable when the unanticipated revenue shortfall occurred. Consequently, we theorize that these funds had to be re-allocated to more essential expenses to maintain the business. As the stock market is based on expectations about the future, companies with more FF experienced lower CARs during this period.

On stimulus day, the effect of having a financially flexible structure prior to the shock is not significant. However, we see a positive and significant coefficient for the recovery period. The latter is in line with our initial hypothesis, and it is also well corresponding with our explanation of why FF negatively affected CAR in the sell-off period. This is because the same growth expectations and investment opportunities that were diminished during the sell-off period are now somewhat restored as a result of the stimulus packages.

Although our initial thoughts and hypotheses have not been in accordance with the results, we must consider that the financial market is complex. It can be inefficient, and it can overreact or underreact to news and shocks. Additionally, Arslan-Ayaydin et al. (2014) find in their study that the value and impact of financial flexibility may depend on the country the company operates in due to various macroeconomic policies, economic-, and legal environments.

7.2 Financial constraints and abnormal returns

In this section, we report how financial constraint measures affect the stock performance during the same periods as investigated earlier. We do so by running the same regressions as in Table 3 but replacing the dependent variables proxying for financial flexibility with three common financial constraints measures. We expect the financial constraint measures to affect the stock performance in the opposite direction of what we expected from our financial flexibility measure. Hence, we expect a firm considered financially constrained to perform worse during the sell-off period and recovery period, and benefit more on stimulus day.

Table 5: Abnormal stock returns and financial constraint measures

The table presents results from regressions where the independent variables from Table 4 are replaced with financial constraint measures. All variables are outlined in section 5.

	(1) CAR Sell-off period	(2) CAR Stimulus day	(3) CAR Recovery period	(4) CAR Sell-off period	(5) CAR Stimulus day	(6) CAR Recovery period	(7) CAR Sell-off period	(8) CAR Stimulus day	(9) CAR Recovery period
KZ-index	-0.00000391	-0.00000138	-0.0000207						
	(-0.66)	(-0.74)	(-1.55)						
WW-index				-0.0255	0.00188	0.0421			
				(-1.35)	(0.31)	(0.99)			
SA-index							-0.0116	-0.00884**	-0.112***
							(-0.90)	(-2.21)	(-4.08)
Payout ratio	-0.0166	0.000654	-0.00157	-0.0168	0.000629	-0.00187	-0.0162	0.00102	0.00306
	(-1.40)	(0.18)	(-0.06)	(-1.43)	(0.17)	(-0.07)	(-1.37)	(0.28)	(0.12)
EBIT-margin	0.0000907	0.0000478	0.000228	0.000102	0.0000469	0.000207	0.0000916	0.0000486	0.000237
	(0.86)	(1.45)	(0.97)	(0.97)	(1.41)	(0.87)	(0.87)	(1.49)	(1.06)
CAPEX / Assets	-0.0487	0.0119	-0.165*	-0.0548	0.0121	-0.160	-0.0562	0.00642	-0.236**
	(-1.12)	(0.87)	(-1.70)	(-1.26)	(0.88)	(-1.63)	(-1.28)	(0.47)	(-2.50)
COGS / Sales	0.000127	-0.000117***	-0.000392*	0.000118	-0.000117***	-0.000382	0.000134	-0.000111***	-0.000320
	(1.24)	(-3.63)	(-1.71)	(1.16)	(-3.61)	(-1.65)	(1.31)	(-3.49)	(-1.46)
SG&A / Sales	-0.000828**	0.000502***	0.00106	-0.000785**	0.000500***	0.000992	-0.000860**	0.000478***	0.000744
	(-2.26)	(4.35)	(1.28)	(-2.14)	(4.30)	(1.20)	(-2.33)	(4.18)	(0.94)
Investment grade	0.0925**	0.00336	0.0326	0.0972***	0.00356	0.0337	0.0957***	0.00527	0.0579
	(2.60)	(0.30)	(0.41)	(2.74)	(0.32)	(0.42)	(2.69)	(0.48)	(0.76)
Payoutratio top quartile	0.0649	-0.00662	-0.0323	0.0664	-0.00578	-0.0193	0.0675	-0.00553	-0.0167
	(1.50)	(-0.49)	(-0.33)	(1.55)	(-0.43)	(-0.20)	(1.57)	(-0.41)	(-0.18)
Cons	-0.409***	0.0281***	0.195***	-0.429***	0.0299***	0.234***	-0.428***	0.0135	0.00957
	(-15.80)	(3.45)	(3.36)	(-14.29)	(3.15)	(3.44)	(-12.67)	(1.28)	(0.13)
N	153	153	153	153	153	153	153	153	153

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5 presents the regression coefficients on abnormal returns against the three financial constraint measures. Columns (1) to (6) show no significant relationship between the KZ-index or the WW-index on cumulative returns for any of the periods. Similarly, column (7) presents no significant effect on CAR from the SA-index in the sell-off period. However, columns (8) and (9) show evidence that financially constrained firms, according to the SA-index, performed worse on stimulus day and during the recovery period. The latter supports our initial expectations that financially constrained firms performed worse during the recovery period. On the other hand, less constrained firms have better access to external financing, which makes them better equipped to cope with uncertainties and make use of investment opportunities. A one standard deviation increase in the SA-index is associated with 1.17 and 14.86 percent lower CAR on stimulus day and for the recovery period, respectively.

7.3 Robustness tests

As we have reached results that are not in line with previous literature, we have conducted robustness tests to test our data further and validate our results. Table 6 and Table 7 presents regression coefficients on alternative performance indicators, ROA and ROE, against the same variables as in Table 4. We regress these measures for the 1st- (Q1) and 2nd quarter (Q2) of 2020. The results are compared with results from our predefined sell-off- and recovery period, respectively. Odd-numbered columns present performance for Q1 2020 and even-numbered columns for Q2 2020.

Table 6: Return on assets and financial flexibility measures

The table presents results from regressions where the dependent variables from Table 4 are replaced with ROA as a performance indicator. All odd-numbered columns display results for ROA in Q1 2020, and all even-numbered columns display results for ROA in Q2 2020. All variables are outlined in section 5.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA
	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2
Cash /	-0.162***	0.00602						
Assets	(-3.17)	(0.21)						
ST-debt /			0.0332	0.00357				
Assets			(1.37)	(0.28)				
LT-debt /					0.0133	-0.0273		
Assets					(0.37)	(-1.46)		
FF							-0.0589***	0.00825
							(-2.79)	(0.72)
Payout	-0.00897	0.00278	-0.00229	0.00231	-0.000792	0.00257	-0.00668	0.00331
ratio	(-0.64)	(0.36)	(-0.16)	(0.30)	(-0.05)	(0.34)	(-0.47)	(0.43)
EBIT-	0.000100	0.000663*	0.000163	0.000642*	0.000294	0.000651*	0.00000431	0.000696**
margin	(0.16)	(1.93)	(0.25)	(1.86)	(0.45)	(1.93)	(0.01)	(2.02)
CAPEX /	-0.0451	-0.000271	-0.0474	0.000857	-0.0562	0.00330	-0.0453	-0.00122
Assets	(-1.31)	(-0.01)	(-1.31)	(0.04)	(-1.54)	(0.17)	(-1.30)	(-0.06)
COGS /	0.00167	0.000612	0.00138	0.000656	0.00120	0.000519	0.00200	0.000512
Sales	(0.98)	(0.65)	(0.78)	(0.70)	(0.67)	(0.56)	(1.15)	(0.54)
SG&A /	-0.0000448	-0.000446	-0.000423	-0.000446	-0.000332	-0.000424	-0.000421	-0.000423
Sales	(-0.07)	(-1.34)	(-0.67)	(-1.34)	(-0.53)	(-1.30)	(-0.70)	(-1.28)
Investment	-0.00664	0.0220***	-0.0138	0.0219***	-0.0109	0.0207***	-0.0107	0.0220***
grade	(-0.47)	(2.82)	(-0.94)	(2.81)	(-0.73)	(2.68)	(-0.75)	(2.85)
Payoutratio	0.0382*	0.0136	0.0338	0.0143	0.0300	0.0145	0.0380*	0.0129
top quartile	(1.93)	(1.25)	(1.64)	(1.31)	(1.45)	(1.35)	(1.90)	(1.18)
Cons	0.00177	-0.0143**	-0.0246	-0.0153*	-0.0141	-0.00814	0.0753**	-0.0260
	(0.15)	(-2.15)	(-1.61)	(-1.88)	(-1.00)	(-1.11)	(2.27)	(-1.44)
N	101	101	101	101	101	101	101	101

t statistics in parentheses

$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 7: Return on equity and financial flexibility measures

The table presents results from regressions where the dependent variables from Table 4 are replaced with ROE as a performance indicator. All odd-numbered columns display results for ROE in Q1 2020, and all even-numbered columns display results for ROE in Q2 2020. All variables are outlined in section 5.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ROE	ROE	ROE	ROE	ROE	ROE	ROE	ROE
	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2
Cash / Assets	-0.391	-1.357						
	(-1.02)	(-1.20)						
ST-debt / Assets			0.464***	-0.0551				
			(2.76)	(-0.11)				
LT-debt / Assets					0.0360	1.131		
					(0.14)	(1.50)		
FF							-0.456***	-0.601
							(-3.03)	(-1.31)
Payout ratio	-0.216**	0.00109	-0.218**	0.0723	-0.197*	0.0659	-0.242**	0.00924
	(-2.05)	(0.00)	(-2.17)	(0.23)	(-1.89)	(0.22)	(-2.41)	(0.03)
EBIT-margin	-0.00120	-0.00353	-0.00253	-0.00172	-0.000736	-0.00174	-0.00296	-0.00486
	(-0.26)	(-0.26)	(-0.56)	(-0.12)	(-0.16)	(-0.13)	(-0.66)	(-0.35)
CAPEX / Assets	-0.247	0.0217	-0.169	-0.0696	-0.274	-0.191	-0.198	0.0373
	(-0.95)	(0.03)	(-0.67)	(-0.09)	(-1.05)	(-0.25)	(-0.80)	(0.05)
COGS / Sales	0.00963	0.00195	0.0117	-0.00275	0.00853	0.00225	0.0149	0.00627
	(0.75)	(0.05)	(0.95)	(-0.07)	(0.66)	(0.06)	(1.21)	(0.17)
SG&A / Sales	-0.000757	-0.000742	-0.00278	-0.00294	-0.00145	-0.00359	-0.00217	-0.00406
	(-0.17)	(-0.06)	(-0.64)	(-0.22)	(-0.32)	(-0.27)	(-0.50)	(-0.31)
Investment grade	-0.0332	0.114	-0.0768	0.0765	-0.0432	0.133	-0.0380	0.0821
	(-0.31)	(0.37)	(-0.75)	(0.24)	(-0.41)	(0.43)	(-0.38)	(0.27)
Payoutratio top quartile	0.341**	0.835*	0.371**	0.763*	0.322**	0.745*	0.382***	0.848*
	(2.30)	(1.91)	(2.59)	(1.74)	(2.17)	(1.73)	(2.68)	(1.94)
Cons	0.0186	0.173	-0.199*	0.0856	-0.0205	-0.173	0.657***	0.947
	(0.20)	(0.65)	(-1.87)	(0.26)	(-0.20)	(-0.59)	(2.79)	(1.31)
N	101	101	101	101	101	101	101	101

t statistics in parentheses

$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Following the results in Table 4, column (1) in Table 6 shows a negative and significant coefficient for cash over assets. Columns (3) and (5) present positive but insignificant coefficients for both short-term- and long-term debt. In column (7), we see a negative and significant relationship between FF and ROA during the first quarter of 2020, contradicting our first hypothesis. For Q2, there are no significant relationships for any of the independent variables.

When ROE is used as the dependent variable, the relationship between cash over assets is insignificant for both periods, as reported in columns (1) and (2) in Table 7. Column (3) shows a significant coefficient for short-term debt, while column (4) does not have a significant coefficient for this variable. The difference from Table 6, which shows no significance for short-term debt, may be due to ROE being a measure of profitability in relation to shareholders' equity and ROA in relation to total assets. However, the coefficients for long-term debt are insignificant, as reported in columns (5) and (6). Further, column (7) displays a negative and significant coefficient for FF, corresponding with the results from Table 6. This is also in line with our findings for the recovery period in Table 4, showing that having a financial flexible structure prior to the shock results in a lower CAR.

A possible reason that FF has a negative effect in the first quarter may be due to what we consider high financially flexible firms typically being growth companies (Goedhart et al., 2006). On the basis that growth companies pay less or no dividends, the positive and significant coefficient for companies with a payout ratio in the top quartile of the distribution, as presented in column (7) in Tables 6 and 7, supports this assertion. Although we believe that financial flexibility should be beneficial when dealing with negative shocks, the results indicate that the impact from the Covid-19 pandemic may have been too substantial for these companies and resulted in a lower income compared to assets and equity. On the other hand, mature and profitable companies are less affected as they have easier access to external funding when facing such revenue shocks and have the opportunity to reduce or omit their regular dividend payments (Abdulkadir et al., 2015; Bougheas, 2004; DeAngelo & DeAngelo, 2007).

8. Conclusion

In this paper, we examine the value of financial flexibility for listed Norwegian companies during the Covid-19 pandemic. Based on Fahlenbrach et al. (2020) and Meier et al. (2013), a firm is considered financially flexible when it holds more cash, less short-term, and less long-term debt. We researched accounting data for the period between 2014 - 2019 and have used the five-year average of each variable proxying for financial flexibility to evaluate if a firm has built a financially flexible structure prior to the shock. CARs for each company are calculated and used as a dependent variable in our regressions to examine the effect of financial flexibility variables on firm performance. To examine the effect before and after stimulus packages from the government were announced, we run three regressions for periods we define as the sell-off period, stimulus day, and recovery period.

Previous research has concluded that firms considered financially flexible have been less affected by the Covid-19 shock. Interestingly, we have not been able to reach the same conclusion for our data sample. In contrast to our hypothesis, we find that more cash over assets had a negative effect on CAR for the sell-off period, while more short-term debt over assets had a positive effect. However, long-term debt affected CAR negatively. On stimulus day, we found that more cash over assets had a positive effect on abnormal returns. All the other variables are insignificant on this day. We think a reason behind this contradicting result is that the firms that we consider financially flexible had higher investment growth opportunities prior to the shock and were consequently more affected than the sample used by previous research.

However, in line with our hypothesis, our results indicate that financial flexibility positively affected abnormal returns during the recovery period, with short-term debt as the only insignificant variable. Moreover, firms considered financially constrained according to the SA-index have performed significantly worse on stimulus day and during the recovery period. Similar results for the sell-off period were obtained when ROA and ROE for Q1 2020 replaced CAR as the dependent variable.

We contribute to the literature on financial flexibility by providing empirical evidence on the impact of having a financial flexible structure for listed Norwegian companies in response to the Covid-19 pandemic. Compared to previous research, this study has a relatively small sample size due to a limited number of suitable Norwegian companies listed on OSE, which may have affected our findings. A broader selection of sample size could be beneficial to validate our results further, and we would thus suggest future research to include all listed Scandinavian-based companies.

In conclusion, we find significant differences in abnormal stock returns for listed Norwegian companies with different degrees of financial flexibility during the period of Covid-19 restrictions. Our results show that financial flexibility had a negative effect on performance during the sell-off period and a positive effect during the recovery period. A one standard deviation increase in financial flexibility resulted in a 4.76 percent lower CAR in the sell-off period and a 13.68 percent higher CAR in the recovery period. However, we found no significant impact of financial flexibility on stimulus day.

9. Reference list

Abdulkadir, R. I., Abdullah, N. A. H., & Woei-Chyuan, W. (2015). Dividend policy changes in the pre-, mid-, and post-financial crisis: evidence from the Nigerian stock market. *Asian Academy of Management Journal of Accounting & Finance, 11*(2), 103-126. http://eprints.usm.my/40036/1/aamjaf110215_05.pdf

Arslan-Ayaydin, Ö., Florackis, C., & Ozkan, A. (2014). Financial flexibility, corporate investment and performance: evidence from financial crises. *Review of Quantitative Finance and Accounting, 42*(2), 211-250. https://link.springer.com/content/pdf/10.1007/s11156-012-0340-x.pdf

Ball, R., & Brown, P. (1968). An Empirical Evaluation of Accounting Income Numbers. *Journal of Accounting Research, 6*(2), 159-178. https://doi.org/10.2307/2490232

Bancel, F., & Mittoo, U. R. (2011). Financial flexibility and the impact of the global financial crisis. *International Journal of Managerial Finance, 7*(2), 179-216. https://doi.org/10.1108/17439131111122157

Bartholdy, J., & Peare, P. (2005). Estimation of expected return: CAPM vs. Fama and French. *International Review of Financial Analysis, 14*(4), 407-427. https://doi.org/10.1016/j.irfa.2004.10.009

Bougheas, S. (2004). Internal vs External Financing of R&D. *Small Business Economics, 22*(1), 11-17. https://doi.org/10.1023/B:SBEJ.0000011569.79252.e5

Byoun, S. (2011). Financial flexibility and capital structure decision. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1108850

Carhart, M. M. (1997). On Persistence in Mutual Fund Performance. *The journal of finance, 52*(1), 57-82. https://doi.org/10.1111/j.1540-6261.1997.tb03808.x

Chen, M.-H., Jang, S. S., & Kim, W. G. (2007). The impact of the SARS outbreak on Taiwanese hotel stock performance: an event-study approach. *International Journal of Hospitality Management, 26*(1), 200-212. https://doi.org/10.1016/j.ijhm.2005.11.004

DeAngelo, H., & DeAngelo, L. (2007). Capital structure, payout policy, and financial flexibility. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=916093

Denis, D. J., & Osobov, I. (2008). Why do firms pay dividends? International evidence on the determinants of dividend policy. *Journal of financial economics, 89*(1), 62-82. https://doi.org/10.1016/j.jfineco.2007.06.006

Fahlenbrach, R., Rageth, K., & Stulz, R. M. (2020). How valuable is financial flexibility when revenue stops? Evidence from the COVID-19 crisis. *National Bureau of Economic Research*(w27106). https://www.nber.org/system/files/working_papers/w27106/w27106.pdf

Fama, E. F., & French, K. R. (1993). Common risk factors in the returns on stocks and bonds. *Journal of financial economics, 33*(1), 3-56. https://doi.org/10.1016/0304-405X(93)90023-5

Fama, E. F., & French, K. R. (1998). Value versus Growth: The International Evidence. *The journal of finance, 53*(6), 1975-1999. http://www.jstor.org.ezproxy.library.bi.no/stable/117458

Fama, E. F., & French, K. R. (2001). Disappearing dividends: changing firm characteristics or lower propensity to pay? *Journal of financial economics, 60*(1), 3-43. https://doi.org/10.1016/S0304-405X(01)00038-1

Finansdepartementet. (2021). *Revidert nasjonalbudsjett 2021* (Prop. St. 2 (2020-2021)). https://www.regjeringen.no/contentassets/34570d00a82b444196de2c36a9efb993/no/pdfs/stm202020210002000dddpdfs.pdf

FitchRatings. (2021). *Rating Definitions*. FitchRatings. Retrieved June 11 from https://www.fitchratings.com/products/rating-definitions

Gamba, A., & Triantis, A. (2008). The Value of Financial Flexibility. *The journal of finance, 63*(5), 2263-2296. https://doi.org/10.1111/j.1540-6261.2008.01397.x

Global, S. P. (2021). *Intro to Credit Ratings*. S&P Global Ratings. Retrieved June 11 from https://www.spglobal.com/ratings/en/about/intro-to-credit-ratings

Goedhart, M. H., Koller, T., & Rehm, W. (2006). Making capital structure support strategy. *The McKinsey Quarterly*. https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/making-capital-structure-support-strategy

Graham, J. R., & Harvey, C. R. (2001). The theory and practice of corporate finance: evidence from the field. *Journal of financial economics, 60*(2), 187-243. https://doi.org/10.1016/S0304-405X(01)00044-7

Hadlock, C. J., & Pierce, J. R. (2010). New Evidence on Measuring Financial Constraints: Moving Beyond the KZ Index. *The Review of Financial Studies, 23*(5), 1909-1940. https://doi.org/10.1093/rfs/hhq009

Helsedirektoratet. (2020, March 12). *Helsedirektoratet har vedtatt omfattende tiltak for å hindre spredning av Covid-19*. Helsedirektoratet. https://www.helsedirektoratet.no/nyheter/helsedirektoratet-har-vedtatt-omfattende-tiltak-for-a-hindre-spredning-av-covid-19

Hill, R. C., Griffiths, W. E., & Lim, G. C. (2018). *Principles of econometrics* (5th ed.). John Wiley & Sons.

Jensen, M. C., Black, F., & Scholes, M. S. (1972). The capital asset pricing model: Some empirical tests. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=908569

Kaplan, S. N., & Zingales, L. (1997). Do Investment-Cash Flow Sensitivities Provide Useful Measures of Financing Constraints?*. *The Quarterly Journal of Economics, 112*(1), 169-215. https://doi.org/10.1162/003355397555163

King'wara, R. (2015). The relationship between financial flexibility and dividend payouts: A case of listed firms in Kenya. *European Journal of Business and Management, 7*(3), 51-58.

Koornhof, C. (1988). Financial flexibility and the assessment of future cash flows. *Investment Analysts Journal, 17*(31), 13-19. https://doi.org/10.1080/10293523.1988.11082268

Kumar, A., & Vergara-Alert, C. (2020). The Effect of Financial Flexibility on Payout Policy. *Journal of Financial and Quantitative Analysis, 55*(1), 263-289. https://blog.iese.edu/vergara/files/2018/03/Financial_Flex_Payout_Policy.pdf

Lie, E. (2005). Financial flexibility, performance, and the corporate payout choice. *The Journal of Business, 78*(6), 2179-2202. https://doi.org/10.1086/497043

Lintner, J. (1965). Security Prices, Risk, and Maximal Gains From Diversification. *The journal of finance, 20*(4), 587-615. https://doi.org/10.2307/2977249

Lu, M. (2020, May 20). How Global Central Banks are Responding to COVID-19, in One Chart. *Visual Capitalist*.

https://www.visualcapitalist.com/global-central-banks-policy-response-covid-19/

MacKinlay, A. C. (1997). Event Studies in Economics and Finance. *Journal of Economic Literature, 35*(1), 13-39. http://www.jstor.org/stable/2729691

Meier, I., Bozec, Y., & Laurin, C. (2013). Financial flexibility and the performance during the recent financial crisis. *International Journal of Commerce and Management, 23*(2), 79-96. https://doi.org/10.1108/10569211311324894

Oad Rajput, S. K., Wongchoti, U., Chen, J., & Faff, R. (2019). Is Financial Flexibility a Priced Factor in the Stock Market? *Financial Review, 54*(2), 345-375. https://doi.org/10.1111/fire.12170

Ødegaard, B. A. (2021, April 1). *Asset pricing data at OSE*. https://ba-odegaard.no/financial_data/ose_asset_pricing_data/index.html

Petrosillo, N., Viceconte, G., Ergonul, O., Ippolito, G., & Petersen, E. (2020). COVID-19, SARS and MERS: are they closely related? *Clinical Microbiology and Infection, 26*(6), 729-734. https://doi.org/10.1016/j.cmi.2020.03.026

Regjeringen. (2020, March 13). *Regjeringens strakstiltak for å dempe de økonomiske virkningene av koronaviruset* Regjeringens strakstiltak for å dempe de økonomiske virkningene av koronaviruset, Statsministerens kontor, Glacisgata 1. https://www.regjeringen.no/no/aktuelt/regjeringens-strakstiltak-for-a-dempe-de-okonomiske-virkningene-av-koronaviruset/id2693442/

Roberts, B. W. (2009). The Macroeconomic Impacts of the 9/11 Attack: Evidence from Real-Time Forecasting. *Peace Economics, Peace Science and Public Policy, 15*(2), 341-367. https://doi.org/doi:10.2202/1554-8597.1166

Sayed, O. A., & Eledum, H. (2021). The short-run response of Saudi Arabia stock market to the outbreak of COVID-19 pandemic: An event-study methodology. *International Journal of Finance & Economics*. https://doi.org/10.1002/ijfe.2539

Sharpe, W. F. (1964). Capital asset prices: a theory of market equilibrium under conditions of risk. *The journal of finance, 19*(3), 425-442. https://doi.org/10.1111/j.1540-6261.1964.tb02865.x

Teng, X., Chang, B.-G., & Wu, K.-S. (2021). The Role of Financial Flexibility on Enterprise Sustainable Development during the COVID-19 Crisis—A

Consideration of Tangible Assets. *Sustainability, 13*(3), 1245. https://www.mdpi.com/2071-1050/13/3/1245/htm

Tjernshaugen, A., Hiis, H., Bernt, J. F., & Braut, G. S. (2021, June 8). *Koronavirus-pandemien 2020-2021*. Store norske leksikon. https://sml.snl.no/koronavirus-pandemien_2020-2021

Verlekar, R. P., & Kamat, M. S. (2019). Recalibration and Application of Springate, Zmijewski and Grover Bankruptcy Models in Indian Banking Sector. *Business Analytics & Intelligence, 7*(2), 19-27. https://www.tuhin.ai/images/IJBAI-October-2019.pdf#page=25

Whited, T. M., & Wu, G. (2006). Financial Constraints Risk. *The Review of Financial Studies, 19*(2), 531-559. https://doi.org/10.1093/rfs/hhj012

Yasir, M. H., & Alabassi, Z. M. (2020). The role of financial flexibility in facing the financial failure caused by the corona pandemic: an analytical study of a sample of companies listed on the iraqi stock exchange. *Journal of Critical Reviews, 7*(10), 1589-1600. https://www.researchgate.net/profile/Mohanad-Yasir/publication/343152067_THE_ROLE_OF_FINANCIAL_FLEXIBILITY_IN_FACING_THE_FINANCIAL_FAILURE_CAUSED_BY_THE_CORONA_PANDEMIC_AN_ANALYTICAL_STUDY_OF_A_SAMPLE_OF_COMPANIES_LISTED_ON_THE_IRAQI_STOCK_EXCHANGE/links/5f194fde45851515ef41b7b5/THE-ROLE-OF-FINANCIAL-FLEXIBILITY-IN-FACING-THE-FINANCIAL-FAILURE-CAUSED-BY-THE-CORONA-PANDEMIC-AN-ANALYTICAL-STUDY-OF-A-SAMPLE-OF-COMPANIES-LISTED-ON-THE-IRAQI-STOCK-EXCHANGE.pdf

10. Appendix

Table 8: Carhart four-factor model results

Company	Intercept	Mkt-Rf	SMB	HML	UMD
Norsk Hydro ASA	-0,00252	1,02678	0,01034	0,31411	-0,07354
Bonheur ASA	0,00613	0,65405	0,36357	0,42599	-0,29793
Borgestad ASA	-0,03668	1,72431	0,22243	0,27754	0,64308
Reach Subsea ASA	-0,01982	1,16108	0,15502	-0,23370	-0,22882
Orkla ASA	-0,00010	0,24874	0,20894	-0,24477	0,18500
Belships ASA	0,00331	0,54063	-0,21730	0,46526	0,08012
Gyldendal ASA	0,00906	0,00411	-0,00862	0,01223	0,00059
Wilh Wilhelmsen Holding ASA	-0,00969	0,71983	0,53148	0,14940	-0,09994
Dno ASA	-0,00197	1,18864	-0,47474	0,41792	-0,75597
Olav Thon Eiendomsselskap ASA	0,00182	0,52019	-0,13581	-0,07892	0,04715
Goodtech ASA	-0,01916	0,63922	-0,21978	-0,18124	0,05216
Tomra Systems ASA	0,01952	0,36222	0,00647	-0,18572	-0,16716
Atea ASA	0,00759	0,27828	0,05345	0,02186	0,15791
Veidekke ASA	0,00720	0,44186	0,29592	-0,15836	-0,16174
NRC Group ASA	0,01299	0,45848	0,69222	-0,44842	-0,29286
Sparebanken Ost	0,00249	0,16423	0,06410	0,19593	-0,05912
Odfjell SE	-0,00613	0,17403	0,19696	0,28914	-0,21618
Sparebanken More	0,00266	0,29008	0,26882	0,21230	0,04624
ABG Sundal Collier Holding ASA	-0,00634	0,60499	0,50475	0,45337	-0,03316
Arendals Fossekompani ASA	0,00543	0,45407	0,34800	0,13093	0,08227
Nts ASA	0,01299	0,19740	0,38312	-0,05311	-0,15077
Voss Veksel og Landmandsbank ASA	0,00442	0,15348	-0,12370	-0,04916	-0,10228
Schibsted ASA	-0,00005	0,38281	-0,55144	-0,38565	0,13280
Dnb ASA	-0,00096	1,10419	0,31746	0,35257	-0,02957
Storebrand ASA	-0,00271	1,08715	0,98806	0,42714	0,04490
Kongsberg Gruppen ASA	-0,00422	0,75325	0,08557	0,13663	-0,03078
Sparebank 1 SMN	0,00541	0,55122	0,24265	0,20591	-0,21185
Sparebank 1 Nord-Norge	0,00564	0,56080	0,28154	0,25247	0,06655
Sparebank 1 BV	0,00426	0,30907	0,29277	0,32729	0,08013
Sparebanken Vest	0,00372	0,32083	0,37428	0,41312	0,07143
Nekkar Asa	-0,02290	0,17743	-0,20745	-0,07640	0,52996
Sandnes Sparebank	0,00100	0,22336	0,57246	0,68999	-0,21296
Scana ASA	-0,01989	0,50683	-0,30733	0,97834	-0,33234
Totens Sparebank	0,01086	0,24522	0,29841	0,30329	-0,08846
Nordic Semiconductor ASA	-0,00303	1,32641	-0,14958	-0,16115	0,05685
Sparebank 1 Ringerike Hadeland	0,00616	0,08426	0,04138	-0,08671	-0,06886
Sogn Sparebank	0,01088	-0,16115	0,14509	0,25663	-0,03546
Hexagon Composites ASA	0,00008	0,91823	0,94682	0,47266	-0,34897
PETROLIA SE	-0,01848	0,61113	-0,63006	-0,00293	0,23018
Mowi ASA	0,00350	0,47541	0,21537	-0,24828	0,40823
Byggma ASA	0,01319	0,29183	0,14386	0,33074	0,47788
Af Gruppen ASA	0,00277	0,39613	0,23528	-0,43914	0,15020
Kitron ASA	0,01313	0,77646	0,76339	-0,26402	-0,16434

Table 8 (continued): Carhart four-factor model results

Company	Intercept	Mkt-Rf	SMB	HML	UMD
Sparebanken Sor	-0,00073	0,14862	0,44816	0,33826	0,23422
Aurskog Sparebank	0,00207	-0,06487	0,02918	-0,04463	0,09178
Skue Sparebank	0,00914	0,31708	0,12326	0,11909	0,10512
Melhus Sparebank	-0,00119	0,18594	0,17772	-0,01656	0,00608
Itera ASA	0,00574	0,83110	0,69100	-0,02584	0,16047
Holand og Setskog Sparebank	-0,00206	0,34265	0,09842	0,00596	0,16560
Sparebank 1 Helgeland	0,00170	0,66954	0,37528	0,22285	0,02076
Solon Eiendom ASA	-0,03614	0,97669	-0,51587	-0,85957	-0,08406
Photocure ASA	0,00042	0,69242	-0,23113	-0,53606	0,67014
Dof ASA	-0,08119	2,91921	0,39637	0,91491	-0,58271
Telenor ASA	0,00533	0,01824	-0,96799	-0,23635	0,04942
Strongpoint ASA	0,00431	0,17467	0,71467	-0,09562	-0,08135
Equinor ASA	-0,00556	1,39281	0,43016	0,22631	-0,32973
Arribatec Solutions ASA	-0,05510	1,37720	1,24552	0,25485	-0,68333
Q-Free ASA	-0,01083	0,58375	0,48836	0,41522	-0,31892
Carasent ASA	-0,02631	0,24323	-1,17290	-1,47189	1,03541
Leroy Seafood Group ASA	0,00641	0,56824	0,09475	-0,09401	0,25811
Techstep ASA	-0,02554	-0,03933	0,61618	0,42450	-0,08756
Otello Corporation ASA	-0,02655	0,78031	-0,46014	-0,63049	-0,24939
Yara International ASA	-0,00281	1,21356	-0,23651	-0,02563	-0,07174
Akastor ASA	-0,01450	1,48799	0,27336	1,03520	0,06732
Medistim ASA	0,01908	0,19761	0,46773	0,00543	0,47396
Nel ASA	0,03733	0,06734	-0,88531	-0,46377	0,07831
Aker ASA	-0,00833	2,13763	0,45682	-0,06363	0,30726
Magnora ASA	-0,02709	1,08588	0,52924	0,26460	0,17553
GC Rieber Shipping ASA	-0,02631	0,66632	-0,04147	0,29608	0,22546
Havila Shipping ASA	-0,10087	2,31039	2,54276	0,62521	-0,20274
Eidesvik Offshore ASA	-0,02920	0,82138	-0,10933	-0,05261	-0,24365
American Shipping Company ASA	-0,00355	0,25103	0,46667	0,46555	-0,17991
Sparebank 1 Ostfold Akershus	0,01121	0,11550	0,53726	0,28635	0,03763
Navamedic ASA	0,00446	-0,01349	0,65922	0,29839	-0,13248
SEABIRD EXPLORATION PLC	-0,12737	2,52930	1,32675	0,77703	-1,40589
REC Silicon ASA	-0,03204	1,07016	0,19459	0,37630	-0,61930
Austevoll Seafood ASA	0,00359	0,53702	0,37165	0,12792	0,30362
Akva Group ASA	0,01112	0,50143	0,45988	-0,13607	0,32274
Norwegian Property ASA	0,00884	-0,11243	-0,25762	-0,03237	0,14128
Oceanteam ASA	-0,04661	1,58870	1,70404	0,99807	-0,37762
Electromagnetic Geoservices ASA	-0,06735	2,01101	0,82540	1,16432	-0,06784
Jaeren Sparebank	0,00994	0,13072	0,24560	0,25457	0,01013
SalMar ASA	0,01037	0,47790	0,29643	-0,48428	0,30531
Protector Forsikring ASA	0,00492	0,57636	0,10474	-0,16354	-0,13384
Grieg Seafood ASA	0,00916	0,86541	0,58782	-0,08506	0,30059
Norwegian Energy Company ASA	-0,01629	1,02189	2,09260	1,07948	-0,85355
Polaris Media ASA	0,01125	-0,41275	-0,38413	-0,13429	-0,27281
Aker BP ASA	0,00526	1,98487	0,89632	0,19011	-0,15657
Panoro Energy ASA	-0,00780	2,24233	1,02859	1,16325	-0,72608

Table 8 (continued): Carhart four-factor model results

Company	Intercept	Mkt-Rf	SMB	HML	UMD
Wallenius Wilhelmsen ASA	-0,00868	0,91200	0,69040	0,54871	-0,26498
Bouvet ASA	0,00933	0,80708	0,68815	0,09349	0,16285
Gjensidige Forsikring ASA	-0,00039	0,35211	0,13840	-0,20253	-0,00218
Norway Royal Salmon ASA	0,00905	1,11160	0,74195	-0,02940	0,43638
Sparebank 1 SR Bank ASA	-0,00096	0,82070	0,70112	0,43895	0,09123
Selvaag Bolig ASA	0,00909	0,67353	0,41062	-0,08059	0,14166
Borregaard ASA	0,00945	0,37329	0,07303	0,07264	0,14691
Ocean Yield ASA	-0,00322	0,66921	-0,35249	-0,26992	0,17089
Insr Insurance Group ASA	-0,02083	-0,00406	-0,18946	-0,02067	-0,51371
Zalaris ASA	-0,00555	0,63784	0,38921	0,12523	-0,02356
Aqualisbraemar Loc ASA	-0,00725	0,28135	-0,08230	0,71045	-0,04542
Aker Solutions ASA	-0,02139	1,81158	0,48297	0,40096	-0,45509
Scatec ASA	0,02266	0,20370	-0,00159	-0,40284	-0,26474
XXL ASA	-0,02860	0,94421	0,17931	-0,20795	-0,13357
Entra ASA	0,00515	0,24182	-0,20583	-0,19428	0,09949
Thin Film Electronics ASA	-0,05448	1,81563	0,77814	0,64887	-1,22172
Nordic Nanovector ASA	-0,02741	1,54097	1,65988	0,45328	0,92420
Idex Biometrics ASA	-0,08043	3,19355	1,17393	-0,87030	1,54397
Multiconsult ASA	-0,01392	0,49011	0,36786	-0,19844	0,05316
Europris ASA	-0,00510	0,33815	-0,09152	-0,14522	-0,03974
Kid ASA	0,00669	0,04659	-0,02751	0,02915	-0,01016
Sbanken ASA	-0,00385	0,98293	0,44694	0,08104	0,15604
Next Biometrics Group ASA	-0,08404	2,86325	2,42265	-0,85525	-0,45724
B2holding ASA	-0,01228	1,13501	0,91811	-0,00735	0,03468
Norwegian Finans Holding ASA	0,01031	1,17272	-0,47868	-0,25973	0,43434
Arcus ASA	-0,00285	-0,05659	0,04962	0,02633	-0,00098
Pareto Bank ASA	-0,03501	0,44978	-0,48125	0,81501	-0,42615
Targovax ASA	-0,03455	1,90039	1,15295	0,28331	0,26068
Bergenbio ASA	-0,01268	0,62680	0,89561	0,04734	0,28128
Sparebank 1 Ostlandet	-0,00032	0,30920	0,02151	0,06571	0,04676
Fjord1 ASA	0,00426	0,23481	-0,18451	0,12630	-0,18099
Infront ASA	-0,00182	-0,14324	0,01569	-0,03492	0,19391
Sparebank 1 Nordvest	-0,00231	0,08065	0,09538	-0,00971	0,06166
Webstep ASA	-0,00543	0,37393	0,28688	0,12517	0,07670
Crayon Group Holding ASA	0,01445	0,51750	0,51279	0,04870	-0,18197
Komplett Bank ASA	0,00465	0,87496	-0,01594	0,05172	-0,06565
Elkem ASA	-0,01636	1,15751	0,79572	0,05698	0,03331
PCI Biotech Holding ASA	-0,01304	1,82043	3,11205	0,68661	0,57037
Magseis Fairfield ASA	-0,05444	-0,74190	1,06433	0,30590	-0,65632
Polight ASA	-0,00370	0,68553	0,47719	0,64982	-0,07859
Vistin Pharma ASA	-0,01662	1,02954	0,62497	-0,13880	0,12724
Sparebanken Telemark	0,00155	0,02226	0,05182	0,01971	-0,03651
Hunter Group ASA	-0,01185	1,38275	1,57857	1,97741	-0,54791
Nordic Mining ASA	-0,01587	0,89681	0,34381	0,21319	-0,63855
Philly Shipyard ASA	-0,02602	0,13595	0,02874	-0,18064	0,23200
Aqua Bio Technology ASA	-0,03895	0,85554	-0,25008	-0,13428	-0,07901

Table 8 (continued): Carhart four-factor model results

Company	Intercept	Mkt-Rf	SMB	HML	UMD
Nattopharma ASA	-0,02040	0,71508	0,47474	0,08839	0,27850
North Energy ASA	-0,02179	0,81585	1,50994	0,55886	-0,16461
Saga Pure ASA	-0,01427	0,97653	0,05029	-0,02430	0,48033
Awilco LNG ASA	-0,01421	0,83657	0,35239	0,87606	-0,78016
Aega ASA	-0,04636	0,30341	-0,13623	-0,46003	-0,91020
EAM Solar ASA	-0,01355	-0,44514	0,82160	0,54753	-0,97369
Vow ASA	0,03925	0,33975	-0,06206	0,58331	-0,21890
Pioneer Property Group ASA	-0,00121	0,03702	-0,01925	-0,03753	0,02774
Induct AS	-0,04486	1,95045	0,18802	0,07701	0,82402
Black Sea Property AS	-0,02064	0,05580	-0,86287	-0,06845	-0,27830
Aasen Sparebank	-0,00147	0,10082	-0,34292	-0,11483	-0,08670
Gentian Diagnostics AS	-0,00108	0,23111	0,16423	0,07215	0,09297
Grong Sparebank	-0,00053	-0,03934	-0,01536	-0,01792	0,01572
Lillestrom Sparebank	0,00051	0,07823	-0,00801	-0,01500	0,01716
Tysnes Sparebank	0,00059	0,00033	-0,05582	-0,03067	-0,00259
Sunndal Sparebank	-0,00138	-0,04412	-0,06903	-0,01406	-0,03111
Atlantic Sapphire ASA	-0,02041	0,80441	0,64587	-0,46673	-0,55554
Lifecare AS	0,00719	-0,15964	0,85736	0,40491	0,25647

BI Norwegian Business School - Preliminary Thesis Report

The value of financial flexibility, evidence from listed Norwegian companies during the Covid-19 pandemic.

Hand in Date:
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Campus:
BI Oslo

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Master of Science in Business

Major:
Accounting and Business Control

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Preliminary thesis report

Research topic

In March 2020 a new and unexpected virus, first detected in China, reached Norway for the first time, and the World Health Organization classified the outbreak as a pandemic (Tjernshaugen et al., 2020). This resulted in a massive lock-down, which again had a huge negative impact on the economy. Various restrictions from the government as an attempt to lower the spread of infection is still ongoing. Such unexpected shocks to revenues and cash-flows is a textbook example of what is expected that financial flexible firms should be able to deal with.

Building on this, our thesis will focus on how well financially flexible firms actually have coped with the challenges during this ongoing Covid-19 pandemic. We wish to further investigate how much of an effect financial flexibility has helped or harmed companies during this period.

So, with everything in mind, our research question will be:
"Is there a difference in stock returns, in the period of Covid-19-restrictions, for listed Norwegian companies with a high degree of financial flexibility versus low flexibility?"

Current state

The capital markets and the corona-pandemic

As an attempt to curb the negative economic impact from this shock in demand, governments and central banks are stimulating the economy with an expansionary fiscal policy (Lu, 2020). Interest rates around the world are lowered to zero or even negative rates, and major stimulus packages are dispersed. The Norwegian government is without exception, and it is estimated that the government used 131 billion NOK on stimulus spending programs during 2020 (Prop. 56 S. (2020-2021), p. 6). Even though bankruptcies caused by the pandemic are still expected to occur, fewer companies filed for bankruptcy in 2020 than for 2019 (Fjærli & Hoang, 2020). Despite ongoing infection control measures and uncertainties, stock markets have already recovered from their losses, due to the mentioned stimulus spending programs and positive news about a coronavirus-vaccine (Brunborg & Stave, 2020). As an example, Oslo Børs Benchmark Index increased by 4.56 percent during 2020. However, this does not mean that every company has recovered from their losses, and the pandemic affected some sectors more than others. It is also tempting to believe that differences in performance in the recovery period is due to each company's ability to adapt and react to such contingencies.

Financial flexibility

Graham and Harvey (2001) performed a qualitative research about the cost of capital, capital budgeting, and capital structure. The researchers reached the conclusion that the most important driver for the firm's capital structure strategy, according to American and European CFO's, is their desire to obtain and retain their financial flexibility, as this reduces the likelihood of financial failure when negative cash flow shocks occur (Yasir & Alabassi, 2020).

Financial flexibility is defined as "... a measure of the adaptability of a business." (Koornhof, 1988). Meier et al. (2013) measure the firm's financial flexibility based on proxies such as cash and cash equivalents, short-term debt, total debt and net debt. Similarly, Fahlenbrach et al. (2020) considers companies with more cash holdings, less debt, and less long-term debt over assets as more financially flexible. Meaning, financial flexibility is a representation of how well a company is able to mobilize its financial resources when anticipating an uncertain future (Byoun, 2011; Gamba & Triantis, 2008).

Furthermore, studies have found that when financial flexibility increases, the amount of dividend payouts decreases for the subsequent period (King'wara, 2015; Oad Rajput et al., 2019). When cash levels are high, debt is low, capital expenditures are low, and/or there are poor growth opportunities, companies will usually increase payouts (Lie, 2005). Increasing payouts conveys stakeholders that the firm currently has excessive financial flexibility, or that it is expected that operating cash flow will become stronger or more certain in the foreseeable future.

Literature review

Financial flexibility and the performance during financial crises

Previous research has examined the value and the effect of firms financial flexibility, with evidence from other periods of exogenous negative shocks in cash flow and investment opportunities.

Meier et al. (2013) studied the value of financial flexibility during the financial crisis of 2008, investigating whether companies with financial flexibility prior to the crisis perform better during the crisis. They measure financial flexibility as the average of the previous five years' amount of cash and cash-equivalents, short-term debt and long-term debt, and net debt. The results are based on stock returns for a time period from September 2007 to March 2010, and during this time period the study found no positive impact on firm value from high pre-crisis levels of cash. However, high pre-crisis levels of debt resulted in a negative impact on firm value during the crisis period, according to this study.

The value of financial flexibility during the global financial crisis of 2008 is also examined using questionnaire surveys and interviews with CFO’s. Bancel and Mittoo (2011) used this approach to examine the crisis’ impact on the firm's liquidity, capital structure, investments and business operations. By using this research method, the researchers were able to measure the impact for both private and publicly listed companies. On the other hand, the survey results may be biased by the managers beliefs. Based on several financial flexibility variables from the survey data, the study found that firms with high degree of financial flexibility suffered a lower impact from the financial crisis compared to companies with a low degree of financial flexibility.

Arslan-Ayaydin et al. (2014) examined the impact of financial flexibility on the performance and investment opportunities of East Asian companies during 1994-2009. In this time period, East Asian companies went through both the Asian crisis of 1997 and the global financial crisis of 2008. In addition, the long time period allows the study to examine the value of financial flexibility for normal times as well as crisis periods. The study finds financial flexibility important for both investment and performance for both crises, even though the effect is significantly lower during the global financial crisis compared to the Asian crisis. Moreover, investment behavior for East Asian companies during crisis periods is mainly driven by the company's leverage ratio. Interestingly, the researchers do not observe significant differences between flexible and inflexible companies during normal times, in terms of investment level and cash-flow sensitivity. Lastly, this study observes that the impact and value of financial flexibility may depend on the region or country the company operates in, which is probably due to different macroeconomic policies and various economic- and legal environments.

The value of financial flexibility during the Covid-19 pandemic

Even though the financial challenges from the Covid-19 pandemic are still ongoing, some researchers have already conducted studies on the field.

Fahlenbrach et al. (2020) researched the effects of a firm's financial flexibility on its stock prices, and the credit risk reaction to the Covid-19 shock. As it is evident from the research, everything else equal, the revenue shortfall affects a firm's stocks and its Credit Default Swaps premiums less if the firm is more financially flexible. A similar result was reached by Bancel and Mittoo (2011), finding that firms with less flexible costs are affected more from exogenous shocks.

To investigate the value of financial flexibility, Fahlenbrach et al. (2020) uses a sample of 1857 publicly listed non-financial US firms and compares their cumulative stock return for the period when the shock occurs. The researchers define a period that extends from February 3rd to March 23rd as the collapse period. From the comparison of the cumulative stock returns during this collapse period, they evidenced that companies with a high degree of financial flexibility fell by 26 percent less than the companies with less financial flexibility. By regressing the stock returns on proxies for financial flexibility, they find significant evidence that firms with less short-term debt, more cash, and less long-term debt experience a lower stock price drop in response to the negative shock. Interestingly, among all the variables considered relevant for financial flexibility, they find that the solvency ratio of long-term debt to assets is the most consistently significant.

Yasir and Alabassi (2020) reached a conclusion through their findings that can be used to further validate Fahlenbrach et al. (2020) results. The pair bases their study on the Grover (2001) model to predict the corporate financial failure caused by the Covid-19 pandemic. They used a combination of financial reports and publications issued by the Iraqi Stock Exchange, in addition to interviews with key stakeholders to detail workplace-variables. To evaluate financial flexibility, a combination of debt capacity, cash assets, and net cash flow was used, and the Grover score (GS) was further used to measure the likelihood of financial failure. Any increase in the financial flexibility, resulted in an increase in the companies GS.

$$GS \geq 0.01 \rightarrow The\ company\ is\ considered\ not\ a\ failure$$

(Verlekar & Kamat, 2019).

After analyzing the data and hypotheses of the study, the most notable finding of the research, among other findings, was the need to increase the debt capacity and retain cash holdings to be able to face negative shocks and crises caused by abnormal circumstances.

Knowledge gap

As of now, some research has been done on this topic, but the focus has been on relatively short timeframes with firms located outside of Norway (Fahlenbrach et al., 2020). Even though we still do not know the final effects of the ongoing pandemic on companies' performance, there is more data available as of now than when previous research was conducted. If the results from the previous research is applicable or not for Norwegian listed companies, is also unexplored.

Our thesis will consist of two parts. In the first part of the thesis we will investigate the effects that firms experienced in a short-term, from the day the Covid-19 news first affected the stock market and the following week. In the second part of the thesis we will investigate the effects on the firms during a long-term, from the day the Covid-19 news first affected the stock market until the end of 2020. In addition, we will only investigate a selected amount of listed companies on Oslo Stock Exchange.

To evaluate the value of building up financial flexibility, we will use a similar approach as Meier et al. (2013), with a view to investigate the average flexibility of the prior five years. It will be interesting to see if our research will embody differences compared to the results from the global financial crisis, as the two shocks have impacted the economy differently.

Our interest in the topic

During the recent pandemic, companies around the world have experienced a new challenge, with an unexpected negative shock in demand, due to the Covid-19 infection control regulations. History has shown that different uncertainties occur from time to time, and companies with a high degree of financial flexibility is expected to be able to react and adapt to most unforeseen negative shocks in cash-flow and investment opportunities.

The value of financial flexibility with evidence from the global financial crisis is widely investigated, and there are multiple similarities between the financial crisis in 2008 and the ongoing Covid-19 pandemic, like companies being forced to lay off employees, bankruptcies, reduction in demand of certain goods, etc. Although there are similarities, the recent Covid-19 shock is a different scenario as the effects of a pandemic are different from a financial crisis. Hence, the recent pandemic gives a new opportunity to investigate the value of financial flexibility for a company in a VUCA-world (Volatility, Uncertainty, Complexity and Ambiguity).

Research question and objective of the thesis

It is tempting to believe that companies with less short-term debt and more cash holdings will perform better during a sudden revenue stop, but if this actually is the case for the Covid-19 pandemic as well, will be interesting to investigate further. As mentioned earlier, we will investigate this hypothesis for both a short-term and a long-term, for companies that have built up a high degree of financial flexibility ahead of the shock.

Previous research has already examined the performance and value of financial flexibility for the short-term, but not for Norwegian companies as far as we know. Few or no other studies have for the time being examined this value for the recovery period, as this is an ongoing crisis. We define this recovery period as the long-term. The value of financial flexibility for the long-term will be interesting to investigate, and we believe that this potentially could provide an even more interesting result than for the short-term, although our initial hypothesis is that companies with a high degree of financial flexibility will perform better for both periods. By using a sample of Norwegian companies listed on the Oslo Stock Exchange as data basis, we will answer our research question:

"Is there a difference in stock returns, in the period of Covid-19-restrictions, for listed Norwegian companies with a high degree of financial flexibility versus low flexibility?"

Formally, to reach a conclusion on this question we will test the following hypotheses:

H1: "Companies that have more financial flexibility will suffer less than companies with less financial flexibility when the capital markets reflect the negative shock from Covid-19".

H2: "Companies that have more financial flexibility will perform better than companies with less financial flexibility in the recovery period of the negative shock from Covid-19".

The objective of the thesis is to provide empirical evidence of the value of financial flexibility for a company when sudden and unexpected events occur and result in a cash-flow shortfall, using the ongoing pandemic as an example. Even though we will only investigate listed Norwegian companies, we believe the results will be applicable and interesting to stakeholders of companies not listed on the Oslo Stock Exchange as well.

A plan of data collection and thesis progression

To conduct our thesis we need to choose a research design that fits our research question. Data collection can be performed in numerous different ways, and we first need to choose whether to follow a qualitative-, quantitative-, or a mixed-method research design (Saunders et al., 2015, p. 164). Qualitative research method uses non-numerical data to understand and further develop a framework or theory into the field, while quantitative research method uses numerical data to study the relationship between variables.

For our thesis, we will use numerical accounting proxies and stock-returns to conduct answers to our research question. Hence, we will apply a quantitative research method, comparing stock returns of several listed companies on Oslo Stock Exchange. Using various proxies from their financial statements, we will classify their degree of financial flexibility.

Furthermore, a research method is either descriptive, exploratory, explanatory, evaluative, or a combination of these (Saunders et al., 2015). Descriptive research seeks to gain accurate description of some topic, that being either about a person, a situation or an event. On the other hand, exploratory research seeks to gain insight about a topic, and not necessarily an accurate description as for descriptive research. A research that aims to find causal relationship between variables is defined as explanatory, and an evaluative research aims to research how well something works.

We will answer our research question by regressing the stock returns of the companies on proxies of financial flexibility, to evaluate if there is a causal relationship between the cumulative stock return (dependent variable) and selected proxies of financial flexibility (independent variables). In addition, multiple linear regression will give us the ability to compare the slope coefficient of each independent variable. Furthermore, we will compare the results between companies with different degrees of financial flexibility. By using this explanatory research method, we will try to gain knowledge about the value of financial flexibility during the Covid-19 pandemic, and investigate whether companies that have built a financial flexible structure prior to the crisis perform better than companies that have not.

For data collection to take place, we will first need to define our measure on financial flexibility. Proxies used by previous research on the field will help us to shape our framework for measuring flexibility. Variables such as cash and cash equivalents, short-term debt, total debt and net debt is widely used and will most likely be a part of our measure as well. In addition, we may consider adding variables such as dividend payout ratio and common liquidity ratios to our requirement of a company having financial flexibility. Similar to the study conducted by Meier et al. (2013), we will use an average of each variable for a five year-period in advance of the negative shock, to be able to investigate the performance of companies that have built up financial flexibility before the Covid-19 pandemic occurred. We wish to have discussed and decided both the variables for measurement and the companies we wish to include in our sample before February.

The data we need to define whether a company is financially flexible or not will be collected from secondary sources such as financial statements conducted from Proff.no. After we have divided the companies in our sample into groups of their degree of financial flexibility, we can collect information about their historical stock returns from another secondary source, Euronext.com. We will need historical stock returns for a period which extends from February 21th 2020 to the year's last trading day, December 30th 2020, as we want to examine the performance for both a short-term and a long-term. February 21th is the last trading-day before the stock market on Oslo Stock Exchange started to fear the development of the Covid-19 virus (Bøe & Høgseth, 2020). To test our hypotheses, we will import the data we have collected into STATA, to perform multiple regression analyses of the stock returns.

We expect to have the statistical and numerical results finished by March. We will use these results to write the thesis and hopefully reach a purposeful conclusion. By the end of May, we wish to discuss our findings and results with our supervisor. From the feedback, we will work to have a finished result by the end of June.

Reference list

Arslan-Ayaydin, Ö., Florackis, C., & Ozkan, A. (2014). Financial flexibility, corporate investment and performance: evidence from financial crises. *Review of Quantitative Finance and Accounting, 42*(2), 211-250.

Bancel, F., & Mittoo, U. R. (2011). Financial flexibility and the impact of the global financial crisis: Evidence from France. *International Journal of Managerial Finance*.

Bøe, E., & Høgseth, M. H. (2020, 24. February). Børsfallet fortsetter: Hovedindeksen ned 3,5 prosent. *E24*. https://e24.no/boers-og-finans/i/y3r02A/boersfallet-fortsetter-hovedindeksen-ned-35-prosent

Brunborg, I., & Stave, T. K. (2020, 30. December). Oslo Børs endte året i pluss: – Et helt sinnssykt år. *E24*. https://e24.no/boers-og-finans/i/pAddkw/oslo-boers-endte-aaret-i-pluss-et-helt-sinnssykt-aar

Byoun, S. (2011). Financial flexibility and capital structure decision. *Available at SSRN 1108850*.

Fahlenbrach, R., Rageth, K., & Stulz, R. M. (2020). *How valuable is financial flexibility when revenue stops? Evidence from the Covid-19 crisis* (0898-2937).

Fjærli, E., & Hoang, J. K. T. (2020). *Koronakrisens innvirkning på antall konkurser*. https://www.ssb.no/virksomheter-foretak-og-regnskap/artikler-og-publikasjoner/koronakrisens-innvirkning-pa-antall-konkurser

Gamba, A., & Triantis, A. (2008). The value of financial flexibility. *The journal of finance, 63*(5), 2263-2296.

Graham, J. R., & Harvey, C. R. (2001). The theory and practice of corporate finance: Evidence from the field. *Journal of financial economics, 60*(2-3), 187-243.

King'wara, R. (2015). The relationship between financial flexibility and dividend payouts: A case of listed firms in Kenya. *European Journal of Business and Management, 7*(3), 51-58.

Koornhof, C. (1988). Financial flexibility and the assessment of future cash flows. *Investment Analysts Journal, 17*(31), 13-19.

Lie, E. (2005). Financial flexibility, performance, and the corporate payout choice. *The Journal of Business, 78*(6), 2179-2202.

Lu, M. (2020, 20. May). How Global Central Banks are Responding to COVID-19, in One Chart. *Visual Capitalist*. https://www.visualcapitalist.com/global-central-banks-policy-response-covid-19/

Meier, I., Bozec, Y., & Laurin, C. (2013). Financial flexibility and the performance during the recent financial crisis. *International Journal of Commerce and Management*.

Oad Rajput, S. K., Wongchoti, U., Chen, J., & Faff, R. (2019). Is Financial Flexibility a Priced Factor in the Stock Market? *Financial Review, 54*(2), 345-375.

Prop. 56 S. (2020-2021). *Ny saldering av statsbudsjettet 2020*. Finansdepartementet. https://www.regjeringen.no/contentassets/8d9406792f0d4d518123d3a4dddcbaec/no/pdfs/prp202020210056000dddpdfs.pdf

Saunders, M. N. K., Lewis, P., & Thornhill, A. (2015). *Research Methods for Business Students*. Harlow, United Kingdom: Pearson Education UK.

Tjernshaugen, A., Hiis, H., Bernt, J. F., & Braut, G. S. (2020). *Koronavirus-pandemien 2020-2021*. https://sml.snl.no/koronavirus-pandemien_2020-2021

Verlekar, R. P., & Kamat, M. S. (2019). Recalibration and Application of Springate, Zmijewski and Grover Bankruptcy Models in Indian Banking Sector. *Business Analytics & Intelligence*, 19.

Yasir, M. H., & Alabassi, Z. M. (2020). THE ROLE OF FINANCIAL FLEXIBILITY IN FACING THE FINANCIAL FAILURE CAUSED BY THE CORONA PANDEMIC: AN ANALYTICAL STUDY OF A SAMPLE OF COMPANIES LISTED ON THE IRAQI STOCK EXCHANGE. *Journal of Critical Reviews, 7*(10), 1589-1600.