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COVID-19 and Gender Differences

How did the Compensation Scheme for Businesses affect gender differences in Norway?

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Abstract

In this thesis, we study the Compensation Scheme for Businesses that applied in Norway during the COVID-19 pandemic. Specifically, we investigate whether there is a difference in received grant amount between businesses with female CEOs and businesses with male CEOs, and how this potential difference affect gender equality. We study private limited companies that received compensation through the scheme for January and February 2021. To answer the research question we use descriptive statistics, the OLS method and perform a Blinder-Oaxaca decomposition.

We find that 82.09 percent of the money paid out through the scheme went to businesses with male CEOs, which is not surprising as 83.24 percent of all CEOs in Norwegian private limited companies are men. However, the businesses with female CEOs have on average received 41.20 percent lower grant amounts than the businesses with male CEOs. When controlling for firm size, industry, region and the gender of the board chairperson, we find no significant difference in mean grant amount between businesses with female CEOs and businesses male CEOs. However, the dummy for female chairperson is significant, which indicates that the gender of people in leadership positions is still correlated with grant amount. The regressions show that the majority of the gender difference can be explained by male CEOs on average running larger businesses than female CEOs. According to the Blinder-Oaxaca decomposition, the average grant amount for businesses with female CEOs is higher in industries with a larger share of female CEOs. This indicates that industries with a larger share of female CEOs were affected particularly hard by the pandemic.

Our results show that gender equality is still lacking in the Norwegian corporate sector and that the number of female CEOs is too low given the political goal of gender equality. Based on our findings, we believe that the scheme have contributed to increased gender differences and that this should be investigated further in future research.

Keywords – COVID-19, Compensation Scheme for Businesses, Gender Equality, Female Leadership, Gender Differences

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1 Introduction

On March 11th 2020, the World Health Organization (2020) declared the COVID-19 outbreak as a pandemic, and it became clear that the virus would have enormous consequences for people, businesses and societies, all over the world. To help businesses through the pandemic, the Norwegian government implemented various support schemes, among them the Compensation Scheme for Businesses. Since March 2020, over 14 billions Norwegian kroner (NOK) have been paid out to Norwegian businesses (Norwegian Tax Administration, 2020; The Bønnøysund Register Centre, 2022). This equals 0.8 percent of the National Budget for 2021, and is more than the total amount spent on primary and secondary education in Norway in 2021 (The Storting's Administration, 2021). The spending can be justified by the fact that it would be more expensive for society if businesses went bankrupt and employees lost their jobs (Prop. 73 S (2019-2020)). Nevertheless, since this is tax money, paid by the public, we believe it is important to question how it was used. Norwegian law states that public authorities at all levels must work towards gender equality in all areas of society (Ministry of Culture and Equality, 2020). We therefore want to study whether the scheme has had any consequences for gender equality.

In addition to the enormous health and economic consequences, the pandemic has also led the world a huge step backwards in regards to gender equality. The Global Gender Gap Report 2021 found that the pandemic has increased the gender gap worldwide (World Economic Forum, 2021). It is now estimated to take 135.6 years to close the gender gap, compared to 99.5 years in the 2020 report. The equivalent estimate for Western Europe is only 52.1 years, which is a decrease from the 54.1 years reported in 2020. However, the economic participation and opportunity gender gap did increase in Norway during the pandemic, after decreasing consistently in the previous years.

Gender equality is perceived as important by the Norwegian population, especially amongst women, and it has been on the political agenda for decades (Plan International, 2018). To prohibit discrimination based on gender and better women's stand in society, the Equality Act was implemented in 1978 (Ikdahl, 2020). This created a solid foundation for gender equality, and according to the World Economic Forum (2021), Norway has closed 84.9 percent of its gender gap and is the third most gender equal country in the world.

The Norwegian workforce consists of 47.17 percent women and 52.83 percent men (Statistics Norway, 2022b). However, only 16.76 percent of chief executive officers (CEOs) in Norwegian private limited companies are women (Statistics Norway, 2021d). For publicly listed companies, the difference is even more substantial, with 8.1 percent of all CEOs being female. Thus, even though the workforce is virtually gender balanced, there is still a long way to go when it comes to gender equality in leadership positions.

Given the large amounts of public spending on business compensation during COVID-19, and the strong public support for gender equality in Norway, we think it is important to know whether the compensation scheme has contributed to increased gender differences. Various studies find that when developing policy responses to the COVID-19 pandemic, gender should be taken into consideration (Liu et al., 2021; Goldstein et al., 2020). However, for the Compensation Scheme for Businesses, gender is not considered at any point (The Bønnøysund Register Centre, n.d.d.). If policies during the pandemic had unintended, negative consequences for gender equality, counteractive policies could be necessary in the post-COVID reconstruction. It is therefore crucial to know if and how public spending affects gender equality, so this can be taken into account in further policy development.

The aim of public spending must not always be increased gender equality, as there are many other important purposes, but in our opinion policies and public spending should never work against gender equality. This belief is supported by Norwegian law, which states that public authorities at all levels must work towards gender equality in all areas of society (Ministry of Culture and Equality, 2020). We therefore find it interesting to study whether there are differences in received grant amount between companies with female CEOs and companies with male CEOs. Thus, the research question is:

Are there any gender differences in who received business compensation during the COVID-19 pandemic?

Specifically, we study CEOs and ask whether companies run by women on average received less money through the Compensation Scheme for Businesses than those run by men. We study companies of the Norwegian legal structure Aksjeselskap (hereafter: private limited companies) that received compensation for the time period January and February 2021. The justification for this delimitation follows in section 4.2.

To prove causation, one should ideally perform an experiment. However, in this case an experiment is not feasible. Nevertheless, we believe a study on the correlation between CEO gender and a company's received grant amount is of interest. Correlation, even when there is no proven causation, shows that public money is spent unevenly on female and male run businesses. Given the large interest in gender equality in Norway, we believe that such a result is of public interest. For a further discussion on correlation versus causation, and the ideal experiment, we refer to section 5.4.

Our research contributes to the literature on how gender differences developed during the COVID-19 pandemic, specifically on how public support schemes can have exacerbated previous gender differences in the corporate sector. We also contribute with insight on gender differences in leadership and how female and male CEOs differ in their use of public support schemes. Additionally, we created a dataset containing information on the gender of the CEO and the chairperson in all businesses that received compensation for January and February 2021. This can be utilised further in future research.

We find that 82.09 percent of the money paid out through the Compensation Scheme for Businesses went to businesses led by male CEOs, which is not surprising since only 16.76 percent of all CEOs in Norway are women. However, the share of female CEOs in the sample is higher than the share of female CEOs in the overall population. Thus, the average grant amount was lower for the companies with female CEOs than for the companies with male CEOs. The main reason for this is that companies run by male CEOs typically are larger than companies run by female CEOs. Nevertheless, both CEO gender and chairperson gender is correlated with grant amount.

1.1 Outline

To lay the foundation for the remaining of the thesis, we provide further information on gender equality in Norway, COVID-19, and the Compensation Scheme for Businesses in section 2. Section 3 contains a literature review, explaining why we believe there is gender differences related to received grant amount. In section 4 the data is presented. The methodology is presented in section 5. Section 6 contains the analysis with descriptive statistics and regression results. A discussion of our findings follows in section 7, together with the study's limitations and suggestions for further research. Finally, we conclude.

2 Background

In this section we provide further insight on gender equality in Norway and the COVID-19 restrictions that applied in January and February 2021. Lastly, we present the requirements of the Compensation Scheme for Businesses, and explain the application process.

2.1 Gender Equality in Norway

Equality is defined as equal rights and opportunities for everyone, regardless of gender, abilities, sexuality, age, ethnicity and religion (Ryste and Ikdahl, 2021). Thus, gender equality does not mean that there must be an equal amount of each gender in every positions. It rather means that every person should have equal rights and opportunities to possess every position, for example as CEO or board member. However, equal opportunities will likely lead to a more even gender distribution in these positions.

Since 2006 all Norwegian publicly listed companies have been required to have at least 40 percent women and 40 percent men on their boards (Almennaksjeloven, 1997). This has increased the number of women on boards. The law has also likely influenced other statistics. In 2003 there were 554 publicly listed companies in Norway (Knudsen et al., 2021). By 2021 this number had decreased to 229. It is tempting to assume that the quota introduced in 2006 contributed to this development, in that some companies changed their legal structure to avoid the gender requirement. This assumption indicates that the corporate sector is not yet willing to take the necessary measures to obtain gender equality at all levels.

The purpose of the law was to increase female representation on boards, increase the amount of women in leadership positions in the corporate sector overall, and reduce the gender pay gap (Bertrand et al., 2019). Thus, the introduction of the gender quota shows that gender equality in the corporate sector is desired in Norway. However, it is not yet obtained. It is therefore important that policies during the COVID-19 pandemic does not slow down or reverse previous progress made towards gender equality. When developing the Compensation Scheme for Businesses, gender equality was not the first priority. Still, one could expect that the scheme does not have negative implications for gender equality, given the importance of gender equality in other political measures.

Table 2.1: CEOs of Companies Established in Norway in 2020

The gender distribution of CEOs in all companies established in Norway in 2020, split by industry (Statistics Norway, 2021a). The gender distribution varies a lot between industries.

Industry	Female	Male
Manufacturing	36.6%	63.4%
Construction	4.5%	95.5%
Wholesale and retail trade; repair of motor vehicles and motorcycles	35.7%	64.3%
Transporting and storage	8.1%	91.9%
Accommodation and food services	42.5%	57.5%
Information and communication	17.7%	82.3%
Real estate activities	26.5%	73.5%
Professional, scientific and technical activities	39.0%	61.0%
Administrative and support service activities	38.8%	61.2%
Education	54.2%	45.8%
Human health and social work activities	65.7%	34.3%
Arts, entertainment and recreation	46.9%	53.1%
Other service activities	73.4%	26.6%

Table 2.1 shows that the share of female and male CEOs varies substantially across different industries in Norway. The COVID-19 pandemic affected most industries, some positively and some negatively (Solem, 2020). Since industries were affected differently by the pandemic and women and men tend to operate in different industries, it seems likely that companies with female and male CEOs in general were affected differently by the pandemic. As a consequence, female and male CEOs would have different needs for the Compensation Scheme for Businesses, depending on how their company was affected, which in turn depends on which industry they operate in.

2.2 The Pandemic in Norway

In January 2021 some of Norway's strictest restrictions during the pandemic were implemented (Rosef et al., 2021). Visitors in private homes were advised against, there were strict restrictions on public events and serving alcohol was prohibited. Leisure activities were recommended to be done outside, middle schools and high schools faced strict distancing rules, higher education was fully digital, and in all cases where working from home was feasible, it was required. In addition to the national restrictions, some municipalities had even more severe local restrictions. These included stricter rules in primary schools and kindergartens, mandatory face mask usage in public, and closures of gyms and swimming pools.

Some restrictions were lifted towards the end of January, but many also lasted for months, especially in the bigger cities and surrounding areas (Olsson et al., 2021). This affected businesses both directly through orders to close, social distancing rules and limitations on the number of guests, and indirectly since people stayed more at home and therefore spent less money on goods and services (Olsen, 2021). As a result, many businesses experienced big decreases in income and many were forced to lay off employees temporarily. Since unemployment benefits do not compensate for 100 percent of lost salary, the unemployed and the temporarily laid off had to reduce their private spendings (Norwegian Labour and Welfare Administration, n.d.). In turn businesses' demand fell and a vicious circle occurred. Still, businesses faced unavoidable fixed costs like rent and insurance expenses, which many struggled to cover due to the major income losses. To keep businesses going through the pandemic and the following restrictions, a public compensation scheme was therefore necessary (The Bønnøysund Register Centre, 2021b).

2.3 The Compensation Scheme for Businesses

The Compensation Scheme for Businesses was implemented as one of multiple measures aiming to help struggling businesses during the pandemic. It was created for businesses with a significant fall in turnover due to the virus itself or due to the implemented infection control measures (The Bønnøysund Register Centre, n.d.a). The purpose of the scheme was to avoid unnecessary bankruptcies and keep Norwegian jobs safe during the pandemic.

2.3.1 Requirements January-February 2021

To be eligible for the grant, companies had to fulfill certain requirements. The companies must be taxable in Norway, be registered before March 1st 2020 and have had at least one employee between August 2019 and September 2020 (The Bønnøysund Register Centre, n.d.d). The company's operations must be legal and all paperwork in regards to taxes, ownership structure, bank connections and financial statements must be in order. Moreover, the company cannot be under bankruptcy proceedings or liquidation, nor be involved in a demerger after March 2020. Furthermore, the company must have fixed unavoidable costs in the grant period that they struggle to cover due to a substantial turnover fall. The turnover fall must be of at least 30 percent in the grant period compared to the comparative period. The relevant grant period in this thesis is January and February 2021. The comparative period is therefore January and February 2019 for companies established before 2019 and January and February 2020 for companies established in 2019 or 2020. There are no requirements of previous profitability or a negative operating profit.

Businesses with lost inventory due to government requirements to close, can under this scheme also apply for a grant to cover the lost inventory (The Bønnøysund Register Centre, n.d.d). To be eligible for this grant, the company must be ordered to close temporarily, or the ban on serving alcohol must make it unprofitable to keep open. The lost inventory must consist of fresh produce bought before businesses were ordered to close, and the produce need to expire or deteriorate before the mandatory closing was lifted.

The Compensation Scheme for Businesses is not open for companies that operate in the finance sector, oil and gas extraction companies that follows the oil tax regime, companies that produce, transmit or distribute electricity and airlines with a Norwegian operating license (The Bønnøysund Register Centre, n.d.d). These sectors were either not strongly affected by the pandemic, or they were covered by separate schemes.

2.3.2 The Application Process

The grant application is done through Altinn, the Norwegian online platform for forms, communication and relevant information between government agencies, private individuals and businesses (Ferkingstad, 2021). For private limited companies, it is the CEO or the board chairperson who can send the application (The Bønnøysund Register Centre, n.d.b). An accountant or auditor can fill in the application, but it must be signed and sent from the company's CEO or chairperson. Both the company's turnover and expenses are part of the application and the numbers must be reported both for the grant period, and for the comparative period. What the unavoidable fixed costs consist of also has to be stated.

When a company has applied for the grant, the application must be authorised by an accountant or an auditor (The Bønnøysund Register Centre, n.d.b). Their role is to check that all provided information is correct and truthful and they thus work as a security measure to avoid exploitation of the scheme. Most applications are then processed automatically, and if approved the company receives their money within 2-3 business days. Additionally, some applications are picked at random to be processed manually

(The Bønnøysund Register Centre, n.d.c). This is again to ensure that the scheme is not exploited by companies that do not fulfill the requirements.

Lastly, the calculated grant amount (the sum of the two grants) must be of at least 5,000 NOK for it to be paid out to the company. Hence, the scheme is not helpful for the smallest companies. Nine percent of all applications were disapproved, and over 50 percent of these disapprovals were due to the calculated grant amount being less than 5,000 NOK (The Bønnøysund Register Centre, 2021a).

2.3.3 Compensation Amount

The grant amount is calculated based on the reported amount of fixed unavoidable costs, the company's turnover fall and an adjustment factor, using the following formula[1] (Forskrift midlertidig tilskuddsordning, 2020):

$$GrantAmount = FixedUC_{GP} * \frac{turnover_{CP} - turnover_{GP}}{turnover_{CP}} * 0.85 \tag{2.1}$$

If the calculated grant amount exceeds 60 millions NOK per grant period (here: two months), the amount that exceeds 60 millions is reduced by 50 percent. This means that if a company according to the formula should receive a grant amount of 80 millions NOK, the 20 millions NOK that exceeds 60 millions NOK is reduced by 50 percent. Thus, the grant amount paid out to the company is 70 millions NOK. The maximum amount that can be paid out to a company or a concern per grant period is 160 millions NOK.

The grant covering lost inventory is intended to cover the acquisition cost (Forskrift midlertidig tilskuddsordning, 2020). If the business receive coverage from insurance, this amount is deducted from the acquisition cost when calculating the grant amount. The grant for lost inventories is given in addition to the grant covering fixed, unavoidable cost, and is not included in the maximum amount of 160 millions NOK. However, the sum of the two grant amounts cannot exceed the company's reported turnover fall.

[1] $\text{FixedUC}_{\text{GP}}$: fixed unavoidable costs in the comparative period (January and February 2019/2020).
$\text{Turnover}_{\text{CP}}$: turnover in the comparative period (January and February 2019/2020).
$\text{Turnover}_{\text{GP}}$: turnover in the grant period (January and February 2021).
Adjustment factor: 0.85

3 Literature

In this section we present relevant literature on gender differences related to COVID-19, leadership, ethical decision making and in asking for resources. The literature is chosen because we believe gender differences in these areas can explain the difference in received grant amount between companies with female CEOs and companies with male CEOs.

3.1 COVID-19 and Gender Differences

The COVID-19 pandemic is not over, yet research has already been conducted on the consequences of the pandemic, and they find that men and women have been affected differently by the pandemic (OECD, n.d.). Female owned businesses were 5.9 percentage points more likely to have closed their business during the spring of 2020, compared to male owned businesses (Goldstein et al., 2020). The gender differences were largest in countries with strict lockdown policies. Additionally, female and male business owners reported a need for different support schemes during the pandemic. For female business owners with young children, the main priority was support in taking care of household members, whilst this ranked 6th among male business owners with young children. Male business owners reported a greater need for various financial support schemes. This reflects the norm of women doing more of the household work than men, and shows that policies related to COVID-19 are important for gender equality.

Graeber et al. (2021) examine how the economic consequences of the pandemic and the government imposed measures affected the self-employed in Germany. They find that self-employed women were one-third more likely to experience income losses than self-employed men. Among employees, they do not find a comparable gender gap, which is likely due to rigidities in the labour market. These results indicate that a large portion of the gender gap among the self-employed is due to women and men working in different industries, and that female dominated industries were more severely affected by the pandemic.

In 2017, around 85 percent of self-employed women in Norway worked in the service industry (OECD, 2017). This was one of the industries ordered to shut down during the hardest hitting times of the pandemic, and among the industries with the highest risk of contagion (NOU 2021:6; Barbieri et al. 2021). We would therefore expect that self-employed women were more affected by the pandemic than self-employed men in Norway as well. As seen in table 2.1, service activities is the industry with the highest share of female leaders (Statistics Norway, 2020). Hence, we can suspect that female leaders were in greater need of support from the Compensation Scheme for Businesses.

3.2 Gender Differences in Leadership

Over the past couple of decades, a lot of research have been conducted on the difference between women and men. The general perception is that there are significant differences between women and men both in how they act and how they are perceived (e.g. Ellemers (2018); Brandt and Laiho (2013); Croson and Gneezy (2009)). Gender differences related to leadership could explain why companies with female CEOs and companies with male CEOs have different needs for the Compensation Scheme for Businesses and thus also received significantly different mean grant amounts. In the following, various aspects of gender differences in regards to leadership are therefore presented.

3.2.1 Crisis Management and Risk Aversion

Female managers are more likely to emphasize participative and consensual decision making, which brings more diversity to the idea and brainstorming process (Rita and Zachary, 2004). These capabilities are important during a crisis and are therefore likely to improve crisis preparedness. Moreover, they class "feminine" leaders as people-oriented and transformational. Leaders with these "feminine" characteristics are better prepared for a crisis, and it is whether the leader possesses them or not that is of importance for how good a crisis is handled, not the gender of the leader. To be better prepared for a potential crisis, companies should therefore seek to have "feminine" leaders.

After the financial crisis of 2008, the Lehman Sisters hypothesis was proposed (Kanter, 2010). The hypothesis states that the financial crisis could have been prevented, or at least reduced, if there were more women in top management positions at the big financial institutions prior to the crisis. In 2008, women made up only 13 percent of the executive suite in major financial service companies globally, thus there was room for improvement (Clempner et al., 2019). The Lehman Sisters hypothesis is based on the assumption that women are more risk averse than men, and therefore would not have taken the risks that eventually led to the fall of the investment bank Lehman Brothers, and the following global financial crisis. The hypothesis thus claim that more women in leadership positions are beneficial when it comes to crisis management and at reducing the economic consequences of a crisis.

3.2.2 Female Leaders and Profitability

Jalbert et al. (2013) study the relationship between CEO gender and financial performance in the companies on the annual Forbes Compensation List from 1997 to 2006. They find significant differences between female and male CEOs, and that companies managed by female CEOs performed better on multiple performance and valuation measures. Studying Finnish limited companies with at least 10 employees, Kotiranta et al. (2007) find that a company led by a female CEO is on average 1 percentage point more profitable than an equivalent company led by a male CEO. This corresponds to about 10 percent, and holds true when controlling for multiple other factors that could affect profitability. Adler (2001) score 215 Fortune 500 companies in the period 1980 to 1998 on how many women they had in their top executive positions and on the board of directors. Higher scores were given to companies that appointed women before 1992. The 25 highest scored companies were between 18 and 69 percent more profitable than the median Fortune 500 company in their industry. For UK companies, a positive correlation between women on the board and profitability is found (Nadeem et al., 2019). Thus in western companies, more women in the executive suite and on the board seems to be correlated with higher profitability.

The above mentioned studies find correlation between female CEOs, women in the executive suite or women on the board, and firm performance and profitability. However, causation is not proven. The results does therefore not necessarily mean that women are better leaders than men. The correlation could for example be explained by women being appointed as CEOs in already profitable companies, or that companies with a female CEO are more diverse in all parts of the organisation, and that this is what leads to better profitability. A third common explanation is that women have to break through the glass ceiling to reach the executive suite.

The glass ceiling refers to the invisible, organizational barriers that make it harder for women, and other minorities, to advance in their careers (Loden, 2008). The glass ceiling theory thus claims that there are less women in leadership positions because it is harder for women to obtain these positions. If the bar is set higher for women, the ones that actually break through the glass ceiling will be better equipped, suitable and competent, than their male counterparts. This could explain, at least part of, why companies with female CEOs perform better than similar companies with a male CEO. Moreover, one can expect that companies with good CEOs handle a crisis like the pandemic better and therefore have less need for government support.

Chamorro-Premuzic (2013) argues that it is too easy for incompetent men to become leaders and that the focus should be on getting more competent people, both women and men, into leadership positions. This reflects the glass ceiling theory; if women go through a tougher selection process to become CEOs, the ones that make it are likely more competent than the average male CEO. For businesses and the economy as a whole, it is best to have the most competent people in leadership positions and it could therefore be beneficial if women and men are selected on equal terms.

3.3 Ethical Decision Making

A study of German students in a Master of Business program indicates that women judge actions as more unethical than men (Stedham et al., 2007). Most situations in this study are perceived as unethical by both the female participants and the male participants, but the women view the actions as more unethical than what their male counterparts do. Both the women and the men perceive it as unlikely that they would take part in the unethical actions, but again the probability is lowest for women.

In a meta-analysis of research on gender differences in ethical decision making, Franke et al. (1997) find that women perceive hypothetical business practices as unethical more often than men. The gender differences decline as people get more work experience, since it then becomes easier to draw conclusions based on similar real-life events. They also find less of a gender difference in monetary issues compared to non-monetary issues. Saundra et al. (2002) find no difference in workplace values between women and men, suggesting that their ethical beliefs and perceptions are similar. However, they do find that when presented with hypothetical business situations, women usually make more ethical choices than men. Since women and men tend to have different ethical beliefs, it seems reasonable to assume that they also differ in how they run their businesses as CEOs.

3.4 Women Ask Less

In 2021 women in Norway working full time had an average monthly salary of 49 490 NOK (Statistics Norway, 2021b). The equivalent for men was 55 210 NOK. Part of the reason for this gender wage gap is that women and men tend to work in different industries and have different occupations (Statistics Norway, 2020). However, this cannot explain the entire gender wage gap (Østbakken and Frisell, 2021). One potential explanation for the remaining difference is that women do not ask for pay rises to the same extent as men.

Rozada et al. (2018) use data from Zonajobs, an online job application platform in Argentina, to analyse the supply side of the gender wage gap. The applicants provide a wage bid, as well as their age and gender. The researchers study women and men with comparable skills that apply for the same position, and control for age, as a proxy for experience, and the type of job. They find that women, on average, ask for 6 percent lower wages than men do. When studying recent graduates in Sweden, Säve-Söderbergh (2007) finds similar results in that women both ask for lower wages and receive lower offers from their employers. The author also finds that women self-promote less, and have less economic incentives related to self-promotion. Hence, the gender wage gap is lower when the wage offer is stated in the job posting.

Kwapisz and Hechavarría (2018) show that female entrepreneurs are less likely than male entrepreneurs to ask for outside financing when starting a business. The demand from female entrepreneurs is therefore less, which could explain part of why the majority of money from venture capital funds goes to male owned businesses (Stengel, 2021). Women are more likely to ask for outside financing when starting their business, the more start-up helpers without ownership share they have (Kwapisz and Hechavarría, 2018). It thus seems important for female entrepreneurs to seek advise from their helpers to ensure good funding of their business, which in turn contributes to future growth and sustainable operations (Bertoni et al., 2011).

In a lab experiment, participants were asked to play a word game and told they would be paid between three and ten USD for playing (Babcock and Laschever, 2007). After completing the task, an experimenter thanked each participant and said «Here's three dollars. Is three dollars okay?» (p. 2). Participants that asked for more money were given ten dollars instead, whilst those who did not say anything or only complained did not get any additional money. The male participants asked for more money 9 times as often as the female participants. Thus, the men were on average paid significantly more than the women for performing the same task, simply because they asked for more money. Furthermore, Babcock and Laschever find that women believe that their circumstances are more fixed than they actually are. Women do not think that there can be changes, and therefore do not ask for them either. The authors argue that even if women and men are equally successful when asking, the fact that men ask more will lead them to have more opportunities and more resources available to them. This could result in a huge imbalance between women and men in society.

4 Data

In this section we present the data our analysis is based on. Firstly, we explain the data retrieval and cleaning process. Then, we present relevant descriptive statistics to obtain a better understanding of the dataset.

4.1 Data Retrieval

The purpose of this thesis is to analyse the relationship between the gender of a company's CEO and the company's use of the Compensation Scheme for Businesses. To analyse this we utilise two different datasets. The first dataset is retrieved from The Brønnøysund Register Centre (n.d.b.) and consists of information on all the companies that received compensation through the Compensation Scheme for Businesses in the period between September 2020 and October 2021. The dataset provides, among other things, information on each company's turnover before and during the pandemic, as well as how much money they received through the scheme.

Every company in the dataset can be identified by their unique organisation number[2]. Therefore, we extract every individual organisation number from the first dataset and use this to retrieve the second dataset from Proff Forvalt (n.d.). From this website we collect the name of the CEO and the chairperson, as well as other relevant information on all the businesses included in the first dataset. We then merge the two datasets together using the organisation number as the primary key. This results in the final dataset, that we later clean and add new variables to.

4.2 Data Cleaning

The original dataset from The Brønnøysund Register Centre consists of 13,814 companies. Since some companies received compensation for multiple grant periods, the dataset contains 32,908 observations. The rules of the scheme changed multiple times during the pandemic, and so have the government imposed restrictions. To reduce the risk of our results being influenced by these changes, we choose to only look at January and

[2]See Appendix A1 for glossary with further explanation of words and phrases.

February 2021, where the requirements of the scheme stayed constant. This period is chosen because it was a time with strict restrictions in big parts of Norway, resulting in 9,428 businesses receiving compensation during the two months. This makes a good foundation for our analysis. Every observation where the grant period does not equal January-February 2021 is therefore deleted from the dataset.

Moreover, we choose to only study private limited companies. We choose to focus on only one legal structure because most statistics are presented separately for different legal structures, and we want to be able to compare statistics from our sample with the same statistics for the population[3]. Private limited companies is the legal structure with the most available statistics, which makes a good basis for comparing the sample with the population. Excluding other legal structures also makes the sample more homogeneous, which we perceive as an advantage when studying gender differences. Legal structure is stated in the data from Proff Forvalt, and we delete all observations with legal structure not corresponding to AS (Norwegian abbreviation for private limited company). As a result, the number of businesses is reduced from 9,428 to 7,625.

Companies without information on the name of the CEO and the chairperson are removed from the dataset, as this information is crucial in this thesis. In this step, another 811 observations are removed from the dataset. The data from Proff Forvalt also contains information on the number of employees in each company. However, this information is missing for 202 of the remaining companies. To be eligible for the grant, the companies have to have employees, so this indicates errors in the dataset, and we therefore delete all observations lacking information on the number of employees. This provides us with the final dataset of 6,612 unique observations.

From Proff Forvalt we retrieve the name of the CEO and the chairperson of all companies that received compensation. To perform the desired analysis we need to know the gender of the CEO and the chairperson of each company. We therefore add a new variable to the dataset, indicating whether the person in question is female or male. For most of the CEOs and chairpersons we easily detect the gender based on the name. When we are unsure we search the name on Proff.no, Facebook or Google to determine if the person is female or male. This is necessary for about 10% of the observations.

[3]The population is defined as all Norwegian private limited companies in 2021.

We want to be able to control for whether a business is located in a city, as the government imposed restrictions often were stricter in more populated areas. Therefore, we retrieve data on the population in every municipality in the first quarter of 2021 from Statistics Norway (n.d.). The data from the Brønnøysund Register Centre includes the municipality where the business is registered. We merge the population data into our dataset using the municipality number as the primary key. A business is only registered in one municipality, but can operate in several. Thus, the population of the municipality where a business is registered may not be a perfect measure of whether the operations are predominantly performed in a city, but it gives an indication.

Finally, we categorise the companies in our dataset into different industries. The data from Proff Forvalt includes the NACE code for all the businesses. We use the two first digits, which classify businesses into 21 different industries[4]. The dataset includes businesses within 17 of these industries, as well as 7 businesses that are unclassified. In 4 of the industries there are less than 50 companies. We take these companies, as well as the 7 unclassified ones, and put them into one common category called *Other*. The final dataset hence consists of businesses within 13 industries as well as the *Other* category.

4.3 Descriptive Statistics of the Dataset

To get a better understanding of the businesses that received money through the Compensation Scheme for Businesses and how the money was distributed among them, some descriptive statistics of the data are presented. We present the mean, median, minimum and maximum value of various variables for the entire sample. Thereafter, we present the mean, median, minimum and maximum value of grant amount, split by industry and region. This provides insight on the distribution of grant amount between industries and regions, as well as the importance of industry and region as control variables in the subsequent regression analyses. Summary statistics split by gender follow in the analysis in section 6.

[4]See Appendix A2 for the NACE classification

Summary Statistics

Table 4.1 reports summary statistics on grant amount, number of employees and turnover in the grant period and the comparative period.

Table 4.1: Summary Statistics of the Compensation Scheme for Businesses

Summary statistics for key variables in the dataset. The mean, median, minimum and maximum values are presented for each variable. Monetary values in NOK. For further variable description see appendix A1.

	Mean	Median	Min	Max
Grant Amount	270,881	70,220	5,197	87,145,244
Grant Fixed Unavoidable Costs	270,185	69,802	0	87,145,244
Grant Lost Inventory	696	0	0	320,529
Turnover Comparative Period	4,246,995	1,070,332	5,205	880,207,332
Turnover Grant Period	1,588,257	302,013	0	356,807,204
# Employees	21	9	1	4,333

In total, 1,791,064,961 NOK was paid out to the 6,612 businesses in the sample, through the scheme for January and February 2021. From table 4.1 it is clear that there are big differences in how much money each company received. The median grant amount is 70,220 NOK, which is 200,661 NOK below the mean grant amount. This means that most companies received a grant amount far below the mean, but that some received a much higher share of the total pot, increasing the mean considerably. Thus, the mean is not representative for what most businesses received. The median is likely a better measure, and we therefore include both in all our summary statistics tables.

The majority of the money paid out through the scheme stems from compensation due to fixed, unavoidable costs, which 6,608 companies received compensation for. The average grant amount is 270,185 NOK. There are again big differences in how much various companies received, with the median being 69,804 NOK, which is much lower than the mean. Only 129 companies received compensation for lost inventories, and the amounts were generally a lot lower than the amounts compensating for fixed, unavoidable costs. The table shows statistics where all companies in the dataset are included, and the mean of grant lost inventory is therefore only 696 NOK. For the 129 businesses that received this grant, the mean is 35,678 NOK and the median is 20,841 NOK.

Moreover, the table shows that the companies on average experienced a substantial fall in turnover from the comparative period to the grant period. The mean turnover fell from over 4 millions NOK in the comparative period to approximately 1.5 millions NOK in the grant period. The companies' pre-pandemic turnover varied from 5,205 NOK all the way up to 880,207,332 NOK, which indicates that there are big differences in firm size. This is also supported by the number of employees, which ranges from 1 employee to 4,333 employees. The variation in firm size could potentially explain some of the variation in grant amount, and we study this further in section 6.1.

Grant Amount by Industry

Table 4.2 shows the mean, median, minimum and maximum values of grant amount in the dataset, as well as the number of observations and the share of female CEOs in the sample, split by the 14 industry categories.

Table 4.2: Grant Amount in NOK by Industry

The number of observations and the share of female CEOs in the sample are presented together with the mean, median, minimum and maximum value of grant amount in NOK for each industry. For full industry names see Appendix A2. The number of observations, the share of female CEOs and grant amount vary a lot across industries.

Industry	# Observations	Female Share	Mean	Median	Min	Max
C	425	15.53 %	200,851	103,354	6,296	5,278,356
F	455	5.05 %	131,142	64,333	5,500	2,427,202
G	1,077	34.91 %	153,393	49,745	5,344	15,522,531
H	262	10.31 %	1,118,221	75,230	5,827	78,019,240
I	2,272	29.97 %	302,530	94,336	5 197	82,748,569
J	123	16.26 %	146,713	59,270	5,493	1,833,091
L	112	22.32 %	952,769	72,585	5,706	87,145,244
M	379	16.09 %	139,702	36,818	5,455	9,356,092
N	616	25.65 %	152,564	64,003	5,205	3,464,303
P	122	56.56 %	85,604	35,975	6,604	1,613,781
Q	90	52.22 %	65,389	32,588	6,300	637,269
R	432	28.70 %	432,278	108,146	7,881	38,368,942
S	196	56.63 %	68,568	29,149	5,200	1,551,940
Other	51	17.65 %	241,462	64,800	8,484	2,968,593
Total	6,612	27.18 %	270,881	70,220	5,197	87,145,244

The number of companies that received compensation through the scheme differs a lot depending on industry. This is likely related to the number of companies in each industry in the population, but also to how each industry was affected by the pandemic. The accommodation and food service industry (I) and the wholesale and retail trade; repair of motor vehicles and motorcycles industry (G) constitute nearly half of all businesses in the sample. This indicates that these industries were severely affected by the pandemic.

Many of the government imposed restrictions hit these industries particularly hard, with orders to close certain types of businesses, prohibition on serving alcohol and strict social distancing rules in shops, restaurants and bars. It is therefore not surprising that a high number of businesses within these industries needed support during the pandemic.

Grant amount varies a lot between industries when it comes to both the mean, median, minimum and maximum amount. The transporting and storage industry (H) has a mean of 1,118,221 NOK, which is the highest by far. The single highest amount is found within the real estate industry (L), where a company received 87,145,244 NOK. All industries have small businesses that receive grants of less than 10,000 NOK. However, there are big differences when looking at the highest grant amount in each industry. In the sample, 15 companies received more than 10 millions NOK. Of them, there are 5 companies in both the transporting and storage industry (H) and in the accommodation and food service industry (I), 3 companies within the arts, entertainment and recreation industry (R) and 1 company in the wholesale and retail industry (G) and in the real estate industry (L).

Furthermore, we observe that the share of female CEOs in each industry vary substantially. This indicates that women and men typically run businesses in different industries. Since grant amount also vary a lot across industries, we expect industry to be of importance when we later analyse gender differences related to the Compensation Scheme for Businesses.

Grant Amount by Region

Table 4.3 shows the mean, median, minimum and maximum values of grant amount, as well as the number of observations and the share of female CEOs in the sample, split by region. We divide the data into 6 geographical regions, for the most part following a standard Norwegian classification[5]. Furthermore, we divide the data into two categories, depending on whether a business is registered in a highly populated area or not. Municipalities with more than 50,000 inhabitants are defined as a metropolitan area[6], and we present the summary statistics separately for these two categories as well.

As seen in table 4.3, there are big regional differences in how many businesses received money through the scheme, and in how much they received. The difference in number of

[5]See appendix A3.1 for counties in each region.
[6]See appendix A3.2 for all metropolitan area municipalities.

companies in each region is likely correlated with the size of the region. It is reasonable that more people also lead to more businesses, and that more businesses lead to a higher number of businesses needing support during the pandemic. This assumption is supported by the data, which shows that the three most populated regions, Eastern Norway, Western Norway and Oslo (Statistics Norway, 2022a), have the highest number of companies receiving compensation. Of the businesses in our sample, 78 percent are located within these three regions and 69 percent of the Norwegian population lives there.

Table 4.3: Grant Amount in NOK by Region

The number of observations and the share of female CEOs in the sample are presented together with the mean, median, minimum and maximum value of grant amount in NOK, for each region as well as for metropolitan and rural areas, separately. For further descriptions of the regions see appendix A3.1. The number of observations and grant amount vary a lot across regions.

Region	# Observations	Female Share	Mean	Median	Min	Max
North	653	29.10 %	171,538	74,857	5,662	6,690,944
Central	536	31.53 %	142,726	62,891	5,312	2,599,620
West	1,412	27.55 %	225,693	71,469	5,200	65,121,476
South	289	23.53 %	170,663	63,379	5,197	7,517,951
East	2,223	26.59 %	185,172	60,727	5,217	11,758,198
Oslo	1,499	26.02 %	548,974	95,762	5,390	87,145,244
Metropolitan	3,703	26.09 %	333,400	79,954	5,217	87,145,244
Rural	2,909	28.57 %	191,299	61,018	5,197	65,121,476
Total	6,612	27.18 %	270,881	70,220	5,197	87,145,244

Moreover, we observe that the mean, median and maximum grant amounts vary substantially across the different regions. Oslo stands out, with a mean of 548,974 NOK and a median of 95,762 NOK. The single highest grant amount is also found in Oslo. All six regions have small businesses that received around 5,000 NOK. Central Norway has the lowest mean grant amount with 142,726 NOK, whilst the median is lowest in Eastern Norway with 60,727 NOK. The regional differences could be related to the fact that the regions faced somewhat different government imposed restriction during the pandemic, and thus the businesses were affected differently. It could also be related to the size of the businesses, in that some regions might have more large businesses than others.

Over half of the businesses in the sample are located in a metropolitan area, even though only 19 out of the 335 municipalities in the sample are classified as metropolitan. This aligns with our expectations of most businesses being located in the areas where most people live. Median grant amount is 18,936 NOK higher in metropolitan areas than in rural areas, whilst mean grant amount is 141,519 NOK higher for businesses located in metropolitan areas. This indicates that businesses in the cities have faced bigger losses during the pandemic than those in rural areas, which makes sense since the restrictions often were stricter in more populated areas. We also expect that businesses in metropolitan areas had higher absolute turnovers before the pandemic, as there are more customers available there. A 30 percent turnover fall would then lead to a bigger absolute fall in turnover, resulting in higher grant amounts for businesses in these areas. However, we observe that the rural areas also have businesses that experienced huge turnover falls, with one business receiving 65 millions NOK in compensation for January and February 2021. Note that where a business is registered is not always where it has most of its operations, so these numbers could be somewhat misleading.

The share of female CEOs vary somewhat across regions, but to a much smaller degree than when looking at industry differences. This indicate that industry is of more importance when studying gender differences in the corporate sector. However, the big differences in mean grant amount between the regions show that region is of importance when studying differences in mean grant amount between companies.

5 Methodology

This section contains an explanation of the methodology applied in this thesis. We discuss the various methods used to study the relationship between CEO gender and received grant amount. The methodology is presented in three parts, descriptive statistics, the OLS method and the Blinder-Oaxaca Decomposition, and includes our assumptions and models. In the end, a discussion on correlation versus causation follows.

5.1 Descriptive Statistics

To answer the research question, we begin by presenting descriptive statistics for companies with female and male CEOs separately. This gives valuable insight on gender differences in our sample. The descriptive statistics answer the six questions presented below.

Question 1 - How is the CEO gender distribution in the sample, and does it differ statistically significantly from the population?

We wish to test if the share of female and male CEOs differs statistically significantly from the share of female and male CEOs among all Norwegian private limited companies. This is done with a t-test, which tells us whether the distribution of female and male CEOs in the sample differ statistically significantly from the gender distribution among CEOs in the population. We use a 5 percent significance level. A p-value below 5 percent means that the null-hypothesis can be rejected, and that the gender distribution among CEOs in the sample differ statistically significantly from the gender distribution in the population.

Question 2 - Do the companies with female CEOs receive their fair share of the total grant amount?

We discuss what can be perceived as a fair distribution of money and whether this is fulfilled in the sample. We study whether the share of female and male CEOs in the sample corresponds to the percentage share of the total grant amount the two groups received, as this is one way to define a fair distribution. We also discuss what would be a fair distribution given the share of female CEOs in the sample and the share of female CEOs in the population. Additionally, since a company's grant amount is calculated based on reported fixed, unavoidable costs and turnover fall, statistics regarding these variables are relevant for a discussion on the fairness of the money distribution. We therefore present statistics on these variables, and compare the distribution of costs and turnover fall to the distribution of the total grant amount.

Question 3 - Does received mean grant amount differ statistically significantly between companies with a female CEO and companies with a male CEO?

To investigate if received mean grant amount is statistically significantly different for companies with a female CEO and a male CEO, we perform a t-test. The null-hypothesis of this t-test is that the two means are equal, in other words that female-led and male-led companies on average received the same grant amounts. The alternative hypothesis is that the male-led companies received a higher grant amount than the female-led companies.

Question 4 - How do outliers affect the difference in mean grant amount between companies with female CEOs and companies with male CEOs?

We study the distribution of observations in the data more closely. We investigate whether observations that stand out from the majority of the sample in regards to received grant amount, affect the difference in mean grant amount between companies with female CEOs and companies with male CEOs. To do so, we perform a t-test which tests whether there is a statistically significant difference in mean grant amount between the companies with female CEOs and the companies with male CEOs, when excluding outliers. This shows whether the previous results are driven by outliers.

Question 5 - How is firm size correlated with CEO gender?

Furthermore, we study whether firm size and CEO gender are correlated. We assume that firm size is correlated with received grant amount and it is therefore interesting to study the correlation between CEO gender and firm size as well. Additionally, this will give an indication on the importance of firm size as a control variable in the regression analysis. We use two measures of firm size; the number of employees in each company and the company's turnover in the comparative period.

Question 6 - How does mean grant amount vary across the different gender compositions of the CEO and the chairperson?

Lastly, we present descriptive statistics on the board chairperson as we use the chairperson's gender as one of our control variables. Specifically, we present the number of observations and the mean grant amount for all gender combinations of CEO and chairperson. Based on these statistics, we discuss the correlation between received grant amount and chairperson gender, and compare it to the correlation between received grant amount and CEO gender.

5.2 The OLS Method

When studying the descriptive statistics on gender, we expect to find a difference in mean grant amount between companies with a female CEO and companies with a male CEO. To study this difference further we perform various regressions, with the purpose of answering the additional question:

Question 7 - Does received mean grant amount differ statistically significantly between companies with a female CEO and companies with a male CEO, when controlling for firm characteristics?

Since our analysis is based on cross-sectional data, we use the ordinary least squares method (OLS), which estimates coefficients that minimizes the sum of squared residuals (Wooldridge, 2014). We are interested in how the CEO's gender is related to a company's received grant amount through the Compensation Scheme for Businesses. Performing a regression with *GrantAmount* as the dependent variable and *FemaleCEO* as the independent variable, allows us to study this. The coefficient of the gender dummy provides a measure of the gender gap, indicating to what extent companies with a female CEO on average have received more or less than companies with a male CEO.

The statistics in section 4 indicate that other factors than gender likely affect how much money companies received through the scheme. Therefore, we add additional control variables to the regression, starting with the one we believe affects grant amount the most and adding one by one, by decreasing importance. By including more variables in the regression, we investigate whether the difference in mean grant amount is due to gender only, or if it fully or partially can be explained by other observable characteristics. We expect the coefficient of *FemaleCEO* to decrease and become insignificant when adding more control variables. This would mean that the control variables explain the difference in mean grant amount between female-led and male-led businesses.

5.2.1 Logarithmic functional form

In the analysis we use a logarithmic functional form. The variable *GrantAmount* varies a lot across the sample, and a logarithmic model is therefore useful (Wooldridge, 2014). Our dependent variable is strictly positive, which could lead to a skewed or heteroskedastic distribution. Taking the logarithm reduces these problems. It also narrows the range of the variable, which makes the OLS estimates less sensitive to outlying values. This is helpful in our analysis, as we know that some companies in the sample have received grant amounts much higher than the sample average.

We also take the log of the explanatory variables *NumberEmployees* and *TurnoverCP*[7]. From table 4.1 in section 4 we observe that there is a big difference between the maximum and minimum value, whilst the mean and median are relatively small for both of these variables. This indicates that some observations are a lot higher than the majority of the sample. Taking the log of the variables reduces the range, which in turn makes the estimates less sensitive to outliers (Wooldridge, 2014).

Using a logarithmic functional form leads to a different interpretation of the coefficients (Wooldridge, 2014). When the dependent variable is logarithmic (log-linear model), the coefficients of the explanatory variables are interpreted as the approximate percentage change in *GrantAmount* when the explanatory variable increases by 1. In a log-log model, the coefficient measures elasticity, such that a 1% increase in the explanatory variable is associated with approximately a β% increase in *GrantAmount*. When the change in log(y) becomes larger, these approximation methods become more and more inaccurate and precise estimates must be calculated separately. For a log-linear model this is done with the following formula:

$$\%\Delta y = 100 * (e^{\beta_1} - 1) \tag{5.1}$$

For a log-log model the following formula is used:

$$\%\Delta y = \beta_1 \%\Delta x \tag{5.2}$$

[7]CP is short for Comparative Period. For further variable explanation see appendix A1.

5.2.2 Controlling for Gender

We start the regression analysis by studying the direct relationship between CEO gender and received grant amount. We estimate the following simple linear regression model:

$$logGrantAmount = \beta_0 + \beta_1 FemaleCEO + \epsilon \tag{5.3}$$

The error term, ϵ, represents all factors other than CEO gender that also affect received grant amount (Wooldridge, 2014). To be able to draw ceteris paribus conclusions on how CEO gender affects grant amount, all other factors must be held constant. However, here all other factors are unobserved and therefore hard to hold constant. Later on, we add more variables to the model such that we get a multiple regression model, and thus are able to isolate the effect of *FemaleCEO* on *GrantAmount* better.

The t-test we perform to begin with tells us whether the *FemaleCEO* coefficient is significant or not. A statistically significant difference between mean grant amount for female-led and male-led businesses gives a statistically significant coefficient in the regression. Nevertheless, it is interesting to perform the regression in addition to the t-test, since the *FemaleCEO* coefficient provides an estimate of the percentage difference in mean grant amount between female-led and male-led companies.

5.2.3 Controlling for Firm Size

Since we believe that women and men typically run companies of different sizes, we control for firm size in our analysis. We assume that firm size is correlated with grant amount, as it is natural that bigger companies received more money through the scheme. Adding a firm size variable to the regression means that we perform a multiple regression. The advantage of multiple regressions is that they allow us to hold several factors, here firm size, fixed, hence isolating the effect of CEO gender better (Wooldridge, 2014).

Number of employees is one of many ways to measure firm size (The Confederation of Norwegian Enterprise, n.d.). Number of employees is therefore included in the regression, and we estimate the following multiple linear regression model:

$$logGrantAmount = \beta_0 + \beta_1 FemaleCEO + \beta_2 logNumberEmployees + \epsilon \tag{5.4}$$

Some companies in the sample received large grant amounts, but have very few employees. Examples include Strawberry Group AS which received 87 millions NOK, but only have 10 employees and Color Line Transport AS which have 5 employees and received 31 millions NOK. However, Scandic Hotels AS has 4,333 employees, the highest number in the sample, and received 83 millions NOK, which was the second highest grant amount in the sample. These examples show that number of employees may not be a perfect measure of firm size, and we therefore wish to include turnover as an additional measure.

Our data includes information on the turnover of all businesses in the comparative period and in the grant period. We choose to use turnover in the comparative period as our control variable, since this is a pre-pandemic measure. Hence, the companies regarded as big pre-pandemic is regarded as big in this analysis as well. *GrantAmount* is calculated using *TurnoverCP* and *TurnoverGP*[8]. Therefore, *logGrantAmount* is correlated with *logTurnoverCP* and we expect *logTurnoverCP* to explain a high share of the variation in the dependent variable. The following regression is performed:

$$\begin{aligned} logGrantAmount = \beta_0 + \beta_1 FemaleCEO + \beta_2 logNumberEmployees \\ + \beta_3 logTurnoverCP + \epsilon \end{aligned} \tag{5.5}$$

A company's number of employees and turnover are likely correlated. This does not violate the prerequisites of OLS, as long as there is no perfect collinearity between the two variables (Wooldridge, 2014). As mentioned above, the sample consists of both companies with high turnovers and few employees and companies with many employees and high turnovers. Thus, perfect collinearity is not an issue. Still, high collinearity between the two variables could result in high variances, which makes it hard to estimate the individual effect of the two variables. Since the effect of firm size is not the main interest in this analysis, this is not an issue.

5.2.4 Controlling for Industry

The descriptive statistics in section 4 show that there are big differences in grant amount between the various industries and that the share of female CEOs in the sample vary a lot across industries. To further isolate the effect of CEO gender on grant amount, we therefore consider it necessary to control for industry effects.

[8]GP is short for Grant Period.

The sample consists of companies within 13 different industries as well as an *Other* category. The dummy variable trap occurs if the number of dummy variables created equals the number of categories in the sample (Wooldridge, 2014). This leads to multicollinearity and causes issues in the calculations of regression coefficients and p-values. To avoid this, we include 13 industry dummy variables. Industry C is used as the base category, which all the other industries are compared against. The following regression is estimated:

$$\begin{aligned} logGrantAmount &= \beta_0 + \beta_1 FemaleCEO + \beta_2 logNumberEmployees \\ &+\beta_3 logTurnoverCP + \sum \beta_i IndustryDummy + \epsilon \end{aligned} \tag{5.6}$$

5.2.5 Controlling for Regional Differences

Section 4 shows that there are big differences in mean grant amount between businesses registered in metropolitan areas compared to rural areas. We therefore add the *Metro* variable to our regression model. Municipalities with over 50,000 inhabitants are classified as metropolitan. Some of the difference in mean grant amount could stem from metropolitan and rural areas differing in regards to companies' firm size and industry, such that the *Metro* variable may not be significant when these control variables are already included. Nevertheless, we believe *Metro* to be of some importance because the government imposed restrictions were stricter and lasted longer in more highly populated areas. *Metro* is added to the regression model and the following expression is estimated:

$$\begin{aligned} logGrantAmount &= \beta_0 + \beta_1 FemaleCEO + \beta_2 logNumberEmployees \\ &+\beta_3 logTurnoverCP + \sum \beta_i IndustryDummy + \beta_2 Metro + \epsilon \end{aligned} \tag{5.7}$$

As observed in section 4, there are also big differences in mean grant amount between the different geographical regions. Again, it is possible that the regions are dominated by businesses in different industries and of different sizes, and that this explains the difference in mean grant amount between the regions. Nevertheless, there were regional differences in the government imposed restrictions and we expect this to be the underlying reason for some of the difference in grant amount between regions. Controlling for region might not be the best way to capture the regional differences in government imposed restrictions, as even within one region there could be different rules. Categorising municipalities based on restriction strictness would be a better approach, but for simplicity reasons we choose to use regions instead.

There are six regions in our dataset. Five dummy variables are thus added, with Eastern Norway as the base category. We estimate the following expression:

$$\begin{aligned} logGrantAmount &= \beta_0 + \beta_1 FemaleCEO + \beta_2 logNumberEmployees \\ &+ \beta_3 logTurnoverCP + \sum \beta_i IndustryDummy + \beta_4 Metro \\ &+ \sum \beta_i RegionDummy + \epsilon \end{aligned} \tag{5.8}$$

5.2.6 Controlling for Gender of Board Chairperson

In addition to the gender of the CEO, the dataset includes information on the gender of the board chairperson. Since both the chairperson and the CEO are able to apply for the scheme, we find it interesting to study how the gender of both is related to received grant amount. We expect that *FemaleBC*, just like *FemaleCEO*, has a negative effect on grant amount. The following expression is estimated:

$$\begin{aligned} logGrantAmount &= \beta_0 + \beta_1 FemaleCEO + \beta_2 logNumberEmployees \\ &+ \beta_3 logTurnoverCP + \sum \beta_i IndustryDummy + \beta_4 Metro \\ &+ \sum \beta_i RegionDummy + \beta_5 FemaleBC + \epsilon \end{aligned} \tag{5.9}$$

The *FemaleCEO* and *FemaleBC* variables are likely correlated. There are four possible combinations of the gender of the CEO and the gender of the chairperson. The only way there is no correlation between the two variables is if the number of observations of each gender combination is the exact same. This seems unlikely since there are a lot more male CEOs among Norwegian private limited companies, than there are female CEOs. Thus, there must be correlation. Correlation does not violate the assumptions of OLS as long as there is no perfect collinearity between the two variables. Perfect collinerarity seems unlikely, as it would mean that not all four gender combinations are present in the sample. Still, high multicollinearity between the two variables could give high variances, and make it hard to estimate the individual effect of the two variables. In this case, the effect of the two variables should be seen in relation to each other and be analysed together.

5.3 Blinder-Oaxaca Decomposition

In the OLS regressions presented above, we use a group indicator variable to measure the gender gap in mean *GrantAmount*. This can also be done with a Blinder-Oaxaca decomposition (Blinder, 1973; Oaxaca, 1973). The aim of this method is to distinguish between the explained and the unexplained components as the reason for the difference in mean between two groups. Traditionally, the method has been used to study the gender pay gap. The wage differential between women and men is then divided into one part which is explained by group differences in characteristics, such as education and work experience, and one part that cannot be explained by such wage determinants. The unexplained part is often used as a measure of discrimination. Thus, the method gives insight into how much of the gender pay gap is due to discrimination, and how much is due to the fact that women as a group differ from men as a group, for example when it comes to education, work experience, industry and job positions.

The two groups of interest in our analysis are companies with a female CEO and companies with a male CEO. The sample is therefore divided into two groups, based on this characteristic. Moreover, we perform one regression for each group and compare the two models with each other. Under traditional OLS with a gender dummy variable, only the intercept is affected by gender. The main advantage of the Blinder-Oaxaca decomposition is that it allows for the coefficients of the control variables to be different for the two groups. Thus, the following regression is preformed for both subsamples:

$$\begin{aligned} logGrantAmount = \beta_0 + \beta_1 logNumberEmployees + \beta_2 logTurnoverCP \\ + \sum \beta_i IndustryDummy + \beta_3 Metro + \sum \beta_i RegionDummy \\ + \beta_4 FemaleBC + \epsilon \end{aligned} \tag{5.10}$$

To decompose the gender gap into an explained and an unexplained part, we use the following approach retrieved from Cahuc et al. (2014). Let G_{Mi} and X_{Mi} denote grant amount and the vector of observable characteristics respectively, for company i belonging to the reference group of companies with male CEOs. Expression 5.10 can then, for companies with male CEOs, be written as:

$$logG_{Mi} = X_{Mi}\beta_M + \epsilon_{Mi} \tag{5.11}$$

The equivalent for companies with a female CEO is:

$$logG_{Fi} = X_{Fi}\beta_F + \epsilon_{Fi} \tag{5.12}$$

where β denotes the vector of parameters to be estimated and ϵ is the error term. The error term is here interpreted as the effect of the individual unobserved characteristics. Dividing the sample into two groups and performing separate regressions, makes it possible to estimate the relationship between the control variables and received grant amount for the companies with female CEOs and companies with male CEOs separately.

The difference in mean *logGrantAmount* between the two groups can be decomposed into the following, which is know as the Blinder-Oaxaca decomposition:

$$\overline{logG_M} - \overline{logG_F} = (\overline{X}_M - \overline{X}_F)\hat{\beta}_M + \overline{X}_F(\hat{\beta}_M - \hat{\beta}_F) \tag{5.13}$$

where $\hat{X}_M$ and $\hat{X}_F$ denotes the average values of the vectors of observed characteristics.

The first term of the decomposition, $(\overline{X}_M - \overline{X}_F)\hat{\beta}_M$, represents the explained component of the gender difference in received grant amount. This is the difference in mean grant amount that is due to observed differences between companies run by women and companies run men, for example that male CEOs on average run bigger companies or operate in different industries than female CEOs. Thus, the explained component gives an estimate of how much a company with a female CEO would receive, if they had the same characteristics as the average company with a male CEO. To estimate the contribution of each control variable to the gender gap, the explained part is further decomposed.

The second term, $\overline{X}_F(\hat{\beta}_M - \hat{\beta}_F)$, shows the unexplained component of the gender difference. A difference in coefficients between the two models shows that women and men on average have different returns to their characteristics. For example, operating in industry G could be associated with a higher increase in grant amount for a company with a male CEO than for a company with a female CEO. Thus, the unexplained component gives an estimate of how much a company with a female CEO would receive, if they had the same return to characteristics as companies with a male CEO.

5.4 Correlation vs. Causation

In non-experimental studies one must be aware of the difference between correlation and causation. Both correlation and causation are terms used to describe the relationship between variables, but the two concepts do not have the same interpretation. Correlation refers to the fact that two variables are related to each other, usually by moving in the same direction or in complete opposite direction (Frøslie, 2022). Correlation can be demonstrated by a scatter plot, for example if we observe that an increase in the x-variable is related to an increase in the y-variable.

Causation refers to a situation where one event causes another event to occur (Dahlum and Grønmo, 2021). Causation is more difficult to prove than correlation and it must be done with appropriate experiments and statistical tests. If we have proven causation, we also have correlation between the variables in question. However, correlation does not imply causation. The fact that two variables are correlated, does not mean that one causes the other. The relationship between the two variables could be completely coincidental, or there may be a third factor causing both variables in question to change. For example, both ice cream sales and the number of wildfires increase during summer and thus are correlated. However, the correlation stems from increased temperatures, which causes both ice cream sales and the number of wildfires to increase.

In our analysis we find a significant difference in mean grant amount between businesses with a female CEO and businesses with a male CEO. Thus, we know that CEO gender is correlated with grant amount. However, we have not proven causation. It seems unlikely that the gender of a company's CEO determines how much money the company received trough the scheme. As explained in section 2.3, there are clear requirements and rules for which companies are eligible for the scheme and how much they can get. None of these requirements are related to the CEO's gender. Hence, there are other factors than CEO gender that determine grant amount. However, CEO gender can be correlated with some of these requirements and thus also be correlated to grant amount. For example, to be eligible for the scheme, companies have to experience substantial turnover falls. The bigger the turnover fall, the more compensation one could receive. If companies with male CEOs on average experienced bigger turnover falls, they would also receive bigger grant amounts and we will find correlation between CEO gender and grant amount.

To prove causation one needs to perform an experiment that isolates the gender effect. Such an experiment would involve a random distribution of female and male CEOs among all Norwegian businesses. All businesses would have to be pooled together and CEOs would be appointed at random, such that there is no correlation between CEO gender and firm characteristics. If the businesses then were to apply to the Compensation Scheme for Businesses, it would be possible to study whether there is a differences in mean grant amount that is due to gender only, or whether the correlation is due to other factors that are correlated with both CEO gender and grant amount. However, this experiment is impossible to conduct as CEOs can never be randomly assigned to actual businesses.

The correlation between CEO gender and grant amount is what we wish to investigate further in our analysis. We believe that correlation is of public interest, even if there is no causation, as it would mean that public money is spent unevenly on female-led and male-led businesses. Gender equality is desired in Norway and still lacking in the corporate sector. Therefore, we think it is of interest how governmental support schemes relates to gender equality. From a gender equality perspective it is unfortunate if public money is spent in a way that exacerbates preexisting gender differences, which could be the case if male-led businesses have received more money through the scheme than female-led businesses. It is crucial to know how policies affect gender differences, so that this can be taken into account in future decision making and support schemes. For example, if gender differences has increased due to COVID-19 related policies and support schemes, this can be counteracted by compensating in other areas post-COVID.

6 Analysis

In the following section we apply the methodology to our data, and present the results of our analyses. In doing so, we answer the seven questions presented in section 5. The section is divided into three main parts; descriptive statistics on gender, the OLS regression models and the Blinder-Oaxaca decomposition. In the end, we discuss the robustness of the analysis, and what implications this have for our results.

6.1 Descriptive Statistics on CEO Gender

Question 1 - How is the CEO gender distribution in the sample, and does it differ statistically significantly from the population?

Table 6.1: Overview of the CEO Gender Distribution

The sample is divided into two categories: companies with a female CEO and companies with a male CEO. The number of observations and total grant amount in NOK for each category is presented in numbers and as a percentage share of the total sample. There are less female CEOs in the sample than male CEOs, and the companies with female CEOs have received a smaller share of the total grant amount.

	Female CEO	Male CEO	Total
Number of Observations	1,797	4,815	6,612
Percentage of Observations	27.18%	72.82%	100%
Total Grant Amount	320,783,317	1,470,282,644	1,791,065,961
Percentage of Total Grant Amount	17.91%	82.09%	100%

Table 6.1 show that 27.18 percent of the 6,612 companies in the sample have a female CEO, whilst 72.82 percent have a male CEO. In 2021, 16.76 percent of all CEOs in Norwegian private limited companies were women (Statistics Norway, 2021c). Thus, the percentage share of all female-led companies that applied to the scheme is higher than the percentage share of all male-led companies that applied. However, since the share of male CEOs in the population is so high, the majority of CEOs in the sample are still men.

To test if there is a statistically significant difference in the share of female CEOs in the sample, compared to the share of female CEOs in the population, we perform a t-test. The null hypothesis of the t-test is that the share of female CEOs in our sample is equal to 16.67 percent, while the alternative hypothesis states that there is a higher share of female CEOs in the sample than in the population. The t-test gives a p-value of 0.00, which means that we reject the null hypothesis. We can thus conclude that the share of female CEOs receiving compensation through the scheme is statistically significantly higher than the share of female CEOs in the population. This could indicate that businesses led by women have struggled more during the pandemic, and therefore been in greater need of the support scheme. If we believe businesses led by women and men were affected equally, they should have received money through the scheme at the same frequency, and the share of female CEOs in the sample should have been lower.

Question 2 - Do the companies with female CEOs receive their fair share of the total grant amount?

Table 6.1 shows that the companies with female CEOs received 17.91 percent of the total grant amount paid out to companies in the sample. However, companies with a female CEO constitutes 27.18 percent of the sample. Therefore, it could be perceived as fair that the companies with female CEOs received 27.18 percent of the total grant amount. If the share of money paid out to companies with female CEOs equals the share of female CEOs in the sample, mean grant amount would be the same for companies with female CEOs and with male CEOs. In this case, female-led businesses should have received 486,811,456 NOK in total, which is nearly 170 millions NOK more than what they did receive.

One could also argue that it is fair if the share of female CEOs in the sample equals the share of female CEOs in the population, i.e. 16.76 percent. If they also were to receive 16.76 percent of the total grant amount, the companies with female CEOs should in total receive 300,182,488 NOK, which is 20 millions NOK less than what they did receive. The fact that they received more than this indicates that a higher share of the female-led businesses than the male-led businesses struggled during the pandemic, but that the absolute turnover falls were greater for businesses with male CEOs than for businesses with female CEOs. To determine whether this is the case, we take a closer look at the reported turnover falls and to what extent they correspond to the received grant amounts.

In table 6.2 we observe that the companies with male CEOs on average have 268,540 NOK higher fixed, unavoidable costs in the grant period than companies with female CEOs. The mean turnover fall is 1,478,898 NOK higher for companies with male CEOs than for companies with female CEOs. When looking at the mean turnover fall in percent, the difference is only 2.6 percentage points. Thus, the difference in mean turnover fall seems to primarily be caused by a difference in mean turnover in the comparative period. If companies with male CEOs on average had larger turnovers in the comparative period, it also makes sense that their turnover falls, in absolute value, were larger than the turnover falls of the companies with female CEOs. Gender differences related to turnover in the comparative period is studied further under question 5.

Table 6.2: Reported Fixed, Unavoidable Costs and Turnover Fall

The reported fixed, unavoidable costs in the grant period and the reported turnover falls are presented for the total sample, and split by CEO gender. Monetary values in NOK. For variable description see appendix A1. The companies with male CEOs experienced on average greater turnover falls and more fixed, unavoidable costs, than the companies with female CEOs.

	Female CEO	Male CEO	Total
Total Fixed Unavoidable Costs GP	613,059,140	2,935,689,096	3,548,748,235
Percentage Share	17.29%	82.71%	100%
Mean Fixed Unavoidable Costs GP	341,157	609,697	536,713
Total Turnover Fall	2,842,445,631	14,737,130,750	17,579,576,382
Percentage Share	16.17%	83.83%	100%
Mean Turnover Fall	1,581,773	3,060,671	2,658,738
Mean Turnover Fall in Percent	62.33%	64.91%	64.21%

Each company's grant amount is calculated based on reported turnover fall and fixed, unavoidable costs in the grant period. Therefore, one could argue that the companies with female CEOs received their fair share of the total grant amount if their received share equals their share of the total turnover fall and the total fixed, unavoidable costs. Companies with female CEOs received 17.91 percent of the total grant amount and they accounted for 17.29 percent of the total fixed, unavoidable costs and 16.17 percent of the total turnover fall. Given this definition of fair share, the companies with female CEOs have received their fair share of total grant amount, and maybe even a little bit more.

Question 3 - Does received mean grant amount differ statistically significantly between companies with a female CEO and companies with a male CEO?

Since there are 27.18 percent female CEOs in the sample, but this group only received 17.91 percent of the total grant amount paid out, we know that mean grant amount is lower for companies with female CEOs than for companies with male CEOs. The exact differences are presented in table 6.3.

Table 6.3: Summary Statistics by Gender

Summary statistics for key variables in the dataset are presented separately for companies with a female CEO and companies with a male CEO. The mean, median, minimum and maximum value is presented for each variable. Monetary values in NOK. For variable description see appendix A1. Companies with female CEOs have lower mean and median grant amount than the companies with male CEOs. Female CEOs also run smaller companies measured in number of employees and measured in turnover.

	Mean	Median	Minimum	Maximum
Female CEO				
Grant Amount	178,511	57,307	5,197	38,368,942
Grant Fixed Unavoidable Costs	177,746	56,844	5046	38,368,942
Grant Lost Inventory	765	0	0	320,529
Number of Employees	19	8	1	2,966
Turnover Comparative Period	2,463,033	773,432	7,834	241,658,352
Turnover Grant Period	881,261	243,619	0	117,181,636
Male CEO				
Grant Amount	305,355	77,412	5205	87,145,244
Grant Fixed Unavoidable Costs	304,684	76,687	0	87,145,244
Grant Lost Inventory	670	0	0	150,617
Number of Employees	22	9	1	4,333
Turnover Comparative Period	4,912,785	1,204,737	5205	880,207,332
Turnover Grant Period	1,852,114	333,315	0	356,807,204

The companies with female CEOs have on average received 126,844 NOK less through the compensation scheme than the companies with male CEOs. To examine if the difference in mean grant amount is statistically significant, we perform a t-test. Companies with a female CEO received on average 178,511 NOK, whilst companies with a male CEO received on average 305,355 NOK through the scheme for Janaury and February 2021. The null-hypothesis of the t-test is that these two means are equal. The t-test gives a p-value of 0.02, which means that the null hypothesis can be rejected. In other words, companies with female CEOs have on average received statistically significantly lower grant amounts than companies with male CEOs. This is expected since the companies with female CEOs also experienced smaller turnover falls in absolute value, and had less fixed, unavoidable costs than the companies with male CEOs.

Question 4 - How do outliers affect the difference in mean grant amount between companies with female CEOs and companies with male CEOs?

Figure 6.1 shows all observations plotted on grant amount and CEO gender. The figure illustrates that more companies with male CEOs than with female CEOs received money through the scheme, and that more of the male-led companies received high grant amounts. Each dot in the diagram represents one company receiving a grant, such that the darker the colour, the more companies received that grant amount.

Figure 6.1: Gender Distribution of Grant Amount

Grant amount plotted for companies with female and male CEOs. Each dot indicates one observation. The dashed line at 15 millions NOK works as a threshold for outliers. The majority of companies in the sample have a male CEO, and companies with male CEOs have received more money than the companies with female CEOs.

The dashed line in the diagram is drawn at 15 millions NOK. Above this line we find the 10 observations in the dataset with the highest grant amounts. These observations clearly stand out from the majority of observations in the sample. We have therefore chosen to classify observations with a grant amount above 15 millions NOK as outliers[9]. The remaining 6,602 companies in the sample received less than 15 millions NOK. Thus, the range in grant amount is smaller among the majority of the companies, than what the previously presented descriptive statistics show. Of the 10 companies receiving over 15 millions NOK, only 1 is led by a woman. Hence, we find it interesting to study the effect of these 10 outliers on mean grant amount.

For now we remove the outliers from the data and calculate a new mean for the remaining sample, and for the remaining companies with female CEOs and male CEOs separately. This gives insight into whether the difference in mean grant amount between companies with male CEOs and companies with female CEOs is driven by outliers.

[9]For a further discussion on outliers, we refer to appendix A4.

Table 6.4: Mean Grant Amount - Outliers

Mean grant amount in NOK for companies with female CEOs, male CEOs and the total sample, including and excluding outliers, and for outliers only. Mean grant amount is lower for companies with female CEOs than for companies with male CEOs, both when including and excluding outliers.

	Female CEO	Male CEO	Total Sample
Mean excluding outliers	157,246	213,268	198,028
Mean including outliers	178,511	305,355	270,881
Mean of outliers	38,368,942	49,479,690	48,368,616

From table 6.4 we observe that when removing the 10 observations with the highest grant amounts from the sample, there is still a substantial difference in mean grant amount between companies with female CEOs and companies with male CEOs. The mean for companies with male CEOs decline by 92,087 NOK, whilst the mean for comapnies with female CEOs decline by 21,265 NOK. Hence, removing the 10 outliers have a much bigger impact on mean grant amount for the companies with male CEOs. This is not surprising given that 9 of the 10 observations are of companies with male CEOs.

To check whether the difference in mean grant amount for companies with female CEOs and companies with male CEOs remains significant when excluding the outliers, we preform a t-test. The null-hypothesis is that the two means, 157,246 NOK and 213,268 NOK respectively, are equal. The t-test provides a p-value of 0.02 percent, which means that we reject the null-hypothesis. Thus, we conclude that our previous result of a statistically significant difference in mean grant amount between companies with a female CEO and companies with a male CEO is not driven by outliers.

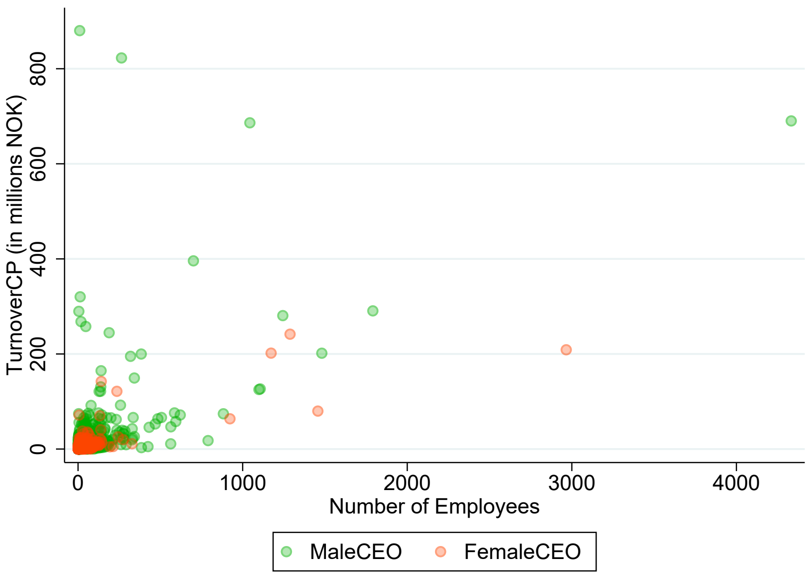
Question 5 - How is firm size correlated with CEO gender?

Table 6.3 gives insight into CEO gender differences related to firm size. The average number of employees in female-led companies is 19 employees, which is 3 employees less than the average in male-led companies. The medians are more similar and a lot lower with 8 employees for female CEOs and 9 employees for male CEOs. This indicates that men typically run companies with more employees than what women do. Furthermore, the mean in both groups are increased by some companies having a much higher number of employees than the majority of the sample. The maximum amount is highest for the male CEO with 4,333 employees, whilst the female CEO with most employees have 2,966.

Table 6.3 shows that mean turnover is higher for companies with a male CEO, both in the comparative period and in the grant period. In the grant period the difference in mean turnover is 970,853 NOK and in the comparative period the difference in mean turnover is 2,449,752 NOK. Surprisingly, we observe that the minimum value of turnover in the comparative period is lower among the companies with male CEOs than among the companies with female CEOs. However, a closer look at the data shows that there are 10 companies with a turnover of less than 18,000 NOK. Of these, 6 companies have a female CEO and 4 companies have a male CEO. Hence, there is no reason to believe that the majority of small companies are run by men. The maximum value of turnover, both in the comparative period and the grant period, is found in a company with a male CEO.

Figure 6.2: Plot of Firm Size

The figure shows the number of employees along the x-axis and the turnover in the comparative period in millions NOK along the y-axis. Colour distinguishes observations by the gender of the CEO. We observe that male CEOs tend to run bigger companies than what female CEOs do, but that the majority of the companies in the sample are small.



The difference in firm size is further illustrated in figure 6.2, where the number of employees and turnover in the comparative period is plotted for each company. The figure supports the statistics in table 6.3, in that companies run by a male CEO typically are larger than those run by a female CEO. This is especially true when looking at the turnover in the comparative period, where the top 10 observations are of companies with a male CEO. For number of employees the difference is not as clear for the biggest companies, but for companies with between 500 and 1000 employees the figure shows that there are close to no female CEOs. However, as seen in the figure, most of the companies in the sample are small, with less than 250 employees and a turnover of under 50 millions NOK. The descriptive statistics show that the average company is even smaller, as the mean turnover in the comparative period is 4,246,955 NOK and the mean number of employees is 21. Nevertheless, there is some correlation between CEO gender and firm size. We therefore perceive firm size, measured in number of employees and turnover in the comparative period, as important control variables in the regression analyses.

Question 6 - How does mean grant amount vary across the different gender compositions of the CEO and the chairperson?

Table 6.5 shows the number of observations for each gender combination of CEO and chairperson in the sample. Of the companies in the sample, 68.36 percent have both a male chairperson and a male CEO. The rarest combination is companies with a female chairperson and a male CEO, which makes out only 4.46 percent of the total sample. Among the companies with a female CEO, 52.87 percent have a female chairperson and 47.13 percent have a male chairperson. Of the companies with a male CEO, 93.87 percent have a male chairperson as well.

Table 6.5: Number of Observations for Each Gender Composition

The number of observation for each gender combination of CEO and chairperson is presented. The percentage share of the total sample in parenthesis. The majority of CEOs and chairpersons in the sample are men.

	Female Chair	Male Chair	Total
Female CEO	950 (14.37%)	847 (12.81%)	1,797 (27.18%)
Male CEO	295 (4.46%)	4,520 (68.36%)	4,815 (72.82%)
Total	1,245 (18.83%)	5,367 (81.17%)	6,612 (100%)

From table 6.6 it becomes clear that businesses with both a female CEO and a female chairperson have the lowest mean grant amount out of all the gender combinations in the sample, with only 82,091 NOK. The highest mean is found among businesses with both a male chairperson and a male CEO, which received 313,208 NOK on average. Since this is also the category with the highest number of observations, we conclude that the majority of the money paid out through the scheme, went to male-led businesses.

Table 6.6: Mean Grant Amount for Each Gender Composition

The mean grant amount in NOK per company for each gender combination of CEO and chairperson is presented. Having a male CEO and/or a male chairperson is correlated with higher grant amounts.

	Female Chair	Male Chair	Total
Female CEO	82,091	286,655	178,510
Male CEO	185,019	313,208	305,355
Total	106,480	309,018	270,881

Mean grant amount for all companies with a female CEO is higher than the mean grant amount for all companies with a female chairperson. On the contrary, mean grant amount for all companies with a male chairperson is higher than the mean for all companies with a male CEO. Moreover, we observe that the difference in mean grant amount is bigger between companies with a female chairperson and a male chairperson, than between companies with a female CEO and a male CEO. This indicates that the correlation between chairperson gender and received grant amount is stronger than the correlation between CEO gender and grant amount.

6.2 OLS Regressions

The descriptive statistics presented in the previous section show that there are differences in how much money companies received through the Compensation Scheme for Businesses, given the gender of their CEO. The t-test proves that the difference is significant and that companies with a male CEO on average received more money than companies with a female CEO. The same results apply for the gender of the chairperson; companies with a female chairperson received on average less money through the scheme than companies with a male chairperson. In this section we perform regressions with *logGrantAmount* as the dependent variable and *FemaleCEO* as the independent variable of interest. Additional control variables are included, one by one and with decreasing importance, to study how this affect the relationship between CEO gender and received grant amount. The subsequent sections thus answer the following question:

Question 7 - Does received mean grant amount differ statistically significantly between companies with a female CEO and companies with a male CEO, when controlling for firm characteristics?

6.2.1 Controlling for Gender

Regressing a dummy for CEO gender on *logGrantAmount* shows the correlation between CEO gender and received grant amount. The regression output is presented in model 1 in table 6.7.

Table 6.7: Regression Output

In this table we add firm characteristic controls sequentially and by decreasing importance to check how they affect the relationship between CEO gender and grant amount. *logGrantAmount* is the dependent variable and *FemaleCEO* is the independent variable of interest. *FemaleCEO* stays significant in model 1-6, but not when controlling for the gender of the chairperson in model 7. Yes/No indicates which control variables are included. Robust standard errors in parentheses. For full regression output see appendix A5.

Dependent variable	logGrantAmount						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
FemaleCEO	-0.345***	-0.266***	-0.102***	-0.106***	-0.105***	-0.106***	-0.0465*
	(0.0331)	(0.0251)	(0.0216)	(0.0215)	(0.0214)	(0.0214)	(0.0244)
logNumberEmployees	No	Yes	Yes	Yes	Yes	Yes	Yes
logTurnoverCP	No	No	Yes	Yes	Yes	Yes	Yes
Industry	No	No	No	Yes	Yes	Yes	Yes
Metro	No	No	No	No	Yes	Yes	Yes
Regions	No	No	No	No	No	Yes	Yes
FemaleBC							-0.134***
							(0.0271)
Constant	11.36***	9.953***	4.377***	3.589***	3.608***	3.650***	3.700***
	(0.0180)	(0.0257)	(0.143)	(0.156)	(0.156)	(0.157)	(0.157)
Observations	6612	6612	6612	6612	6612	6612	6612
R^2	0.015	0.437	0.589	0.625	0.625	0.629	0.630
Adjusted R^2	0.015	0.437	0.589	0.624	0.624	0.628	0.629

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

Consistent with the previous t-test we observe that the *FemaleCEO* coefficient is significant at the 1 percent level. Holding all else equal, grant amount received is approximately 34.5 percent less for companies with a female CEO, compared to companies with a male CEO. Since the approximate effect is large, we calculate the exact estimate of *FemaleCEO* on grant amount, and get an effect of 41.20 percent. Thus, businesses with a female CEO received on average 41.20 percent less money through the scheme, than businesses with a male CEO. This is consistent with our findings in the descriptive statistics.

6.2.2 Controlling for Firm Size

In model 2 and 3 in table 6.7, control variables for firm size are added. This decreases the effect of CEO gender on grant amount substantially. The *FemaleCEO* coefficient stays significant at the 1 percent level, but has changed from -0.345 when only controlling for CEO gender to -0.102 when controlling for the company's number of employees and turnover in the comparative period. This indicates that companies with a female CEO received approximately 10 percent less in grant amount, compared to companies of a similar size with a male CEO. Thus, 74 percent of the difference in mean grant amount between businesses with a female CEO and businesses with a male CEO, can be explained by differences in firm size. The descriptive statistics show that men generally run bigger businesses than women, and the regression output shows that they therefore also received higher grant amounts through the scheme.

The coefficient of determination, R^2, shows the fraction of the sample variation in the dependent variable that is explained by the independent variables (Wooldridge, 2014). When including the two measures of firm size, R^2 increases from 1.5 percent when only controlling for CEO gender, to nearly 60 percent. This is expected since grant amount is calculated based on reported turnover fall and fixed, unavoidable costs, and these variables are likely correlated with firm size.

One should be aware of potential measurement errors in the variables. The data on number of employees is retrieved from Proff Forvalt. Their data is based on information from Statistics Norway and the Brønnøysund Register Centre (Proff Forvalt, n.d.). Companies could differ in how they measure the number of employees they report to these institutions. For example, some may include only full time workers, whilst others also include part time workers. We have no insight into this and do not know how it is dealt with in the data. Therefore, there is a risk of measurement errors in the data, in that the observations might not be consistent. This could make the results less reliable. However, we are not interested in the direct effect of number of employees on received grant amount, but rather how adding this variable affects the relationship between *FemaleCEO* and *logGrantAmount*. Therefore, we do not expect potential measurement errors in number of employees to impact our main results substantially.

6.2.3 Controlling for Industry

In model 4 in table 6.7 we include dummy variables for industries. The *FemaleCEO* coefficient changes slightly, but remains significant at the 1 percent level. According to this model, companies with a female CEO received approximately 10.6 percent less money through the scheme than companies with a male CEO, all else equal. It is surprising that the *FemaleCEO* coefficient in absolute terms increases, as we expect it to decrease when adding more control variables. However, the increase is not statistically significant.

Since some industries are female dominated and others are male dominated, and mean grant amount varies a lot across industries, we expect part of the gender gap to be due to industry differences rather than CEO gender. The regression output shows that which industry a company operates in is correlated with received grant amount. However, adding industry control variables does not change the *FemaleCEO* coefficient significantly; the gender gap does not become smaller, nor significantly bigger. Thus, when already controlling for firm size, industry does not explain a significant amount of the gender gap in received grant amount.

6.2.4 Controlling for Regional Differences

When adding the *Metro* dummy variable in model 5 in table 6.7, the coefficient of *FemaleCEO* changes insignificantly, but remains significant. Adjusted R^2 remains the same and the coefficient of *Metro* is not significant. The regional dummy variables do not affect the relationship between CEO gender and grant amount either. The coefficient of *FemaleCEO* is the same in model 6 in table 6.7, where both *Metro* and regions are controlled for, as in model 4, where these control variables are not included. Thus, when controlling for firm size and industry, the variation in where the businesses are located does not explain a significant part of the gender gap in received grant amount.

6.2.5 Controlling for Female Chairperson

Lastly, we add *FemaleBC* as a control variable in model 7 in table 6.7. The effect of a female CEO on grant amount, all else held equal, is now reduced to approximately -4.65 percent and the coefficient is only significant at a 10 percent level. On the other hand, the *FemaleBC* coefficient is significant at the 1 percent level. According to model 7, companies with a female chairperson received, ceteris paribus, approximately 13.4 percent less money through the scheme, than companies with a male chairperson. However, the R^2 only increases by 0.1 percentage points when adding the *FemaleBC* control variable. These results indicate that chairperson gender is correlated with grant amount, but that this control variable does not explain much of the variability in grant amount.

In model 7, the effect of the chairperson's gender on grant amount is stronger and more significant than the effect of CEO gender. This is consistent with the descriptive statistics in section 6.1, which show that female chairperson is related to low grant amounts, and that the correlation between female chairperson and grant amount is stronger than the correlation between female CEO and grant amount. Since we find correlation between female CEO and female chairperson, some of the previously found correlation between CEO gender and grant amount is likely due to the correlation between CEO gender and chairperson gender. When controlling for the chairperson's gender, we remove this omitted variable bias and get a new estimate of the relationship between CEO gender and grant amount. Multicollinearity can make it difficult to know how precise the coefficients of the two variables are. However, the VIF test suggests that multicollinearity is not an issue in this model and we therefore interpret the coefficients as the correct measures of the relationship between *FemaleCEO*, *FemaleBC* and *logGrantAmount*. For a discussion of multicollinearity see section 6.4 and for the output of the VIF test see appendix A6.

Assuming that model 7 is the best model for estimating the effect of CEO gender on received grant amount, we cannot say for sure that having a female CEO is related to lower grant amounts, as the coefficient of *FemaleCEO* is not significant. However, a female chairperson has a significant, negative effect on received grant amount in the model. Thus, the main finding remains that women in leadership positions are correlated with lower grant amounts, but the correlation weakens when controlling for other firm characteristics.

6.3 Blinder-Oaxaca Decomposition

The Blinder-Oaxaca decomposition is presented in table 6.8. When performing separate regressions for companies with female CEOs and companies with male CEOs, the coefficients obtain different values and significant levels. Thus, the differences between the female-led and male-led companies in the sample lead to different returns to characteristics.

Table 6.8: The Blinder-Oaxaca Decomposition

The Blinder-Oaxaca decomposition model for companies with female CEOs and companies with male CEOs, as well as the pooled OLS model for both categories. *logGrantAmount* is the dependent variable. Robust standard errors in parentheses. There are significant differences in the returns to characteristics between companies with female CEOs and companies with male CEOs.

Dependent variable	logGrantAmount		
	(1)	(2)	(3)
	Female CEO	Male CEO	Pooled OLS
FemaleCEO			-0.0465*
			(0.0244)
logNumberEmployees	0.2018***	0.2466***	0.239***
	(0.0215)	(0.0128)	(0.0138)
logTurnoverCP	0.4923***	0.4994***	0.497***
	(0.0184)	(0.0109)	(0.0120)
F	0.3104*	-0.1927***	-0.175***
	(0.1736)	(0.0551)	(0.0476)
G	-0.1659*	-0.1185**	-0.128***
	(0.0957)	(0.0508)	(0.0381)
H	0.2345	0.3127***	0.298***
	(0.1633)	(0.0650)	(0.0639)
I	0.2636***	0.3320***	0.315***
	(0.0930)	(0.0470)	(0.0377)
J	-0.1440	-0.0281	-0.0534
	(0.1827)	(0.0869)	(0.0693)
L	0.4791***	0.6977***	0.655***
	(0.1683)	(0.0926)	(0.0817)
M	-0.2928**	-0.1662***	-0.189***
	(0.1283)	(0.0605)	(0.0504)
N	-0.0870	-0.1523***	-0.131***
	(0.1049)	(0.0547)	(0.0501)
P	-0.0679	-0.0580	-0.0923
	(0.1242)	(0.1139)	(0.0690)
Q	-0.0314	0.2868**	0.152**
	(0.1378)	(0.1253)	(0.0755)
R	0.4843***	0.5312***	0.527***
	(0.1090)	(0.0608)	(0.0491)
S	-0.1550	0.0696	-0.0312
	(0.1121)	(0.0942)	(0.0563)
Other	0.3489	0.2801**	0.295**
	0.2546	0.1256	(0.128)
Metro	0.0262	-0.0364	-0.0209
	(0.0401)	(0.0260)	(0.0216)
NorthernNorway	0.1489**	0.1689***	0.162***
	(0.0610)	(0.0410)	(0.0338)
CentralNorway	-0.0534	-0.0188	-0.0338
	(0.0627)	(0.0448)	(0.0360)
WesternNorway	0.0513	0.0385	0.0401
	(0.0470)	(0.0311)	(0.0261)
SouthernNorway	0.0749	0.0431	0.0467
	(0.0918)	(0.0553)	(0.0464)
Oslo	0.1862***	0.1848***	0.185***
	(0.0521)	(0.0337)	(0.0277)
FemaleBC	-0.2269***	-0.0150	-0.134***
	(0.0358)	(0.0464)	(0.0271)
Constant	3.8575***	3.6405***	3.700***
	(0.2452)	(0.1475)	(0.157)
Observation	1797	4815	6612
R^2	0.638	0.623	0.630
Adjusted R^2	0.633	0.622	0.629

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

We use the estimated models to decompose the gender gap into an explained and an unexplained part using the method presented in section 5.3. As observed in table 6.9, the explained component of the difference in received grant amount between companies with female CEOs and companies with male CEOs is estimated to be 0.2990. This means that companies run by men on average received 29.90 percent higher grant amounts than companies run by women, due to observable characteristics like firm size, industry and gender of the chairperson.

Table 6.9: Decomposition of the Gender Gap

The table shows how much of the CEO gender gap that can be explained by the various control variables, as well as the unexplained part. The majority of the gender gap in mean grant amount can be explained by firm characteristics.

	Log points	Percent of gender gap
NumberEmployees	0.0292***	8.45%
TurnoverCP	0.2266***	65.59%
Industry variables	-0.0202***	-5.85%
Regional variables	0.0012	0.35%
FemaleBC	0.0628***	18.18%
Total explained	0.2990***	86.54%
Total unexplained	0.0465*	13.46%
Total gender gap	0.3455***	100%

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

In table 6.9 the explained part of the CEO gender gap is decomposed further. The majority of the gender gap is due to differences in *TurnoverCP*, which is one of our firm size measures. Of the difference in mean grant amount between businesses with a female CEO and a male CEO, 74.04 percent can be explained by the fact that businesses with male CEOs on average are bigger, measured in turnover in the comparative period and number of employees. Moreover, we observe that 18.18 percent of the gender gap can be explained by the *FemaleBC* coefficient. Companies with a female CEO have a female chairperson more often than companies with a male CEO, and having a female chairperson is associated with a lower grant amount. This explains part of why companies with a female CEO on average have received less than companies with a male CEO.

The industry variables represent -5.85 percent of the total gender gap. Adding industry variables thus reduces the gender gap in received grant amount. If the companies with female CEOs had the industry characteristics of the companies with male CEOs, the female-led businesses would on average receive 2.02 percent lower grant amounts than what they actually received. The small female advantage in the industry variables suggests that the mean grant amount for companies with female CEOs is higher in industries with a larger share of female CEOs. If the distribution of female and male CEOs was equal across all industries, the gender gap would not be affected by industry variables. The region variables do not contribute to the gender gap in received grant amount, suggesting that the share of female CEOs is equal across regions. Thus, the results of the decomposition is consistent with the statistics presented in section 4, which show that there are big differences in the female share of CEOs across industries, but not across regions.

The unexplained part of the difference in mean grant amount between companies with female CEOs and companies with male CEOs is estimated to be 0.0465, and constitutes 13.46 percent of the total gender gap. This is the difference in mean grant amount that is due to the companies with female CEOs having different returns to their characteristics than the companies with male CEOs. This is seen in table 6.8, where the coefficients of each variable vary between the two groups. For example, an increase in number of employees leads to a bigger increase in grant amount for companies with a male CEO than for companies with a female CEO, all else equal.

In total, the explained and the unexplained components sum to 0.3455, which is equal to the gender gap observed in model 1 in table 6.7. Moreover, the unexplained part of the gender gap is equal to the *FemaleCEO* coefficient in model 7. This is expected, since we control for the same factors in the Blinder-Oaxaca decomposition as in model 7 in table 6.7. If we add more, relevant control variables to the estimated models in the Blinder-Oaxaca decomposition, we expect the unexplained part of the gender gap to decrease further.

The unexplained gender gap is not significant at the 5 percent level in model 7 in table 6.7, nor when performing the Blinder-Oaxaca decomposition. Hence, we cannot state that there is a significant difference in mean grant amount between female-led and male-led businesses, when controlling for firm size, industry, location and the chairperson's gender. However, the explained part of the gender gap is significant, indicating that there is a difference in the average characteristics for female-led and male-led businesses. This corresponds to the descriptive statistics which show that women and men typically run companies with different characteristics. Furthermore, since the gender of the chairperson explains part of the gender gap in mean grant amount, the gender of people in leadership positions is still correlated with received grant amount, even when controlling for other firm characteristics. This corresponds with the results of the OLS models.

6.4 Robustness

For our estimated model to be robust, in that our estimated coefficients are efficient and unbiased, the prerequisites of OLS must be met (Wooldridge, 2014). Therefore, we present the six prerequisites and discuss whether they are fulfilled in our model. The prerequisites are discussed for model 7 in table 6.7, as we assume this to be the best model.

The first assumption of OLS is that the regression model is linear in parameters. Since we have estimated a linear model, this assumption is met. Our sample size is large, with 6,612 observations, which are all the available observations for January and February 2021. The random sampling assumption is thus met as well. We use a logarithmic functional form of the dependent variable and have a large sample size. Therefore, we do not expect any problems regarding the normality assumption either. Moving on, we discuss potential issues regarding multicollinearity, endogeneity and homoskedasticity in our model.

Multicollinearity

The third assumption of OLS is that there is no perfect collinearity between the independent variables in the model (Wooldridge, 2014). To identify the level of multicollinearity, we conduct a variation inflation factor (VIF) test. The test shows low levels of multicollinearity between the independent variables in the model, which is the desired result[10].

We have multiple categorical variables in our regression model. The choice of base category for a set of dummy variables can affect the extent of multicollinearity in the data (Wissmann et al., 2007). Originally we used *Other* as the base category for our industry dummy variables. The VIF test then indicates multicollinearity issues, as the category contains too few observations. To solve this problem, we choose industry C as

[10]The test output can be found in appendix A6.

the base category instead. The VIF test then shows low levels of multicollinearity. Thus, multicollinearity is not an issue in the presented model.

Endogeneity

The zero conditional mean assumption states that the expected value of the error term, given any value of the independent variables, is zero (Wooldridge, 2014). This assumption is key to be able to interpret results causally. In model 1 in table 6.7 we assume that this assumption does not hold since we do not include any company characteristics beside CEO gender. Therefore, we add more control variables in the six following models. For the zero conditional mean assumption to hold in model 7, there can be no factors outside the estimated model that affects grant amount and is correlated with any of the independent variables in the model.

In our model, no CEO characteristics are included as control variables. In reality, factors like the CEO's education level and experience could be of more importance for received grant amount than the CEO's gender. However, as long as these factors are correlated with gender, we obtain a gender effect. If this is the case, the zero conditional mean assumption does not hold and we cannot draw causal interpretations of CEO gender on received grant amount. As discussed in section 5.4 we know that we are not able to prove causation and are therefore primarily interested in correlation. A violation of the zero conditional mean assumption does not mean we cannot draw conclusions on correlation, and we therefore do not see the endogeneity problem as a big issue in our thesis.

Homoskedasticity

Homoskedasticity refers to the situation where a model's error term has the same variance, given any value of the explanatory variables (Wooldridge, 2014). To be able to conclude that the coefficients estimated by the OLS method have the smallest variance among all linear, unbiased estimators, homoskedasticity must be present. To test whether the assumption of homoskedasticity is met in our model, a Breusch-Pagan test is performed (Breusch and Pagan, 1979). The null-hypothesis of the test is that homoskedasticity is present. The test gives a p-value of 0.00, indicating that we have heteroskedasticity, rather than homoskedasticity, in our model.

The issue with heteroskedasticity is that we cannot know how precise our estimated coefficients are, and the usual formulas for the t- and F-statistic are not reliable (White, 1980). To account for heteroskedasiticity, we use robust standard errors. When calculating the t-statistic by dividing the OLS estimator on its robust standard error, we obtain a heteroskedasticity-robust t-statistic. Thus, using robust standard errors ensure that the t-statistic and significance levels referred to in our analysis are valid.

To sum up, our estimated model does not fulfill all the prerequisites of unbiased, consistent and efficient OLS estimators. As expected, we cannot draw causal, ceteris paribus conclusions, but we can draw conclusions on correlation which we still believe is important and relevant. This means that when we find that companies with female CEOs on average received 41.20 percent lower grant amounts than companies with male CEOs, it does not mean that these companies received less because they have a female CEO. It only shows that CEO gender and received grant amount is correlated.

7 Discussion

In this section we discuss the potential explanations of our findings from section 6, in light of the literature presented in section 3. We also discuss the implications of our results on gender equality in Norway. Lastly, we present the limitations of our study and suggestions for further research. The discussion is based on the thesis' research question:

Are there any gender differences in who received business compensation during the COVID-19 pandemic?

7.1 Possible Explanations

The difference in mean grant amount is no longer significant at a 5 percent level when controlling for firm characteristics. This indicates that most of the difference in mean grant amount can be explained by the fact that female and male CEOs tend to run businesses with different characteristics. Nevertheless, we think it is interesting to discuss why there is correlation between CEO gender and firm characteristics. Additionally, the *FemaleCEO* coefficient remains significant until we add the *FemaleBC* control variable. This indicates that gender in leadership positions still is of importance, but that the correlation between chairperson gender and received grant amount is stronger than the correlation between CEO gender and grant amount. Since we have studied correlation, we cannot know the exact reasons behind our findings. However, in the following we discuss some potential explanations in light of the existing literature.

7.1.1 COVID-19 and Gender Differences

Graeber et al. (2021) find that female dominated industries were affected the hardest by the pandemic. Therefore, we expect more female-led businesses than male-led businesses to need government support during the pandemic. This is also what we observe, as the share of female CEOs in the sample is higher than the share of female CEOs in the population. Additionally, the Blinder-Oaxaca decomposition shows that mean grant amount for companies with female CEOs is higher in industries with a larger share of female CEOs. This is consistent with the findings of Graeber et al. and shows that the need for government support was larger in industries with a higher share of female CEOs.

Goldstein et al. (2020) find that female and male business leaders wanted different support schemes during the pandemic. Married, female business owners with children under 5 years old reported to need help in taking care of family members, whilst men were more interested in financial support schemes for their businesses. Thus, it is not surprising that the majority of the CEOs in the sample are men. Nevertheless, more companies with female CEOs than what the female share of CEOs in the population suggests, received compensation through the scheme. This indicates that female CEOs might need financial support for their business to the same extent as male CEOs, but that the need for childcare support was even stronger among women in the corporate sector.

7.1.2 Gender Differences in Leadership

The difference in mean grant amount could be related to a difference in need of financial support between companies with female CEOs and companies with male CEOs. Women tend to run smaller companies than men do and this can lead to female run businesses having less need for financial support during the pandemic than male run businesses. A turnover fall of 50 percent obviously leads to higher grant amounts for a company with a previous turnover of 100 millions NOK, than for a company with a pre-pandemic turnover of 1 million NOK. Our analysis shows that the relative fall in turnover was almost equal between female-led and male-led businesses, but that the absolute turnover fall was significantly larger for male-led businesses. Thus, companies with male CEOs on average experienced bigger losses and therefore received more money. This is supported by the regression analysis, where the gender gap decreases substantially when controlling for firm size.

Less need for financial support among female-led businesses could also be explained by differences in leadership. A good leader would be better prepared for a crisis, such that the need for governmental financial support might be less. According to Rita and Zachary (2004), "feminine" leaders are better prepared to handle a crisis. We expect more female than male CEOs to have these feminine characteristics. It therefore makes sense if companies with a female CEO on average have less need for the Compensation Scheme. Jalbert et al. (2013) find that companies with female CEOs perform better than equivalent companies with a male CEO. This could mean that female-led businesses are better prepared for a crisis, such that they experience smaller turnover falls in relative terms or have enough assets to survive the pandemic without government support. A difference in leading abilities between the female and male CEOs in our sample, could therefore be the reason for some of the observed difference in mean grant amount.

7.1.3 Ethical Behaviour

The purpose of the Compensation Scheme for Businesses was to help Norwegian businesses during the pandemic and in that way keep people's jobs safe (The Brønnøysund Register Centre, n.d.a.). For January and February 2021 there were no requirements of a negative profit or previous profitability to be eligible for the grant. However, such requirements were introduced for later time periods. This could indicate that some companies took advantage of the scheme, and received money even though it was not necessary for the company's survival. This was legal, but can be perceived as unethical.

Men tend to view situations as less unethical than women (Stedham et al., 2007). Thus, male CEOs could perceive their company receiving money, even when they do not need it, as acceptable, whilst female CEOs are more likely to perceive it as unethical. In this case, the need for government support may have been the same for female and male run businesses, such that the gender difference in mean grant amount rather stems from differences in ethical perceptions. According to this theory, more male CEOs than female CEOs would take advantage of the scheme and receive money, even though it was not necessary for the company's survival.

7.1.4 Women Ask Less

Since women tend to ask for less resources and ask less frequently than men (Babcock and Laschever, 2007), we expect there to be a lower share of female CEOs in the sample than in the population. However, we observe the opposite. There are 27.18 percent female CEOs in the sample and only 16.76 percent female CEOs in the population. This indicates that female CEOs ask for financial support more frequently during a crisis than their male counterparts. A potential explanation could be that female CEOs differ from the average woman and obtain characteristics more typical for men. Another possibility is that females are more prone to asking for what they want when they ask on behalf of someone else, here the company they run, compared to asking for themselves.

Often women ask less than men because they do not know that they could or should ask (Babcock and Laschever, 2007). The compensation scheme was talked a lot about in the media, making it clear that struggling businesses could and should apply. Additionally, filling in an application form for such a scheme may feel less like asking, which could make it easier for the female CEOs to apply. Another possible explanation for why female-led businesses applied to the scheme so frequently, is that it can have been men within the female-led businesses who took initiative and applied for the scheme. According to Kwapisz and Hechavarría (2018), female business owners are more likely to ask for financing when they have a good support network. Thus, good support networks could also contribute to the high share of female CEOs in the sample.

Companies with female CEOs received only 17.91 percent of the total grant amount paid out to companies in the sample, even though these companies constituted 27.18 percent of the sample. This indicates that even though female CEOs seem to ask for help more frequently than male CEOs, they ask for less. This is expected, given the results from Rozada et al. (2018) and Säve-Söderbergh (2007), who find that part of the gender wage gap is explained by women asking for lower wages than men. Similar results are found for business owners, where men ask for more outside financing than women when starting a new business (Kwapisz and Hechavarría, 2018). It is therefore not surprising that the majority of the Compensation Scheme for Businesses went to male-led businesses. However, female CEOs could not have asked for more either. The companies with female CEOs account for 17.29 percent of the total fixed, unavoidable costs and 16.17 percent of the total turnover fall reported by the businesses in the sample. Since received grant amount is calculated based on these figures, it is reasonable that the companies with female CEOs did not receive more than around 18 percent of the total grant amount.

7.2 Possible Implications

On average, female CEOs in our sample run smaller companies with lower pre-pandemic turnovers, than their male counterparts. Female CEOs also tend to lead companies within certain industries. If women on average have less interest in running big companies or operate in certain industries, this may not be a problem. However, a gender equality issue arises if women and men do not have the same opportunities to run businesses of certain sizes or in certain industries. Less opportunities for women could be explained by the glass ceiling theory, which states that it is harder for women to obtain leadership positions because of institutionalised barriers (Loden, 2008). It is reasonable to assume that these barriers are stronger in certain industries and in larger companies, where the risk of a poor CEO is higher.

If women are not evaluated on the same criteria as men when CEOs are appointed, and this leads to women not running big corporations or not getting access in certain industries, society has an issue. The Compensation Scheme for Businesses may have increased this problem by supporting companies with male CEOs with more money than what the companies with female CEOs received. As a society we want the best possible people to run businesses, regardless of gender, as this creates the most value for society. Female leaders are just as competent as male leaders (Kotiranta et al., 2007; Nadeem et al., 2019; Jalbert et al., 2013). Thus, the best pool of CEOs would likely be obtained if men and women were selected at the same frequency and received the same support.

Gender equality is a stated political goal in Norway, and leadership positions in the world of business is one of the areas where this is still lacking (Ministry of Culture and Equality, 2020; Teigen, 2021). One can therefore argue that it is a bigger loss for society if initially profitable female run businesses go bankrupt, than male run ones, since this leads to an even lower share of female CEOs. Additionally, if a high share of female run businesses go bankrupt due to the pandemic, it paints a picture of women not being suited as CEOs and businesses leaders, which could increase the glass ceiling further. One could therefore argue that female-led businesses should receive more compensation than what their share in the population suggests, as the potential consequences of their bankruptcies on gender equality could be enormous. However, supporting women specifically would probably spark controversy since it can be perceived as discrimination against men.

In Norway, the traditionally female dominated industries are also the industries with the highest shares of female CEOs (Statistics Norway, 2021a,b). This can increase the consequences of gender differences in who received compensation through the scheme. Less support to female-led businesses than male-led ones could at worst mean less support for female employees in general, which would be unfortunate from a gender equality perspective. The purpose of the Compensation Scheme for Businesses was to avoid unnecessary bankruptcies and save Norwegian jobs through the pandemic (The Bønnøysund Register Centre, n.d.a). As of April 2022, there have been no public inquiries on whether the scheme has been successful at this. However, if it turns out that more female-led businesses and businesses with mainly female employees have gone bankrupt during the pandemic, it is a step backwards for gender equality in the world of business.

Many employees in health, education and care services got their daily life turned upside down when the pandemic hit in March 2020 (Korsmo, 2020; Bakke and Hjemås, 2021). The demand for nurses and health care workers increased substantially, and most teachers had to change their way of teaching completely as school became digital. Health care and education are female dominated industries (Statistics Norway, 2021b), such that these changes affected women the most. Nurses employed at hospitals increased their working hours significantly during the pandemic (Bakke and Hjemås, 2021). They were paid for this extra work, but not more than normal, even though many felt a lot more pressure and faced a daily risk of contagion. Teachers also reported to have worked more (Korsmo, 2020). A compensation scheme for this extra work was not put in place until December 2021 and had no retrospective effect (Vik, 2021). Hence, teachers are only compensated for a small proportion of the extra work the pandemic inflicted on them.

At the beginning of the pandemic, people stood outside their houses honouring health care workers and other essential workers by applauding (Clausen and Sterud, 2020). At the same time, millions were paid out to businesses that experienced reduced income due to the pandemic. This was public money that could have been used on higher wages for teachers and health care workers, or on other welfare purposes. It was important to keep businesses running during the pandemic, to save jobs and keep the economy going. In addition, most health care workers and teachers did not experience income losses, which is what businesses were compensated for, so this kind of compensation structure can be perceived as fair. However, since the majority of business leaders are men, and the majority of teachers and health care workers are women, the Compensation Scheme for Businesses and the lack of support schemes for essential workers likely increased gender differences. The first version of the Compensation Scheme for Businesses was put in place in March 2020 and applications could be sent in as of April 2020 (Regjeringen Solberg, 2020). On the other hand, teachers had to wait until December 2021 to get any compensation for the extra work the pandemic inflicted on them (Vik, 2021). This indicates that the effect on gender differences was not considered enough when the pandemic hit and the government began developing various support schemes.

In Norway, women spend nearly twice as much time on unpaid domestic work as men (World Ecomonomic Forum, 2019). During the pandemic, the amount of domestic work increased substantially as kindergartens and schools closed, and women took on the bulk of this work (Sund, 2021). There were no support schemes covering this increased responsibility, even though it for many meant less time for work. Thus, women may have experienced uncompensated income losses due to the government imposed restriction. Businesses on the other hand received millions every month, compensating for lost income. The majority of money paid out through the Compensation Scheme for Businesses went to companies with a male CEO, thus supporting men, their businesses and their careers, whilst women had to do more work in the home and thus had less time to focus on their careers. As a result, gender differences in the corporate sector may have increased.

The Global Gender Gap Report 2021 find that the pandemic increased the gender gap worldwide, and even in Norway the economic participation and opportunity gender gap increased slightly (World Economic Forum, 2021). Based on our findings we believe that the various governmental support schemes contributed to this development.

7.3 Limitations

To be able to conduct the analysis, some delimitations are done. These are necessary, but may have implications for our results. Since the rules of the scheme changed a lot between March 2020 and February 2022, we choose a shorter time period where the same rules applied. We also choose to only study companies of the legal structure private limited companies. Choosing another time period or a different legal structure, might lead to different results. Thus, the results may not be generalisable to all businesses that received money through the scheme during the pandemic. Nevertheless, we expect to find similar results for other time periods and other legal structures.

The Compensation Scheme for Businesses was not open for companies operating in the finance sector, companies following the oil tax regime, companies producing, transmitting or distributing electricity and airlines with a Norwegian operating license (The Bønnøysund

Register Centre, n.d.d.). In the analysis, the share of female CEOs in the sample is compared to the share of female CEOs in the population. Comparing the sample to the population excluding businesses in these sectors provides a more correct comparison. This is only necessary if the share of female CEOs in the excluded sectors differ significantly from the population. The lack of reliable statistics on the share of female CEOs in different industries and for different legal structures, make the desired comparison impossible.

In large companies, we assume that the decision on whether to apply to the scheme was not made by the CEO and/or chairperson alone. For a better understanding of the scheme's implications on gender differences, it would therefore be interesting to include the gender composition of the board and of the executive suite, as well as the female share of employees. However, this information is difficult to obtain, as it must be done manually from multiple different sources. This is time consuming and would result in a much smaller sample. It was therefore decided against. Information on gender composition is also more easily available for some businesses than for others, which could result in selection bias.

The analysis lacks information on the share of businesses that were eligible for the scheme, but chose not to apply. Such information would provide a better understanding on whether female CEOs and male CEOs utilise public support schemes to the same extent. To obtain a measure of this, we would need to calculate the turnover fall of businesses to see which fulfilled that requirement, as well as controlling for all other requirements. There are over 600,000 active businesses in Norway (Statistics Norway, 2022c). About 10 percent of these received compensation through the scheme (The Bønnøysund Register Centre, 2022; Norwegian Tax Administration, 2020). Since only 16.76 percent of private limited companies have a female CEO, a big sample would be necessary to draw conclusions on gender differences. Obtaining the required information for a sample of this size would be too time consuming given the scope of this thesis.

There is always a risk of omitted variable bias. We believe that we include the most important firm characteristics as control variables, but that we could have included more control variables on the CEOs, such as education, age and experience. However, obtaining this information is time consuming and probably not possible for all businesses, thus the sample would be much smaller. Some of the correlation we find between CEO gender and grant amount can stem from a stronger correlation between other CEO characteristics and grant amount, as long as these characteristics are also correlated with gender. However, this does not change the fact that CEO gender is correlated with grant amount. Correlation is the main interest of this analysis, since no amount of control variables enable us to prove causation. Therefore, we are not concerned about potential omitted variable bias, but one should be careful in the interpretation of the size of the coefficients. Regardless, it remains a fact that companies with female CEOs received less financial support than companies with male CEOs as a result of this scheme.

During the pandemic, local and national government institutions in Norway provided various different support schemes for struggling businesses (Ministry of Local Government and Regional Development, 2021; The Bønnøysund Register Centre, 2021b). We only study one of them, but for a thorough analysis of the effect of public support schemes on gender equality, they should all be analysed together. Our discussion is based on the assumption that the majority of money from other compensation schemes also go to men and male-led businesses. If this proves wrong, the arguments in the discussion and conclusion weakens.

7.4 Suggestions for Further Research

Our thesis opens for further research in the field of governmental support schemes during the COVID-19 pandemic and how these schemes relate to gender equality in the corporate sector. Our first suggestion is to study the businesses that were eligible for the Compensation Scheme for Businesses, but chose not to apply. A gender difference here would be of great interest as it shows that female and male CEOs behave differently regarding public support scheme during a crisis. Knowing whether there is a difference in the share of eligible female-led companies choosing to apply, compared to eligible male-led companies, would provide a better understanding of why there is a significant difference in mean grant amount between female-led and male-led companies. Moreover, this could give insight into how future support schemes should be presented and formatted to best support gender equality.

Furthermore, we believe there is a need to study all support schemes related to the COVID-19 pandemic. This way, one could better find and understand the total effect these schemes have on gender equality. A gender difference under one support scheme can be equalised by the opposite difference under another support scheme. Studying all of them together would therefore give more insight into how female and male CEOs utilise support schemes, and whether there are any issues regarding gender equality.

Another suggestion for further research is to look more into the correlation between received grant amount and the gender of the board chairperson. Our hypothesis was that the CEO would be the most important, which is why CEO gender was chosen as the main focus of our thesis. However, the results suggest that the correlation between received grant amount and chairperson gender is stronger than the correlation between received grant amount and CEO gender. Further research on the relationship between the gender of the chairperson and received grant amount would therefore be interesting. Additionally, research including the gender composition of the board and of the executive suite could be of interest to better understand the relationship between gender in leadership positions and the use of governmental support schemes.

8 Conclusion

In this thesis, we study the Compensation Scheme for Businesses during the COVID-19 pandemic, and ask whether there is a difference in received grant amount between companies with female CEOs and companies with male CEOs. We study private limited companies that received compensation for the months of January and February 2021.

We find that mean grant amount for companies with a female CEO is 41.20 percent lower than the mean grant amount for companies with a male CEO. The significant difference is reduced but still persistent when removing the top 10 observations from the sample. The share of female CEOs in the sample is higher than the share of female CEOs in the population, but still a lot lower than the share of male CEOs. Thus, there is an uneven gender distribution in the sample, but the difference is smaller than in the population. The share of the total grant amount paid out to companies with female CEOs is 9.27 percentage points lower than the share of female CEOs in the sample. Lastly, the descriptive statistics indicate that there is a stronger correlation between received grant amount and chairperson gender, than between received grant amount and CEO gender.

When performing OLS regressions, we add control variables for industry, region, firm size and chairperson gender. When applying these control variables simultaneously, we find no significant difference in mean grant amount between companies with a female CEO and companies with a male CEO. However, the coefficient of *FemaleBC* is significant, implying that the gender of people in leadership positions remains correlated with mean grant amount, even when controlling for firm characteristics.

Lastly, we perform a Blinder-Oaxaca decomposition. Like the OLS regressions, the decomposition shows that the majority of the difference in mean grant amount between female-led and male-led businesses is due to other firm characteristics than CEO gender. Our measures of firm size explain 74.04 percent of the gender gap. The industry variables explain -5.85 percent of the gender gap, which suggests that the average grant amount for female CEOs is higher in industries with a larger share of female CEOs. This result is consistent with the fact that female and male CEOs typically operate in different industries. The Blinder-Oaxaca decomposition results in an unexplained gender gap of 4.65 percent, but it is not significant at a 5 percent significance level.

There could be several explanations of our findings. The main reason female-led businesses received less money through the scheme than male-led businesses, is that women typically run smaller companies than their male counterparts. Another possible explanation is that female leaders are better leaders and therefore better prepared for a crisis, such that they did not have the same need for governmental support. Ethical perception can also have played a part; more men may have taken advantage of the scheme and received money for their business, even though it was not necessary for the business' survival.

The fact that 82.09 percent of the money paid out through the Compensation Scheme for Businesses for January and February 2021 was given to businesses with a male CEO, shows that gender equality is still lacking in the corporate sector in Norway. It can be perceived as fair that businesses received compensation depending on how big turnover falls they experienced, but when this results in 82.09 percent of the total grant amount going to companies with male CEOs, it is unfortunate from a gender equality perspective. It shows that there are too few female CEOs in Norwegian companies, given the political goal of gender equality. Additionally, the companies with male CEOs received on average higher grant amounts, which indicates that the companies with female CEOs did not receive their fair share of the total amount paid out. This may give the male CEOs an advantage to sustain operations during the pandemic and for future growth and profitability. Moreover, this could strengthen the perception of men being superior business leaders, and thus increase the gender imbalance in leadership positions and raise the glass ceiling further.

If we ever are to obtain full gender equality, which is a stated political goal in Norway, we believe gender equality must be taken into consideration at all times, also in politics that are not directly related to gender. One should therefore make sure that schemes like the Compensation Scheme for Businesses do not contribute to increased gender differences in society. The Global Gender Gap Report shows that the pandemic has increased gender differences worldwide, including the economic participation and opportunity gender gap in Norway (World Economic Forum, 2021). If our results are consistent for the whole pandemic and for all compensation schemes, we believe the public compensation schemes during the COVID-19 pandemic have had negative implications for gender equality.

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Appendix

A1 Glossary

Comparative Period: The period that the grant period is compared against to find the turnover fall due to the pandemic. For most businesses in our sample the comparative period is January and February 2019, but for those established in 2019 onwards, January and February 2020 is used.

FemaleBC: Dummy variable indicating the gender of the board chairperson. The variable takes the value 1 if the chairperson is female and 0 if the chairperson is male. Gender identification is done manually based on names.

FemaleCEO: Dummy variable indicating the gender of the CEO. The variable takes the value 1 if the CEO is female and 0 if the CEO is male. Gender identification is done manually based on names.

Female Share: The share of female CEOs in the sample.

$\mathbf{FixedUC_{GP}}$: A business' reported fixed, unavoidable costs in the grant period, used to calculate received grant amount.

Gender Composition: The gender combination of the CEO and the chairperson in a business. They can both be female, both be male, the CEO can be female and the chairperson male or the CEO can be male and the chairperson female.

Grant Amount: Grant amount received for the period January and February 2021 for each business. It is the sum of grant lost inventory and grant fixed, unavoidable costs.

Grant Fixed Unavoidable Costs: Grant received due to fixed, unavoidable costs for January and February 2021.

Grant Lost Inventory: Grant received due to lost inventory for January and February 2021.

Grant Period: The period a company receives compensation for. A grant period is usually one or two months. In this thesis the relevant period is January and February 2021.

IndustryDummy: Dummy variables indicating which industry a business belongs in. Industry C works as the base category. An overview of all industry categories follows in appendix A2

Legal Structure: Indicator of the legal structure of all companies included in the original dataset, retrieved from Proff Forvalt. Different abbreviations for each type of legal structure, where every company with a legal structure not corresponding to AS (Norwegian abbreviation for private limited company) were deleted from the sample.

logGrantAmount: The logarithm of grant amount

logNumberEmployees: The logarithm of number of employees.

logTurnoverCP: The logarithm of turnover in the comparative period.

logTurnoverGP: The logarithm of turnover in the grant period.

Metro: Dummy variable indicating whether a business is registered in a metropolitan or rural area. The variable takes the value 1 if the business is registered in a metropolitan municipality, and 0 if the business is registered in a rural municipality.

Metropolitan: Refers to municipalities with 50 000 or more inhabitants. For full list of all metropolitan municipalities see appendix A3.2.

NACE Industry: Letter showing in which industry a business operates in. Description of industry codes can be found in Appendix A2

Number of Employees: The number of employees in a company as reported in the data from Proff Forvalt.

Outliers: The 10 observations in the sample with the highest grant amounts are defined as outliers.

Organisation Number: Unique identification number for all Norwegian organisations.

Population: All existing Norwegian private limited companies in 2021.

Private Limited Company: A form of legal structure. A separate legal entity where the liability of the owners are limited to their share of capital invested in the company (Altinn, 2021). All companies in the sample are of this legal structure. The Norwegian name is Aksjeselskap, with the abbreviation AS.

Region: Variable showing in which region the business is located. For full list of which counties are included in which region see appendix A3.1.

Regional Variables: Includes all dummy variables for regions and the metro dummy variable.

RegionDummy: Dummy variables indicating which region a business is registered in. Eastern Norway works as the base category.

Rural: Refers to municipalities with less than 50 000 inhabitants.

Total Grant Amount: The sum of all grant amounts paid out to businesses in our sample for the time period January and February 2021.

Turnover Comparative Period: The business's turnover in the comparative period. The comparative period refers to January and February 2019, or January and February 2020 for the companies that where founded in 2019 or later.

Turnover Fall: The difference between the turnover in the comparative period and the turnover in the grant period.

Turnover Grant Period: The business's turnover in the grant period. The grant period refers to January and February 2021.

A2 NACE Industry Codes

(European Commission, 2010)

A - Agriculture, forestry and fishing

B - Mining and quarrying

C - Manufacturing

D - Electricity, gas, steam and air condition supply

E - Water supply; sewerage; waste management and remediation activities

F - Construction

G - Wholesale and retail trade; repair of motor vehicles and motorcycles

H - Transporting and storage

I - Accommodation and food service activities

J - Information and communication

K - Financial and insurance activities

L - Real estate activities

M - Professional, scientific and technical activities

N - Administrative and support service activities

O - Public administration and defence; compulsory social security

P - Education

Q - Human health and social work activities

R - Arts, entertainment and recreation

S - Other services activities

T - Activities of households as employers; undifferentiated goods - and services - producing activities of households for own use

U - Activities of extraterritorial organisations and bodies

The variable *Other* consists of the following industry codes; A, B, E, K and Unknown. Note: Not all industry codes are represented in the sample.

A3 Regional Variables

A3.1 Classification of Counties into Regions

Central Norway

- Trøndelag

Eastern Norway

- Innlandet
- Vestfold og Telemark
- Viken

Northern Norway

- Nordland
- Svalbard
- Troms og Finnmark

Oslo

- Oslo

Southern Norway

- Agder

Western Norway

- Møre og Romsdal
- Rogaland
- Vestland

A3.2 Municpalities Classified as Metropolitan

Municipalities with over 50,000 inhabitants are classified as metropolitan areas, identified by the dummy variable $Metro = 1$ in the dataset. This includes the following 19 municipalities:

Asker - Bergen - Bærum - Bødo - Drammen - Fredrikstad - Kristiansand - Lillestrøm
Nordre Follo - Oslo - Sandefjord - Sandnes - Sarpsborg - Skien - Stavanger - Tromsø
Trondheim - Tønsberg - Ålesund

A4 Outliers

When performing regressions using the OLS method, one should be aware of potential outliers in the dataset, as these could have a large impact on the regression results (Wooldridge, 2014). Outliers are observations that are substantially different from the bulk of the dataset, and they can potentially be a result of errors in the data. To remove outliers from the dataset one need a reason to do so. The fact that the values stand out from the majority of the observations is not reason enough.

In our dataset, there are 10 observations with a grant amount higher than 15,000,000 NOK. These have a substantially larger grant amount than the bulk of the dataset and are therefore outliers. However, we believe that the amounts retrieved in the dataset are the correct ones, as they stem from data published by public institutions. This entails that these values are not an error, but represent natural variation in the data. We therefore do not perceive it as beneficial to remove them, and thus the outliers remain in the dataset together with all other observations.

A5 Regression Output

Table A5.1: OLS Regressions

In these regression we add firm characteristic control variables sequentially to check how they affect the relationship between CEO gender and grant amount. *logGrantAmount* is the dependent variable and *FemaleCEO* is the independent variable of interest. *FemaleCEO* stays significant in model 1-6, but not when controlling for the gender of the chairperson in model 7. Robust standard errors in parentheses.

Dependent variable	logGrantAmount						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Added control	Gender CEO	#Employees	TurnoverCP	Industry	Metro	Region	Gender BC
FemaleCEO	-0.345***	-0.266***	-0.102***	-0.106***	-0.105***	-0.106***	-0.0465*
	(0.0331)	(0.0251)	(0.0216)	(0.0215)	(0.0214)	(0.0214)	(0.0244)
logNumberEmployees		0.648***	0.326***	0.235***	0.236***	0.240***	0.239***
		(0.0107)	(0.0123)	(0.0137)	(0.0138)	(0.0138)	(0.0138)
logTurnoverCP			0.446***	0.508***	0.505***	0.500***	0.497***
			(0.0115)	(0.0119)	(0.0120)	(0.0120)	(0.0120)
F				-0.181***	-0.181***	-0.173***	-0.175***
				(0.0476)	(0.0477)	(0.0476)	(0.0476)
G				-0.126***	-0.133***	-0.136***	-0.128***
				(0.0377)	(0.0379)	(0.0381)	(0.0381)
H				0.311***	0.309***	0.299***	0.298***
				(0.0645)	(0.0646)	(0.0639)	(0.0639)
I				0.342***	0.336***	0.315***	0.315***
				(0.0374)	(0.0377)	(0.0377)	(0.0377)
J				-0.0229	-0.0342	-0.0527	-0.0534
				(0.0688)	(0.0693)	(0.0693)	(0.0693)
L				0.684***	0.679***	0.662***	0.655***
				(0.0824)	(0.0824)	(0.0817)	(0.0817)
M				-0.173***	-0.182***	-0.189***	-0.189***
				(0.0500)	(0.0505)	(0.0502)	(0.0504)
N				-0.111**	-0.117**	-0.133***	-0.131***
				(0.0499)	(0.0501)	(0.0501)	(0.0501)
P				0.0906	0.0806	0.0706	0.0923
				(0.0690)	(0.0692)	(0.0688)	(0.0690)
Q				0.158**	0.148*	0.136*	0.152**
				(0.0775)	(0.0776)	(0.0761)	(0.0755)
R				0.544***	0.538***	0.526***	0.527***
				(0.0488)	(0.0489)	(0.0491)	(0.0491)
S				-0.0330	-0.0434	-0.0496	-0.0312
				(0.0563)	(0.0566)	(0.0565)	(0.0563)
Other				0.298**	0.301**	0.289**	0.295**
				(0.125)	(0.125)	(0.128)	(0.128)
Metro					0.0300	-0.0193	-0.0209
					(0.0194)	(0.0217)	(0.0216)
NorthernNorway						0.167***	0.162***
						(0.0338)	(0.0338)
CentralNorway						-0.0326	-0.0338
						(0.0362)	(0.0360)
WesternNorway						0.0399	0.0401
						(0.0262)	(0.0261)
SouthernNorway						0.0513	0.0467
						(0.0463)	(0.0464)
Oslo						0.183***	0.185***
						(0.0277)	(0.0277)
FemaleBC							-0.134***
							(0.0271)
Constant	11.36***	9.953***	4.377***	3.589***	3.608***	3.650***	3.700***
	(0.0180)	(0.0257)	(0.143)	(0.156)	(0.156)	(0.157)	(0.157)
Observations	6612	6612	6612	6612	6612	6612	6612
R^2	0.015	0.437	0.589	0.625	0.625	0.629	0.630
Adjusted R^2	0.015	0.437	0.589	0.624	0.624	0.628	0.629

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

A6 Robustness Analysis

Table A6.1: VIF Test for Multicollinearity

The test checks for multicollinearity in our estimated model. Values > 5 indicate high multicollinearity. Multicollinearity is not detected in model 7.

Variable	VIF
FemaleCEO	1.45
logNumberEmployees	2.17
logTurnoverCP	2.04
F	1.94
G	3.08
H	1.57
I	4.49
J	1.29
M	1.85
N	2.26
P	1.31
Q	1.23
R	1.94
S	1.50
Other	1.12
Metro	1.36
NorthernNorway	1.20
CentralNorway	1.16
WesternNorway	1.31
SouthernNorway	1.09
Oslo	1.63
FemaleBC	1.44
Mean	1.73