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The likelihood and financial effect of merger and acquisitions on Nordic listed firms: the role of women on the board

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Abstract

This thesis seeks to explore whether female board members on Nordic listed firms have an impact on the likelihood of performing an M&A transaction. Additionally, it investigates women's impact on financial performance. The foundation for our research questions and hypotheses development lies in the Critical Mass theory and the differences and similarities in decision-making between gender. We run two probit regressions and one OLS regression on a data set between 2014 and 2020. First, we examine the probability that a firm will make an M&A transaction. Secondly, the probability of the transaction being Nordic. Finally, we test what effect gender distribution on the board has on the firm's financial performance three years post-transaction. Our results show that one additional woman on the board of directors as well as a critical mass of women does not have a significant effect on any of our tests.

Keywords: Gender Diversity, Corporate Governance, M&A transaction, Critical Mass, Financial Performance

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1. Introduction

In this section, we will introduce the reader to our topic of choice. Firstly, we will provide a background, followed by the purpose and contribution of our thesis. Finally, we will present the delimitations and disposition.

1.1 Background

All public companies are required to have a board of directors, whose members are elected by their shareholders (Corporate Finance Institute, 2022). The board of directors are responsible for the organization and the overall management of the firm. Their main tasks include managing the company in the best interest of its shareholders. Furthermore, the board is responsible for decisions regarding the firm's strategic direction and financial structure. Other responsibilities include efficiently monitoring internal controls and cultivating a proper control system to limit risks associated with the operations of the corporation. The Swedish Corporate Governance Code defines good corporate governance as "ensuring that companies are run sustainably, responsibly and as efficiently as possible on behalf of their shareholders." (The Swedish Corporate Governance Code, 2020). Thus, one can argue that the individuals elected to the board of directors have an immense effect on the future of a company and its value creation. In this study, we are particularly interested in what effect gender distribution of board members has on company decision-making in the Nordic region.

Countries in the Nordic region (i.e., Sweden, Norway, Denmark, Finland and Iceland) have come the furthest in the world regarding gender equality. As of today, Iceland, Norway, Sweden and Finland are all ranked in the top 5 while Denmark is ranked 32nd among countries in the world that are the most gender-equal (World Economic Forum, 2022). Surprisingly, in the corporate world, the number of women on the board of directors remains relatively low. In 2014, the average board size of Nordic listed firms was 7.94 board members, of which 2.08 were women (~26%) (Nordic Compass, 2022). In 2020, the average board size was 7.59 board members, of which 2.37 were women (~31%). Although the numbers show an increase of 5 percentage points between 2014 and 2020, and thus a higher representation of women, one can conclude that the corporate world remains male-dominated. To combat this, Nordic countries are actively working towards reaching a more gender-diverse board of directors of listed firms. Norway and Iceland have implemented quotas that state that a minimum of 40 percent of the board of listed firms need to be women (Nikk, 2020). Sweden, Finland and Denmark have not yet implemented any

legislation regarding the issue. However, Sweden has introduced a recommendation of having at least 40% women on the board of directors for Swedish listed firms (Kollegiet för svensk bolagsstyrning, 2019). These initiatives have yielded strong results, as the percentage of women on the board of Nordic firms is higher than the average of the EU countries and continues to grow (Nordic cooperation, 2022).

As the number of women on boards is increasing, it is highly relevant and interesting to study how a more gender-diverse board affects major corporate decisions. In this thesis, we are particularly interested in how gender diversity on the board of directors may affect the corporate decision to make a merger and acquisition (M&A). Moreover, we are interested in how gender diversity affects the financial performance of the firm after the transaction is made.

1.2 Purpose and contribution

The primary purpose of this thesis is to investigate how gender diversity on the board of directors of a Nordic-listed company affects the likelihood of the firm performing an M&A transaction. Further, we are interested in what kind of transaction (foreign or nordic) is most likely to be made as well as the financial performance of the firm after the transaction.

We aim to contribute and expand on the already studied topic of how gender diversity on the board of directors affects the financial performance of a firm. Our study focuses on how a more gender-diverse board may affect major corporate decisions, which in turn will likely have an impact on the financial performance of the company (Ahern & Weston, 2007). We have limited our study to the Nordic market due to the Nordic region being among the countries in the world that have come the furthest regarding gender equality (Nordic cooperation, 2020). Therefore, we believe that it is of high interest to investigate how greater gender diversity is reflected in the firms' decision-making related to corporate finance. To the best of our knowledge, this research topic has not been explored in the Nordic capital markets before. Therefore, we aim to close this research gap.

1.3 Delimitation

This thesis only covers Nordic M&A transactions in the timeframe 2014-2020. The companies that are studied are publicly listed Nordic companies (Sweden, Norway, Finland, Denmark and Iceland) and the stock exchanges are limited to NASDAQ-OMX Nordic and Oslo Bors. The research questions, theoretical framework and our hypotheses developments

are mainly based on the decision-making differences and similarities between genders and on the Critical Mass theory developed by Kanter (1977).

1.4 Disposition

This thesis is divided into six sections and has the following structure: In the first section, we will introduce the reader to the topic of our study. Next, we will cover the literature review, theoretical framework, and the development of the research questions and hypotheses. In section three, we will introduce the used methodology and assumptions, followed by an introduction to the empirical data in section four. In section five, our results will be presented, followed by an analysis and discussion. Finally, in section six, we will present a conclusion, limitations of the study and suggestions for future research.

2. Theory and literature overview

This section serves as an introduction to previously published research related to our topic of interest. In particular, the value of M&A transactions, the value of gender diversity, the value of corporate governance, gender diversity's effect on risk perception and decision-making, and finally, gender diversity's effect on board decisions. We will also present our research questions and hypotheses in this section.

2.1 Literature review and previous research

2.1.1 The value of mergers and acquisitions

An M&A transaction refers to when two companies are combined in some form. In layman's terms, a merger is a transaction where two companies of a similar size are combined into one organization. An acquisition refers to when a larger company acquires a smaller firm. Firms may engage in M&A transactions with the intention of further strengthening their business in aspects such as managerial capabilities and resources, gaining economies of scale, extending technological capabilities, and utilizing patents (Corporate Finance Institute, 2022; Ziedonis, 2004). Moreover, Bower (2001) argues that firms also engage in M&A activities to enter new markets, explore fragmented industries, and deal with overcapacity in mature industries. Neoclassical economic theory suggests that the consolidation of two firms will generate a higher return together than the firms alone. Hence, gains of synergies may be realized (Ahern & Weston, 2007; Bena et al., 2014).

However, although M&A transactions can be viewed as growth opportunities for firms, they can also come with high levels of risks. A transaction can impact the consolidated firm's risk profile negatively, as a bigger company with higher fixed costs involves a higher level of uncertainty regarding its future cash flow generation (Ott, 2020). Furthermore, previous research notes that distance and unfamiliarity with the target's country, culture and institutions pose great challenges for buyers (Di Guardo et al., 2016; Zaheer, 1995; Mantecon, 2009). Extrapolating from the famous 'Market for Lemons' model by Akerlof (1970), firms engaging in M&A activities also have difficulties efficiently valuing the companies they are acquiring due to information asymmetry between sellers and buyers. Thus, the target companies should be valued less (Stiglitz, 2000) and buyers' performance suffers as a consequence (Moeller and Schlingemann, 2005).

2.1.2 The value of gender diversity

The research on gender diversity on the board of directors covers two main topics. One aspect is ethical and the other is economic (Campbell & Mínguez-Vera, 2008; Isidro & Sobral, 2015). The ethical aspect advocates that it is immoral to exclude women on the basis of gender. Therefore, companies should increase gender diversity, so that society achieves a more equitable outcome (Isidro & Sobral, 2015). The economic argument suggests that companies' financial performance will be affected by the degree of gender diversity. Prior findings on how greater gender diversity affects financial performance are mixed. Some have found a positive relationship (Carter et al., 2003; Campbell & Minguez-Vera, 2008) while others have found a negative or no significant relationship between board gender diversity and financial performance (Ahern & Dittmar, 2012; De Andres et al., 2005).

Moreover, Adams and Ferreira (2004) suggest that gender diversity on the board of directors also may have a political dimension. Some firms may have the incentive to incorporate gender diversity in order to retain a certain public image or to deal with government agencies which have preferences for gender diversity. According to Hillman et al. (2007), this is especially applicable to large firms as they have more demands and exposure in social contexts. Firm size is one of the most consistent predictors of having a more gender-diverse board (Burgess & Tharenou, 2002).

2.1.3 The value of corporate governance

Resource dependency theory

Pfeffer and Salancik (1978) developed the resource dependency theory, arguing that minimizing the uncertainty of a firm's external environment by controlling its resources is critical for a company's survival and gaining a competitive advantage. They argue that a company's board of directors is one of five tools that can be used to reduce external uncertainty. The fundamental benefits provided by the board according to Pfeffer and Salancik (1978) are legitimacy, providing advice and counsel, being a communication channel for information between external organizations and the firm, as well as being a conduit to support from external actors. The aforementioned benefits, denoted the provision of resources by Hillman and Dalziel (2003), are highly relevant to consider as they have a positive association with board capital and thus add power to the organization.

Agency theory

According to the agency theory, humans are subject to opportunistic behavior, which implies that individuals are likely to have a self-interest to maximize one's own utility. Therefore, corporations face a risk that a "principal-agent"-relationship may arise between the shareholders and the management, due to information asymmetry (Tricker, 2019). This relationship may potentially lead to a conflict of interest, as the management has the opportunity to decide what information they choose to share with the board. Thus, there is a risk that the management (the agents) choose to maximize their own personal utility while the shareholders (the principals) have to bury the risks of potential losses for the company. Thus, to resolve potential agency problems, the role of the board of directors is highly important, as they work to monitor the management (Fama & Jensen, 1983).

Women and corporate governance

According to Adams & Ferreira (2009), women possess behavioral traits that are associated with good corporate governance. For example, women on average have a higher board attendance, are more likely to join monitoring committees and are more likely to enhance managerial control, compared to men. Additionally, in order to enhance corporate governance, the decision-making process is important. Simone (2008) argues that a group of homogenous people are more likely to make decisions based on groupthink. Groupthink

refers to when a group makes decisions based on perceived group consensus, without using critical reasoning or evaluating different alternatives and perspectives. Adams & Ferreira (2009) suggest that women, in contrast to men, are more self-sufficient and less likely to be affected by group pressure. Therefore, by including women's contributions of various experiences and perspectives, the quality of decisions made by the board may improve (Hillman et al., 2007).

In contrast, some prior research suggests that an increase in gender diversity may result in a disadvantage for group efficiency. Westphal and Bednar (2005) argue that when solving complex problems, difficulties in coordination may arise. They suggest that people with similar demographic backgrounds are more likely to have open and effective communication and are thus able to develop strategies more efficiently. Additionally, they are more likely to experience a higher level of trust. Williams and O'Reilly (1998) also found that groups with a high level of homogeneity had fewer internal conflicts and are more prone to collaborate as a group. Similarly, Earley and Mosakowski (2000) concluded that members of homogeneous groups tend to have more analogous thoughts, which facilitates decision-making.

2.2 Theoretical framework

2.2.1 Gender diversity effect on risk perception and decision-making

Given that M&A transactions involve risk, our research questions and hypotheses development are based on prior literature related to risk and decision-making differences between genders. Previous findings are two-folded. A number of studies conclude that women in general are more risk-averse compared to men. Women tend to avoid risk in many aspects of their lives and are less likely to engage in aggressive and risky behavior (Eckel & Grossman, 2002). In contrast, men are more likely to engage in risky behavior such as gambling, risky experiments and other intellectual risk-taking (Byrnes et al., 1999). Sapienza (2009) similarly argues that men are more risk-prone and explains the difference based on testosterone levels, where higher levels of testosterone are associated with a higher tendency toward risk-taking. Thus, she makes the argument that men and women naturally differ in their decision-making to some degree, as men biologically have higher levels of testosterone.

Furthermore, research shows that men tend to have a higher tendency of overconfidence, which affects their decision-making process. Overconfidence refers to overestimating the precision of one's knowledge, abilities and prospects (Barber & Odean,

2001**)**. Many psychologists' research suggests that the difference in overconfidence between genders is highly task-dependent. Men are more likely to be overconfident and risk-prone compared to women in tasks perceived to be more masculine, for example, financial trading or gambling (Beyer & Bowden, 1997). Moreover, Lewellen et al. (1977) reported that men on average rely less on their brokers, make a higher number of financial transactions, and predict that the financial returns of their investments will be higher. Likewise, Barber and Odean (2001) found that male investors on average expected their portfolios to outperform the market by a higher margin, further indicating men's tendency of overconfidence. Hence, according to the aforementioned theories and research, men are more likely to make riskier financial decisions compared to women.

In contrast, Powell and Ansic (1997) found no significant difference in risk-taking between genders. They investigated the gender differences in the investment behavior of fixed-income mutual fund managers and found no significant difference in terms of risk, financial performance, or other fund characteristics on average. Thus, they argued that the variation in investment behavior between men and women does not necessarily have to do with gender differences. Rather, the difference can be explained by factors such as investment knowledge, wealth constraints or differences in educational background. The fund managers in the study had similar competencies, educational backgrounds and the funds had similar characteristics. Despite gender differences, it still led to almost identical results.

Schubert et al. (1999) came to a similar conclusion. They argued that the reason why other studies have concluded that women are more risk-averse is due to not controlling for wealth effects or that the particular setting is abstract. However, in contextual situations, they found no evidence of a difference in risk propensity between genders. They argue that in practice, financial decisions are always contextual. Thus, they advocate that there should not be a significant difference between genders in financial decision-making. Gysler et al. (2002) also argued that women on average are significantly more risk-averse compared to men in general tasks. However, they further argued that risk aversion for women decreases as they gain a higher level of competence, potentially leading to overconfidence. In contrast, higher levels of competence showed the opposite effect on men. When expertise increases, their risk aversion tends to increase.

2.2.2 Gender diversity effect on board decisions

Kanter (1978) developed The Critical Mass theory, arguing that in order for a minority to contribute and impact a majority, the minority needs to have reached a certain

size; a critical mass of 30%. If the threshold has not been reached, the minority will be classified as "tokens", leading them to be ignored and disliked by the majority of the group. However, Kanter argues that once a critical mass threshold is reached, the influence of the subgroup grows. Once fulfilled, the minority will not be classified as tokens anymore and has a higher chance to influence the ideas and culture of the majority. In a board of directors setting, it would imply that only when women reach 30% of representatives, will they have an influence in the decision-making process.

2.3 Research question development and hypotheses formulation

2.3.1 Research question development

Due to the contradictory results of prior literature on differences in decision-making between genders, we want to examine how board gender diversity affects firm M&A decisions in the Nordics. The Critical Mass theory (Kanter, 1977) and the differences and similarities in decision-making between gender (Eckel & Grossman, 2002; Byrnes et al., 1999, Sapienza, 2009, Beyer & Bowden, 1997, Gysler et al., 2002) lie as the foundation for our research question and hypotheses development. We will perform two tests; the first test regards the probability of making an M&A transaction, and the second test regards the probability of performing a transaction involving less risk. We use a Nordic transaction as a proxy for a less risky transaction. Our first two research questions are formulated as follows:

Does gender diversity on the board of directors affect the likelihood of a firm making an M&A transaction? (test 1)

Does gender diversity on the board of directors affect the likelihood of the acquired firm being Nordic? (test 2)

Additionally, prior literature is also contradictory in terms of gender's effect on firm financial performance. Therefore, we are interested in further exploiting the topic in the Nordic region. We measure the financial performance three years post-acquisition and use return on assets (ROA) as a proxy. The time span of three years allows the company time to transition its business post-acquisition. It is also a relatively short time, which helps minimize

the risk of other factors having an effect on the firm's ROA (Deloitte, 2022). Our third research question is formulated as follows:

How does gender diversity on the board of directors affect the ROA of the firm three years after the transaction is made? (test 3)

For all our tests (test 1, test 2, and test 3 above), we will examine partly the effect of one additional woman on the board, and partly the effect of a critical mass of women on the board. We want to observe potential differences between decision-making theories and Kanter's theory. Kanter's theory assumes that the potential differences only appear when the critical mass is fulfilled.

2.3.2 Hypotheses development

Our two hypotheses for the first test are formulated as follows:

H_0: *One additional woman on the board of directors has no effect on the probability of performing an M&A transaction in the following year* (hyp. 1)

H_A: *One additional woman on the board of directors has an effect on the probability of performing an M&A transaction in the following year*

H_0: *A board of directors consisting of at least 30% women has no effect on the probability of performing an M&A transaction in the following year* (hyp. 2)

H_A: *A board of directors consisting of at least 30% women has an effect on the probability of performing an M&A transaction in the following year*

We expect to reject null hypotheses (1) and (2) based on both sides of the two-folded prior literature. The first basis of our reasoning lies in the aforementioned support for women being more risk-averse than men and them being more likely to make different decisions (Gysler et al., 2002; Schubert et al., 1999). As M&A transactions involve a lot of risks (Ott, 2020), we expect the decision-making process between women and men to differ.

Additionally, studies suggest that a more diverse board will lead to new ideas and influences compared to a homogenous board (Hillman et al., 2007; Simone, 2008). Furthermore, based on Kanter's theory (1977), we believe that a critical mass of women will imply that the minority of the board of directors will be able to influence their risk perception to the majority, which will affect the decision-making process.

On the other side of the spectrum, some literature suggests that there is no difference between men and women in financial decisions if they possess the same level of competence. It is reasonable to assume that the competence level of board members is high, regardless of gender, since a high level of competence is a prerequisite to be considered for the role (Gabrielsson et al., 2007). Gysler et al. (2002) suggest that women with high competence tend to be less risk-averse, while men with high competence tend to be more risk-averse. Therefore, our expectation to reject null hypotheses (1) and (2) is reinforced.

Our two hypotheses for the second test are formulated as follows:

H_0:	*One additional woman on the board of directors has no effect on the probability of performing an M&A transaction of a Nordic company the following year*	(hyp. 3)
H_A:	*One additional woman on the board of directors has an effect on the probability of performing an M&A transaction of a Nordic company the following year*	
H_0:	*A board of directors consisting of at least 30% women has no effect on the probability of performing an M&A transaction of a Nordic company the following year*	(hyp. 4)
H_A:	*A board of directors consisting of at least 30% women has an effect on the probability of performing an M&A transaction of a Nordic company the following year*	

We expect to reject null hypotheses (3) and (4) as studies have shown that women are more risk-averse than men in situations where they are less informed (Gysler et., al 2002, Schubert et al., 1999). It is reasonable to assume that board members have more knowledge of the markets close to the firm's current operations. Therefore, we expect that a higher representation of female board members would make a Nordic firm more inclined to initiate

and carry out Nordic transactions, rather than international ones. Furthermore, we expect a critical mass of women to have an influence on their male peers, and therefore a risk-averse effect on the probability of acquiring Nordic firms (Eckel & Grossman, 2002; Byrnes et al., 1999, Sapienza, 2009, Beyer & Bowden, 1997, Gysler et al., 2002).

Finally, our two hypotheses for the third test are formulated as follows:

H_0: *One additional woman on the board of directors has no effect on the ROA of the company three years after the transaction* (hyp. 5)

H_A: *One additional woman on the board of directors has an effect on the ROA of the company three years after the transaction*

H_0: *A board of directors consisting of at least 30% women has no effect on the ROA of the company three years after the transaction* (hyp. 6)

H_A: *A board of directors consisting of at least 30% women has an effect on the ROA of the company three years after the transaction*

We expect to reject null hypotheses (5) and (6). Our reasoning is two-folded. First, it is based on prior research suggesting that women are more likely to avoid risky decisions (Eckel & Grossman, 2002; Byrnes et al., 1999, Sapienza, 2009, Beyer & Bowden, 1997, Gysler et al., 2002). Thus, we expect women to perform more due diligence, which in turn generates a higher probability of the investment being successful. Given this, one could expect that more women on the board will lead to a lower investment risk profile, a stronger balance sheet, and consequently a higher ROA in a period of three years after the transaction is made.

In contrast, other research suggests that a higher degree of heterogeneity on the board of directors may result in a disadvantage for group efficiency, which may affect the ROA negatively (Westphal & Bednar, 2005; Williams & O'Reilly, 1998; Earley & Mosakowski, 2000). Furthermore, Ahern and Dittmar (2012) have found a negative relationship between board gender diversity and financial performance. Therefore, we believe that more women on the board of directors will have an effect on the firm's ROA three years after the transaction. However, the direction is not certain.

3. Method

In this section, we will present the research design, the model that has been used for the regressions, the different variables included, and our assumptions.

3.1 Research design

In order to investigate the relationship between gender diversity on the board of directors and the likelihood of making an M&A transaction, we have performed a quantitative research study on Nordic listed firms. We define an M&A transaction as an event where a listed Nordic company acquires a majority share (>50%) of another company (private or listed) or as an event where a listed Nordic firm consolidates with another firm and merges into one new company.

The research design is consistent with *Gender and corporate finance: Are male executives overconfident relative to female executives?* (Huang & Kisgen, 2013), as well as *The impact of institutional investors on mergers and acquisitions in the United Kingdom* (Andriosopoulos & Yang, 2015). We have modified the control variables to fit the available data.

3.2 Probit and OLS models

We have six hypotheses that we want to investigate, divided into three tests. Each test examines two hypotheses respectively.

First and second tests

Our first and second tests each consist of a group of five probit regressions. A probit regression is used when the outcome is binary. In our case, either an M&A transaction takes place or it does not. Thus, the results of the regressions will display what impact the independent variables have on the probability of a transaction taking place.

In our first group of probit regressions (1a and 1b below), our dependent variable is the probability of at least one M&A transaction taking place in the following year. In our second group of probit regressions (2a and 2b below), our dependent variable is the event of at least one Nordic M&A transaction taking place in the following year. In each of these regressions, the binary outcome variable only has two possible outcomes: either there is at least one transaction (1) or there is no transaction (0). The subscripts i and t+1 correspond to firm i in the following year t+1. The control variables are added subsequently to the

regressions to control for omitted variable biases. The models stated below are the final probit regressions including all control variables.

$$Y_{i,\,t+1} = \alpha + \beta_1 OneAdditionalWomanOnTheBoard_{i,t} + \beta_2 BoardSize_{i,t} + \beta_3 FirmSize_{i,t} + \beta_4 ROA_{i,t} + \beta_5 Leverage_{i,t} + \beta_6 CashAndCashEquivalents_{i,t} + \beta_7 Capex_{i,t} + \beta_8 MarketToBook_{i,t} + \beta_9 IntangibleAssets_{i,t} + feIndustry_{i,t} + feCountry_{i,t} + feYear_{i,t} + \varepsilon_{i,t} \quad (1a)$$

$$Y_{i,\,t+1} = \alpha + \beta_1 CriticalMassDummy_{i,t} + \beta_2 BoardSize_{i,t} + \beta_3 FirmSize_{i,t} + \beta_4 ROA_{i,t} + \beta_5 Leverage_{i,t} + \beta_6 CashAndCashEquivalents_{i,t} + \beta_7 Capex_{i,t} + \beta_8 MarketToBook_{i,t} + \beta_9 IntangibleAssets_{i,t} + feIndustry_{i,t} + feCountry_{i,t} + feYear_{i,t} + \varepsilon_{i,t} \quad (1b)$$

$$Y_{j,\,t+1} = \alpha + \beta_1 OneAdditionalWomanOnTheBoard_{i,t} + \beta_2 BoardSize_{i,t} + \beta_3 FirmSize_{i,t} + \beta_4 ROA_{i,t} + \beta_5 Leverage_{i,t} + \beta_6 CashAndCashEquivalents_{i,t} + \beta_7 Capex_{i,t} + \beta_8 MarketToBook_{i,t} + \beta_9 IntangibleAssets_{i,t} + feIndustry_{i,t} + feCountry_{i,t} + feYear_{i,t} + \varepsilon_{i,t} \quad (2a)$$

$$Y_{j,\,t+1} = \alpha + \beta_1 CriticalMassDummy_{i,t} + \beta_2 BoardSize_{i,t} + \beta_3 FirmSize_{i,t} + \beta_4 ROA_{i,t} + \beta_5 Leverage_{i,t} + \beta_6 CashAndCashEquivalents_{i,t} + \beta_7 Capex_{i,t} + \beta_8 MarketToBook_{i,t} + \beta_9 IntangibleAssets_{i,t} + feIndustry_{i,t} + feCountry_{i,t} + feYear_{i,t} + \varepsilon_{i,t} \quad (2b)$$

$Y_{i,\,t+1}$ = *At least one M&A transaction the following year*
$Y_{j,\,t+1}$ = *At least one Nordic M&A transaction the following year*
α = *constant*
β = *coefficient of variable*
fe = fixed effects
ε = *error term*

Third test

Our third test (3a and 3b below) is in the form of five linear OLS regressions with a dependent variable of ROA three years after the M&A transaction. The subscripts *i* and *t*+3

correspond to firm *i* in the third year *t*+3. The control variables are added subsequently to the regressions to control for omitted variable biases. The models stated below are the final OLS regressions including all control variables.

$$Y_{j,\,t+3} = \alpha + \beta_1 OneAdditionalWomanOnTheBoard_{i,t} + \beta_2 BoardSize_{i,t} + \beta_3 FirmSize_{i,t} + \beta_4 ROA_{i,t} + \beta_5 Leverage_{i,t} + \beta_6 CashAndCashEquivalents_{i,t} + \beta_7 Capex_{i,t} + \beta_8 MarketToBook_{i,t} + \beta_9 IntangibleAssets_{i,t} + feIndustry_{i,t} + feCountry_{i,t} + feYear_{i,t} + \varepsilon_{i,t} \quad (3a)$$

$$Y_{j,\,t+3} = \alpha + \beta_1 CriticalMassDummy_{i,t} + \beta_2 BoardSize_{i,t} + \beta_3 FirmSize_{i,t} + \beta_4 ROA_{i,t} + \beta_5 Leverage_{i,t} + \beta_6 CashAndCashEquivalents_{i,t} + \beta_7 Capex_{i,t} + \beta_8 MarketToBook_{i,t} + \beta_9 IntangibleAssets_{i,t} + feIndustry_{i,t} + feCountry_{i,t} + feYear_{i,t} + \varepsilon_{i,t} \quad (3b)$$

$Y_{i,\,t+1}$ = *ROA three years after the M&A transaction*
α = *constant*
β = *coefficient of variable*
fe = *fixed effects*
ε = *error term*

In the following three parts, we will describe and define the different variables in the model.

3.3 Dependent variables

At least one M&A transaction the following year

Either 1 or 0, depending on if there was at least one transaction performed the following year. 1 if there was a transaction and 0 if there was not.

At least one Nordic transaction the following year

Either 1 or 0, depending on if there was at least one Nordic transaction performed the following year. 1 if there was a transaction and 0 if there was not.

ROA three years after the M&A transaction

A decimal number representing the ROA of the acquiring firm three years post-acquisition.

3.4 Independent variables and control variables

Independent variables

One additional woman on the board

Adding one woman to the board of directors at the year-end prior to the M&A transaction. We chose the year-end prior to the event as we assume that the transaction will not be made directly after the decision is taken. One year is a reasonable time frame between the decision and the transaction (Corporate Finance Institute, 2022).

Critical mass dummy: at least 30% women

An independent dummy variable indicating if the percentage of women represented on the board of directors is over 30%. 1 if the number of women represented on the board is at least 30% and 0 if there are less than 30%.

Control variables

Board Size

The size of the board of directors will have an indirect impact on the percentage of women on the board. The larger the board size, the larger the likelihood that females are represented. By controlling for the board size, we can make sure that it is the female contribution that has an impact on the decision of making an M&A transaction and not just one additional board member. The data is taken from the year-end prior to the transaction.

Firm Size

We have used the total assets of the acquiring company as a proxy for firm size as the total assets are the resources from which the company can generate profit (Dang & Yang, 2018). The data is taken from the year-end prior to the M&A transaction. It is reasonable to assume that a larger firm would be more likely to make an M&A transaction compared to a smaller firm that cannot afford it to the same extent. Moreover, a smaller firm has a relatively high transaction cost compared to a bigger firm (Ang, 1992).

Return on Assets (ROA)

The return on assets is a profitability measure and performance proxy for the acquiring firm at the year-end prior to the M&A transaction. ROA is likely to have both a direct and indirect impact on a firm's probability to make an M&A transaction. The direct impact is that a more profitable firm will have a higher likelihood to make a transaction. The indirect impact is that profitable firms are likely to be larger, which in turn has a higher likelihood to be more gender-diverse (Yang, 2019; Burgess & Tharenou, 2002). The definition we have used for ROA is:

$$ROA = \frac{Operating\ Income}{Total\ Assets}$$

Leverage

The leverage of the acquiring firm at the year-end prior to the M&A transaction may have an impact on whether the firm will make a transaction since it is riskier to have a higher leverage ratio (Corporate Finance Institute, 2022; Myers, 1977). Therefore, we believe that a high leverage ratio will have a negative effect on the likelihood of making an M&A transaction.

$$Leverage = \frac{Current\ Debt + Long\ Term\ Debt}{Total\ Assets}$$

Cash and Cash Equivalents

The cash and cash equivalents ratio is a measure of how much cash the company has compared to its total assets. This is measured at the year-end prior to the transaction. A higher ratio means that the company is more secure since it can use its cash to pay off its debt if needed. Some companies that are planning to perform M&A transactions as a part of their business strategy may have a high ratio, in order to later afford the transaction (Mikkelson et al., 2003). However, a high ratio could also mean that the company is inefficient. Therefore, we expect a higher cash and cash equivalents ratio to have a negative impact on making an M&A transaction.

$$Cash\ and\ Cash\ Equivalents\ Ratio = \frac{Cash\ and\ Cash\ Equivalents}{Total\ Assets}$$

Capital Expenditures

Since Capex is the amount the firm invests in its fixed assets, we believe that a high Capex ratio will decrease the likelihood of making an M&A transaction. Therefore, we chose

to include it as a control variable in our regression model. The Capex ratio is measured at the year-end prior to the M&A transaction.

$$Capex\ Ratio\ = \frac{Capex}{Total\ Assets}$$

Market-to-Book Ratio

The market-to-book ratio is measured by the acquiring firm the year-end prior to the M&A transaction. Huang and Kisgen (2013) found that firms with a high market-to-book ratio were significantly more likely to hire a female executive. This means that a high market-to-book ratio may also increase the likelihood to have a higher number of women on the board of directors. Therefore, a high market-to-book ratio may have an indirect effect on the likelihood of making an M&A transaction.

$$Market\ to\ Book\ Ratio\ = \frac{Market\ Cap}{Total\ Book\ Value}\ = \frac{Market\ Cap}{Total\ Assets - Total\ Liabilities}$$

Intangible Assets Ratio

According to the Swedish intellectual property office, examples of intangible assets are patents, brand names, business methods, goodwill and expert knowledge. A firm's intangible assets can be up to 80% of its value. Furthermore, firms that develop and manage their intangible assets are more profitable on average (Swedish Intellectual Property Office, 2022). Furthermore, goodwill may be realized when acquiring another company. One could assume that a firm with a high level of goodwill will have a higher probability of making more M&A transactions, as it may be part of its business strategy (Corporate Finance Institute, 2022). Given these reasons, we believe that a high portion of intangible assets will have a positive impact on the likelihood of making an M&A transaction. The ratio is measured at the year-end prior to the M&A transaction.

$$Intangible\ Assets\ Ratio\ = \frac{Intangible\ Assets}{Total\ Assets}$$

Industry Fixed Effects

Based on differences in industries, firms are more or less likely to perform M&A transactions. Networks of industries are connected through customer and supplier trade flows and stronger product market connections lead to more cross-industry mergers (Ahern & Harford, 2014). When we control for industries, we make sure that the difference in

probability of performing an M&A transaction does not depend on what industry the firm is operating in.

Country Fixed Effects

Since our data includes acquiring firms from five different countries and hence five different markets, we want to make sure that the likelihood of making a transaction is not due to the nationality of the acquiring firm. Therefore, we use country fixed effects in our model.

Year Fixed Effects

We are controlling for the year fixed effects so that differences in particular events or macroeconomic circumstances do not have an effect on our results. Further, we also control for the fact that the number of data points collected is different from year to year. For example, in 2014 Nordic Compass only covered 252 firms whereas, in 2020, 494 firms were covered. The aforementioned reasons can make a difference in the results, which is why we account for year fixed effects in our model.

3.6 Correlation between the variables and assumptions to the models

Table 1 below illustrates a correlation matrix for our aforementioned variables. A coefficient of 1 indicates a perfect positive correlation between two variables. A coefficient of -1 indicates a perfectly negative correlation. It can be observed that most coefficients, apart from One additional woman on the board and Critical mass, are close to 0, indicating no linear correlation between the variables. It is no surprise that there is a correlation between One additional woman on the board and the Critical mass, due to the nature of the variables. Because of their high correlation, we do not include both variables in the same regressions.

Table 1. Correlation matrix

The correlation between each of the variables included in the final regressions

	Transaction year after	Women on the board	Critical mass	Board size	Firm size	ROA	Leverage	Cash and cash equivalents	Capex	Market to book	Intangible assets
Transaction year after	1										
One additional woman on the board	0.0999*	1									
Critical mass (1=at least 30% women)	-0.0557	-0.6117*	1								
Board size	0.0629*	0.4257*	0.1516*	1							
Firm size	-0.0097	0.1766*	0.0024	0.2430*	1						
ROA	0.0735*	-0.1114*	0.1113*	-0.0545	-0.1796*	1					
Leverage	0.0003	0.0118	-0.0476	-0.0613	0.2049*	-0.2524*	1				
Cash and cash equivalents	-0.0891*	-0.1026*	0.0371	-0.1299*	-0.0729*	0.4043*	-0.3603*	1			
Capex	-0.0647	-0.0547	0.0594	0.0029	-0.0925*	0.1802*	0.0276	-0.0696*	1		
Market-to-book	-0.0195	-0.0535	0.0473	-0.0227	-0.0638*	0.4181*	-0.1500*	0.2148*	-0.0310	1	
Intangible assets	0.1537*	-0.0227	-0.0132	-0.0794	-0.1862*	0.0727*	0.0761*	-0.1505*	-0.1769*	0.0247	1

Note: * indicate 1% significance level

Assumptions to the models

In this study, two groups of probit and one group of OLS regressions are performed in order to evaluate our hypotheses. We want to highlight certain assumptions that we have made in these regressions.

Assumptions to the probit regressions

We have a sample of 2 116 observations of at least one M&A transaction performed the following year, with a standard deviation of 0.4417. Therefore, as the sample is large and the standard deviation is known, we assume that the sample and the error term follow a normal distribution. Due to the same reasons, we assume the error term to be independent. Furthermore, since the dependent variable in our model can only take two values, we assume that the outcome is binary. To test the assumption of linearity and multicollinearity, we performed a correlation matrix and found that our independent variables do not correlate. Thus, the assumptions hold.

Assumptions to the OLS regression

In the OLS regression, we assume for the same reasons as stated above that the regression is linear in the coefficients and the error term. Moreover, we assume that the independent variables are uncorrelated with the error term and that the observations of the error term are uncorrelated with each other. Since we include a constant in the regression, we assume that the error term follows a normal distribution and furthermore has a population mean of zero. As we control for industry, country and year fixed effects, we can assume that the error term has a constant variance. Hence, heteroscedasticity in the model is prevented. Lastly, as illustrated in the correlation matrix, we can assume that no independent variable is a perfect linear function of other explanatory variables.

4. Empirical data

In this section, we will present our sample data and cover descriptive statistics.

4.1 Sample

We have collected our data from two databases, namely Nordic Compass and Capital IQ. The Nordic Compass database is the Swedish House of Finance's ESG database. From

there, we have collected data from 2014 to 2020 that cover more than 400 publicly listed firms in the Nordic region, both large-cap and mid-cap. The data at Nordic Compass is collected by a manual data collection team and includes organization numbers. The overall coverage of firms across the years is shown in Appendix A. The company data is summarized in Appendix B.

Additionally, we have collected financial data about the acquirer (i.e. Nordic publicly listed firms), in each transaction. We collected the M&A transactions data from Capital IQ which is a database that covers detailed company financials. Available information includes among others, debt and equity capital structure, fixed income terms, and current and historical company-level ownership information. Our screening criteria were that the acquirer was a Nordic and publicly listed company. The target could be either a private or a public company located anywhere in the world. The closed date for the transactions was between January 1st 2014 to December 31st 2020. The key identifier which we used to create one common model was the companies' organizational numbers and tickers. This made it possible to merge our acquisition and financial data from Capital IQ with the gender diversity data from Nordic Compass. The transactions collected from Capital IQ are summarized in Appendix C. The definitions for the data are summarized in Appendix D.

4.2 Descriptive statistics

Table 2 below shows the descriptive statistics for our analysis followed by discussions of our data points. In order to dive deeper into the female percentage on boards and how they have developed over the years, we refer to Appendix E. Moreover, Appendix F and G describe the board gender diversity statistics by industry and country, respectively.

Table 2. Descriptive statistics for all variables in the dataset

Dependent variables	**Observations**	**Mean**	**Std.Dev**	**Min**	**Max**
At least one M&A transaction the following year	2 116	0.2656	0.4417	0	1
At least one Nordic M&A transaction the following year	303	0.4950	0.5008	0	1
ROA three years after the M&A transaction	726	0.0836	0.0696	0.0013	0.4764
Independent variables	**Observations**	**Mean**	**Std.Dev**	**Min**	**Max**
Women on the board	2 874	2.2351	1.1239	0	9
Board size	2 878	7.6956	2.2639	0	17
Firm size	1 767	11 346.335	50 930.353	0.702	675 318.3
Return on assets (ROA)	1 586	0.0860	0.0736	0.0000	0.5078
Leverage	1 767	0.2303	0.1638	0	1.0189
Cash and cash equivalents	1 767	0.1062	0.1441	0	0.9959
Capex	1 752	0.0314	0.0397	0	0.5945
Market-to-book	1 734	3.5457	6.0945	-39.3830	174.0955
Intangible assets	1 642	0.2397	0.2215	0.0000	0.9181

Note: Since industry-, country- and year fixed effect are dummy variables, no mean, standard deviation, min or max has been reported, and hence not included in the table.

Discussion of Table 2

Women on the board, Board size and Firm size

We have over 2 800 observations for women on the board and the board size, and 1 767 for the firm size. Our sample consists of firms with between 0 and 9 women on the board, and a mean of 2.24. There are many firms with zero female board members, but none that only have women. Men account for the majority on most boards.

ROA

It can be observed that the average ROA of the firms in our sample is 0.086, with a standard deviation of 0.07. The wide standard deviation allows us to analyze companies that utilize their resources both well and poorly. Our sample reports a higher mean than the mean ROA for publicly listed companies in Norway, which ranged between 6-8% in the years 2007 to 2009 (Dale-Olsen et al., 2013). Due to the later years used in our sample data and the upward trend presented in Dale-Olsen's study, we believe that our ROA data is reasonable.

Leverage ratio

The firms in our data sample have a mean leverage of 0.230. This is very close to the average of 0.234 in Korteweg's study of the net benefits of leverage (Korteweg, 2010), which indicates that our result is reasonable. However, given the difference in the time period from when the referred article is published, we have also taken into account other factors that could influence leverage in order to establish the veracity of our data. Bates et al. (2009) found evidence of a link between macroeconomic uncertainty and the optimal level of debt. Firms borrow more when economic uncertainty decreases, and in the period covered by our data (2014 to 2020), record low interest rates and a technology investment boom increased revenues and cash flows (European Central Bank, 2022; Sveriges Riksbank, 2022). As our minimum value for leverage is 0, our data also demonstrates an interesting phenomenon that has been studied by many researchers. They found that there has been an uptick in firms with zero debt (Strebulaev et al., 2013). Zero-levered firms are typically firms with smaller boards and higher management ownership (Bessler et al., 2013).

Cash and Cash Equivalents ratio

Table 2 shows an average Cash and Cash Equivalents (CCE) of 0.106 for the firms in our sample. Our mean cash holdings are similar to those studied by Mikkelson et al. (2003,

2009) and Le et al. (2018). Due to our large standard deviation of 0.14, our sample covers a wide range of cash holdings. Having a high variation in CCE is a strength of our data sample since it allows us to draw wider conclusions about the whole population of Nordic firms.

Capex ratio

The average Capex ratio in our data is 0.031, which is close to the average of 0.013 in the study by Bates et al. (2009) based on US firms. Given the time difference between our data and theirs, we believe our data is reasonable since a firm's Capex ratio is likely to fluctuate as they move through various growth cycles (Anthony & Ramesh, 1992).

Market-to-book ratio

The average market-to-book ratio in our data is 3.546. This is slightly higher compared to the mean of 2.49 that McNichols et al. (2014) found, based on US firms over time. A higher ratio means that the company is valued higher relative to its book value. Due to time and geographic differences, the difference between our market-to-book value and theirs should not be substantial.

Intangible assets ratio

The average intangible assets ratio in our data is 0.240. This is relatively close to the average found by Barth et al. (1999). They found a mean of 0.08, with a standard deviation of 0.10. The difference between our average and theirs may be explained by the difference in time.

Discussion of Appendix E

Transactions and women represented on the board over the years

In Appendix E, the statistics for transactions and women represented on the board over the years are summarized. There is an increasing percentage of women on the board throughout the years 2014 to 2020, from 26.4% to 32%. This indicates progress in terms of gender diversity. We have data for a total of 703 transactions which shows a steady increase in the number of transactions from 2014 up until 2017. After 2017, the number of transactions oscillated from year to year. The percentage of firms that have completed a transaction has decreased, from a high of 27.5% in 2019 to a low of 20.6% in 2020. The reason for the decrease could potentially be explained by the demand shock caused by

Covid-19 in 2020 (Brinca et al., 2020). Due to the fluctuations between the years, we believe that it is beneficial to include Year Fixed Effect in our models.

Discussion of Appendix F

Transactions and women represented on the board by industry

The table in Appendix F illustrates the number of women on the board of directors and the number of transactions performed in each industry. Further, it shows the number of boards within each industry that reach the critical mass of 30%. The table allows us to analyze the differences in the number and percentage of transactions performed between firms with more or less than 30% of women on the board. Within the Financial Services sector, 73.7% of transactions are made by firms with a critical mass of women on the board. On the opposite side of the spectrum, within the Industrial sector, only 40.7% of the transactions are made by firms with a critical mass of women.

The top three most represented sectors in terms of performed transactions are Industrials, Consumer, and Financial Services, together accounting for more than 65% of the total transactions. The Industrial sector accounts for the highest share of transactions performed (31.8%). This can be argued to be expected, due to the large presence of Industrial companies within the Nordics, especially Sweden, with companies such as Assa Abloy, Skanska, and ABB who have performed a large number of M&A transactions historically (ABB, 2020; Assa, 2022; Skanska, 2022). The sector with the second-most transactions compared to the number of observations is the Technology sector. The technology sector, like the industry sector, is fragmented which fosters more M&A transactions (Ziedonis, 2004). Nordic tech firms such as ATEA, Ericsson, and Tieto EVRY are all examples of firms that have made several M&A transactions historically (Atea, 2016: Ericsson, 2022; Tieto Every; 2022). The Other segment has the lowest number of transactions performed (17.8%), closely followed by the Health Care segment (19%). Therefore, we believe that Industry Fixed Effect will be essential in our regressions, as we expect the Industrial and Technology sectors to have a large effect.

Discussion of Appendix G

Transaction and women represented on the board by country

In Appendix G, we can observe the differences in the number of transactions and women on the board in the different countries. Iceland and Norway have the highest number of women on the board (42.7% and 36.1% respectively). It is possible to note that all of Iceland's firms in our sample data have more than 30% of women on the board. Norway has

72% on the same measure. The country with the lowest number of firms with more than 30% women on the board is Denmark, with only 15.3%. This is in line with our previous observation that Denmark ranks much lower than the other Nordic countries in terms of equality (World Economic Forum, 2022).

Discussion of Appendix H

ROA and women represented on the board over the years

Appendix H illustrates the variable ROA and ROA three years after the transaction. It presents the difference between companies with fewer or more than 30% women on the board. The table further shows the difference between the data when a transaction happened compared to when it did not. We can conclude that firms below the critical mass of women have consistently higher ROA both one and three years after the transaction. This is consistent for all observations. The difference is between 1 and 2 percentage points on average. Thus, more women on boards may imply worse financial performance for the firm, according to this single data point.

5. Empirical results and analysis

In this part of the report, we perform the tests and present the empirical results. We also analyse and discuss the results.

5.1 Analysis of regression results

We will start by showing the regressions for our three tests. The first group of tests concerns hypotheses (1) and (2), regarding the probability of making a M&A transaction based on the number of women on the board. The second group of tests concerns hypotheses (3) and (4), namely the effect of the probability of making a Nordic transaction based on the number of women on the board. The third group of tests concerns hypotheses (5) and (6), in regards to the effect on the ROA of the acquiring company three years after the transaction based on the number of women on the board.

5.1.1 First test

Table 3. First test: Does gender diversity on the board of directors affect the likelihood of a firm making an M&A transaction?

	Dependent variable: M&A transaction the following year									
	(I)		(II)		(III)		(IV)		(V)	
Independent variables	a	b	a	b	a	b	a	b	a	b
One additional woman on the board	0.091**		0.074*		0.094**		0.082		0.040	
	(0.03)		(0.03)		(0.03)		(0.04)		(0.04)	
Critical mass (1=at least 30% women)		0.083		0.116		0.167**		0.088		0.039
		(0.06)		(0.06)		(0.06)		(0.08)		(0.09)
Board size			0.019	0.038**	0.016	0.041**	0.025	0.045*	0.017	0.026
			(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)
Firm size							-0.000	-0.000	0.000	0.000
							(0.00)	(0.00)	(0.00)	(0.00)
ROA							1.613**	1.636**	2.554***	2.570***
							(0.56)	(0.56)	(0.76)	(0.76)
Leverage									-0.652*	-0.654*
									(0.33)	(0.33)
Cash and cash equivalents									-0.396	-0.429
									(0.57)	(0.57)
Capex									-1.221	-1.312
									(1.46)	(1.46)
Market-to-book									-0.023	-0.024
									(0.02)	(0.02)
Intangible assets									0.867***	0.857***
									(0.24)	(0.24)
Financial services					-0.104	-0.114	0.151	0.148	0.353*	0.345
					(0.10)	(0.10)	(0.13)	(0.13)	(0.18)	(0.18)
Health care					-0.072	-0.089	0.081	0.066	0.024	0.017
					(0.12)	(0.12)	(0.15)	(0.15)	(0.17)	(0.17)
Industrials					0.334***	0.333***	0.339**	0.335**	0.377***	0.374***
					(0.09)	(0.09)	(0.10)	(0.10)	(0.11)	(0.11)
Manufacture					0.019	0.011	-0.054	-0.061	0.126	0.122
					(0.15)	(0.15)	(0.17)	(0.17)	(0.19)	(0.19)
Technology					0.249	0.241	0.593***	0.592***	0.936***	0.936***
					(0.14)	(0.14)	(0.18)	(0.18)	(0.22)	(0.22)
Other					0.218	0.212	0.293*	0.294*	0.281	0.280
					(0.12)	(0.12)	(0.14)	(0.14)	(0.16)	(0.16)
Finland							0.221	0.265*	0.146	0.169
							(0.13)	(0.13)	(0.14)	(0.14)
Iceland							0.140	0.189	0.120	0.145
							(0.29)	(0.29)	(0.31)	(0.31)
Norway							0.128	0.186	0.085	0.114
							(0.14)	(0.13)	(0.15)	(0.15)
Sweden							0.365***	0.418***	0.214	0.239
							(0.11)	(0.11)	(0.13)	(0.12)
Constant	-0.758***	-0.617***	-0.899***	-0.934***	-1.034***	-1.089***	-1.111***	-1.165***	-1.166***	-1.176***
	(0.07)	(0.04)	(0.11)	(0.12)	(0.13)	(0.14)	(0.21)	(0.21)	(0.27)	(0.28)
Number of observations	1,971	1,977	1,971	1,974	1,971	1,974	1,223	1,235	1,137	1,138
Pseudo R-squared	0.0045	0.0008	0.0052	0.0042	0.0203	0.0197	0.0331	0.0318	0.0924	0.0920
Industry Fixed Effect	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effect	No	No	No	No	No	No	Yes	Yes	Yes	Yes
Year Fixed Effect	No	No	No	No	No	No	No	No	Yes	Yes

Note: This table present the results for five regressions with the dependent variable *at least one M&A transaction the following year* and the independent variables *One additional woman on the board* (a) and *Critical mass* (b). Column I is the probit regression where only the independent variable is included. In Column II, we add the control variable board size. Subsequently, we add industry fixed effects in column III, and in IV, we add firm size and ROA. Lastly, in column V we add the remaining control variables. Consumer and Denmark are exluded in the table due to fixed effects. All variables are defined in section 3.3-3.5. Standard error are in parentheses; *p<0.1, **p<0.05, ***p<0.01.

Description of regression outputs

In Table 3 we run five probit regressions and test for the probability of making an M&A transaction the following year. All the (a) columns test the effect of *One additional woman on the board* one year prior to the transaction. All the (b) columns test the *Critical*

mass; the effect of the dummy variable of at least 30% women represented on the board. We test hypotheses (1) and (2).

In column Ia, we observe that O*ne additional woman on the board* is significant at a 5% level. The positive coefficient implies that one additional woman on the board has a significant effect on the likelihood that the firm will make an M&A transaction the following year, by 9.1 percentage points. In column Ib, there is also a positive coefficient of 0.083 of the *Critical mass* variable and the probability of making an M&A transaction. However, it is not significant, making it difficult to draw a causal relationship between the two variables.

In column II we add the control variable *Board size.* Although the results are similar to column I, the significance level of *One additional woman on the board* decreases from 5% to 10%.

In column III we add *Industry Fixed Effects.* It is now possible to observe that the positive coefficient is statistically significant on a 5% level both for *One additional woman on the board* and for the *Critical mass*. This implies that a higher number of women on the board is associated with a higher likelihood of performing M&A transactions. More specifically, *One additional woman on the board* is associated with a 9.4 percentage point increase, and a *Critical mass* of women is associated with a 16.7 percentage point increase. Therefore, the results in column III are aligned with our expectations that we would be able to reject null hypotheses (1) and (2).

When we further control for *Firm size*, *ROA* and *Country Fixed Effects* in column IV, it can be observed that the previously noted significant effect in column III disappears. However, *ROA*, *Industrials*, *Technology*, *Other segment*, and *Sweden* positively and significantly affect the likelihood of making an M&A transaction both for *One additional woman on the board* as well as *Critical mass*. Furthermore, *Finland* and the *Board size* positively and significantly affect the likelihood of making an M&A transaction when the *Critical mass* is fulfilled.

Finally, in column V, we add *Leverage*, *Cash and cash equivalents, Capex, Market-to-book ratio, Intangible assets* as well as *Year Fixed Effects*. The effect on the probability of performing a transaction that is explained by adding *One additional woman on the board* or a *Critical mass*, has disappeared to almost zero.

Discussion of the first test

When studying the results of our regression, it is interesting to note that the significance of the coefficients for women on the board and critical mass vary. Additional

women do have a significant effect on the likelihood of the probability of making an M&A transaction at first sight, but not as we add more control variables. Additionally, the effect of the independent variables diminishes. The coefficient for one additional woman on the board decreases from 0.091 to 0.040, while the coefficient for critical mass decreases from 0.083 to 0.039. The pseudo R-squared increases for every performed test as more control variables are added. Therefore, we believe that the latter models are more realistic tests since a higher pseudo R-squared indicates that the model predicts the outcome to a higher extent. The accumulated results from the regressions in the first test imply that we cannot reject null hypotheses (1) and (2) due to insignificant data in the latter tests. For the same reason, we cannot either accept the alternative hypotheses that one additional woman or a critical mass of women on the board has a significant effect.

We can conclude that our results are not in line with our predictions that women have a significant effect on the likelihood of making an M&A transaction. Thus, our results would logically imply that other parameters are more valid explanatory variables in our model. An M&A transaction is a big decision for a firm to make and there are many parameters that contribute to making the decision, both external and internal.

External parameters include understanding the market, as acquisitions occur mainly to enter new markets, to exploit fragmented industries, and through consolidations in mature industries to deal with overcapacity (Bower, 2001). As shown in the results in Table 3, the Industrials and Technology sectors have a higher likelihood to make an M&A transaction. The coefficients are 0.37 and 0.94, respectively, with a 1% significance level. This result is in line with previous research by Ziedonis (2004) who found that the technology sector has more transactions. Furthermore, many tech companies acquire other firms to utilize the patent that the target company possesses (Ziedonis, 2004). Other research (Adra et al., 2020) showed that monetary policy also may have an impact on a firm's willingness to perform M&A transactions. Adra showed that as interest rates increase, there is a negative market reaction to M&A announcements, an increase in the likelihood of deal withdrawal, and significant financing challenges for the acquirer in the post-acquisition phase. This, as well as monetary policy uncertainty, will lead to lower M&A activity.

In terms of the internal parameters, M&A activities also occur to extend new products, and as a substitute for R&D (Bower, 2001). Other internal aspects include realizing synergies by combining innovation capabilities as an important driver of acquisitions (Bena et al, 2014). Bena showed that companies with large patent portfolios and low expenses on R&D are more likely to acquire other firms. Moreover, those acquirers that have a prior

technological link to their target produce more patents post-acquisition. Thus, as patents are realized as an intangible asset on a company's balance sheet, it is not surprising that the intangible asset variable in our model has a positive effect on the likelihood of making an M&A transaction. The coefficient is 0.86, with a 1% significance level. We believe that these aforementioned parameters, both external and internal, might have had an effect on our model.

Another point of view that may explain our result is Powell and Ansic's (1997) theory. The theory suggests that there is not a significant difference between men and women when making financial decisions when the same level of competence is possessed. It is reasonable to assume that women on the board of Nordic listed firms possess similar knowledge, education and experience as their male peers. As suggested in the resource dependency theory, the board has an important role to minimize the uncertainty of the external environment, which is critical for the success of the firm (Pfeffer & Salancik, 1977). Furthermore, in line with the agency theory, it is of high interest for the stakeholders of the firm to hire a competent board, to prevent potential agency problems (Fama & Jensen, 1983). Therefore, to have the aforementioned competencies, such as knowledge, education and experience within the field, is a prerequisite to be considered for a position on the board of directors. Hence, all board members, regardless of gender, are likely to be of similar character based on competence. This might be an explanation for our insignificant results.

In the next group of tests, we will investigate whether women take fewer risks in their investments.

5.1.2 Second test

Table 4. Second test: Does gender diversity on a board of directors affect the likelihood of the acquired firm being Nordic?

Dependent variable: Nordic M&A transaction the following year										
	(I)		(II)		(III)		(IV)		(V)	
Independent variables	a	b	a	b	a	b	a	b	a	b
One additional woman on the board	0.140*		0.160*		0.126		0.125		0.098	
	(0.06)		(0.07)		(0.07)		(0.08)		(0.08)	
Critical mass (1=at least 30% women)		0.175		0.180		0.093		0.070		0.022
		(0.14)		(0.15)		(0.15)		(0.17)		(0.18)
Board size			-0.024	0.021	-0.030	0.006	-0.043	-0.006	-0.031	-0.003
			(0.04)	(0.04)	(0.04)	(0.04)	(0.05)	(0.04)	(0.05)	(0.04)
Firm size							-0.000	-0.000	-0.000	-0.000
							(0.00)	(0.00)	(0.00)	(0.00)
ROA							-3.303***	-3.371**	-1.678	-1.664
							(1.14)	(1.14)	(1.59)	(1.59)
Leverage									-0.351	-0.313
									(0.75)	(0.75)
Cash and cash equivalents									-0.684	-0.797
									(1.10)	(1.10)
Capex									-1.798	-1.865
									(3.76)	(3.79)
Market-to-book									-0.070	-0.069
									(0.04)	(0.04)
Intangible assets									0.195	0.170
									(0.54)	(0.54)
Financial services					0.626*	0.616*	0.827*	0.808*	0.719	0.685
					(0.30)	(0.31)	(0.37)	(0.37)	(0.48)	(0.48)
Health care					-0.568	-0.600*	-0.388	-0.401	-0.361	-0.367
					(0.29)	(0.29)	(0.31)	(0.31)	(0.35)	(0.35)
Industrials					0.499*	-0.524*	-0.503*	-0.532*	-0.451*	-0.483*
					(0.21)	(0.21)	(0.22)	(0.22)	(0.23)	(0.23)
Manufacture					-0.371	-0.417	-0.536	-0.582	-0.346	-0.383
					(0.38)	(0.38)	(0.38)	(0.38)	(0.43)	(0.43)
Technology					-0.167	-0.204	-0.256	-0.288	-0.244	-0.266
					(0.31)	(0.31)	(0.36)	(0.35)	(0.38)	(0.38)
Other					-0.324	-0.340	-0.347	-0.349	-0.142	-0.139
					(0.27)	(0.27)	(0.28)	(0.28)	(0.30)	(0.30)
Finland							0.112	0.191	0.141	0.216
							(0.29)	(0.29)	(0.30)	(0.30)
Iceland							-1.364	-1.215	-1.250	-1.099
							(0.79)	(0.79)	(0.77)	(0.77)
Norway							0.458	0.558	0.527	0.627*
							(0.29)	(0.29)	(0.30)	(0.30)
Sweden							-0.115)	-0.027	-0.083	-0.004
							(0.25)	(0.25)	(0.27	(0.26)
Constant	-0.349*	-0.098	-0.208	-0.267	0.165	0.157	0.649	0.564	0.595	0.545
	(0.17)	(0.10)	(0.29)	(0.30)	(0.34)	(0.35)	(0.46)	(0.45)	(0.55)	(0.55)
Number of observations	301	301	301	301	301	301	290	290	279	279
Pseudo R-squared	0.0121	0.0035	0.0129	0.0044	0.0645	0.0581	0.1311	0.1255	0.1439	0.1404
Industry Fixed Effect	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effect	No	No	No	No	No	No	Yes	Yes	Yes	Yes
Year Fixed Effect	No	No	No	No	No	No	No	No	Yes	Yes

Note: This table present the results for five regressions with the dependent variable *at least one Nordic M&A transaction the following year* and the independent variables *One additional woman on the board* (a) and *Critical mass* (b). Column I is the probit regression where only the independent variable is included. In Column II, we add the control variable board size. Subsequently, we add industry fixed effects in column III, and in IV, we add firm size and ROA. Lastly, in column V we add the remaining control variables. Consumer and Denmark are exluded in the table due to fixed effects. All variables are defined in section 3.3-3.5. Standard error are in parentheses; *p<0.1, **p<0.05, ***p<0.01.

Description of regression outputs

In Table 4, we test hypotheses (3) and (4) by running five probit regressions to investigate the probability that a firm will acquire a Nordic company in the following year. We use a Nordic acquisition as a proxy for a less risky transaction.

Columns Ia-Va test the effect of *One additional woman on the board of directors*. As in the previous tests, a dummy variable of a *Critical mass* of 30% women is added in Column Ib-Vb. The control variables that are added in II and III are *Board size* and *Industry Fixed Effect* respectively. In column IV, *Firm size*, *ROA* and *Country Fixed Effects* are added. In column V, we further control for *Leverage, Cash and cash equivalents, Capex, Market-to-book ratio, Intangible assets* and *Year Fixed Effect*.

In columns I and II, it can be noted that *One additional woman on the board* increases the probability of making a Nordic transaction by respectively 14 and 16 percentage points at a 10% significance level. The *Critical mass* coefficient is positive but is not significant in these columns. In the latter columns (i.e., III, IV, V) with the additional control variables noted above, the coefficients of *One additional woman on the board* and the *Critical mass* coefficient remain positive. However, once these control variables are added, the effect of the coefficient diminishes and its significance disappears. It is worth mentioning that we only have 301 observations as most in our data sample, which might cause issues with the significance of the results.

Due to insignificant data, we fail to reject null hypotheses (3) and (4). Moreover, we cannot accept the alternative hypotheses that there is a significant effect if one additional woman is added to the board (3), or when there is a critical mass of women represented on the board (4).

Discussion of the second test

Based on previous literature suggesting that women are more risk-averse compared to men (Eckel & Grossman, 2002), we expected to see positive coefficients for one additional woman on the board and the critical mass threshold. Our predictions are based on the fact that investments in companies residing in the Nordic countries can be viewed to be easier to analyze, integrate and understand as a whole, which implies less risk. However, based on the result of our regression, and that the pseudo R-squared increases as we add more control variables, we conclude that women do not have an impact on the likelihood that a firm will make an M&A transaction in a Nordic country. Neither can we claim that a critical mass of women significantly alters the probability of making an M&A transaction in the Nordic region.

The results may have several explanations. First of all, perhaps we overestimated the differences between Nordic and European markets. There is a risk that Nordic transactions cannot be distinguished from other European transactions in terms of riskiness, because of the

common market. Furthermore, again in line with Powell and Ansic (1997), there is also a possibility that due to similarities in educational background and competencies, men and women on the boards will make similar decisions. Given this, there is a risk that groupthink is created within the board. If this is the case, decisions are made based on perceived group consensus rather than individual contributions (Simone, 2008). This might be an explanation for why our data shows an insignificant difference between genders. Regardless, our findings suggest that having additional women on the board does not lead to less risky transactions, based on our definition.

However, in Appendix C it is possible to observe that the firms in the dataset do make more transactions in the Nordic countries. Of all transactions, 55% are made in the Nordics, and 45% in the rest of the world. Of those 45%, 24% of the transactions are made in the rest of Europe. Due to the insignificant result in our regression in Table 4, one can argue that it is likely other factors rather than board gender composition which contribute to why Nordic companies choose to expand their business in closer areas. This is in line with previous research that found that the distance between two countries has a negative effect both on the probability and the intensity of M&A deals. Moreover, other contributing factors may be related to differences in customer preferences due to culture and familiarity. Further, the closer distance may also enhance operational cost efficiency, related to freight and supply expenses (Di Guardo et al., 2016). This is also illustrated in the data in Appendix C, as only 14% of the transactions are made in the United States and Canada. Asia/Pacific, Latin America and Caribbean, and Africa/Middle East together only account for 7%. This reinforces both the cultural as well as geographical distance aspects.

In our next group of tests, we will examine what effect additional women on the board have on the financial performance of the firm, using ROA as a proxy.

5.1.3 Third test

Table 5. Third test: How does gender diversity on the board of directors affect the ROA of the firm three years after the transaction is made?

Dependent variable: ROA three years after the M&A transaction										
	(I)		(II)		(III)		(IV)		(V)	
Independent variables	a	b	a	b	a	b	a	b	a	b
One additional woman on the board	-0.007**		-0.006*		-0.003		0.000		-0.001	
	(0.00)		(0.00)		(0.00)		(0.00)		(0.00)	
Critical mass (1=at least 30% women)		-0.013*		-0.015*		-0.007		-0.001		-0.001
		(0.01)		(0.01)		(0.00)		(0.01)		(0.01)
Board size			-0.000	-0.002	-0.000	-0.001	-0.001	-0.001	-0.001	-0.001
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.000)	(0.00)
Firm size							-0.000	-0.000	-0.000	-0.000
							(0.00)	(0.00)	(0.00)	(0.00)
Leverage									-0.038*	-0.038*
									(0.02)	(0.02)
Cash and cash equivalents									0.230***	0.230***
									(0.04)	(0.04)
Capex									0.234**	0.234**
									(0.08)	(0.08)
Market-to-book									0.002***	0.002***
									(0.00)	(0.00)
Intangible assets									0.008	0.009
									(0.01)	(0.01)
Financial services					-0.062***	-0.062***	-0.060***	-0.060***	-0.036***	-0.036***
					(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Health care					0.050***	0.051**	0.046***	0.046***	0.031***	0.031**
					(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industrials					-0.009	-0.009	-0.009	-0.009	-0.009	-0.009
					(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Manufacture					-0.016	-0.016	-0.010	-0.010	-0.004	-0.004
					(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Technology					-0.007	-0.007	-0.003	-0.003	-0.016	-0.016
					(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Other					0.015	0.016	0.017	0.017	-0.006	-0.006
					(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Finland							-0.026**	-0.025**	-0.026**	-0.027**
							(0.01)	(0.01)	(0.01)	(0.01)
Iceland							-0.052**	-0.051**	-0.049*	-0.049*
							(0.02)	(0.02)	(0.02)	(0.02)
Norway							-0.025**	-0.024**	-0.022**	-0.022**
							(0.01)	(0.01)	(0.01)	(0.01)
Sweden							-0.014	-0.013	-0.014	-0.014
							(0.01)	(0.01)	(0.01)	(0.01)
Constant	0.098***	0.089***	0.099***	0.107***	0.100***	0.103***	0.121***	0.121***	0.087***	0.087***
	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)
Number of observations	717	720	717	719	717	719	713	715	652	653
R-squared	0.0105	0.0084	0.0105	0.0126	0.1907	0.1929	0.2125	0.2144	0.3261	0.3273
Adjusted R-squared	0.0091	0.0071	0.0077	0.0099	0.1816	0.1838	0.1979	0.1998	0.3058	0.3071
Industry Fixed Effect	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effect	No	No	No	No	No	No	Yes	Yes	Yes	Yes
Year Fixed Effect	No	No	No	No	No	No	No	No	Yes	Yes

Note: This table present the results for five regressions with the dependent variable *ROA three years after the M&A transaction* and the independent variables *One additional woman on the board* (a) and *Critical mass* (b). Column I is the probit regression where only the independent variable is included. In Column II, we add the control variable board size. Subsequently, we add industry fixed effects in column III, and in IV, we add firm size. Lastly, in column V we add the remaining control variables. Consumer and Denmark are exluded in the table due to fixed effects. All variables are defined in section 3.3-3.5. Standard error are in parentheses; *p<0.1, **p<0.05, ***p<0.01.

Description of regression outputs

In Table 5, we test hypotheses (5) and (6) by running five OLS regressions. We study the relationship between our dependent variable *ROA* three years post-acquisition, and our independent variables of interest, *One additional woman on the board* and a *Critical mass* of women on the board.

In columns Ia-Va we test the effect of adding *One additional woman on the board*. As in the previous tests, a dummy variable of a *Critical mass* of 30% women is added in columns Ib-Vb. In columns II and III, we add *Board size* and *Industry Fixed Effect*. Further, in column IV, we add *Firm size* and *Country Fixed Effects*. Lastly, in column V, we control for *Leverage, Cash and cash equivalents, Capex, Market-to-book ratio, Intangible assets* and *Year Fixed Effect.*

In column I, we are able to observe a significant association between more women on the board and the firm generating a negative ROA. The significance level for the coefficients in column I are 5% for *One additional woman on the board* and 10% for the *Critical mass*. In column II, we note that *One additional woman on the board* decreases *ROA* three years post-acquisition by 0.6%, at a 10% significance level. We also note that a *Critical mass* of women decreases *ROA* three years after the transaction by 1.5%, at a 10% significance level. Though small, the coefficients are larger for the *Critical mass* compared to for *One additional woman on the board* in both columns I and II. This indicates that the negative effect on *ROA* is larger when the women's representation on the board reaches a *Critical mass* of 30%. However, the size of the coefficient and thus the effect based on women on the board remains very limited. Moreover, when we control for additional variables in columns III, IV and V respectively, the results are no longer statistically significant.

We fail to reject null hypotheses (5) and (6) due to insignificant data. For the same reason, we cannot accept the alternative hypotheses that one additional woman (5) or a critical mass of at least 30% of women represented on the board (6) will have a significant effect on the firm's financial performance three years after the transaction is made.

Discussion of the third test

Previous research on how homogenous groups enhance efficiency may help explain our results of negative coefficients. The studies suggest that a homogeneous group with similar demographic backgrounds are more likely to collaborate and coordinate, which facilitates decision-making (Westphal & Bednar, 2005; Williams & O'Reilly, 1998; Earley & Mosakowski, 2000). Therefore, when a firm includes more women on the board, there might be a risk that internal conflicts appear, leading to worse financial decisions and results. This is illustrated in the negative coefficients in our model.

However, research has had contradictory results on what effect a greater number of women on the board has on group efficiency and the financial profitability of a firm (Carter et al., 2003; Campbell & Minguez-Vera, 2008; Ahern & Dittmar, 2012; De Andres et al., 2005;

Simone, 2008; Adams & Ferreira, 2009; Hillman et al., 2007). Therefore, it is not surprising that our result in Table 5 is insignificant. There are many factors that can have an effect on a firm's ROA, which is not necessarily connected to the gender distribution on the board and the M&A transaction performed. This is further illustrated in our model as the R-square increases once we add more control variables.

In column V, we see that leverage has a coefficient of -0.038 and a significance level of 10%. This is in line with the findings of Omondi et al., (2013). They suggest that high leverage affects a firm's profitability negatively with a 5% significance. On the other hand, cash and cash equivalents and firm size were found to have a positive effect on a firm's ROA with a 5% significance. This is in line with our findings, as cash and cash equivalents have a coefficient of 0.23 with a 1% significance level. However, our result for firm size is insignificant.

Furthermore, there are additional factors that affect a company's profitability that we have not included in our model. The two main drivers of profit are increased revenue and decreased cost (UNL Beef, 2022). Increased revenue can be obtained either by increased demand or higher prices for the firm's products or services. Decreased costs can be obtained in several ways, for example by economies of scale or restructuring. Both revenue and costs can further be impacted by fluctuating macroeconomic factors such as inflation, interest rates, exchange rates, and overall market trends (Pettinger, 2015). Therefore, it is not surprising that the year fixed effect is significant in our findings. Regardless of the board's gender diversity and if the firm makes an M&A transaction, these aforementioned factors contribute to the firm's financial performance.

5.2 Omitted and control variables

Omitted variables

The control variables included in our model are not exclusively comprehensive. There are other variables that may have an effect on companies' likelihood of performing an M&A transaction, the kind of transaction performed and the ROA of the firm three years post-acquisition. However, as we have used fixed effects, we control for unobservable or observable predictors for average differences across industry, country and year. Thus, the variable omitted bias and unobserved heterogeneity have been diminished as no sufficient variation in the coefficient has been able to be recognized.

Control variables

In our first test, our control variable *Board size* is significant in columns IIb, IIIb and IVb. However, it is not statistically significant in our second test nor our third test, implying that the board size is not relevant to affect the independent variables. *Firm size* is not statistically significant in any of our tests which hinders us to draw any conclusions regarding its contributing effect. Furthermore, *Return on assets (ROA)* is significant in our first test. This is expected, as we would anticipate that it is more likely that a profitable company will make an M&A transaction (Yang et al., 2019). In our second test, the *ROA* coefficient is negative in column IV on a 1% significance level. This implies that less profitable firms are more likely to acquire Nordic firms rather than international ones. This is also anticipated as more profitable firms are more likely to invest on an international basis to further expand their geographical coverage (Corporate Finance Institute, 2022). Since *ROA* is our dependent variable in our third test, it is not included as a control variable in the final regression.

Moreover, *Leverage* has a negative coefficient and is significant in the first test, which is expected as a firm with more debt is less likely to make an acquisition (Yang et al., 2019). Similarly, the coefficient is negative in our second test. However, as it is not significant, we cannot with enough certainty conclude an association based on the result. Our third test shows a negative significant coefficient which implies that a firm in debt is more likely to have a lower ROA, which is anticipated. The coefficients of *Cash and Cash Equivalents, Capital Expenditures* and *Market-to-book ratio* are not significant in any of our regressions. Thus, we conclude that these variables do not significantly affect our dependent variables. *Intangible Assets* are highly significant in our first test, with a 1% significance level. However, it is not significant in either our second or third tests. Its positive coefficient implies that firms with a higher level of intangible assets have a higher likelihood of performing an M&A transaction. This is in line with our expectations that a firm with more intangible assets is more likely to engage in M&A activities (Corporate Finance Institute, 2022).

Finally, when analyzing the *Fixed Effects* variables, our tests show a higher difference in significance for *Industry Fixed Effects*. For instance, in our first test, *Industrial* and *Technology* contribute more to the result compared to other industries, as they are statistically significant. This is anticipated as some industries are more prone to perform M&A transactions. The same arguments can be made both for *Country Fixed Effects* and *Year Fixed Effects*. For instance, in our first test, *Sweden* is statistically significant in column IV and has the largest effect comparably. As seen in Appendix C, Sweden has the highest share of buyers

and makes the most number of transactions (55%) compared to the rest of the Nordic countries. Given that the market is progressing and macroeconomic factors change from year to year, firms make different decisions accordingly. Therefore, it is not surprising that both *Country Fixed Effects* and *Year Fixed Effects* have an impact on the result of the models.

6. Conclusion and future research

In this section, we will conclude our work, provide potential limitations to our study, and present suggestions for further research within the field.

6.1 Conclusion

In this study, we have performed three groups of tests concerning how gender diversity on the board of directors of Nordic listed firms affects the decision-making process and financial performance. Firstly, we tested the probability that a firm will make an M&A transaction. Secondly, the probability that the firm will make a Nordic M&A transaction. Thirdly, what effect gender distribution on the board has on the firm's financial performance three years post-transaction.

At first, women seemed to have a significant effect on all three tests. However, the methodology was to gradually add control variables as they limit the influence of confounding and other extraneous variables and thus enhance the validity of the study. Once additional control variables were included, we were able to note a diminishing contribution and significance of both one additional woman and a critical mass of women on the board, on all three tests. Thus, we conclude that our data does not support that women have a significant effect on the likelihood of making an M&A transaction, the likelihood of performing an acquisition in the Nordic region, nor an effect on a company's financial performance three years post-acquisition.

Although our study cannot support a gender difference in decision-making regarding M&A transactions or the financial impact of those decisions, data still shows an increase in gender diversity on the board of directors in later years. Thus, the ethical and political reasons for implementing more women remain.

6.2 Limitations

There are a number of potential limitations to our research design. Firstly, our study only includes Nordic publicly listed companies. The prevalence of our data may be a factor as

to why we did not achieve significant results and why some of our results are not consistent with the findings of prior literature.

Moreover, our data may not be collectively exhaustive of the true population as it is limited to the data available at Nordic Compass and Capital IQ. If we were to use additional databases, our results would possibly be different. Additionally, there are a number of control variables not included in our model which may have an effect on the board of directors' M&A decision process.

Finally, we are also aware that the board of directors, though an important decision-making unit within a company, might not be the single most impactful stakeholder when a firm decides to make an M&A transaction. The management team and especially the CEO are examples of stakeholders with additional influence in these matters.

6.3 Suggestions for further research

We have recognized a number of opportunities to further extend our research topic. Firstly, it would be interesting to take other aspects of board diversity into account when testing the likelihood of performing an M&A transaction and the firm's financial performance. For example, by including aspects such as a board's diversity of age, education, cultural background and ethnicity. These are all factors that may have an impact on board decision-making related to a transaction. Furthermore, since we concluded that there might be additional internal and external aspects impacting the M&A decision, we suggest including these aspects in future research.

Moreover, as mentioned in our limitations, the CEO is likely to have a great extent of influence on corporate finance decisions. Therefore, further research may perform a similar study but instead have the gender of the CEO as an independent variable.

Finally, another suggestion is to test how board gender diversity may affect the likelihood of making a transaction that can be seen as the opposite of an M&A transaction. More specifically, an equity carve-out. In contrast to merging with another firm, an equity carve-out is a transaction where a company separates a part of its operations (Geersing, 2007). Therefore, it would be interesting to see how the risk perception and the decision-making based on gender may differ between these two decisions.

7. References

ABB. (2020, October 2). *ABB Förvärvar Codian - Utökar portföljen med Industriella Höghastighetsrobotar.* ABB. News. https://new.abb.com/news/sv/detail/68460/abb-forvarvar-codian-utokar-portfoljen-med-industriella-hoghastighetsrobotar

Adams, R. B., & Ferreira, D. (2004). *Gender diversity in the boardroom*. European Corporate Governance Institute, Finance Working paper, 57, 30.

Adams, R. B., & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of financial economics, 94*(2), 291-309. doi.org/10.1016/j.jfineco.2008.10.007

Adra, S., Barbopoulos, L. G., & Saunders, A. (2020). The impact of monetary policy on M&A outcomes. *Journal of Corporate Finance, 62*, 101529. doi.org/10.1016/j.jcorpfin.2019.101529

Ahern, K. R., & Dittmar, A. K. (2012). The changing of the boards: The impact on firm valuation of mandated female board representation. *The quarterly journal of economics, 127*(1), 137-197. doi.org/10.1093/qje/qjr049

Ahern, K. R., & Harford, J. (2014). The importance of industry links in merger waves. *Journal of Finance, 69*(2), 527-576. doi:10.1111/jofi.12122

Ahern, Kenneth Robinson and Weston, J. Fred, M&As: The Good, the Bad, and the Ugly (2007). *Journal of Applied Finance, 2007, vol. 17*(1): pp. 5-20 https://ssrn.com/abstract=2085006

Akerlof, G. A. (1978). The market for “lemons”: Quality uncertainty and the market mechanism. *In Uncertainty in economics* (pp. 235-251). Academic Press. doi.org/10.1016/B978-0-12-214850-7.50022-X

Aldrich, J. H., & Nelson, F. D. (1984). *Linear probability, logit, and probit models (No. 45)*. Sage. doi.org/10.4135/9781412984744

Alimov, A., & Mikkelson, W. (2009). Capital Market Conditions and the Financial and Real Implications of Cash Holdings.

Andriosopoulos, D., & Yang, S. (2015). The impact of institutional investors on mergers and acquisitions in the United Kingdom. *Journal of Banking and Finance, 50*, 547-561. doi:10.1016/j.jbankfin.2014.06.004

Ang, James S. (1992) "On the Theory of Finance for Privately Held Firms," *Journal of Small Business Finance: Vol. 1: Iss. 3*, pp. 185-203. doi.org/10.57229/2373-1761.1121

Anthony, J. H., & Ramesh, K. (1992). Association between accounting performance measures and stock prices: A test of the life cycle hypothesis. *Journal of Accounting and Economics, 15*(2-3), 203-227. doi.org/10.1016/0165-4101(92)90018-W

Assa Abloy. (n.d.). *Assa Abloy Gör Sitt hittills Största förvärv - köper hhi för 37…* Assa Abloy. https://www.affarsvarlden.se/artikel/assa-abloy-gor-sitt-hittills-storsta-forvarv-koper-hhi-for-37-miljarder

Atea. (2016, March 23). *Atea köper it-bolag i Östersund.* Atea. https://www.atea.se/om-atea/nyhetsarkiv/pressmeddelanden/2016/atea-koper-it-bolag-i-ostersund/

Atea. (2022, June 21). *Atea förvärvar Human IT Syd och Väst.* Atea. https://www.atea.se/om-atea/nyhetsarkiv/pressmeddelanden/2022/atea-forvarvar-human-it-syd-och-vast/

Barber, B. M., & Odean, T. (2001). Boys will be boys: Gender, overconfidence, and common stock investment. *The quarterly journal of economics, 116*(1), 261-292. doi.org/10.1162/003355301556400

Barth, M. E., & Kasznik, R. (1999). Share repurchases and intangible assets. *Journal of accounting and economics, 28*(2), 211-241. doi.org/10.1016/S0165-4101(99)00020-8

Bates, Thomas W., Kathleen M. Kahle, and René M. Stulz. "Why do US firms hold so much more cash than they used to?." *The journal of finance 64.5* (2009): 1985-2021. doi.org/10.1111/j.1540-6261.2009.01492.x

Bazel-Shoham, O., Lee, S. M., Rivera, M. J., & Shoham, A. (2020). Impact of the female board members and gaps in linguistic gender marking on cross-border M&A. *Journal of World Business, 55*(2), 100909. doi.org/10.1016/j.jwb.2017.10.005

Bena, J., & Li, K. (2014). Corporate innovations and mergers and acquisitions. *The Journal of Finance, 69*(5), 1923-1960. doi.org/10.1111/jofi.12059

Bessler, W., Drobetz, W., Haller, R., & Meier, I. (2013). The international zero-leverage phenomenon. *Journal of Corporate Finance, 23*, 196–221. doi.org/10.1016/j.jcorpfin.2013.08.004

Beyer, S., & Bowden, E. M. (1997). Gender differences in self-perceptions: Convergent evidence from three measures of accuracy and bias. *Personality and Social Psychology Bulletin, 23*(2), 157-172. doi.org/10.1177/0146167297232005

Bolagsstyrning.se. (n.d.). *Könsfördelning I Bolagsstyrelserna.* Bolagsstyrning.se http://www.bolagsstyrning.se/userfiles/archive/3883/190620_konsfordelning_i_bolagsstyrelserna_00000002.pdf

Bower, J. L. (2001). Not all M&As are alike--and that matters. *Harvard business review, 79*(3), 92-101.

Burgess, Z., & Tharenou, P. (2002). Women board directors: Characteristics of the few. *Journal of business ethics, 37*(1), 39-49.

Byrnes, J. P., Miller, D. C., & Schafer, W. D. (1999). Gender differences in risk taking: A meta-analysis. *Psychological bulletin, 125*(3), 367. doi.org/10.1037/0033-2909.125.3.367

Campbell, K., Mínguez-Vera, A. Gender Diversity in the Boardroom and Firm Financial Performance. *J Bus Ethics 83*, 435–451 (2008). doi.org/10.1007/s10551-007-9630-y

Corporate Finance Institute. (2022, February 7). *Goodwill.* Corporate Finance Institute. https://corporatefinanceinstitute.com/resources/accounting/goodwill/

Corporate Finance Institute. (2022, November 2). *Leverage ratios.* Corporate Finance Institute. https://corporatefinanceinstitute.com/resources/accounting/leverage-ratios/

Corporate Finance Institute. (2022, October 10). M*ergers acquisitions M&A process.* Corporate Finance Institute. https://corporatefinanceinstitute.com/resources/valuation/mergers-acquisitions-ma-process/

Corporate Finance Institute. (2022, October 27). *Board of directors.* Corporate Finance Institute. https://corporatefinanceinstitute.com/resources/management/board-of-directors/

Dale-Olsen, Harald, Pål Schøne, and Mette Verner. "Diversity among Norwegian boards of directors: Does a quota for women improve firm performance?." *Feminist Economics 19.4* (2013): 110-135. doi.org/10.1080/13545701.2013.830188

Dang, C., (Frank) Li, Z., & Yang, C. (2018). Measuring firm size in empirical corporate finance. *Journal of Banking and Finance, 86,* 159-176. doi:10.1016/j.jbankfin.2017.09.006

De Andres, P., Azofra, V., & Lopez, F. (2005). Corporate boards in OECD countries: Size, composition, functioning and effectiveness. *Corporate Governance: An International Review, 13*(2), 197-210. doi.org/10.1111/j.1467-8683.2005.00418.x

Deloitte. (2019, September 13). *Leading through acquisition transition: Deloitte Us: Mergers & Acquisitions.* Deloitte United States. https://www2.deloitte.com/us/en/pages/mergers-and-acquisitions/articles/leading-through-transition-mergers-and-ascquisitions.html

Di Guardo, M. C., Marrocu, E., & Paci, R. (2016). The concurrent impact of cultural, political, and spatial distances on international mergers and acquisitions. *The World Economy, 39*(6), 824-852. doi.org/10.1111/twec.12275

Dubeck, P. J., & Kanter, R. M. (1978). Men and women of the corporation. *Social Forces, 57*(1), 336. doi.org/10.2307/2577661

Earley, C. P., & Mosakowski, E. (2000). Creating hybrid team cultures: An empirical test of transnational team functioning. *Academy of Management journal, 43*(1), 26-49. doi.org/10.5465/1556384

Eckel, C. C., & Grossman, P. J. (2002). Sex differences and statistical stereotyping in Attitudes Toward Financial Risk. *Evolution and Human Behavior, 23*(4), 281–295. doi.org/10.1016/s1090-5138(02)00097-1

Ericsson. (2022, June 28). U*ppdatering om Ericssons Kommande Förvärv av Vonage.* Arvopaperi. https://www.arvopaperi.fi/porssitiedotteet/uppdatering-om-ericssons-kommande-forvarv-av-vonage/2de35f9a-0cd4-56d1-8396-bcb3816a9466

Eugene F Fama, C Michael, Jensen (1983) Separation of Ownership and Control. *Journal of Law and Economics, volume 26*, p. 301 - 326. doi.org/10.1086/467037

European Central Bank. (2022, October 27). *Official interest rates.* European Central https://www.ecb.europa.eu/stats/policy_and_exchange_rates/key_ecb_interest_rates/html/index.en.html

Gabrielsson, J., Huse, M., & Minichilli, A. (2007). Understanding the leadership role of the board chairperson through a team production approach. *International journal of leadership studies, 3*(1), 21-39.

Geersing, Bernard, What Creates More Value: Equity Carve-Outs Versus Spin-Offs (June 23, 2007). doi.org/10.2139/ssrn.996223

Grinstein, Y., & Hribar, P. (2004). CEO compensation and incentives: Evidence from M&A bonuses. *Journal of Financial Economics, 73*(1), 119–143. doi.org/10.1016/j.jfineco.2003.06.002

Hillman, A. J., & Dalziel, T. (2003). Boards of directors and firm performance: Integrating agency and resource dependence perspectives. *Academy of Management review, 28*(3), 383-396. doi.org/10.5465/amr.2003.10196729

Huang, J., & Kisgen, D. J. (2013). Gender and corporate finance: Are male executives overconfident relative to female executives? *Journal of Financial Economics, 108*(3), 822-839. doi:10.1016/j.jfineco.2012.12.005

Isidro, H., Sobral, M. The Effects of Women on Corporate Boards on Firm Value, Financial Performance, and Ethical and Social Compliance. *J Bus Ethics 132*, 1–19 (2015). doi.org/10.1007/s10551-014-2302-9

Kelley, J. G. (2012). The good, the bad, and the ugly. Monitoring Democracy. doi.org/10.23943/princeton/9780691152776.003.0009

Korteweg, Arthur. "The net benefits to leverage." *The Journal of Finance 65.6* (2010): 2137-2170. doi.org/10.1111/j.1540-6261.2010.01612.x

Le, D. H., Tran, P. L., Ta, T. P., & Vu, D. M. (2018). Determinants of corporate cash holding: Evidence from UK listed firms. *Business and Economic Horizons (BEH), 14*(1232-2019-856), 561-569.

Lewellen, W. G., Lease, R. C., & Schlarbaum, G. G. (1977). Patterns of investment strategy and behavior among individual investors. *The Journal of Business, 50*(3), 296-333. doi.org/10.1086/295947

Mantecon, T. (2009). Mitigating risks in cross-border acquisitions. *Journal of Banking & Finance, 33*(4), 640-651. doi.org/10.1016/j.jbankfin.2008.12.001

Marinova, J., Plantenga, J., & Remery, C. (2015). Gender diversity and firm performance: Evidence from Dutch and Danish boardrooms. *The International Journal of Human Resource Management, 27*(15), 1777–1790. doi.org/10.1080/09585192.2015.1079229

McNichols, M., Rajan, M. V., & Reichelstein, S. (2014). Conservatism correction for the market-to-book ratio and Tobin's Q. *Review of Accounting Studies, 19*(4), 1393–1435. doi.org/10.1007/s11142-013-9275-2

Corporate Finance Institute. (2022, November 10). *Mergers & Acquisitions (M&A).* Corporate Finance Institute. https://corporatefinanceinstitute.com/resources/valuation/mergers-acquisitions-ma/

Mikkelson, W. H., & Partch, M. M. (2003). Do persistent large cash reserves hinder performance?. *Journal of financial and quantitative analysis, 38*(2), 275-294.

Mikkelson, Wayne H., and M. Megan Partch. "Do Persistent Large Cash Reserves Hinder Performance?" *Journal of Financial and Quantitative Analysis, vol. 38*, no. 2, 2003, pp. 275–294., doi:10.2307/4126751

Moeller, S. B., & Schlingemann, F. P. (2005). Global diversification and bidder gains: A comparison between cross-border and domestic acquisitions. *Journal of Banking & Finance, 29*(3), 533-564. doi.org/10.1016/j.jbankfin.2004.05.018

Myers, S. C. (1977). Determinants of corporate borrowing. *Journal of Financial Economics, 5*(2), 147-175. doi:10.1016/0304-405X(77)90015-0

Nikk. (2020, May 2). *Gender quotas for diversity in leadership.* Nikk. https://nikk.no/en/news/gender-quotas-for-diversity-in-leadership

Nordic cooperation. (2022, March 4). *Influence and power.* Nordic cooperation. https://www.norden.org/en/statistics/influence-and-power

O'Reilly, C. A. III, Williams, K. Y., & Barsade, S. (1998). Group demography and innovation: Does diversity help? In D. H Gruenfeld (Ed.), *Composition* (pp. 183–207). Elsevier Science/JAI Press.

Omondi, M. M., & Muturi, W. (2013). Factors affecting the financial performance of listed companies at the Nairobi Securities Exchange in Kenya. *Research journal of finance and accounting, 4*(15), 99-104.

Ott, C. (2020). The risks of mergers and acquisitions—analyzing the incentives for risk reporting in item 1A of 10-K Filings. *Journal of Business Research, 106,* 158–181. doi.org/10.1016/j.jbusres.2019.08.028

Pedro Brinca, Joao B. Duarte, and Miguel Faria e Castro, "Is the COVID-19 Pandemic a Supply or a Demand Shock?," *Economic Synopses, No. 31*, 2020. doi.org/10.20955/es.2020.31

Person, & Colm Fulton, S. M. (2021, August 11). *How Sweden became the Silicon Valley of Europe.* Reuters. https://www.reuters.com/business/finance/how-sweden-became-silicon-valley-europe-2021-08-11/

Pfeffer, J., & G.R. Salancik. (1978). The External Control of Organizations, New York: Harper and Row.

Piesse, J., Lee, CF., Lin, L., Kuo, HC. (2013). Merger and Acquisition: Definitions, Motives, and Market Responses. In: Lee, CF., Lee, A. (eds) *Encyclopedia of Finance.* Springer, Boston, MA. doi.org/10.1007/978-1-4614-5360-4_28

Powell, M., & Ansic, D. (1997). Gender differences in risk behaviour in financial decision-making: An experimental analysis. *Journal of Economic Psychology, 18*(6), 605–628. doi.org/10.1016/s0167-4870(97)00026-3

Powell, M., Schubert, R., & Gysler, M. (2002). How to predict gender-differences in choice under risk: a case for the use of formalized models. *Working paper series/WIF, 2001*(21). doi.org/10.3929/ethz-a-004296575

PRV. (n.d.). *What are intangible assets?* PRV. https://www.prv.se/en/entrepreneurs/what-are-intangible-assets/

Riksbanken. (n.d.). *Policy rate (previously repo rate), deposit and lending rate.* Sveriges Riksbank. https://www.riksbank.se/en-gb/statistics/search-interest--exchange-rates/policy-rate-deposit-and-lending-rate/

Roberts, A.P. (2005). SOX rocks! Who's with us? Inc. Magazine, Nov: 122. doi.org/10.1177/017084068000100316

Sapienza, P., Zingales, L., & Maestripieri, D. (2009). Gender differences in financial risk aversion and career choices are affected by testosterone. *Proceedings of the National Academy of Sciences, 106*(36), 15268-15273. doi.org/10.1073/pnas.090735210

Schubert, R., Brown, M., Gysler, M., & Brachinger, H. W. (1999). Financial decision-making: are women really more risk-averse?. *American economic review, 89*(2), 381-385. doi:10.1257/aer.89.2.381

Simone, J. V. (2008). Groupthink. *Oncology Times, 30*(23), 4. doi.org/10.1097/01.cot.0000342986.94112.c8

Skanska. (n.d.). *Förvärv och försäljningar: Skanska - Global Corporate Website*. Skanska. https://group.skanska.com/sv/investerare/rapporter-publikationer/forvarv--forsaljningar/

Stiglitz, J. E. (2000). The contributions of the economics of information to twentieth century economics. *The quarterly journal of economics, 115*(4), 1441-1478. doi.org/10.1162/003355300555015

Strebulaev, Ilya A., and Baozhong Yang. "The mystery of zero-leverage firms." *Journal of Financial Economics 109.1* (2013): 1-23. doi.org/10.1016/j.jfineco.2013.02.001

Swedish Corporate Governance Board. (2020). *The Swedish Corporate Governance Code.* Swedish Corporate Governance Board. https://www.corporategovernanceboard.se/UserFiles/Koden/2020/The_Swedish_Corporate_Governance_Code_1_January_2020_00000002.pdf

Swedish House of Finance. (2022). Nordic Compass, SHoF's ESG Database

Tietoevry. (n.d.) *Tieto Förvärvar Meridium Ab.* Tietoevry. https://www.tietoevry.com/se/nyhetsrum/alla-nyheter-och-pressmeddelanden/pressmeddelande/2018/11/tieto-forvarvar-meridium-ab-och-starker-kapaciteten-inom-digitala-kundupplevelser/

UNL Beef. (2022). *Six factors affecting profit.* UNL Beef. https://beef.unl.edu/six-factors-affecting-profit#:~:text=and%20ranch%20profits.-,Six%20factors%20interact%20to%20affect%20farm%20and%20ranch%20profits

Watson, W. E., Kumar, K., & Michaelsen, L. K. (1993). Cultural diversity's impact on interaction process and performance: Comparing homogeneous and diverse task groups. *Academy of management journal, 36*(3), 590-602. doi.org/10.2307/256593

Westphal, J. D., & Bednar, M. K. (2005). Pluralistic ignorance in corporate boards and firms' strategic persistence in response to low firm performance. *Administrative science quarterly, 50*(2), 262-298. doi.org/10.2189/asqu.2005.50.2.262

World Economic Forum. (2022, July 13). *Global gender gap report 2022.* World Economic Forum. https://www.weforum.org/reports/global-gender-gap-report-2022/

Yang, J., Guariglia, A., & Guo, J. (M. (2019). To what extent does corporate liquidity affect M&A decisions, method of payment and performance? evidence from China. *Journal of Corporate Finance, 54,* 128–152. doi.org/10.1016/j.jcorpfin.2017.09.012

Zaheer, S. (1995). Overcoming the liability of foreignness. *Academy of Management journal, 38*(2), 341-363. doi.org/10.5465/256683

Ziedonis, R. H. (2004). Don't fence me in: Fragmented markets for technology and the patent acquisition strategies of firms. *Management Science, 50*(6), 804–820. doi.org/10.1287/mnsc.1040.0208

8. Appendix

Appendix A. The overall coverage across firms from the Nordic Compass database

	Year						
	2014	2015	2016	2017	2018	2019	2020
Coverage (no. of firms)	252	365	411	475	426	458	494

Appendix B. The distinct values collected from the Nordic Compass database

	Distinct values
Company name	657
Ticker	658
Industry	659
Supersector	660
Organisation number	661
Sales	662
Number of women on the board	663
Board size	664

Note: The industry was later manually merged into 7 industries

Appendix C. Number of transactions collected from Capital IQ by geography

Buyer geographic location	**Number of transactions**	*%*
Sweden	835	*55%*
Norway	270	*18%*
Finland	195	*13%*
Denmark	171	*11%*
Iceland	34	*2%*
Total Nordic buyers	1505	*100%*

Target geographic location	**Number of transactions**	*%*
Sweden	414	*28%*
Norway	167	*11%*
Finland	131	*9%*
Denmark	70	*5%*
Iceland	21	*1%*
Total Nordic targets	803	*55%*
Europe (excl. Nordics)	354	*24%*
United States and Canada	209	*14%*
Asia / Pacific	67	*5%*
Latin America and Caribbean	17	*1%*
Africa / Middle East	16	*1%*
Total RoW targets	663	*45%*
Total targets	1466	*100%*

Note: More buyers compared to targets due to overlap, sometimes there are several buyers. All geographies are primary

Appendix D. The data collected from Capital IQ with definitions

	Definitions
Capital expenditures (Capex)	*Capital Expenditure is a line item in the Standard template that represents cash outflows towards the purchase of plant, property and equipment by the company.*
Cash and cash equivalents	*Cash and Cash Equivalents is a line item across all templates that represent funds in the form of cash, readily convertible deposits, securities and other instruments having maturities of less than 3 months at the time of purchase. It includes short-term, highly liquid investments that are readily convertible into known amounts of cash and are near their maturity as well as cash on hand consisting of coins, currency, undeposited checks, money orders and drafts, and deposits in banks.*
Intangible assets	*Total Intangibles is a supplemental line item across all templates with the following components: Total Other Intangibles, Finance Division Goodwill, Finance Division Goodwill and Intangible Assets, Finance Division Intangibles, and Goodwill.*
Long-term debt	*Long-Term Debt is a line item in the Standard template with the following components: Trust Preferred Securities (Other than Convertible), Long-Term Federal Home Loan Bank Debt, Long-Term Debt - (Template Specific), Convertible Trust Preferred Securities.*
Market capitalization	*Last close Market capitalization is the aggregate valuation of the company based on its last close share price and the last close number of outstanding stocks. It is calculated by multiplying the last close market price of the company's share with the last close outstanding shares of the company.*
Operating income	*Operating Income is a subtotal line item in the Standard template with the following components: Total Revenues, and Total Operating Expenses.*
Total assets	*Total assets include all the assets of the firm, both tangible, intangible, long-term and short-term.*
Total current debt	*Current Financing Obligations is a line item across all templates with the following components: Finance division debt current, Short-term borrowings, Current portion of Leases, and Current portion of long-term debt.*
Total debt	*Total debt includes all the debt of the firm, both long-term and short-term.*
Total equity	*Total Equity is a subtotal line item across all templates with the following components: Total Preferred Equity, Total Common Equity, and Total Minority Interest.*
Total liabilities	*Total liabilities are the total debts and obligations that the company owes to outside parties.*

Note: Definitions taken from Capital IQ

Appendix E. Descriptive statistics of transactions and women represented on the board over the years

	Year							Total	Average	CAGR	CAGR
Variables	2014	2015	2016	2017	2018	2019	2020	14'-20'	14'-20'	14'-20'	14'-19'
Number of observations	252	365	411	475	426	458	494	2 881	412		
Number of transactions	58	82	106	121	108	126	102	703	100	*9,9%*	*16,8%*
% of transaction	*23,0%*	*22,5%*	*25,8%*	*25,5%*	*25,4%*	*27,5%*	*20,6%*		*24,3%*	*-1,8%*	*3,6%*
% change		*-2,4%*	*14,8%*	*-1,2%*	*-0,5%*	*8,5%*	*-24,9%*				
All observations											
Number of women on the board (mean)	2,08	2,07	2,19	2,14	2,33	2,34	2,37		2,22	*2,2%*	*2,4%*
% of women on the board	*26,4%*	*26,8%*	*29,8%*	*28,7%*	*30,9%*	*31,3%*	*32,0%*		*29,4%*	*3,3%*	*3,5%*
% change		*1,4%*	*11,4%*	*-3,6%*	*7,7%*	*1,2%*	*2,1%*				
Transaction happened (1)											
Number of women on the board (mean)	2,47	2,29	2,52	2,26	2,58	2,48	2,54		2,45	*0,5%*	*0,1%*
% of women on the board	*29,4%*	*28,5%*	*31,7%*	*29,6%*	*33,1%*	*31,6%*	*33,8%*		*31,1%*	*2,4%*	*1,4%*
% change		*-3,1%*	*11,2%*	*-6,6%*	*11,9%*	*-4,6%*	*7,1%*				
No transaction (0)											
Number of women on the board (mean)	1,97	2,02	2,08	2,10	2,25	2,29	2,32		2,15	*2,8%*	*3,1%*
% of women on the board	*25,5%*	*26,3%*	*29,1%*	*28,5%*	*30,2%*	*31,2%*	*31,5%*		*28,9%*	*3,6%*	*4,1%*
% change		*3,0%*	*11,0%*	*-2,3%*	*6,2%*	*3,3%*	*0,9%*				
Difference (1-0)											
Number of women on the board (mean)	0,5	0,27	0,44	0,16	0,33	0,19	0,22		0,30	*-12,8%*	*-17,6%*
% of women on the board	*3,9%*	*2,2%*	*2,6%*	*1,1%*	*2,9%*	*0,4%*	*2,3%*		*2,2%*	*-8,5%*	*-38,3%*
% change		*-42,8%*	*14,3%*	*-55,7%*	*154,9%*	*-87,8%*	*554,3%*				

	Year							Total	Average	CAGR	CAGR
Critical mass	2014	2015	2016	2017	2018	2019	2020	14'-20'	14'-20'	14'-20'	14'-19'
All observations											
Boards with less than 30% women	155	225	223	247	198	208	224	1,48	211	*6,3%*	*6,1%*
Boards with more than 30% women	97	140	188	228	228	250	270	1 401	200	*18,6%*	*20,8%*
% of boards over 30% women	*38,5%*	*38,4%*	*45,7%*	*48,0%*	*53,5%*	*54,6%*	*54,7%*	*48,6%*	*48,6%*	*6,0%*	*7,2%*
% change		*-0,4%*	*19,3%*	*4,9%*	*11,5%*	*2,0%*	*0,1%*				
Transaction happened (1)											
Boards with less than 30% women	31	49	46	57	42	60	46	331	47	*6,8%*	*14,1%*
Boards with more than 30% women	27	33	60	64	64	66	56	370	53	*12,9%*	*19,6%*
% of boards over 30% women	*46,6%*	*40,2%*	*56,6%*	*52,9%*	*60,4%*	*52,4%*	*54,9%*	*52,8%*	*52,8%*	*2,8%*	*2,4%*
% change		*-13,6%*	*40,7%*	*-6,6%*	*14,2%*	*-13,2%*	*4,8%*				
No transaction (0)											
Boards with less than 30% women	124	176	177	190	156	148	178	1 149	164	*6,21%*	*3,6%*
Boards with more than 30% women	70	107	128	164	162	184	214	1 029	147	*20,47%*	*21,3%*
% of boards over 30% women	*36,1%*	*37,8%*	*42,0%*	*46,3%*	*50,9%*	*55,4%*	*54,6%*	*47,2%*	*47,2%*	*7,14%*	*9,0%*
% change		*4,8%*	*11,0%*	*10,4%*	*10,0%*	*8,8%*	*-1,5%*				
Difference (1-0)											
Boards with less than 30% women	-93	-127	-131	-133	-114	-88	-132	-818	-117	*6,01%*	*-1,1%*
Boards with more than 30% women	-43	-74	-68	-100	-98	-118	-158	-659	-94	*24,22%*	*22,4%*
% of boards over 30% women	*10,5%*	*2,4%*	*14,6%*	*6,6%*	*9,4%*	*-3,0%*	*0,3%*	*5,5%*	*5,5%*	*44,38%*	*-178%*
% change		*-76,7%*	*501,2%*	*-55,1%*	*43,7%*	*-132,2%*	*-110,2%*				

Note: The dfference is calculated by taking the value for when a transaction happened and subtracting the value for when a transaction didn't happen.

Appendix F. Descriptive statistics of transactions and women by industry

	Industry							Total
Variables	Consumer	Financial services	Health care	Industrials	Manufacture	Technology	Other	14'-20'
Number of observations	566	551	311	765	154	275	259	2 881
Number of transactions	126	114	59	243	34	81	46	703
% of transaction	*22,3%*	*20,7%*	*19,0%*	*31,8%*	*22,1%*	*29,5%*	*17,8%*	*24,4%*
All observations								
Number of women on the board (mean)	2,33	2,51	2,11	2,15	2,30	2,10	1,95	
% of women on the board	*29,9%*	*34,5%*	*28,2%*	*27,7%*	*28,0%*	*29,2%*	*28,8%*	
Transaction happened (1)								
Number of women on the board (mean)	2,49	2,86	2,29	2,26	2,5	2,34	2,67	
% of women on the board	*31,5%*	*36,0%*	*30,7%*	*28,7%*	*29,8%*	*32,1%*	*32,7%*	
No transaction (0)								
Number of women on the board (mean)	2,29	2,42	2,07	2,1	2,24	1,99	1,79	
% of women on the board	*29,5%*	*34,1%*	*27,6%*	*27,2%*	*27,4%*	*28,0%*	*27,9%*	
Difference (1-0)								
Number of women on the board (mean)	0,2	0,44	0,22	0,16	0,26	0,35	0,88	
% of women on the board	*2,1%*	*1,9%*	*3,1%*	*1,5%*	*2,3%*	*4,1%*	*4,8%*	

	Industry							Total
Critical mass	Consumer	Financial services	Health care	Industrials	Manufacture	Technology	Other	14'-20'
All observations								
Boards with less than 30% women	282	202	170	464	91	143	128	1 401
Boards with more than 30% women	284	349	141	301	63	132	131	1 480
% of boards over 30% women	*50,2%*	*63,3%*	*45,3%*	*39,3%*	*40,9%*	*48,0%*	*50,6%*	*51,4%*
Transaction happened (1)								
Boards with less than 30% women	58	30	27	144	17	36	19	331
Boards with more than 30% women	68	84	32	99	17	45	27	372
% of boards over 30% women	*54,0%*	*73,7%*	*54,2%*	*40,7%*	*50,0%*	*55,6%*	*58,7%*	*52,9%*
No transaction (0)								
Boards with less than 30% women	224	171	143	320	74	107	109	1 148
Boards with more than 30% women	216	265	109	202	46	87	104	1 029
% of boards over 30% women	*49,1%*	*60,8%*	*43,3%*	*38,7%*	*38,3%*	*44,8%*	*48,8%*	*47,3%*
Difference (1-0)								
Boards with less than 30% women	-166	-141	-116	-176	-57	-71	-90	-1 029
Boards with more than 30% women	-148	-181	-77	-103	-29	-42	-77	-1 149
% of boards over 30% women	*4,9%*	*12,9%*	*11,0%*	*2,0%*	*11,7%*	*10,7%*	*9,9%*	*5,6%*

Note: The dfference is calculated by taking the value for when a transaction happened and subtracting the value for when a transaction didn't happen.

Appendix G. Descriptive statistics of transactions and women by country

	Country					Total
Variables	Denmark	Finland	Iceland	Norway	Sweden	14'-20'
Number of observations	373	469	51	529	1 424	2 664
Number of transactions	98	129	11	137	323	703
% of transaction	*26,3%*	*27,5%*	*21,6%*	*25,9%*	*26,0%*	*26,4%*
All observations						
Number of women on the board (mean)	1,62	2,07	2,29	2,53	2,52	
% of women on the board	*19,0%*	*28,7%*	*42,7%*	*36,1%*	*32,0%*	
Transaction happened (1)						
Number of women on the board (mean)	1,82	2,27	2,64	2,71	2,61	
% of women on the board	*21,3%*	*30,9%*	*42,9%*	*34,0%*	*33,0%*	
No transaction (0)						
Number of women on the board (mean)	1,54	1,99	2,18	2,47	2,48	
% of women on the board	*18,2%*	*27,9%*	*42,6%*	*36,9%*	*31,7%*	
Difference (1-0)						
Number of women on the board (mean)	0,28	0,28	0,46	0,24	0,13	
% of women on the board	*3,1%*	*3,0%*	*0,3%*	*-2,8%*	*1,3%*	

	Country					Total
Critical mass	Denmark	Finland	Iceland	Norway	Sweden	14'-20'
All observations						
Boards with less than 30% women	316	251	0	148	595	1 310
Boards with more than 30% women	57	218	51	381	647	1 354
% of boards over 30% women	*15,3%*	*46,5%*	*100,0%*	*72,0%*	*52,1%*	*50,8%*
Transaction happened (1)						
Boards with less than 30% women	83	57	0	48	140	328
Boards with more than 30% women	15	72	11	89	183	370
% of boards over 30% women	*15,3%*	*55,8%*	*100,0%*	*65,0%*	*56,7%*	*53,0%*
No transaction (0)						
Boards with less than 30% women	233	194	0	100	454	981
Boards with more than 30% women	42	146	40	292	464	984
% of boards over 30% women	*15,3%*	*42,9%*	*100,0%*	*74,5%*	*50,5%*	*50,1%*
Difference (1-0)						
Boards with less than 30% women	-150	-137	0	-52	-314	-653
Boards with more than 30% women	-27	-74	-29	-203	-281	-614
% of boards over 30% women	*0,0%*	*12,9%*	*0,0%*	*-9,5%*	*6,1%*	*2,9%*

Note: The dfference is calculated by taking the value for when a transaction happened and subtracting the value for when a transaction didn't happen.

Appendix H. Descriptive statistics of ROA and women represented on the board over the years

	Year							Average
All observations	2014	2015	2016	2017	2018	2019	2020	14'-20'
ROA								
Women less than 30%	*10,0%*	*9,9%*	*9,9%*	*9,7%*	*9,6%*	*8,3%*	*8,8%*	9,5%
Women more than 30%	*8,0%*	*8,0%*	*7,8%*	*8,3%*	*9,0%*	*7,2%*	*6,5%*	*7,8%*
Difference	*-2,1%*	*-1,9%*	*-2,0%*	*-1,4%*	*-0,6%*	*-1,1%*	*-2,3%*	*-1,6%*
ROA three years after transaction								
Women less than 30%	*10,5%*	*9,6%*	*8,4%*	*7,6%*	*n/a*	*n/a*	*n/a*	*9,0%*
Women more than 30%	*9,0%*	*8,0%*	*6,8%*	*7,3%*	*n/a*	*n/a*	*n/a*	*7,8%*
Difference	*-1,5%*	*-1,6%*	*-1,6%*	*-0,2%*	*n/a*	*n/a*	*n/a*	*-1,2%*

	Year							Average
Transaction happened	2014	2015	2016	2017	2018	2019	2020	14'-19'
ROA								
Women less than 30%	*11,9%*	*10,5%*	*9,6%*	*10,3%*	*8,8%*	*9,1%*	*8,7%*	*9,8%*
Women more than 30%	*9,0%*	*6,9%*	*7,7%*	*8,7%*	*9,5%*	*7,3%*	*6,4%*	*7,9%*
Difference	*-2,9%*	*-3,6%*	*-1,9%*	*-1,6%*	*0,7%*	*-1,8%*	*-2,3%*	*-1,9%*
ROA three years after transaction								
Women less than 30%	*12,0%*	*10,3%*	*8,1%*	*6,9%*	*n/a*	*n/a*	*n/a*	*9,3%*
Women more than 30%	*9,1%*	*6,7%*	*6,7%*	*6,5%*	*n/a*	*n/a*	*n/a*	*7,2%*
Difference	*-2,9%*	*-3,7%*	*-1,4%*	*-0,3%*	*n/a*	*n/a*	*n/a*	*-2,1%*

Note: Values not available for transactions three years after 2018-2020 due to limitations in data. The difference values are calculated using the real values and then rounded, which can cause some small differences.