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FACULTY OF SOCIAL SCIENCES

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**Female Leadership and Financial
Performance: Evidence from the Czech
Republic**

Bachelor thesis

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Declaration of Authorship

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Prague, July 26, 2021

Veronika Bajerová

Abstract

Women are underrepresented in leadership positions even though they constitute half of the population. Even though the number of women in leadership position is growing the literature about the relation between women in leadership positions and financial performance in the Czech Republic is scarce. Therefore, we want to investigate a relation between women in a statutory body and four firm financial performance measurements of different types of firms. Using a data set containing 405 firms we investigate the long-term growth of the number of women in leadership positions and their relation to financial performance during the time frame from 2010 to 2019. We use an instrumental variable estimation method with two types of instruments. The first instrument is a percentage of women in an industry in the Czech Republic and the second is a share of women considering the industry and the year in the data set. The analysis shows a strong positive relation between the returns on assets and women in leadership positions and a neutral relation between other performance measurements and women in leadership positions. This indicates that a firm would experience neutral or positive consequences in terms of financial performance when employing women in a statutory body.

Keywords Women Leadership, Firm Performance, Gender diversity, Statutory Body, Instrument Variable method

Title Female Leadership and Financial Performance: Evidence from the Czech Republic

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Abstrakt

I přesto, že ženy tvoří polovinu světové populace, ve vedoucích pozicích jsou zastoupeny nedostatečně. Počet žen na těchto pozicích neustále stoupá, ale literatura zabývající se ženami na vedoucích pozicích a finanční výkonností v České republice je nedostačující. Tato práce je zaměřená na vztah mezi ženami ve statutárním orgánu firmy a čtyřmi různými měřeními finanční výkonnosti různých typů firem. Použitím souboru dat obsahujícím 405 firem vyšetříme dlouhodobý růst žen na vedoucích pozicích a jejich vztah k finanční výkonnosti firem během let 2010 až 2019. Používáme metodu instrumentální proměnné se dvěma instrumenty. Prvním instrumentem je procento žen pracujících v příslušném odvětví a roce v celé České republice. Druhým instrumentem je podíl žen s ohledem na odvětví a rok vypočítaný ze souboru dat. Naše analýza ukazuje na silný pozitivní vztah mezi ženami a návratností aktiv, zatímco vztah mezi ženami a ostatními měřeními výkonností firem je spíše neutrální. To naznačuje, že když se firmy rozhodnou zaměstnat ženy do statutárního orgánu, na finanční výkonnost to má buď neutrální nebo pozitivní efekt.

Klíčová slova Ženy ve vedení, Výkonnost firem, Genderová rozmanitost, Statutární orgán, Metoda instrumentální proměnné

Název práce Vedení firem ženami a finanční výkonnost: Evidence z České Republiky

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Acronyms

AA	Articles of association
BCA	Business Corporation Act
CZ-NACE	Statistical Classification of Economic Activities
CZSO	Czech Statistical Office
EAT	Earnings after taxation
EBT	Earnings before taxation
FE	Fixed effects
IT	Investment turnover
IV	Instrumental variable
MoA	Memorandum of association
OPM	Operating profit margin
RE	Random effects
ROA	Returns on assets

Bachelor Thesis Proposal

Author	Veronika Bajerová
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Proposed topic	Female Leadership and Financial Performance: Evidence from the Czech Republic

Research question and motivation The main research question studied in this thesis is if there is a correlation between the presence of women in leadership positions on one side and a change of firm's performance on the other side.

This question may be considered highly interesting by someone, because half of the population in Czech Republic are women and - at the same time - only 18.2% of them are employed in leading positions (as board members) and 10.9% of them as executives. On the contrary, 81.8% of the leading positions are held by men (board members) and 89.1% as executives. Both of the groups considered in this thesis hold a college degree.

An experiment among students preparing to become leaders discovered that (in case the gender of the future leader has not been revealed to other students before) women chose riskier strategies in order to meet the goals and in general requested higher effort from their subordinates than men. This fact could evoke a thought that if women were in a leading group (and not in a majority at the same time), they could choose a strategy that is more profitable for the firm. (Timko; 2017)

The influence of women on a firm performance does not have to be direct, because firms might have a better performance for different reasons and, therefore, the performance does not necessarily concern women's presence as leaders. This stance will be considered on in this thesis and will be further described.

The number of women in leading positions in Czech Republic is constantly evolving and is still increasing. Some countries applied quotas on women as leaders (for example Norway, France, Belgium). There has been a significant amount of documents researching the question whether the presence of women in leadership positions improves the corporate's performance or not. For example, a study examining firm's

performance in Asia and Pacific discovered that local firms are the most profitable if there are two women on the corporate board. (Qian; 2016)

In the theoretical part the hierarchy of different types of firms will be described. Also, several ways of how people from various positions in some Czech Republic firms affect the firm's performance.

In the empirical part the performance of different firms will be described. At the end of this part the final results will be presented. These results will show whether there is an impact on a firm's performance with women in leadership positions and - if so - what is the range and how powerful the impact is.

Contribution This thesis will investigate the quantity of women on leadership positions, how the influence of women in charge has evolved over the years and how women influence the firm's performance nowadays. This topic can help with the decision whether or not to introduce quotas on women in leadership positions in the Czech Republic. These quotas have already been introduced e.g. in Norway, Belgium, France or Germany.

There is a thesis from David Černík published in 2016 dealing with how gender board diversity influences the firm performance investigating data from 204 Czech joint-stock companies during the years 2003 – 2011. Opposite to this thesis, mine will not be limited only to joint-stock companies and will use data from 2010 onwards. Based on that, there may not be the same result as in the thesis mentioned above.

Methodology Pooled cross-sectional data of different types of Czech firms will be collected from databases EMIS and Magnus Web. Additional information about firm characteristics will be obtained from annual reports. The data will be sorted into sections according to the type of the firm with respect both to the type of industry and to the women's positions in a firm.

The firm performance will be evaluated mainly by means of the returns on assets, additionally by sales per worker, value added per worker and total factor productivity. I will employ a two-stage least squares regression analysis and an instrument variable approach to address the issues of causality.

Outline

1. Abstract
2. Introduction
3. Literature Review
4. Methodology

5. Interpreting Results
6. Conclusion

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Chapter 1

Introduction

Women worldwide are underrepresented in leadership positions, even though they constitute half of the population. According to many studies, firms could benefit from women's managerial style. The issue whether women benefit a firm's financial performance is examined worldwide and it appears not to have a generic answer. Because the environment of each country is different, the results of studies from other countries can not be applied to the Czech Republic. Therefore, it is important to examine this topic in relation to Czech firms.

Some countries, such as Norway, France, and Belgium, imposed quotas on the number of women in leadership positions in firms. The Czech Republic is not one of those countries though. Despite the low number of women in these positions and the fact that in general women represent barely 20% of each position, this number is slowly rising in the Czech Republic.

The literature regarding the relation between female leadership and financial performance in the Czech Republic is not thorough. There are papers that are concerned with female leadership style and decision-making in gender-diverse groups. Regarding firm's performance, travel agencies and generally joint-stock companies have been already examined before this thesis by other authors.

The purpose of the thesis is to expand the Czech literature about female leadership. We knowingly create data set with more types of firms than just joint-stock companies for a time frame that has not been examined in the Czech Republic before. This thesis can help with a government decision to impose quotas on women in leadership positions or with a decision to employ women in a statutory body.

In the theoretical part, we will summarize existing literature from the Czech Republic, foreign literature, and literature focusing on a female leadership style,

to present what benefits could women bring to the firms when employed in leadership positions. Then, we will describe different types of firms that could be established in the Czech Republic in our time frame, because this is the first paper working with more than one type of a firm. We will describe different bodies of these firms to clarify our choice of a specific type of a body.

The data set will be described in the methodology part. We will present the overall change in the number of women in the time frame from 2010 to 2019 and the diversification of women across different industries. After that, we will introduce an econometric model built to examine the relation between women and a firm's performance. The four measurements for a firm's financial performance will be introduced. The model will be estimated with the instrumental variable method using two instruments. The external instrument will be the percentage of women in a given industry the previous year. The statistics will be collected from the Czech Statistical Office (CZSO). The internal instrument will be the share of women in statutory bodies taking into account the industry and the year. For robustness check, we will estimate our model with the fixed effects estimation method. The results of the analysis will be presented at the end of this thesis.

Chapter 2

Literature Review

Worldwide, there are many studies exploring gender diversity at leadership positions and women's influence on firm performance. However, this topic is not discussed in depth regarding the Czech republic. Nguyen *et al.* in their systematic literature review found only one paper analyzing this topic in the Czech Republic, nevertheless, the authors limited the search for papers by searching for specific words in titles.

The Czech paper by Kubíček *et al.* explored a relation between gender diversity of board and under-pricing in the initial offering process. The authors observed a positive relation between above mentioned.

Further papers regarding the Czech Republic are from Zuzana Křečková, who wrote papers regarding female leadership in the Czech Republic in 2009, 2013, and 2016. She claimed that groups that are gender diverse are better at decision making and solving problems than non-diverse groups in her paper from 2009, which could be beneficial for firms' financial performance. Křečková *et al.* claim that women are viewed as more cooperative and intuitive in their managerial style than men by female respondents. On the contrary, women are viewed as more aggressive than men by male respondents. However, Křečková *et al.* discovered, that women who are endowed with a male managerial style are more likely to be promoted than women with a feminine managerial style. In her paper from 2013, Křečková predicted there will be 21.35 % women on board in 2020. This prediction is based on the growth of women on boards in 2013. Křečková further predicted that it will take 33 years to achieve a 40 % representation of women on boards of Czech firms.

Hedija & Němec wrote a paper exploring female leadership and the financial performance of travel agencies and tour operators in the Czech republic in 2021.

The authors followed critical mass theory when deciding which industry they will concentrate on. The reason behind choosing the tourism industry is that approximately 40% of leadership positions are filled by women in executive bodies in the tourism industry. However, the authors discovered no relation between female executives and financial performance.

The result is not unique to one study. Another Czech paper written by Černík came to this conclusion. However, Černík concentrated on joint-stock companies and their statutory bodies.

Considering Hedija & Němec and Černík restricted their research the result, that women in leadership positions have no impact on firm performance, is not possible to apply to other industries and types of firms.

2.1 Foreign evidence

Foreign studies provide a wide range of methods and discussions about whether women have an impact on firms' performance. One of the principal studies is written by Adams & Ferreira. The authors remind the significance of addressing the endogeneity issue on this topic. Adams & Ferreira discovered, that women, who were elected on boards improved the attendance on the boards. Despite women affecting the boards, the authors observed a negative impact of women on the performance of the firms which had strong governance and a positive impact of women on the performance of the firms which had weak governance. Adams & Ferreira defined the strength of governance as the ability to resist takeovers.

Ionascu *et al.* examined the relation between gender diversity on boards and firm performance in Romania as an archetype of an emerging market. The authors discovered no impact of gender diversity on firm performance on average. However, when the authors took account of the existence of an emerging market, where weak governance of firms is more common than at developed markets, the relation between gender diversity and firm performance was positive. The result presented by Ionascu *et al.* is similar to the result Adams & Ferreira come to. Adams & Ferreira claimed women affected negatively the performance of firms with strong governance, Ionascu *et al.* did not discover any relation between women and the financial performance of firms with strong governance. It is worth mentioning both studies addressed endogeneity and used Tobin's Q as a measure of firm performance.

A different approach was selected by Mkhethwa & Msweli, where they did

not address the endogeneity issue and used a different method for evaluating firms' performance. A formula from 1988 by Affleck-Graves, Burt, and Cleasby was used for measuring firms' performance. The authors did not reveal any relation between women and financial performance.

Reguera-Alvarado *et al.* addressed endogeneity in their study about the impact of women on economic results, which they determined as firm performance. Their study examined the Spanish business environment for the reason that Spain introduced quotas for women in boardrooms. Reguera-Alvarado *et al.* discovered a positive relation between women and firm performance regarding financial, ethical, and social performance and promoted quotas for women in boardrooms.

In a study by Qian, the author used a sample from 10 economies for exploring the relation between women and firm performance. The sample included two economies with mandatory quotas for women on boardrooms, therefore this sample is more representative than samples from other studies focusing on one economy. Qian discovered the firm performance is highest when there are two women on board and simultaneously disprove reverse causality. Therefore, that firms' past financial performance does not predict firms' choice to employ female directors. Despite the positive results, Qian does not support gender quotas and suggests the government should focus on improving gender equality generally.

It is clear, that the relation between women in leadership positions and firm performance can be different based on a cultural setting. Therefore, the author of this work believes it is necessary to explore the relation in the Czech Republic likewise.

2.2 Female leadership style

Many differences can be found between men and women in a workplace environment. Some of these differences are examined in papers which are summarized below.

Rau conducted a study in 2014 where disposition effect and loss aversion were examined. She confirmed the stereotypical view of women being more loss averse than men. The author claimed the disposition effect is significantly higher with women, which correlates with the loss aversion. Moreover, according to Booth *et al.*, women display more risk aversion than men, and women in the single-gender environment are less risk averse than women in the multi-

gender environment. Therefore, including women in bodies requiring collective decisions could bring more caution and wariness to the decisions, which could result in more stable financial performance.

Flory *et al.* discovered that women at a young age are less competitive than men and the competitive gap decreases as women get older. Competitiveness is further explored in a study by Urbig *et al.*. The main discovery in their study is that the gender differences in competitiveness are in a desire to win. Urbig *et al.* explored gender differences with two other components of competitiveness - enjoying the competition and seeing the competition as an opportunity to personally grow. However, the two other components do not seem to affect the gender differences in competitiveness.

The experiments regarding competitiveness are placed in private environments in a majority of studies. Therefore, it is important to mention a study by Buser *et al.* where the authors explored the influence of the public on competitiveness. Buser *et al.* found no influence of the public on willingness to compete. Therefore, the experiments in private environments are valid and the results are valid as well. The gender gap regarding competitiveness could explain the gender gap regarding leadership positions. If women are less competitive than men, men will be more likely to get promoted to leadership positions. However, the lack of competitiveness could lead to better cooperation in boardrooms.

As other studies suggest, women could bring other benefits to firms. Firms are performing better with females in leadership positions even when in times of crisis (Fernando *et al.* 2020), women are more effective than men in implementing environmental-friendly policies (Glass *et al.* 2015), and women are more responsive than men to employee's standpoint (Eduardo 2011).

A theory regarding women's behavior in a firm environment called the Queen Bee phenomenon has been disproved by Arvate *et al.*. The authors discovered the existence of an opposite effect, which they called the Role Model effect. Based on the Role Model effect, the benefits of promoting women to leadership positions could steadily increase on a long-term basis.

Chapter 3

Types of corporations and their bodies

The legislation regarding business corporations was renewed during 2013 and 2014 in the Czech Republic. The commercial code was valid from 1992 to 2013 and it was replaced by the Business Corporation Act (BCA) and partially by the new civil code. Both, the BCA and the civil code, became valid on the 1st of January in 2014.

The BCA divides business corporations into commercial companies (further as "companies") and cooperatives. Companies include joint-stock companies, limited-liability companies, unlimited partnerships, limited partnerships, European companies, and European economic interest groupings. Cooperatives include cooperatives and European cooperative societies. (Lasák 2013) Chapter 3 will present all but European companies, European economic interest groupings, and European cooperative societies. The capital companies (joint-stock company and limited-liability company) will be presented first and then the partnerships (unlimited partnerships and limited partnership) will be presented.

Chapter 3 will describe six types of business corporations that can be established in the Czech Republic and the bodies of these corporations. A body of a company is not an artificial person. It is an internal department that ensures the functioning of the company. They will be described to show which leadership positions women can occupy. Different bodies are mandatory for different companies. A statutory body of a company is mandatory for all types of companies, a supreme body is mandatory for joint-stock companies

and limited-liability companies, and a supervisory body is mandatory for joint-stock companies, with the dualistic internal system. (Řeháček 2010)

3.1 Joint-stock company

A joint-stock company is characterized by dividing a registered capital into a definite number of stocks and each stock has a definite value. A joint-stock company can be established by at least one artificial person or two natural persons. (Dědič *et al.* 2003) The value of registered capital can be recorded in euros if their accounting is in euros. Therefore, the value of a joint-stock company must be at least 2,000,000 CZK or 80,000 EUR. (Lasák 2013) A joint-stock company is obliged to contain in its business name "a.s" or "akc. spol." or "akciová společnost". The business name has to be unique and must not provide false advertising. (Dědič *et al.* 2003)

The owner of a stock is called a stockholder, who became automatically a partner and can be part of a decision-making process in the company and has an entitlement to a share of a profit. A stockholder does not stand surety for the joint-stock company which stocks the stockholder owns. The company can establish different types of stocks. However, the diversity of stocks must be written in the Memorandum of association (MoA). Examples of types of stocks are employee stocks (which are stocks offered to employees) or preferred stocks (which dividends are paid as a matter of priority). (Němeček 2003) The BCA defines the MoA as a fundamental document which is establishing a corporation and containing the Articles of association (AA) and a deed of foundation.

Joint-stock companies can be divided by internal structures into monistic joint-stock companies and dualistic joint-stock companies. However, the monistic internal system was not allowed in the Czech Republic under the commercial code. Despite using only a dualistic system, companies could decide between two internal voting structures. Either a general meeting elected members of a board of directors or a general meeting elected members of a supervisory board and members of a supervisory board elected members of a board of directors. (Řeháček 2010)

3.1.1 Monistic joint-stock company

The main difference between a monistic internal system and a dualistic internal system is that in a monistic internal system a body of a corporation called an

administrative board has a managing function and a controlling function. In a dualistic internal system, there is one body with a controlling function and one body with a managing function. (Řeháček 2010)

The general meeting The supreme body of a joint-stock company is a general meeting. A general meeting's scope of authority is internal - the members of a general meeting elect and remove the members of a statutory body of a joint-stock company from an office and can decide about long-term investment decisions. (Řeháček 2010)

A member has one vote for each crown of a share. A general meeting needs for members with 51% of votes altogether to be present to be quorate. There are situations when a member of a general meeting does not have a right to vote. The first situation is when a general meeting is voting about the removal of a member from a general meeting because of a violation of their responsibility. The second situation is when the member is a close relative to a member whose removal the general meeting is voting about (definition of a close person can be found in the civil code of the Czech Republic). Other situations when a member loses a voting right can be stated in the MoA. (Čech 2018)

There are four types of general meetings. The first type is an inaugural general meeting, where a company is established, the members of bodies are elected and the AA are drawn up. The second type of a general meeting is an annual general meeting. It takes place at least once a year and the members of a general meeting approve annual final records and decide on the division of profits and losses. The third type of a general meeting is an extraordinary general meeting. It is assembled by a statutory body when the company lost at least one third of an initial deposit or is insolvent for more than three months. The fourth type of a general meeting is a substitute general meeting, which takes place when the general meeting is not quorate and it substitutes the original meeting. (Němeček 2003)

The statutory manager The statutory body of a monistic joint-stock company is a statutory manager. A statutory manager represents the company at business meetings and administrates business management. A statutory manager and a chairman of the administrative board can be the same person. (Řeháček 2010)

The administrative board An administrative board has a similar scope of authority as a supervisory board of a dualistic joint-stock company. It supervises the business managing of a company, assembles general meetings, and in the scope of authority belongs a conceptual managing of a society. The maximum number of members of an administrative board is eighteen. Members of an administrative board are elected by the general meeting or by employees. The member of an administrative board, who was not elected by employees, has to be a stockholder. (Řeháček 2010) The BCA states the minimum number of members of an administrative board is three and they are elected for three years unless provided otherwise in the articles of association. (Lasák 2013)

3.1.2 Dualistic joint-stock company

A dualistic internal system is comprised of one body with a controlling function (a supervisory board) and one body with a business managing function (a board of directors). The supreme body and its functions are identical as in a monistic joint-stock company.

The board of directors The statutory body of a joint-stock company is a board of directors. It consists of at least three members and they are elected by the general meeting. The chairman of a board of directors is elected by the members of a board of directors. The number of members must be specified in the MoA. Every member has one vote and the AA establish how many votes are necessary to make a decision and how many members have to be present for the decision to be rightful. A board of directors is answerable to a general meeting. A board of directors manages a company by principles and instructions of a general meeting and represents the company at business meetings. A board of directors ensures legitimate accounting and prepares final accounts and a proposal for a general meeting for dividing profits or for compensating losses. A board of directors can transfer duties to other bodies or employees of a corporation, or divide the duties between different members. However, a board of directors is still accountable for the responsibilities. (Řeháček 2010) In a dualistic joint-stock company, a person can not be on a board of directors and a supervisory board at the same time frame. (Čech 2018)

The supervisory board The supervisory body of a joint-stock company with a dualistic internal system is a supervisory board. It has at least three

members. If the company has more than 500 employees, one third is elected by employees and two thirds are elected by a general meeting. The members used to be elected for at least five years (Němeček 2003), however, the BCA reduced it to three years. A supervisory board supervises the activities of a board of directors and is authorized to control business records and accountancy books. (Lasák 2013)

3.2 Limited-liability company

A limited-liability company belongs to capital companies, according to BCA. However, more resources (Josková *et al.*, Řeháček) debate how well a limited-liability company is close to partnerships. According to Josková *et al.*, it is because the BCA allows partners to initiate in the company by using their personal qualities and education. However, the BCA classifies the limited-liability company as a capital company.

A limited-liability company is a company where partners secure liabilities of a company up to their unpaid initial deposits. The minimal value of an initial deposit is the number of partners multiplied by one crown. Before 2013 the minimum value of an initial deposit was 200,000 CZK and the minimum contribution of one partner was 20,000 CZK. A limited-liability company is obliged to create two bodies - the supreme body (a general meeting) and the statutory body (an executive director). It is optional to create the supervisory body in a form of a supervisory board. (Josková *et al.* 2015) The business name of a limited-liability company must include "společnost s ručením omezeným" or "spol. s.r.o." or "s.r.o.". (Němeček 2003)

The general meeting A general meeting is a supreme body comprising shareholders. A shareholder has a right to attend a general meeting. (Josková *et al.* 2015) A member of a general meeting used to have one vote for each 1,000 CZK of his initial deposit. However, because the initial deposit of a partner can be smaller than 1,000 CZK since 2014, the members of a general meeting have one vote for each 1 CZK of their initial deposit. (Lasák 2013) The scope of authorities includes approving annual final accounts, approving division of profits and compensation for losses, and deciding about personal changes at a supervisory board and executive directors. (Němeček 2003) Members of statutory and supervisory bodies can be elected by cumulative voting - the voting is for every member separated. (Lasák 2013) The scope of all authorities of

a general meeting can be found in the section 190 article 2 of the BCA. The decision of a general meeting is carried when two thirds of shareholders approve it. (Josková *et al.* 2015)

The executive director The limited-liability company can have more than one executive director. If the company has more than one executive director, the executive directors can make a collective body, therefore make collective decisions. However, this must be stated in the MoA. The executive directors are deputies to the company. The scope of authority includes taking care of the legitimating of accounting and business management of the company. (Josková *et al.* 2015) An executive director is obliged to participate in a general meeting. (Lasák 2013)

3.3 Unlimited partnership

An unlimited partnership is the first type of partnership presented in this work. An unlimited partnership is a partnership of at least two persons, who commerce together under one business name. Partners stand surety for the company with all their property. Initial deposits of partners will become assets of the company. (Němeček 2003) A partner can pay his initial deposit by the execution of a service. (Lasák 2013) The business name of the company must include "veřejná obchodní společnost" or "v.o.s" or "veř. obch. spol". However, there is an exception when the name includes one of the partners last name the business name of the company can include " a spol." instead of "veřejná obchodní společnost" or "v.o.s" or "veř. obch. spol". Profits and losses are divided between partners equally, unless the MoA, which is a fundamental document of an unlimited partnership, says otherwise. (Němeček 2003)

The supreme body consists of all the partners. The only obligatory body for an unlimited partnership is the statutory body, which is combined of all partners who meet at least some of the requirements in the section 46 of the BCA. (Lasák 2013) The MoA can add requirements for partners being part of a statutory body. A statutory body represents the company and manages the business. Partners can act as a supervisory body, therefore take a look inside look into and control any documents of a company. (Dvořák 2003)

3.4 Limited partnership

A limited partnership is a partnership where there are two kinds of partners. One kind of partner is called a limited partner. Limited partners stand surety for the corporation up to the amount of their unpaid initial deposit. The other kind of partner is called a general partner, who stands surety for the corporation unlimited. If the business name of the corporation includes the last name of a limited partner, the limited partner stands surety for the corporation with their whole property. The business name of a limited partnership must include "komanditní společnost", "kom.spol." or "k.s.". (Němeček 2003) The minimum value of an initial deposit is not specified in the BCA, however, before 2014 it used to be 5,000 CZK. Profits and losses are divided in half between a company and general partners. General partners have equal shares in profits or losses and the other part of profits or losses, which was given to the company, goes to limited partners correlating with the share of their initial deposit. (Lasák 2013)

The only obligatory body for a limited partnership is a statutory body, which contains general partners. It does not have to contain all of the general partners, however, it must be written in the MoA. If it is not written in the MoA, it is assumed that all general partners are part of a statutory body. The scope of the authority of a statutory body of a limited partnership is the same as in previous companies. (Dvořák 2004)

3.5 European company

A European company was allowed in 2004 and follows local national rules for joint-stock companies, based on where a European company has a registered office. A registered office has to be in a country that is a member of the European Union. A European company submits to a legislative of the European Union. An initial deposit must be at least 120,000 EUR and it is divided into stocks. When the national currency of a country where a European company is based is not the euro, the country can permit to state the registered capital and final accounts in the national currency. (Synek & Kislingerová 2015) The business name of a company must include "SE".

The two types of internal systems presented in the Section 3.1 are possible for a European company even when the country, where the company is based, does not support one of the systems for joint-stock companies. Therefore, the

monistic system was allowed for European companies in the Czech Republic even before it was allowed for Czech joint-stock companies. (Dvořák 2009)

3.6 Cooperative

A cooperative is a company, where one of the main principles affecting characteristics of a cooperative is the principle of collective. Cooperatives could be established by at least two artificial persons or at least five natural persons (Římalová & Holejšovský 2004), however the BCA states, that the minimum number of members in a cooperative is three and does not differentiate between an artificial person and a natural person. (Lasák 2013) The number of members may fluctuate during the existence of a cooperative and these changes do not have to be written in the AA. The number of members of a cooperative does not have an upper limit. Members of cooperatives are equal, therefore every member has the same rights and responsibilities unless the AA says otherwise and every member has one vote. Members of a cooperative do not stand surety for liabilities of a cooperative. However, the AA can concede that some or all members can have a settling obligation. The settling obligation is an obligation for covering a financial loss of a cooperative. If the settling obligation exists, it must be written in the AA and it must include if it applies to all members or if it applies only to the members who fulfill requirements.

There are four types of cooperatives based on the purpose they have been founded for. The purposes are: conducting of business, supporting the business of members of the cooperative, satisfaction of social, cultural, educational or other similar needs of the members of a cooperative, and for a combination of reasons mentioned above. The cooperatives which are founded for conducting business are described in this work.

A business name of a cooperative must include "družstvo". In a cooperative, there is a difference between an entered initial deposit and an initial deposit. An entered initial deposit is written in the AA, must be at least 50,000 CZK, and does not fluctuate. An initial deposit changes with the number of members. If members have a share in a profit the AA must define the division. A supreme body, a statutory body, and a supervisory body are all obligatory for a cooperative. A cooperative can establish other bodies, are not obligatory, therefore not described in this work. Only members of a cooperative can be members of a body of a cooperative. (Římalová & Holejšovský 2004) A cooperative must have an information board in its registered office. (Lasák 2013)

A members' meeting The supreme body of a cooperative is called a members' meeting. In the scope of an authority of a members' meeting belongs electing and removing from office members of statutory and supervisory bodies, the ability to change the AA, approving of final accounts, handling the profits and losses, and more. (Římalová & Holejšovský 2004) The list of a full scope of authority is in the BCA in the section 656. (Lasák 2013) There are four types of members' meetings: annual, extraordinary, and substitute members' meetings have the same description as the annual, extraordinary and substitute general meetings in the Section 3.1, respectively. The fourth type is a partial members' meeting. It takes place when the distance between members is large, therefore it is practical to have two or more members' meetings. Votes on the partial members' meeting add up together. (Římalová & Holejšovský 2004)

A board of directors The statutory body of a cooperative is called a board of directors. A board of directors has three members unless the AA says differently. (Lasák 2013) Members of a board of directors elect the chairman of a board of directors. Each member of a board of directors have one vote. A board of directors executes the will of a members' meeting. A board of directors' scope of authority is everything that does not belong to the scope of authority of either a members' meeting or a supervisory board.

A supervisory board The supervisory body of a cooperative is called a supervisory board. A supervisory board supervises the activity of a cooperative and its bodies and handles the complaints of members of a cooperative. (Římalová & Holejšovský 2004)

Chapter 4

Data and Methodology

4.1 Data description

This thesis is focusing on the relationship between female leadership and firm performance. The data set of Czech firms during the time frame 2010-2019 is used. There are joint-stock companies, limited-liability companies, unlimited partnerships, limited partnerships, and cooperatives. These types of firms are described in Chapter 3.

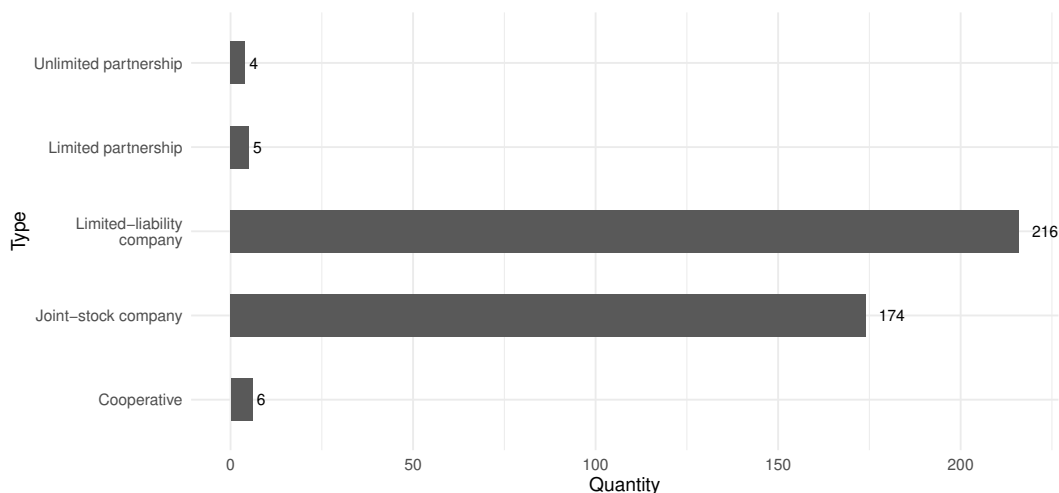
The data were collected using a database called the MagnusWeb. The database was filtered by a return of firms and the number of employees. Since firms with higher returns yield higher risk (Hasnawati 2020), the return filter was set to more than 1,000,000,000 CZK. Because of reasons presented in Section 2.2, such as the cooperativeness of women, the number of employees was limited to be more than 500. The firms which were established during the period 2010-2019 or the firms which ceased to exist during the period 2010-2019 were removed from the data set.

Information about females in leadership positions was collected from annual reports. The firms which did not publish the information or the annual report were removed from the data set.

The edited data set contains 405 firms during ten year period. The diversification of firms from one year period in the data set can be found in the Figure 4.1. The majority of firms in the data set are limited-liability companies and joint-stock companies. Therefore, the leadership positions covered in this study are executive directors, board of directors, and statutory managers. The partners of unlimited partnerships and limited partnerships are included

in the same category as executive directors, board of directors and statutory managers.

Figure 4.1: Diversification of firms in the data set



The Figure 4.2 can be used to observe the difference between a limited-liability company and a joint-stock company regarding the average percentage of women in leadership positions during the years 2010-2019. Because the monistic joint-stock companies started to develop in 2014 in the Czech Republic, the board of directors in the Figure 4.2 contains data from the board of directors for dualistic joint-stock companies and the statutory manager for monistic joint-stock companies. The percentage of women in statutory bodies in limited-liability companies increased by 5 % from the minimum in 2011 to the maximum in 2019. However, the percentage of women on boards of directors was at the minimum in 2010 (9.6 %) and the maximum was in 2015 (10.8 %). The difference between the minimum and the maximum is 1.2%. Therefore, the percentage of women on boards of directors is more consistent than the percentage of women as executives.

The supervisory body is obligatory for almost every type of firm except for unlimited partnership and limited partnership. However, there usually is a supervisory body, for its control function. The Figure 4.3 shows the percentage of women in statutory bodies and supervisory bodies of all firms, which had members of these two bodies listed in their annual report. The trend of both is slightly increasing during the time frame 2010-2019.

The method of instrumental variables, which will be described in Chapter 5, will be used in this thesis and the percentage of participation of women in the labor force in an industry will be used as the instrument. The Czech Statistical

Figure 4.2: Women in statutory positions during the time frame 2010-2019 (%)

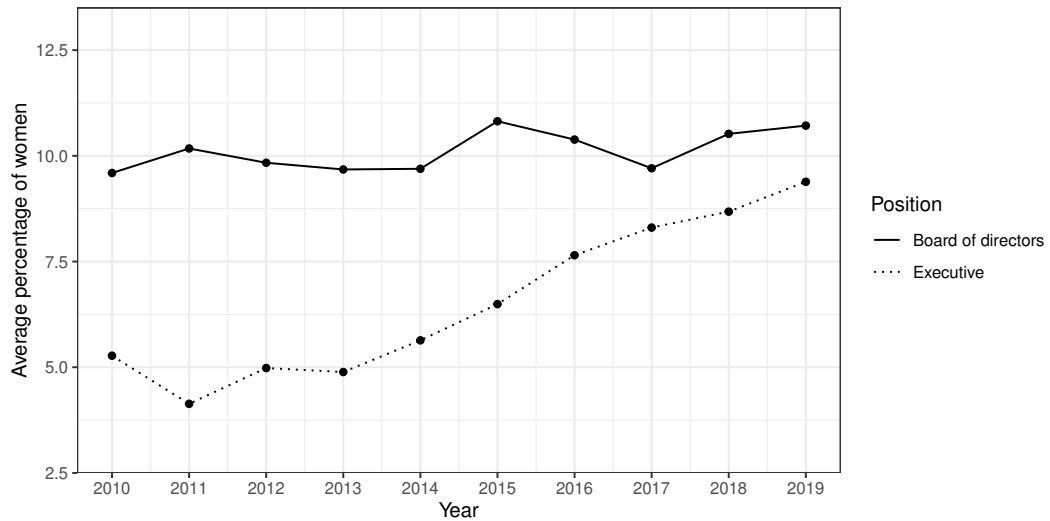
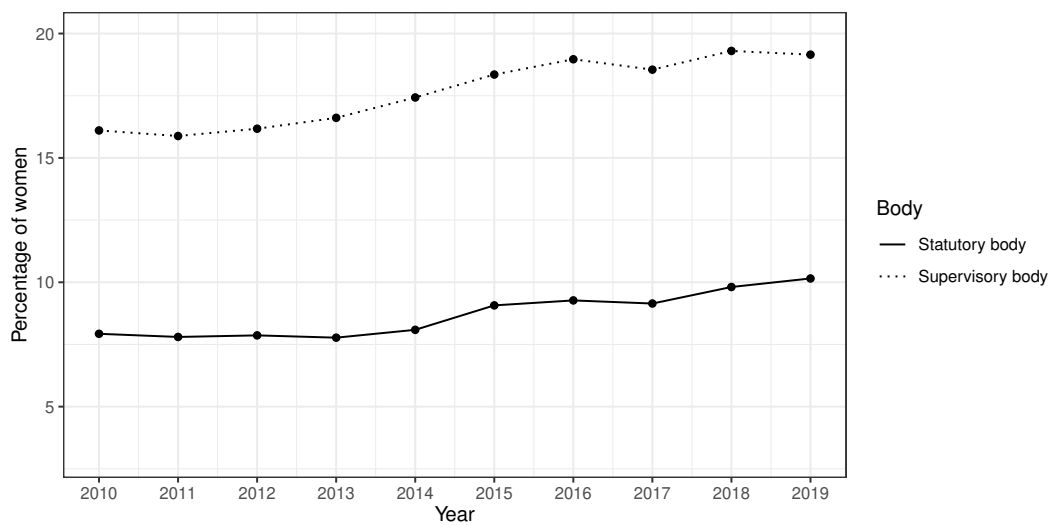


Figure 4.3: The comparison of the participation of women in a statutory body and a supervisory body during the time frame 2010-2019 (%)



Classification of Economic Activities (CZ-NACE) is used for the classification of an industry. Therefore, Table 4.1 is focusing on the fourteen industries in the data set. There are four columns, where the first contains the name of the industry and the other columns describe:

A = % of women in an industry with respect to the whole data set

B = % of women in a statutory body of firms from an industry with respect to the men in the industry the data set

C = % of women in an industry in the Czech Republic

The column A should enlighten the distribution of women in statutory bodies in the data set according to industries. The majority of women employed in a statutory body of firms are in the manufacturing industry and the wholesale and retail trade industry in the data set.

The column B represents the percentage of women in the statutory bodies of firms from the same industry. When the column A is compared to the column B it can be seen that women are employed in a statutory body similarly often in the majority of industries in the data set, except for Transportation and storage, Mining and quarrying, Manufacturing, Construction, Information and communication, and Art, entertainment and recreation. Therefore, the column A could represent the diversification of industries in the data set.

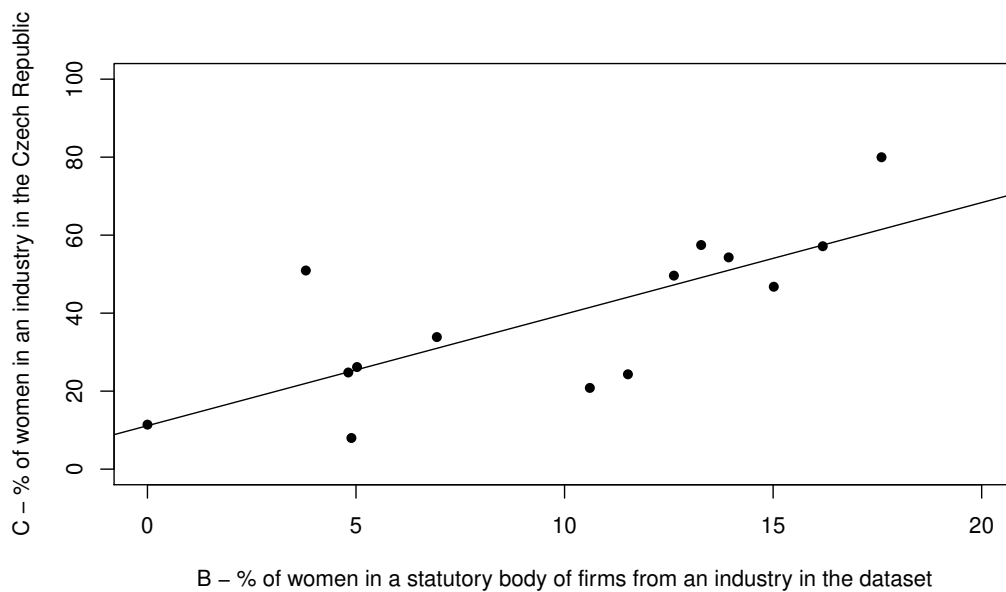
Table 4.1: Gender diversity according to industries

	Industry	A	B	C
	Transportation and storage	3.46	5.03	26.18
	Mining and quarrying	0.00	0.00	11.41
	Manufacturing	42.56	6.94	33.86
	Electricity, gas, steam, and air conditioning supply	3.63	10.61	20.82
Water supply; sewerage, waste management, and remediation activities		5.97	11.52	24.32
	Construction	2.68	4.89	7.98
Wholesale and retail trade; repair of motor vehicles and motorcycles		20.59	13.93	54.30
	Accommodation and food service activities	1.30	13.27	57.47
	Information and communication	1.12	4.81	24.78
	Financial and insurance activities	1.47	16.19	57.16
	Professional, scientific, and technical activities	3.37	12.62	49.62
	Administrative and support service activities	4.07	15.02	46.77
	Human health and social work activities	9.26	17.60	79.97
	Arts, entertainment, and recreation	0.52	3.80	50.93

The column C displays the average percentage of women in an industry during the time frame 2010-2019 in the Czech Republic. The percentages were calculated from the website of the CZSO. With column B, shows the opportunity for women to be employed in a statutory body. When there is an increasing percentage of women in industries there is an increasing percentage of women

in statutory body of firms in these industries. This trend can be seen in the Figure 4.4. Therefore, the percentage of women in the industry will be considered as the instrument.

Figure 4.4: A percentage of women in an industry with comparison to the percentage of women in a statutory body of a firm from the industry (%)



Regarding firm performance, the data were collected by using the MagnusWeb. However, three methods for implementing missing data were performed. Because there is less than 3 % of missing data, the first method is to delete the observations with missing data. This method should not create bias in the regression according to Kleinke *et al.* (2011). The second method is an imputation of a mean. The third method is to impute the missing observations with package mice, method 'cart' in RStudio. This method uses classification and regression trees to impute the missing data. A description of how these methods changed the data set can be found in Table 4.2, Table 4.3, and Table 4.4 and the description of the original data can be found in Table 4.5.

The first thing to highlight is the minimum of the expenditure variable when using the drop method. It is different from the minimums of the expenditure variable when using the two other methods. The reason is simple - the observation with the expenditure variable equal to 44,000 had some other missing variable, therefore it was dropped in the drop method. However, other minimums and maximums of other variables are identical for all methods, which

Table 4.2: The drop method

Statistic	N	Mean	St. Dev.	Min	Max
Assets	3,954	6,321,238,384.0	31,888,659,074.0	1,230,404	707,443,000,000
Liabilities	3,954	6,321,238,385.0	31,888,659,074.0	1,230,404	707,443,000,000
Revenues	3,954	6,916,530,522.0	21,598,857,108.0	-809,000	469,224,000,000
Expenditure	3,954	6,453,905,062.0	19,939,469,491.0	9,717,000	430,726,000,000
Sales	3,954	6,461,496,521.0	20,858,921,859.0	-2,148,000	467,265,000,000
EBT	3,954	458,321,220.0	2,176,174,479.0	-5,028,670,000	43,896,000,000
EAT	3,954	373,160,955.0	1,837,107,825.0	-5,031,681,000	37,337,000,000

Table 4.3: The mean method

Statistic	N	Mean	St. Dev.	Min	Max
Assets	4,050	6,387,100,937.0	31,540,747,737.0	1,230,404	707,443,000,000
Liabilities	4,050	6,383,966,838.0	31,539,952,619.0	1,230,404	707,443,000,000
Revenues	4,050	7,083,996,572.0	21,532,241,078.0	-809,000	469,224,000,000
Expenditure	4,050	6,606,186,423.0	19,881,617,007.0	44,000	430,726,000,000
Sales	4,050	6,828,096,562.0	21,491,570,572.0	-2,148,000	467,265,000,000
EBT	4,050	466,860,343.0	2,157,689,913.0	-5,028,670,000	43,896,000,000
EAT	4,050	378,265,967.0	1,838,590,611.0	-5,031,681,000	37,337,000,000

Table 4.4: The algorithm method

Statistic	N	Mean	St. Dev.	Min	Max
Assets	4,050	6,550,519,615.0	31,791,993,098.0	1,230,404	707,443,000,000
Liabilities	4,050	6,550,519,615.0	31,791,993,098.0	1,230,404	707,443,000,000
Revenues	4,050	7,255,089,058.0	22,073,681,201.0	-809,000	469,224,000,000
Expenditure	4,050	6,724,008,085.0	20,195,235,279.0	44,000	430,726,000,000
Sales	4,050	6,805,166,960.0	21,513,135,542.0	-2,148,000	467,265,000,000
EBT	4,050	484,435,114.0	2,272,156,783.0	-5,028,670,000	43,896,000,000
EAT	4,050	391,093,049.0	1,851,654,729.0	-5,031,681,000	37,337,000,000

Table 4.5: The original

Statistic	N	Mean	St. Dev.	Min	Max
Assets	4,031	6,357,136,759.0	31,618,039,345.0	0.0	707,443,000,000.0
Liabilities	4,024	6,353,965,510.0	31,644,734,402.0	0.0	707,443,000,000.0
Revenues	4,021	7,045,448,977.0	21,616,086,434.0	-809,000.0	469,224,000,000.0
Expenditure	4,017	6,563,702,909.0	19,970,164,640.0	0.0	430,726,000,000.0
Sales	4,042	6,792,804,899.0	21,518,434,951.0	-2,148,000.0	467,265,000,000.0
EBT	4,030	464,440,183.0	2,163,299,909.0	-5,028,670,000.0	43,896,000,000.0
EAT	4,014	376,297,297.0	1,847,020,705.0	-5,031,681,000.0	37,337,000,000.0

is not surprising based on the structure of the methods. The means are the lowest when using the drop method and the highest when using the algorithm method (with an exception with the sales variable, where the highest mean is when using the mean method). The mean is different when using the mean method and when showed in the original because some observations had zero instead of NA. This zero was treated as NA when using the mean method, however was counted when the means of the original data set were calculated.

The standard deviation is the lowest when using the mean method, which was expected. When the observations with missing data were dropped, the standard deviation increased. The algorithm method has the standard deviation mostly in between the drop method and the mean method or bigger. The standard deviation of an expenditure variable is the largest when using the algorithm method, which is not surprising for the reasons mentioned above. Therefore, the results should be less biased, when using the data set alternated by using the algorithm method than when using the other two methods.

The description of variables used in regression can be found in the Table 4.6. The first part in the Table 4.6 is dedicated to the variables used in the Equation 4.1. How exactly are they used is described in the Section 4.2. The last part of the Table 4.6 is dedicated to dummy variables as they require more space in description than other variables.

4.2 Methodology

This topic of women and firm performance has been widely studied all around the world as shown in Chapter 2. As it can be seen from previous literature, the endogeneity issue arises with this topic. Therefore, we need to test our model for endogeneity before deciding which estimation we will use. We will use the Wu-Hausman test for endogeneity. The model we will test for endogeneity is inspired by Hedija & Němec (2021), Ionascu *et al.* (2018), Reguera-Alvarado *et al.* (2017), and Adams & Ferreira (2009).

$$\begin{aligned}
 FirmPerformance_{it} = & \alpha_0 + \alpha_1 Women_{it} + \alpha_2 FirmSize_i + \alpha_3 FirmAge_{it} \\
 & + \alpha_4 Assets_{it} + \alpha_5 Assets_{it-1} + \alpha_6 Industry_i \\
 & + \alpha_7 Type_i + \alpha_8 Year_t + a_i + u_{it}
 \end{aligned}
 \tag{4.1}$$

Table 4.6: Description of variables used in regression

Name	Description	Units	Min	Max	Source
capital	the value of an initial deposit	CZK	100,000	53,798,975,900	MagnusWeb
Assets	the value of assets	CZK	1,230,404	707,443,000,000	MagnusWeb
Revenues	the value of revenues	CZK	-809,000	469,224,000,000	MagnusWeb
Expenditure	the value of expenditures	CZK	44,000	430,726,000,000	MagnusWeb
Sales	the value of sales	CZK	-2,148,000	467,265,000,000	MagnusWeb
Earnings before taxation (EBT)	the earnings before taxation	CZK	-5,028,670,00	3,896,000,000	MagnusWeb
Earnings after taxation (EAT)	the earnings after taxation	CZK	-5,031,681,00	7,337,000,000	MagnusWeb
Age	the age of a firm	number	1	47	MagnusWeb
Year	the year the values are from	dummy variables	0	1	MagnusWeb
F_stat_	the number of women listed in a statutory body	Units	0	7	Annual reports
Stat_	the number of people listed in a statutory body (men and women)	Units	1	16	Annual reports
Perc_Ind	women regarding industry	Percentage	0.07%	0.81%	CZSO
joint	a variable indicating whether a firm is a joint-stock company (=1) or not (=0)	dummy variable	0	1	MagnusWeb
limit	a variable indicating whether a firm is a limited-liability company (=1) or not (=0)	dummy variable	0	1	MagnusWeb
coop	a variable indicating whether a firm is a cooperative (=1) or not (=0)	dummy variable	0	1	MagnusWeb
unl_part	a variable indicating whether a firm is an unlimited partnership (=1) or not (=0)	dummy variable	0	1	MagnusWeb
lim_part	a variable indicating whether a firm is a limited partnership (=1) or not (=0)	dummy variable	0	1	MagnusWeb
Ind_*the abbreviation of an industry*	a variable indicating to which industry the firm belongs to (1= do belong, 0= do not belong). List of industries can be found in the Table 4.1.	dummy variable	0	1	MagnusWeb

$FirmPerformance_{it}$ is a dependent variable describing the financial performance of firms on data set. There will be four measurements of financial performance: Returns on assets (ROA), net profit margin, Operating profit margin (OPM), and Investment turnover (IT). The ROA measures how efficiently the firm utilizes the firm's resources and is a commonly used measure of firm performance (Adams & Ferreira (2009), Ionascu *et al.* (2018), Qian (2016), and Shehata *et al.* (2017)). Net profit margin measures the earnings of a firm while taking into account the costs. This measure is not as widely used as the ROA (Noland *et al.* (2016)). The OPM is a measurement of the profitability of a firm. The IT measures a firm's ability to use assets for sales. The formulas for performance measures are shown below. The variable $Women_{it}$ is a ratio of women in a statutory body with respect to the sum of all members of a statutory body. The reasoning behind the statutory body as a representation of a leadership position is that a statutory body has a larger influence on firm performance than a supervisory body. These bodies are described in Chapter 3. Variables $FirmSize_i$, $FirmAge_{it}$, $Assets_{it}$, and $Assets_{it-1}$ are variables describing firm characteristics in a logarithmic form. Variables $Industry_i$ and $Type_i$ are dummy variables indicating to which industry a firm belongs (the list of industries can be found in Table 4.1) and which type of a firm is it (the types of firms are described in detail in Chapter 3). Variable $Year_t$ is a dummy variable indicating the years 2010 - 2019 and a_i is an unobserved effect fixed in time and u_{it} is an idiosyncratic error.

$$ROA = \frac{Assets}{EAT}$$

$$Net\ margin = \frac{(Revenues - Expenditures)}{Revenues}$$

$$OPM = \frac{EBT}{Sales}$$

$$IT = \frac{Sales}{Assets}$$

Because of the structure of our data set, we will present clustered standard errors for estimated coefficients.

The Durbin-Wu-Hausman test is designed to control for unobserved characteristics of a dependent variable, in our case the firm characteristics. However, the practical usage of this test is to decide between the FE model and the RE model when dealing with panel data. These two estimation methods differen-

tiate in an error term and its correlation to an independent variable. The FE model should be used when the unobserved firm characteristics (the unobserved fixed effect a_i) are correlated with an independent variable. Otherwise, it is recommended to use the RE model. The null hypothesis is that there is no correlation between an error term and an independent variable. The null hypothesis is rejected when the p-value is less than 0.05. We will use our knowledge of the Durbin-Wu-Hausman test to discover whether there is an endogeneity issue or not.

We confirmed the variable $Women_{it}$ as endogenous for three of four firm financial performance measures. It confirmed endogeneity for all four performance measurements. Endogeneity generally can have multiple causes. It can be caused by a measurement error, omitted sample selection, lagged dependent variables, or an omitted variable. We expect our sample is diversified enough not to experience endogeneity from omitted sample selection and we expect not to experience measurement error. We estimated a model similar to Equation 4.1, but with Women as a dependent variable, to see whether there is a simultaneity. From Table A.1 we can see, there is minimal to no influence of firm performance on women in a statutory body. Therefore, we exclude simultaneity as a cause of endogeneity. Because our model does not include a lagged dependent variable, the endogeneity will not have this cause. We suspect the cause of endogeneity to be from omitted variables. There are two ways, how to deal with the omitted variable issue. We can estimate the model with the IV method or by the FE estimation, which was described in the previous paragraph.

The IV method is well known, therefore we will not describe it in detail. The IV method needs appropriate instruments. The two main assumptions for the instrument needs to be met. The instrument must be uncorrelated with the idiosyncratic error and the instrument must be correlated with the endogenous independent variable. (Wooldridge 2013)

Our first instrument is the previous year's percentage of women working in the industry the firm belongs to. This variable will be named *PercentageIndustry*. The idea behind this variable is described in the Section 4.1, more specifically when describing the Figure 4.4. The second instrument is a variable describing the share of women in a statutory body in our data set regards to an industry and a year. This variable will be mentioned as *ShareOfWomen*. We chose these two variables as instruments to have one internal instrument, calculated from our data set, and to have one external instrument, which was in our case

collected from CZSO.

The validity of an instrument can be tested via the Weak Identification test, the Durbin-Wu-Hausman test, and Sargan test. The results of testing our instruments will be presented in Chapter 5, with the results of the estimation.

Chapter 5

Results

The results of the diagnostic tests for estimating the Equation 4.1 with the IV method can be found in the Table 5.1. From the Wu-Hausman p-value, we can confirm that usage of the instruments presented in the Section 4.2 will be useful to address the endogeneity of variable *Women* for three performance measures (ROA, net margin, and OPM). For the IT we chose the FE estimation method.

The weak identification test tells us whether we have weak or strong instruments. Following 'the rule of thumb' we demonstrate that our instruments are strong. The null hypothesis of the Sargan test of over-identifying restrictions is that all instruments are important. We failed to reject the null hypothesis, therefore both of our instruments are necessary.

Table 5.1: Results of diagnostic tests for IV method

	ROA	Net margin	OPM	IT
Wu-Hausman test (p-value)	0.001	0.003	0.003	0.267
Weak ID test (F-test)	18.551	18.551	18.551	18.551
Sargan test (p-value)	0.771	0.215	0.214	0.456

We present the results of the IV method before the results of the FE method. The FE method of estimation for ROA, net margin, and OPM will be used for robustness check. The IV estimation for IT is presented only for showing the difference between the proper estimation method (the FE) and the inappropriate estimation method (the IV). All the presented standard errors of estimated coefficients are in a clustered form, because of the structure of the data set.

When we use a ROA as a measure of firm financial performance, we see a slight significance for women in leadership positions. The significance is at more

Table 5.2: Results of IV estimation (with clustered standard errors)

	ROA	Net margin	OPM	IT
Women	0.473* (0.242)	-3.917 (3.470)	-3.404 (2.956)	16.991 (11.929)
lnFirmSize	-0.006 (0.011)	-0.026 (0.045)	-0.020 (0.039)	0.660 (0.836)
lnAge	-0.027 (0.036)	0.010 (0.157)	-0.021 (0.134)	-2.462 (2.245)
lnAssets	-0.188 (0.195)	-0.584 (0.606)	-0.502 (0.525)	-62.702 (39.921)
lnAssetsLAG	0.194 (0.180)	0.440 (0.473)	0.393 (0.417)	58.832 (36.889)
Industry dummy	Yes	Yes	Yes	Yes
Type dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes
Observations	3,602	3,602	3,602	3,602

Note:

*p<0.1; **p<0.05; ***p<0.01

than 90% confidence level and the estimated coefficient indicates a positive relation between women in statutory body and the ROA. This result is not the same as for other measures estimated by the IV method. For the net margin and the OPM, there is no significance, therefore we will not conclude any relation between women in statutory positions and these performance measures. If we would conclude, the relation would be negative between women and net margin or OPM, because of the negative estimated coefficient.

The studies presented in the Chapter 2 chose ROA as an accounting-based performance measurement. We found a positive relation between women and performance, as well as Ionascu *et al.* (2018) and Qian (2016). We have similar results as Ionascu *et al.* (2018), which found a significant positive influence of women on the ROA.

As for other measurements, the study by Noland *et al.* (2016) used net margin as a measurement for firm performance. Contrary to us, Noland *et al.* found a positive significant relation, therefore this relation between women in leadership positions and net margin should be examined further. For the OPM we failed to find any relative studies, reflecting on the fact that this area needs more examination.

The IT was estimated with FE estimation. This estimation allows us to control for endogeneity caused by an omitted variable, which we believe is our case. We presented the results of the FE estimation of all performance measures in the Table 5.3. The FE estimation for ROA, net margin, and OPM is presented for robustness. The standard errors presented are in a clustered form. According to the results of the FE estimation, women do not majorly influence the IT. The influence is small and positive. If we would choose the wrong estimation method (the IV method), we would believe the influence of women is much larger.

The studies for examining the relation between women in leadership positions and IT are scarce. Therefore, we do not have any comparison of our results with other studies.

For the other performance measures, the signs of estimated coefficients at the *Women* variable did not change. Because of this reason, we believe that our results of the IV method are robust.

However, there are some limitations to our analysis. The data set comprises primarily joint-stock companies and limited liability companies. The analysis could be divided for joint-stock companies and limited liability companies separately. However, women could be in unlimited partnerships, limited partner-

ships, and cooperatives more active in influencing the performance. This part of women and Czech corporations was not thoroughly examined. The sample we worked with, had upper boundaries of employees and initial deposit. There is a possibility that women would be more active in leadership in smaller firms in the Czech Republic. Therefore, there would be stronger relation as it is in a paper by Shehata *et al.* (2017), where they examined a relation between women and financial performance in small and medium enterprises.

Table 5.3: Results of FE estimation

	ROA	Net margin	OPM	IT
Women	0.185 (0.111)	-0.264 (0.253)	-0.206 (0.215)	1.037 (4.010)
lnAge	1.278 (1.049)	1.731 (1.329)	0.345 (0.367)	37.467 (20.216)
lnAssets	-2.273 (1.815)	-0.642 (0.619)	-0.428 (0.478)	-90.577* (43.085)
lnAssetsLAG	1.021 (0.815)	0.312* (0.159)	0.112 (0.097)	43.350* (19.291)
Industry dummy	Yes	Yes	Yes	Yes
Type dummy	Yes	Yes	Yes	Yes
Year dummy	No	No	No	No
Observations	3,602	3,602	3,602	3,602
R ²	0.162	0.011	0.013	0.308
Adjusted R ²	0.056	-0.114	-0.112	0.221
F Statistic (df = 4; 3197)	154.845***	8.898***	10.234***	356.362***

Note:

*p<0.1; **p<0.05; ***p<0.01

Chapter 6

Conclusion

Women are under-represented in leadership positions all around the world, even though women are half of the population. Seeing that, many papers examined gender diversity from all around the world. However, the results of the papers are diverse and can not be generalized. That is the reason why it is necessary to examine the topic of female leadership and firm financial performance in the Czech Republic in more detail.

Even though the topic of female leadership is severely examined thorough the world, there was no paper in the Czech Republic, which would work with more than one type of firm. Papers usually worked with joint-stock companies and disregarded other types of firms. The ROA is used widely in papers as an accountancy-based measurement. However, other measures are overlooked.

The thesis examines the relation between women in positions and the financial performance of firms in the Czech Republic. We wanted to analyze the overall number of women in different leadership positions and its growth over time, and to conclude whether women have a negative influence on a firm's performance or not. As leadership positions were chosen positions in a statutory body of firms. Because we work with five different types of firms, we described the different types of bodies of these firms, to justify our decision for a leadership position. We chose four firm financial measurements, the ROA, net margin, OPM, and IT, to ensure diversity.

After our analysis, it became clear that the number of women in leadership positions grew in different rates. The fastest growth was recorded for the number of female executives in limited-liability companies. The number of women in board of directors stagnate. However, women were represented mostly in the supervisory body, where women hold almost 20% in 2019.

We found a significant positive influence of women on ROA as papers before us. However, this result is not consistent to other measures. Women have only a small positive influence on the IT, and a negative influence on net margin and the OPM. However, this small positive and negative influence is not significant enough and we recommend further research for confirmation of these results. Therefore, women have a neutral to positive influence on firm performance and the growth of the number of women in leadership positions should not affect negatively the firm's performance.

This conclusion can be crucial for deciding whether to impose quotas on women in leadership positions in firms. Women are more sensitive to their subordinates, therefore better at cooperation. And even though women do not affect significantly the firm financial performance, it might be beneficial for firms to employ more women in leadership or to impose quotas. Based on our results, the consequences of employing women in leadership positions should be neutral or positive in general.

We recommend the following research to observe women in leadership in smaller firms regarding the initial deposit and number of employees since we worked with large firms. Additionally, we recommend focusing on unlimited partnerships, limited partnerships, and cooperatives, where women could be more vocal, based on the structure of these types of firms. Furthermore, due to the COVID-19 crisis, the influence of women could be more distinct in the following years, because women in leadership positions increase stability, especially in times of crisis according to Fernando *et al.* (2020). Therefore, the following years could be crucial regarding the question about women in leadership positions and their relation to financial performance.

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Appendix A

Table A.1: FE and RE estimation for testing simultaneity

	Dependent variable: Women			
	ROA (FE)	Net margin (RE)	OPM (RE)	IT (RE)
Financial performance	-0.0025 (0.0013)	-0.0006 (0.0012)	-0.0053 (0.0009)	0.00003 (0.0001)
<i>PercentageIndustry</i>	0.1192 (0.2415)	-0.0338 (0.1080)	-0.0334 (0.1077)	-0.0321 (0.1077)
<i>ShareOfWomen</i>	0.8534*** (0.1931)	0.8541*** (0.1888)	0.8440*** (0.1875)	0.8559*** (0.1903)
lnFirmSize		-0.0084 (0.0104)	-0.0082 (0.0105)	-0.0086 (0.0104)
lnAge	0.0616 (0.0338)	0.0409 (0.0257)	0.0417 (0.0255)	0.0393 (0.0255)
lnAssets	-0.0426* (0.0148)	-0.0345** (0.0123)	-0.0360** (0.0126)	-0.0318 (0.0180)
lnAssetsLAG	0.0198 (0.0165)	0.0207 (0.0138)	0.0213 (0.0140)	0.0191 (0.0172)
Industry	Yes	Yes	Yes	Yes
Type of a firm	Yes	Yes	Yes	Yes
Observations	3,602	3,602	3,602	3,602
R ²	0.0289	0.0352	0.0358	0.0352
Adjusted R ²	-0.0945	0.0293	0.0299	0.0293

Note:

*p<0.1; **p<0.05; ***p<0.01