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FACULTY OF SOCIAL SCIENCES

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Supervisory Boards of Joint Stock Companies and Employee Co-determination in the Czech Republic

Master's thesis

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Declaration of Authorship

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Prague, July 28, 2022

Markéta Červená

Abstract

The Czech regulatory framework for supervisory boards of large joint stock companies leaves significant space to configure company-specific setups in hands of shareholders. As a result, the design, composition and competences of a supervisory board in the Czech Republic can to a large extent vary from company to company. In addition to that, the regulatory framework has been subject to potentially impactful changes over the last decade, such as relaxation and following re-introduction of mandatory representation of employees in the supervisory boards for all large joint stock companies. This thesis explores a unique dataset with information on all, more than 250, Czech joint stock companies with over 500 employees that were subject to the re-introduced requirement on employee participation. The aim of this thesis is to shed light on supervisory board practices in the Czech republic between 2009-2020. Special attention is paid to the question how these practices changed in light of changing legal requirements regarding the mandatory employee participation. First, a series of observations that draws from the examined dataset was provided on the topic, uncovering, e.g., that two-tier corporate governance structure remained dominant in the Czech environment; that education and gender of supervisory board members was vastly industry-specific; or that parity co-determination (well-known from the German environment) practically did not exist in the Czech environment. Then, using random effects probit model for dynamic panel data, it was shown that mandatory employee participation negatively impacts supervisory boards' powers to elect and recall executives. This result was interpreted as shareholders' attempt to protect their interests by delegating this competence to a body of corporate governance that was fully in their control. Similar empirical tools were used to assess what impacts mandatory employee participation had on gender composition of supervisory boards with mixed results.

JEL Classicication

JEL G34, JEL G38

Keywords

Employee co-determination, Supervisory Boards, Corporate Governance, Two-tier corporate governance, Czech joint stock companies, Dynamic panel data

Abstrakt

Český právní rámec pro dozorčí rady velkých akciových spoelčností ponechává akcionářům při definice parametrů, pravomocí a obsazování dozočí rady výraznou volnost. V důsledku toho se dozorčí rady českých akciových společností mohou zásadně lišit. Navíc došlo za posledních deset let k několika výrazným změnám tohoto právního rámce. Za nejzávažnější z nich lze bez pochyb považovat zrušení, a následné znovu zavedení povinné kodeterminace, tedy povinného zastoupení zaměstnanců v dozorčí radách velkých akciových společností. Tato práce analyzuje unikátní data o všech, více než 250, českých akciových společnostech nad 500 zaměstnanců, tj. všech, kterých se znovu zavedení povinné kodeterminace dotklo. Cílem práce je poodkrýt, jak vypadala česká realita dozorčích rad mezi lety 2009 a 2020. Soustředí se pak zejména na dopady povinné zaměstnanecké kodeterminace. Nejprve je zformulováno několik pozorování podpořených sesbíranými daty. Ta například ukazují, že dualistická struktura byla v Česku stále dominantní, že gender a vzdělání členů dozorčích rad se výrazně lišilo mezi jednotlivými podnikatelskými obory, a že v Česku de facto neexistovala paritní kodeterminace dobře známá z Německého prostředí. Dále je za použití probitového modelu s náhodnými vlivy a úpravou pro dynamická panelová data prokázáno, že zavedení povinné kodeterminace má negativní vliv na právo dozorčí rady volit a odvolávat představenstvo společnosti. Tento výledek je interpretován jako snaha akcionářů ochránit své zájmy delegací této pravomoci jiným orgánům společnosti, které jsou plně pod jejich kontrolou. Stejný model je použitý i pro analýzu dopadů povinné zaměstnanecké kodeterminace na genderové složení dozorčí rady, výsledky jsou však nejednoznačné.

Klasificake JEL

JEL G34, JEL G38

Klíčová slova

Zaměstnanecká kodeterminace, Dozorčí rady, Corporate Governance, Dualistický systém corporate governance, České akciové společnosti, Analýza dynamického panelu dat

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Proposed Topic:

Supervisory Boards of Joint Stock Companies and Employee Co-determination in the Czech Republic

Motivation:

In dualistic corporate governance system, which is prevalent in the Czech Republic, the executive board of directors is complemented with Supervisory board (sometimes called Advisory board). Ultimate purpose of this body is to oversee the management and prevent misconduct, or unwise decisions harmful to the interests it represents. Existence of supervisory board is mandatory only for dualistic joint stock companies and its default role given by the law is strictly controlling – it has granted access to all relevant documents, but no means to enforce the represented interests.

In the Czech corporate governance practice, legal requirements set only minimum standards on advisory board design, composition and competences. Shareholders are therefore to large extent free to assign their advisory board competences above the default level, or to set up own supervisory board design, both though collective decision of the General Assembly. Both, design and competences of Czech supervisory boards can therefore substantially differ from each other.

In addition to that, there have been several novelizations of the applicable legal framework in past years. Probably the most significant and legally binding change of the last decade was the relaxation and following re-introduction of co-determination requirement. This requirement is relevant for all two-tier joint stock companies with over 500 employees and reserves at least one third of the supervisory board to employee representatives.

The relaxed legislation and series of policy shifts thus opens interesting research opportunities:

- How do the supervisory boards look like in practice? What is the design, competences, and who sits in the boards?
- Is the provided legal default attractive as supervisory board design, or are shareholders motivated to deviate?
- What are the impacts of the re-introduced employee participation?
- Will shareholders somehow try to restrict the power of employee representatives within the board?
- Will shareholders use the higher, than minimum required of employee representation in supervisory boards to signal good employment conditions?

I strongly believe that my thesis could bring some answers to the herein before stated questions and contribute to overall understanding of the Czech corporate governance practice, necessary e.g., for efficient policy making.

Hypotheses:

1. **Hypothesis on co-determination impacts on competences of the board:** Shareholders can collectively influence the design and competences of supervisory board through General Assembly

decision-making. When the supervisory board represents purely shareholders, it is more powerful, than when employee representatives are involved through co-determination. Specifically, **when employee representatives are present in the supervisory board, it is less likely to have power to elect and recall executives.**

2. **Hypothesis on co-determination impacts on gender composition of the board:** Co-determination can be a channel to open top-level corporate governance positions to people with different, than standard top-management profile. Specifically, in feminized industries such as Healthcare, the co-determination will help to bring more woman to the supervisory board.

1. Study the legal background and literature on joint stock company corporate governance and advisory board design in Czech Republic and Germany (major source of relevant literature)

2. Build up a sample of relevant companies that are
    a. In scope of Czech jurisdiction
    b. Having at least 500 employees (in order to qualify for the parity codetermination rules)
    c. Active for sufficient period of time to reflect all recent legislation changes and business cycle

3. Define 10 detailed research questions to set the perimeter for the descriptive analysis

4. Collect information on in-scope companies in along relevant period of time (2009-2020)
    a. Governance: One/Two tier structure [for one-tier structured organization, no further information was collected]
    b. Design: Supervisory board size, length of term, voting mechanism
    c. Competences: Power to elect / recall executives
    d. **Codetermination**: Number and proportion of co-determined employee representatives within the supervisory board
    e. **Diversity**: Gender composition of the supervisory board, Education of board members

5. Descriptive analysis
    a. By means of descriptive statistics, gather and describe insights from the collected data in context of the applicable legal framework

6. Quantitative analysis
    a. Use pertinent econometric method to analyze the collected panel data design and evaluate hypotheses
        i. H1: To evaluate co-determination impacts on the competences of the supervisory board
        ii. H2: To evaluate co-determination impacts on gender composition of the supervisory board
7. Explain and the results
8. Identify limitations of the research method
9. Conclude the study

Methodology:

Expected Contribution:

1. **Data:** Manual collection and processing of data on supervisory board design in the Czech Republic, enrichment of the collected dataset with information on the supervisory board members form Bisnode Magnus database and aggregation of descriptive statistics

2. **Trends & Insights:** Formulation of descriptive insights on of the Supervisory boards practice in the Czech Republic, focusing on institutional, and design and personnel features of supervisory board members, identification of recent trends

3. **Policy evaluation:** Evaluation of co-determination impacts on supervisory board competences and gender composition

Outline:

1. Legal framework: To provide context for following chapters, describe the Czech legal framework for corporate governance, specifically evolution of the supervisory boards design and legal requirements
2. Literature: Provide summary of influential literature, show what directions does the research take outside of Czech Republic and what are the key findings.
3. Introduction to the analytical part: definition of full set of research questions
4. Data description
5. Observations on the supervisory board practices: Present observations on the supervisory board practice addressing the defined research question, backed by descriptive evidence from the collected dataset
6. Empirical analysis:
    a. State the hypotheses and provide their reasoning in context of existing literature and observations.
    b. Explain empirical approach (model set-up, data, empirical methods used) a
    c. Present and interpret the estimation results
    d. Evaluate the stated hypotheses and discuss empirical findings in broader context.
    e. Reflect on limitations of the work
7. Concluding remarks: Summarize finding and propose further research direction

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Introduction

Legal requirements that regulate the corporate governance practices in the Czech Republic set only minimum standards on supervisory board design, composition and competences. Shareholders are, therefore, to large a extent free to assign their advisory boards with competences that are above the default level or to set up their own supervisory board design, both being achieved through a collective decision of the general assembly. Both design and competences of Czech supervisory boards can therefore substantially differ from company to company.

In addition to that, there were several revisions of the applicable legal framework over the last decade. Probably the most impactful changes of the legal framework concern the relaxation and the following re-introduction of mandatory participation of employee representatives in supervisory boards - the so-called *employee co-determination*. Today, this requirement applies to all two-tier joint stock companies with over 500 employees and reserves at least one third of the supervisory board for employee representatives.

The aim of this thesis can be expressed in the following two interrelated questions: What did the supervisory boards of Czech joint stock companies look like between 2009 and 2020? And how is their design, competences and composition affected by the policy changes related to mandatory employee participation?

To answer these questions, data with information on more than 250 Czech joint stock companies with over than 500 employees covering the subject period between 2009 and 2020 were manually collected from their Articles of Association. The collected data contain all (and only) companies that were subject to the mandatory co-determination at the date of its re-introduction in 2019. In the next step, the data was combined with records regarding individual supervisory board member's engagements from Bisnode Magnus database and analyzed together. Standard tools of descriptive statistics as well as advanced econometric tools for dynamic panel data analysis were utilized.

Results of this analysis were then used to support observations in order to shed light on supervisory board practices in the Czech Republic, uncovering, e.g., that two-tier corporate governance structure remained dominant in the Czech environment; that shareholders tended to appoint supervisory board members for unnecessarily long terms; or that education and gender of supervisory board members was vastly industry-specific.

In addition, it was investigated that effects an introduction and relaxation of employee co-determination has on the design, competences and composition of the supervisory boars. Among other findings on this topic, a piece of empirical evidence is presented to support the finding that when employee co-determination is introduced, shareholders are likely to transfer the power to elect and recall executives away from the supervisory board. Possibly, they tend to do so in order to protect their interests from potentially conflicting decisions of the employee representatives.

Overall, the thesis is organized as follows: Chapter 1 begins with setting out the regulatory context and providing an overview of the key aspects of the Czech legal framework that regulates supervisory board design, including its evolution over the studied period. In Chapter 2 an overview of existing research is spelled out with an emphasis on literature that deals with the topic of employee co-determination. In the Chapter 3, a full list of research questions is detailed, based on insights drawn from the previous examination of the legal environment and existing research. Chapter 4 contains a detailed description of the analyzed dataset. Chapter 5 presents 10 observations on the design, competences and composition of supervisory boards of all Czech joint stock companies over 500 employees, each supported by descriptive statistics withdrawn form the dataset and providing some answers to the research questions defined in Chapter 3. The descriptive observations are followed, in Chapter 6, by an empirical analysis which is centered around two major hypotheses: **H1:** The supervisory boards tend to lose their power to elect executives, when co-determination is in place; **H2:** The female representation statistics respond positively to co-determination introduction, but only in feminized industries, such as healthcare. Both models were estimated using random effects probit for dynamic panels and are presented in Chapter 6. This chapter also provides a discussion of the empirical approach used and its limitations. Finally, a conclusion is provided in Chapter 7.

Chapter 1

Czech Corporate Governance Law

This Chapter contextualizes this research in the applicable Czech legal framework as described by Business Corporations Act (90/2012 Coll.).

1.1 Corporate Governance Structures

According to legislation (§396-397 of the Business Corporations Act 90/2012 Coll.), the default governance scheme for joint stock companies in the Czech Republic is traditionally the **two-tier**[1] setup. Through change of company's Articles of Association, the general assembly[2] a company can now decide for the one-tier[3] corporate governance structure freely, unlike before 2014 when the applicable Commercial Code (513/1991 Coll.) allowed only the two-tier setup.

The two-tier corporate governance structure is characterized by clear separation of executive and supervisory roles in two independent bodies: the executive board of directors[4] and the supervisory board[5]. This corporate governance practice is typical for continental Europe, whereas the one-tier organization is prevalent in Anglo-Saxon territory. Comparative evaluation of the one-tier and two-tier corporate governance and efforts to describe benefits and drawbacks of both systems have been one of the mainstream topics in corporate governance literature. No consensus on either of the systems being strictly better was reached so far. See the Section 2.1 for full literature review on the systems comparison.

[1] *Alternatively: dualistic system*
[2] *Alternatively: general meeting of shareholders*
[3] *Alternatively: monistic*
[4] *Alternatively: executive board*
[5] *Alternatively: advisory board*

The main focus of this thesis is to study the supervisory boards of Czech joint stock companies, therefore, the spotlight will be given mostly to the dualistic companies. Evidence on adoption of monistic structure is however an important information in our dataset also from the co-determination perspective. As there are no governance bodies with mandatory presence of employee representatives in the monistic setup, it will be investigated later in this thesis whether adoption of the monistic governance could be seen as shareholder's strategy to avoid the mandatory employee representation in the governance bodies.

1.2 Bodies of Two-tier Governance Structure

1.2.1 The Board of Directors

The board of directors is the executive body of an organization responsible for steering, management and reporting of company's business activities. According to §438 of the Business Corporations Act (90/2012 Coll.), the members of the board of directors are, by default, elected and recalled by the general assembly of shareholders. However, the Czech legal framework gives joint stock companies the opportunity to delegate this responsibility to the supervisory board, as it is common practice in Germany for example. Topics on the design, competences and composition of the executive boards are however out of the research scope of this thesis.

1.2.2 The Supervisory Board

Supervisory boards represent the the second tier of the dualistic corporate governance structure. Its ultimate purpose is currently described in §446 (1) of the Business Corporations Act (90/2012 Coll.), which states:

> *The supervisory board shall supervise the exercising of powers by the board of directors and the company's activities.*

Although this area has historically been regulated by different legislation, the purpose of the supervisory board (unlike requirements on its composition) did not change. The supervisory board members are expected to promote interests of the stakeholders they represent (shareholders, or employees) when overseeing the executive management of the organization. In other words, the

purpose of this body is to reduce the information asymmetry in the agent-principal relationship arising among shareholders (or other stakeholders, such as employees) and management.

Competences of the Supervisory Board

The competences of supervisory boards are regulated on two levels. On the jurisdiction level, the applicable legal framework establishes minimum set of non-negotiable obligations and competences that ensure performance of independent supervision. On the company level, the general assembly can impose further requirements, or grant further competences to the supervisory board though their Articles of Association.

By law, if the supervisory board notices a problematic business conduct, it must submit their concerns for discussion at the executive board of directors, optionally including possible solutions for the given situation. However, the submitted suggestions are strictly indicative. According to the Business Corporations Act, none of the company bodies, supervisory board included, is allowed to instruct the board of directors in matters of company's business activity and related decision-making. In case the response of the board of directors is not satisfactory, the supervisory board can escalate the issue to the general assembly.

To perform this extent of supervision, the supervisory board has legally granted access to all internal documents, executive meetings and reserved slots to report its findings to the general assembly. Besides that, the Business Corporations Act doesn't grant the supervisory board **any** further significant means and competences it could utilize to exert pressure on the executives and enforce conduct in favor of shareholder's (or employees') interest.

However, as the general assembly of shareholders can re-formulate of company's Articles of Association to grant further competences to the supervisory board, there are companies in the Czech environment with supervisory boards entitled to much broader range of actions. In this thesis, I will specifically focus on whether shareholders use adjustment of those additional competences to moderate the power of supervisory board in times when participation of employee representatives is required. Although any additional competence could be used to suppress the strength of the supervisory board, the mix of competences can be dramatically different from one company to another and hardly comparable. Thus, the only competence I will be reflecting in the further em-

pirical analysis is the essential power to elect and recall executives. For other competences, only anecdotal evidence was collected, and will be presented in Chapter 5.

As a result, the relative strength of the supervisory boards (determined by not only the set of competences, but also other factors, such as voting dynamics or fragmentation of represented interests) differs significantly from one company to another.

Supervisory Board Size and Length of Term

The default size of advisory board in the Czech Republic is **three** members. However, the company's Articles of Association might define different supervisory board size and they often do so. Even one-member supervisory boards are allowed, if they do not collide with the co-determination requirements (see Section 1.2.2). To ensure that, companies with more than 500 employees that are subject to mandatory $\frac{1}{3}$ co-determination must select their supervisory board size selected only from multiples of three.

Before the great re-codification in 2014, requirements on supervisory board size were a lot more strict. There was the minimum size requirement of three supervisory board members and similar requirement on board size divisibility by three applicable.

Regarding the term length, members of the supervisory board are by default appointed for three years. However, the company's Articles of Association or might indicate different length of term (Štenglová & al (2020)) with no limitations. In the older legislation applicable until 2014, the term lengths were restricted from above to maximum five years. The herein stated numbers however apply for the declared term length stated in company's Articles of Association. The actual lengths of individual supervisory board member's contract duration can be effectively shorter, for instance due to board member's death, own resignation, decision of the represented shareholder, or board size reduction.

Besides general description of patterns and trends in supervisory board size and length of term, attention will be paid to changes in the board size prompted by co-determination requirements. Combined with insights on the changes in length of term, it will be assessed whether companies solve mandatory employee representation by addition of new seats to the existing board, or rather by pre-term termination of selected board members' contracts. Similarly, when

the co-determination laws are relaxed, it will be seeked whether the employee representative seats go cancelled, or are filled with further shareholder's representatives.

Members of the Supervisory Broad

In the Czech Republic, there are (and have never been) no binding gender quota, nor minimum education or experience requirements on the individual supervisory board members. Therefore, anyone over 18 years with no history of criminal activity and no conflict of interests (such as executive role in the same company, or own conflicting business activity) can be elected as a supervisory board member. However, shareholders might agree to impose additional criteria on supervisory board members through the Articles of Association. Moreover, since 2014, legal entities can become legitimate members of supervisory board of another company. However, the most recent novelization of the Business Corporations Act (effective from January 2021), requires every legal persons in the advisory board to have her physical person representative who carries out the board membership registered in the business register as well (Florián & al (2020)).

Co-determination

Co-determination, i.e., reservation of several seats in the supervisory board to employee representatives, is nowadays required for joint stock companies with over 500 employees in the Czech Republic. This feature has been re-introduced in Czech corporate governance framework in 2019, after five years.

Specifically, in the qualified companies, employees must co-determine at least one third, but less than one half of the supervisory board members. The particular proportion of co-determined supervisory board members in hands of the general assembly, who regulates it through re-formulation of the company's Articles of Association . If they do not do so, the legal default of $\frac{1}{3}$ co-determination is applied. In fact, the simultaneously applicable requirements on supervisory board size (joint stock companies with over 500 employees must select their supervisory board size from multiples of three) were designed to facilitate the $\frac{1}{3}$ co-determination and apply regardless the particular co-determination proportion stated in the Articles of Association. The supervisory board members elected by employees can be also recalled by similar voting procedure. Despite the co-determination voting mechanism not being

in scope of this thesis, fragments of information on the voting system will be useful when evaluating the co-determination impacts on composition of the supervisory board. Before 2021, there employee representation elections for supervisory board were entirely in hands of shareholders of individual companies, who decided on the particular rules and setup. Since the latest novelization applicable from 1.1.2021, the employee elections have formalized legal setup available in the Business Corporations Act: the employee voting is indirect; organized and steered by the Board of Directors after consultation with Trade Unions, or Employee council; and carried out in a way that enables a maximum of the eligible voters to participate. All employees with valid employee contract on the elections day are eligible voters. Even though the voting mechanism can again differ from one company to another, it is not in the research scope of this thesis to study the employee voting systems and dynamics. The nomination of supervisory board candidates, as well as initiation of the recalling procedure, can be motivated by proposition of the board of directors, trade unions, employee councils, or a group of at least 10% of employees. Any candidate for co-determined supervisory board membership must be employee of the company.

As a side note, lastly mentioned rules for co-determination elections and nominations became applicable only recently and were not be captured in the analyzed data. Yet, assuming that this latest revision only formalized the widespread practice, later in this thesis it will be investigated whether co-determination could help to bring different, than typical managerial profiles in the supervisory boards. Specifically, whether it translates in representation of women, or overall education of the supervisory board.

Voting and Decision-making

In this work, we will focus on joint stock companies with more than 500 employees, i.e., on companies with a minimum supervisory board size of three whom one member is co-determined by employees. It can be therefore expected that all in-scope supervisory boards are collective organs that take decision by voting. The supervisory board voting and decision mechanisms are not the core scope of this thesis. A basic overview of the voting mechanisms is however needed to understand whether a studied group of members (such as women, or employee representatives) would be potentially able to form a winning coali-

tion against the rest of the supervisory board. The default decision-making principles as described in the Business Corporations Act propose following:

- The quorum is majority of members.
- Each advisory board member has exactly one vote.
- The advisory board decides by a majority of votes of the present members.
- In case of a tie, the chairman's vote is decisive.

Under the above described setup and default board size of three supervisory board members, there must be at least two members present during the voting. Either both of them have to agree to pursue the resolution or the resolution follows the opinion of the chairman of the board if he is one of the participating voters. For this default setting, we will however account for two-thirds as the minimum winning coalition, as we are primarily interested in the decision power of co-determined supervisory board members, who are, due to reasons stated in Section 1.2.2 unlikely to be elected chairman of the supervisory boards. It is to be noticed that the necessary two-thirds coalition is over the co-determination threshold of one half, consequently it is impossible for co-determined supervisory board members to steer the decision-making of supervisory board with regard to employee interests, if those are vastly different from the unified view of shareholders represented by the rest of the board.

However, this voting mechanism is just proposed by the Business Corporations Act an shareholders are free to change it through re-formulation of company's Article of Association. They can freely set own quora, own basis of votes from which the necessary majority is computed (all member, or present members only), own rules for the chairman's decisive vote for cases of a tie, or even a list of decisions with enhanced voting requirements, such as qualified majority voting in occasion of highly important decisions. Later in this thesis, whenever assessing whether a subject group of supervisory board members is large enough to form a decisive coalition, it will be referred to the non-enhanced company-specific voting mechanism with assumption that chairman of the board is not member of the subject group.

Chairman of the Supervisory Board

All supervisory boards with more than one member (which should technically apply to all supervisory boards of companies with more than 500 employees) must have a chairman. The Business Corporations Act suggests the chairman

to be elected and recalled by members of the supervisory board, however, shareholders of a company can arrange different setup, such as a chairman elected directly by the general assembly. For this reason, it is assumed that chairman of the supervisory board is therefore more likely to represent interests of shareholder, as they have majority in the supervisory board despite co-determination. It can of course happen that shareholder interests fragmented or partly overlapping with the employee ones, we will however neglect those situations and consider chairman of the board as additional means to protect the interests of general assembly in a co-determined board. This assumption will activate in cases, when chairman of the supervisory board is given the decisive vote, in case of a tie situation.

1.2.3 Overview of legislative changes

Further in this paper, we will study real life advisory board arrangements and composition. Because the later will be studied on panel data covering roughly 11 years length from 2009 to 2020, a brief review of previously applicable rules is needed. An overview table of applicable legislation with focus on co-determination rules is available at the end of this Section.

Supervisory Boards Today (2022)

After the most recent revision applicable since 1.1.2021, there are some additional rules for the employee co-determination elections were introduced. Selected aspects of the applicable legal framework are described in Sections 1.1 - 1.2.2. New policy features brought by this revision are:

- Clear legal proposal for co-determination elections and nomination design, e.g., 10% of employees, trade unions, employee council of board of directors can nominate their candidate in employee elections.
- Co-determined employee representative in the supervisory board must be and employee of the company himself.

Supervisory Boards between 2019 and 2021

Except of the most recent employee elections formalization the legal framework between 2019 and 2021 was similar to what has been described in the Sections 1.1 - 1.2.2.

- Mandatory co-determination of at least one third of the supervisory board.
- Different rules on legal person appointment in the supervisory board.

Supervisory Boards between 2014 and 2019

Before the revision of Business Corporations Act 90/2012 Coll. applicable since 2019, there were several differences, including major difference in the co-determination requirements.

- **No co-determination requirement**
- No supervisory board size requirements, even for companies with over 500 employees
- Different requirements on legal persons appointment in supervisory boards

Supervisory Boards before 2014

In 2014, the current Business Corporations Act 90/2012 Coll. became applicable. Before that, the corporate governance regulatory framework was defined by Commercial Code (513/1991 Coll.) and hat vastly different parameters.

- Only two-tier corporate governance structure was supported.
- Legal persons not allowed as members of the advisory board in most cases (Štenglová & al (2010)).
- **Mandatory one-third co-determination in place**, different (and more widely applicable) than current rules.
- Requirements on minimum supervisory board size, incompatible with one-person board.
- Board-members term length limited from above by five years .

The co-determination rules applicable before 2014 differed from current setup in two major points:

- The co-determination was mandatory for all joint stock companies with over 50 employee, i.e., much more widely applicable than today.
- There was no interval of allowed co-determination proportions, all qualified companies were subject to mandatory $\frac{1}{3}$ co-determination.

Timeline of the most important novelizations

2010	Obligatory one-third co-determination for all companies with over 50 employees, limited term length, no single-member boards.
2011	....
2012	No change, release of the upcoming Business Corporations Act to be applicable from Jan 2014.
2013	....
2014	The current Business Corporations Act becomes applicable (without co-determination rules), term length and board size limitations are relaxed.
2015	....
2016	....
2017	No change, release of co-determination re-introducing novelization to be applicable from 2019.
2018	....
2019	Re-introduction of co-determination for companies with over 500 employees.
2020	....
2021	Release of additional rules for co-determination execution: Co-determined board member must be employee, clarification of who can produce co-determined board member nominations.

Table 1.1: Overview of major revisions of the regulatory framework

Chapter 2

Literature Review

The Corporate Governance as a field of research made its way to top class financial and economic journals around in the year 1976 when one of the founding articles, Jensen & Meckling (1976), investigating divergence of personal motivation of owners and managers concluded that there are unavoidable costs attributable to the separation of ownership and management - *the costs of agency*. As there are multiple designs of corporate governance systems practiced in US, Western Europe or Japan, next steps of the research led to the evaluation of which of the systems and designs tends to be more efficient.

First, Section 2.1 of this Chapter will provide a brief overview of this research direction, with prominent space given to reflections on relative efficiency of monistic and dualistic corporate governance systems. Understanding of their relative drawbacks and benefits is crucial for study of the Czech supervisory board practice because both structures, the monistic and the dualistic, are allowed and companies are free to choose between the two systems. In the second Section of this Chapter, an overview of literature on employee participation in the supervisory boards, so-called employee co-determination, is provided. This overview contains traits of theoretical foundation for employee representation in the supervisory boards, as well as a review of empirical literature on co-determination impacts on various indicators of company performance. Finally, a brief dive into the diversity literature and its implications for supervisory board dynamics is provided.

2.1 One-tier and Two-tier Systems Compared

When Aste (1999) reflected on the possibility of re-introduction of a two-tier corporate governance system in France he listed the general benefits and drawbacks of the dualistic structure. Probably the most straightforward benefit seems to be the strict division of supervisors and executives that comes hand in hand with a clear split of competences and responsibilities and mitigates the politeness barrier within one body and sets clear formal boundaries for supervision. Second, under the two-tier system, the individual bodies tend to be smaller in size, which makes decision-making faster and more agile. Aste (1999) also argues that the two-tier structure is more inclusive, as professionals with other than purely managerial backgrounds can be admitted to the supervisory board. For the same reason, this structure also has better specialization potential as the standalone supervisory body can acquire relevant roles focused for instance on accounting fraud detection. Finally, the assumed shareholder protection boost associated with the two-tier system adoption might be perceived as a good PR signal.

The drawbacks collected by Aste (1999) then touch on topics such as exaggerated bureaucracy and rigidity of the system and related costs and potential excessive pressure that supervisors (who are not in daily contact with the business) might exert on the executives, and thus distort the decisions towards sub-optimum. Adding to the critique of the two-tier structure, Bezemer & al (2014) have conducted and analyzed a series of semi-structured interviews with supervisory board members of Dutch companies to conclude that the two-tier setup might adversely contribute to the challenges they face, such as depth of information asymmetry and add on the communication obstacles and personal tensions among executives and supervisors.

There is still no prevalent opinion within the research community on whether the monistic or dualistic corporate governance system is more efficient. Furthermore, there are prominent voices, such as Jungmann & Carsten (2006) who compare the performance of German (two-tier) and English (one-tier) companies, who claim that neither of the two systems is perfect, but both are quite efficient in fulfilment of their main purpose (execution of the decision-making supervision) and cannot be directly compared. On the same topic, Millet-Reyes & Zhao (2010) brings evidence from France where (similarly to the current situation in the Czech Republic) corporations choose whether to separate the executive and supervisory directors into two boards (two-tier) or not (one-

tier). He focuses on the impacts of different corporate governance systems and different ownership structures on the company's performance, and concludes that neither of the two systems is strictly better in the French setup. It must be pinpointed that the French corporate governance system is specific because supervisors representing interests of large creditors, or public block-holders can be appointed in the respective bodies.

2.2 Employee Participation in Bodies of Corporate Governance

The employee co-determination brings another variable in the classical principle-agent problem among shareholders and managers described by Jensen & Meckling (1976). Now, employee representatives pursuing new set of interests are involved in the management supervision, potentially conflicting with both, shareholders and management. In fact, a recent study published by Franca & Štampar (2021) suggests that less than 50% of interviewed board-level employee representatives from Slovenia (a jurisdiction with bold history of employee co-determination) believe that the employee and company interests are compatible.

On the theoretical level, one of the most prominent arguments against the involvement of employees in the executives overseeing builds on the assumption that employee rewards (salary) is to a large extent independent of the organizational performance, unlike the shareholder's rewards (dividends and stock price growth), which is ultimately dependent on business results of the company. Therefore, as Furubotn (1988) and others explain, the supervisory power over the executives should be reserved to shareholders (via the right to elect all members of the supervisory boards) because they are motivated to maximize their rewards (that are at risk of the executive's misconduct, or sub-optimal decision-making). Dispersing this power among shareholders and the employees with potentially different interests and poor business contact and qualification would put the shareholders in a position, where they can not efficiently tackle their own risks. From the mixed results on co-determination impacts on the companies' performance, Gorton & Schmid (2004) share the same concerns and via comparative analysis of listed German companies with $\frac{1}{3}$ and $\frac{1}{2}$ employee co-determination conclude that higher employee representation has adverse effects on the company's value, which he associates with

payroll maximizing, instead of shareholder value maximizing behavior of the employee representatives. Njoya (2004) responds with a different point of view, suggesting that employee representatives have their own human capital invested in the firm (experience and specialization that is non-transferable on the job market). Thus, their best interest might not necessarily be short-term payroll maximization, but rather sustainable prosperity of the firm reflected in their wages.

Other skeptics about the concept of co-determination pinpoint that the overall benefit of the employee involvement in the supervisory roles is probably not significant, as the co-determination simply does not naturally occur on the free market. Those voices, such as Jensen & Meckling (1979) do not deny that some benefit can be generated for the employees of the corporation. However, they doubt any positive effect on company's business results or competitivity. On account of this argument, other authors show that it certainly would not be the first or last time when the free market fails to settle in the universal desirable equilibrium. Moreover, Levine & David (1989) and other authors stress that the corporations' reluctance to introduce co-determination practices voluntarily might arise from the prisoner dilemma-like situation where the first company to introduce co-determination might face competitive disadvantage, yet if all firms coordinated and introduced the co-determination, the final equilibrium might be more efficient as the benefits of co-determination might materialize without the adverse competition effect.

Moving from theoretical argumentation on employee involvement in the corporate governance to tangible drawbacks and benefits of co-determination, we must first notice that the employee participation in the bodies of corporate governance is exclusive to the two-tier board structures and it might enhance materialization of the benefits listed by Aste (1999), mentioned in Section 2.1: a channel through which people with different, than typical managerial profile can participate on the executives' supervision, leading to higher specialization and performance of the supervisory body.

Before moving to the empirical research overview, mostly carried out in the German environment, a note will be taken on current German co-determination framework to sketch up the context. Today, all German corporations with more than 500 employees co-determine $\frac{1}{3}$ of their supervisors. Larger corporations with more than 2000 employees are then subject to the so-called *parity co-determination* which implies $\frac{1}{2}$ employee involvement in the supervisory board. Yet, the chairman of the board is usually the shareholders' represen-

tative and his vote is decisive in case of a tie. Therefore, even under parity co-determination in Germany, the shareholders, if united, have the decisive power. This is very important to pinpoint because most studies of the co-determination effects usually evaluate the $\frac{1}{3}$ and $\frac{1}{2}$ co-determination, i.e., both values within the shareholder-dominated side of spectrum. As Renaud & Simon (2007) notes, it is also important to keep in mind that any evidence of parity co-determination effects is demonstrated on a sample of large companies (over 2000 employees) and should not be directly generalized, as the worker-shareholder dynamics are very different in smaller companies.

However, in practice, the situation in Germany might not be as bright as it seems in the policy. Hans-Böckler Stiftung[1] repetitively warns that German corporations tend to avoid, or entirely ignore the co-determination standards set by the German code, e.g., by selection of more exotic types of legal entities, as there are no efficient sanctions established.

Any effects of employee co-determination on the company performance, are usually demonstrated empirically by comparison of German companies in the $\frac{1}{3}$ and $\frac{1}{2}$ co-determination regime. The findings show mixed results: First, the employee involvement in the supervisory board might serve as an efficient communication stream aligning the expectations on management and labour side. According to Freeman & Lazear (1994), the reduction of information asymmetry can prevent employee dissatisfactions, strike. As shown by Fauver & Fuerst (2006), it can reduce agency costs of the firm in general. More specifically, Lin *et al.* (2018) conclude that agency cost reduction can translate into cheaper access to bank-provided capital, as the interests guarded by the employee representatives often overlap with the interests of creditors. The question of whether co-determination influences company's performance in terms of profitability, productivity or stock price has been investigated by many researchers with mixed conclusions. Renaud & Simon (2007) summarized the existing empirical and indeed, only fuzzy findings. From his meta-analysis, we can only withdraw that the existing empirical research does not uncover any evidence of detrimental effects of parity co-determination.

More recent empirical research seems to be rather optimistic about the (parity) co-determination effects on company performance. Renaud & Simon (2007) concludes that in the long run, the introduction of parity co-determination does not seem to be associated with reductions in profitability and produc-

[1]The research foundation by German Trade Unions Confederation that supports the co-determination research

tivity (compared with $\frac{1}{3}$ co-determination). Lopatta & al (2019) suggest that companies with parity co-determination seem to be more efficient in labour investment allocation, i.e., they do not tend to underhire, or overhire employees. In his interpretation, this effect is probably related to information asymmetry reduction in the co-determined boards. Employee representatives within the supervisory board have insight into the company's daily operations and thus better information and ability to estimate the current & future workload). Rapp & Wolf (2019) found out that German companies with co-determination seem to be more resilient towards the market shocks - less vulnerable towards crises and quicker in recovery than similar companies from abroad between 2006 and 2013. The limitation of their study lies in the fact that it is nearly impossible to distinguish whether the effect is really causal to co-determination, or just correlated, because of common factors of all companies with parity co-determination (size above 2000 employees, German geography). Lopatta & al (2018) notice that when a German company passes the 2000 employees threshold and switches to parity co-determination regime, the working capital management improves (leaner net current assets, boosted operating cash flow). Again, the generalization potential of their findings is limited by the inseparability of co-determination effects and effects of 2000 employee threshold in their data. Kraft & al (2011) did not detect any detrimental effect of switching from $\frac{1}{3}$ to parity co-determination on the innovating activities (proxied by patenting). And finally, Scholz & Vitols (2019) offer also a different perspective beyond the classical business metrics, arguing that companies with higher co-determination strength seem to be more successful in the adoption of impactful CSR policies and less likely to engage in symbolic CSR initiatives. The authors suggested an interpretation that employee representatives are more concerned with the policies that have a real impact on the daily operations, i.e., their fellow workers, than with the overall PR image of the company.

2.3 Gender, Age, Education and Other Observable Characteristics of Board Members

Whether supervisory board members are representing shareholders or employees is only one of many factors that can bear on the board's decision-making. The experience, background, gender, age and other individual characteristics and their combinations can also influence the board dynamics and performance.

Erel & al (2021) made their research in the monist environment of US companies, thus they do not separate supervisory and executive roles in the corporate governance bodies. They managed to train a well performing machine-learning algorithm to predict individual performance of directors (not distinguishing among executive and supervisory roles), proxied by their re-election support. The performance was predicted based on observable characteristics, such as education, age, gender and other board involvements. Success of their algorithm implies that the observable characteristics can somehow influence the director's performance. Similar prediction accuracy was however not achieved by simpler econometric tools, thus we can assume that the observables' effects are not straightforward. Yet, the authors still managed to identify the profile of a poorly performing director as a male with broad network and multiple current and past board engagements. Those predicable bad-performing professionals are, according to the authors, appointed either because their characteristics (such as number of current and past board experiences) are over-valuated, or because the appointment mechanism is systemically biased and does not perform optimally.

Gorton & Schmid (2004) studied the performance quality of audit committees (which are very often personally inter-related with supervisory boards) where employee representatives were involved. They concluded that without accounting proficiency and outsider perspective, the employee involvement might be detrimental to auditing quality. Thus, personal characteristics such as education of background again turn out to be important indication of the overall supervisory performance. It is however important to note that the assignment of supervisory board is broader, than the assignment of the studied audit committees.

In the Czech environment, Žigraiová (2015) studied how the board size and composition (age, gender, local vs. foreign nationality and education) influences risk-taking behavior of Czech banks. Although the study was focused on executive boards that have, in the Czech dominantly two-tier context, a more direct impact on company performance and decision making, the findings can also be relevant as inputs for the study of supervisory board dynamics as well. According to this study, the proportion of MBA holders and directors of foreign nationality tends to influence the bank decision-making towards a larger risk exposure. For the board size, board members tenure, gender or age, no straightforward conclusion can be withdrawn - the results are either mixed, different across banking institution types, or non-significant.

Several contemporary researchers (e,g. Tyrowicz & al (2020), Bozhinov & al (2021)) also noticed that in a two-tier environment, the gender equality in the executive board (i.e., probability of a woman being appointed) significantly improves, with an increasing proportion of women in the supervisory board. Bozhinov & al (2021) also notice that the spillover effect generated by female employee and shareholder representatives within the co-determined board differs a lot. Female shareholder-representatives seem to be much more powerful advocate for female executive appointment. However, it should be noted that the study comes from the German environment, where supervisory board members appoint and recall the members of the executive board. In the Czech Republic, this arrangement is also possible, but not dominant. The right to elect and recall executives is often left within the competences of the general assembly. The spillover effects might therefore be restrained in the Czech environment.

Chapter 3

Research Questions

The legal framework described in Chapter 1 and existing literature summarized in Chapter 2 motivated several research questions that will be listed in this Chapter and serve as an outline for the following Chapters 5 and 6.

3.1 Research Questions on Supervisory Board Design and Competences

1. **One vs. Two tier structures**: How popular is the monistic setup in the Czech Republic? And is there evidence that shareholders use the possibility to switch towards a monistic setup as a tool to avoid mandatory co-determination? *This research question is addressed by Observation 1 in Chapter 5.*

2. **Usual board size**: In general, do shareholders stick to the supervisory board size proposed by the legal framework, or do they tend to design the supervisory boards smaller/larger? What could motivate them? *This research question is addressed by Observation 2 in Chapter 5.*

3. **Supervisory board member tenure and stability**: In general, do the shareholders stick to the suggested tenure duration for supervisory board members, or do they tend to design the supervisory boards shorter/longer contracts? Is there a major difference between the declared board-membership duration, and the actual tenure? *This research question is addressed by Observation 3 in Chapter 5.*

4. **Supervisory board competences**: What extra competences above the

legally required default are supervisory boards typically assigned? Do the shareholders tend to regulate the competences of the supervisory board when employee representatives are present? *The first part of this research question is addressed by Observation 4 in Chapter 5, where frequent on-top competences are elaborated. The competence regulation in the context of employee co-determination is then subject to Hypothesis 1 of the Empirical analysis.*

5. **Co-determination as a benefit**: Do shareholders opt for higher than minimum co-determination of the supervisory board, e.g., to signal a good working environment? Are there supervisory boards where employee representatives can form a decisive coalition? Is there evidence on mechanism through which companies enable higher than the minimum required employee participation in the corporate supervision? *This research question is addressed by Observation 5 in Chapter 5.*

6. **Path towards compliance**: When co-determination is introduced, do the shareholders react by adjustment of the supervisory board size (i.e., appointment of employee representatives on top of the existing board), or just by substitution of a proportion of existing supervisory board personnel? Can we find evidence on cases of prematurely terminated supervisory board member contracts in the context of changes in co-determination requirements? *This research question is addressed by Observation 6 in Chapter 5.*

3.2 Research Questions on Supervisory Board Composition

1. **Legal persons in supervisory boards**: Do shareholders use their recently acquired right of appointment of a legal person (such as a mother company) in the supervisory board? *This research question is addressed by Observation 7 in Chapter 5.*

2. **Female representation in supervisory boards**: What is the female representation in Czech joint stock company supervisory boards? How does it change in time and differ per industry? *This research question is addressed by Observation 8 in Chapter 5.*

3. **Education of the supervisory board members**: What is the education of Czech supervisory board members? How does it change in time and differ per industry? *This research question is addressed by Observation 9 in Chapter 5.*

4. **Co-determination as booster of supervisory board diversity:** Can we find evidence to support arguments of the existing literature (Aste (1999)) that co-determination opens doors to supervisory boards for representatives with different, than typical managerial profiles? Does co-determination trigger change in the overall education and gender metrics of the supervisory board? Or does it imply higher female representation statistics at least in highly feminized industries, such as healthcare? *First, mixed insight from the descriptive analysis on the aggregate data are provided in Observation 10 in Chapter 5, followed by inconclusive estimation of the industry-specific co-determination effect on gender composition of the supervisory board in the Section 6.5.2 of the Empirical analysis*

Chapter 4

Data Description

To answer the research questions proposed in Chapter 3, a unique dataset on supervisory board parameters and memberships of all 271 Czech joint stock companies with over 500 employees, between 2009 and 2020 was statistically explored. The dataset covered all (and exactly) the companies that were subject to the co-determination re-introduction in 2019. Its collection could be considered as a major research contribution of this work. In this chapter, the dataset is carefully described. We start in Sections 4.1 and 4.2 with an introduction of the two primary datasets on supervisory board design and supervisory board members. Section 4.3 describes how the two original datasets were merged into one master dataset, and provides a definition of the additional variables and statistics used to enrich the available data.

4.1 Primary Dataset I.: Manually Collected Data on Supervisory Board Design

This dataset was created by manual analysis of over 1200 documents (Articles of Association and Minutes of General Meeting) published in the business register.

4.1.1 Description of Collected Variables

The manual data collection was focused only on limited number of parameters of the supervisory board design and competences. In addition to that, the conversion of rich textual data of legal nature into a structured dataset required some information reduction, which is explained in the following:

- **Year and Company** are the dimensions of the primary dataset. The

Year dimension refers to the year in which the particular exploited Articles of Association became applicable. In rare cases with more than one release of an update of the Articles of Association within a year, only the latest release was taken into account. If there are is no release of an update of Articles of Association within the year, no document is recorded in the primary dataset. Before the empirical analysis, the missing values were however treated using the approach described in Section 4.1.1.

- **Declared Board Size** is an integer that represents the requirement for the size of the supervisory board as per a particular company's Articles of Association in a given year.

- **Declared Length of Term** is the stated length of a supervisory board member's contract, as per a particular company's Articles of Association released in a given year. If the Articles of Association suggest a different term length ,e.g., for the first generation of supervisory board members, or for a specific group of supervisory board members, this information is neglected.

- **Quora** is a parameter of the decision-making process of a supervisory board and it stands for the minimum proportion of the supervisory board that must participate in the voting, if a valid decision is to be made. In case the company's Articles of Association list special circumstances in which higher requirements are set to reach a decision, the enhanced quora is neglected. The values of this variable serve only as an input for the smallest decisive coalition computation

- **Voting Mechanism** is a categorical variable that specifies what kind of majority is needed for a resolution by the supervisory board to be adopted. This variable concerns only ordinary (non-enhanced) voting. Its example values are *"more than half of all"*, *"majority of present"*, *"at least two-thirds of all"*. The values of this variable serve as the second input for the smallest decisive coalition computation

- **Declared Co-determination** is a declared proportion of co-determined seats within the company's supervisory broad as per particular company's Articles of Association in a given year. For company i and year t, this variable will be indicated by $Code_{i,t}$. Due to lack of variance in positive

values of $Code_{i,t}$ (addressed in Observation 5, this variable is be simplified to $Code.b_{i,t}$, a binary variable, for most computations. $Code.b_{i,t}$ does not specify the co-determined proportion, but indicates if any co-determination takes place.

- **Power over executives** is a binary variable that indicates whether the supervisory board can elect and recall executives. The correlation between this variable and the co-determination is subject to the Hypothesis 1 of the Empirical analysis. In some cases, Articles of Association might require enhanced majority voting for the supervisory board decisions on the executive board personnel, or provide supervisory board with other important competences. Those eventualities are however not reflected in this simplified variable. Anecdotal evidence on such cases is provided in Observation 4. For company i and year t, this variable is denoted $Exec_{i,t}$.

- **Notes** are unstructured notes on interesting observations regarding the individual documents - They include descriptions of interesting mechanism of employee involvement in the supervisory board members appointment even at times when co-determination is not required, or other interesting competences of the supervisory board except for the power to elect and recall executives.

- **Smallest Winning Coalition** is the smallest proportion of the supervisory board members that must ally to approve an opinion through voting. The value is computed based on the voting system parameters and the quora declared in the Articles of Association of the company in question.

Treatment of Missing Values

All legal entities such as joint stock companies incorporated in the Czech Republic are according to §66 of the Act on Public Registers (*304/2013 Coll.*) required to publish selected documents in publicly accessible registers. This requirement applies also to their Articles of Association (and any updates of thereof).

As the Articles of Association are not updated regularly, the public registers naturally do not contain specific versions for each joint stock company and for each year. As a consequence, it was not possible to retrieve all data required to fill in the company-year matrix in full.

In addition to that, there are most likely some joint stock companies that do not comply with the obligation described above in a way that they do not publish their documents after every update. As a result, it is not possible to determine with certainty whether a missing data point, if any occurs, is due to absence of change in the Articles of Association, or due to the company's reluctance to publish relevant documents. We will assume however, that companies that do publish their new Articles of Association after every major revision in the legal framework that impacts on the corporate governance requirements (2014, 2019) are rather compliant. Therefore, we can take such cases of the missing values, if any occur, to signify that no change took place. In accordance with this assumption, 198 out of all 271 joint stock companies in our sample is classified as rather compliant with the law by regularly publishing required documents. The Figure 4.1 shows the distribution of available documents across the in-scope years. The year 2014 is noticeably outstanding. This was probably caused by the fact that a major revision of the legal framework with strong implications for the corporate governance practice became applicable.

As a result of the previously described circumstances, the dataset has form of an unbalanced panel. To account for this unbalance in the created panel, the Empirical analysis will be performed on an the dataset adjusted by applying so-called *no change assumption*: If there is a missing record in a given year, we will reuse the parameters from the last published document, unless this document is older than three years, or there was a major revision of the regulatory framework between the publication of the last available document and the given year. A summary of all major novelizations can be found in Table 1.1.

The adjusted dataset is a less severely unbalanced panel of panel covering 271 companies over 12 years (2009-2020). In total, it contains 3252 data slots. In the first step, 37% of the panel was filled directly with the inputs manually collected from the analysed documents. Additional 41% of the panel was filled with data applying the *no change assumption* described above. About 2%[1] of the panel accounts for cases when data on the company is available, but there is no supervisory board we could collect the parameters on. Finally, the remaining 18% of the panel are the missing values that could not be eliminated by the *no change assumption*.

[1]This number is lower than the declared percentage of companies that ever opted for monistic corporate governance structure - 6.3%, because their monistic period never approached (and due to legal constraints could not approach the full observed time interval.)

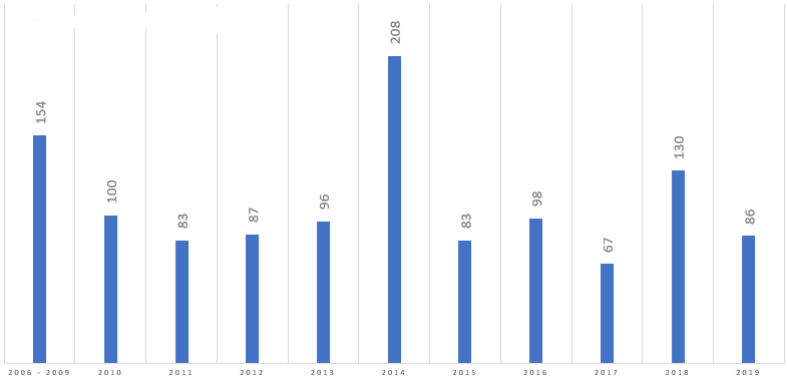

Figure 4.1: Number of available and analyzed documents per year of release

4.2 Primary Dataset II.: Bisnode Magnus Data on Supervisory Board Members

4.2.1 Description of initial Bisnode Magnus dataset

The primary dataset on supervisory board members is exported from the Magnus Bisnode database and contains 7866 entries on changes in the supervisory board personnel of the in-scope companies, that happened during the in-scope period. The following information contained in every change log will be used in further analysis:

- **Company** is the name of the company in which the board member was active.
- **NACE** is the code of main economic activity, used for Industry clustering as per Table 4.3.
- **Name** is the name of the person (legal or physical) who is the supervisory board member.
- **Start date** is the first day of an individual supervisory board engagement contract. This variable is used as the first key to map the composition of a supervisory board at a given point of time.
- **Finish date** is the last day of individual supervisory board engagement, regardless the declared duration of his contract. This variable is used as the second key to map the composition of a supervisory board at a

given point of time. For active supervisory board members, this value is missing, which is acknowledged in the mapping.

- **Activity** is a binary variable indicating whether the person was still active supervisory board member at the moment of the dataset export.

Unfortunately, the dataset does not contain any information on whether the supervisory board member represents shareholders, or employees within the supervisory board. This information would be extremely valuable for an evaluation whether co-determination helps to bring people that are not of the typical managerial profile in the supervisory boards. For that reason, manual data collection was considered in this case as well. However, as the data availability was in this case very poor, this idea was abandoned.

4.2.2 Enrichment of the Bisnode Magnus Dataset

The primary dataset from Bisnode Magnus was further enriched with other metrics and inputs on the individual board member level:

- **Assumed Gender** of the supervisory board member was mostly derived from their name. supervisory board members of Czech joint stock companies are in most cases Czech and Czech names hold gender-specific components that enabled formulation of the gender assumption. Gender neutral and foreign names were searched online, mostly on Linked-In and in press releases or annual reports of the respective company. It was possible to provide a qualified assumption on gender for more than over 99% of persons included in the sample.

- **The set of binary variables on achieved and reported education** contains assumptions on the highest level of education. Those are based on what academic titles were reported with the names. Of course, such inputs must to be treated as mere assumptions, because academic degrees are not among mandatory data in business registers.

- **Actual Engagement Length** is computed as difference between the start date and the end date of the supervisory board member's engagement. Due to the nature of the Bisnode Magnus database that does not distinguish between multiple contracts chained by one supervisory board member, the actual engagement length duration can exceed the declared term length multiple times, if the individual was re-elected.

Description	of the education variables
$isBC_m$	Binary variable positive for board member m if he reports a bachelor's degree, a lesser as the highest level of education. By design, for people with bachelor's degree who also acquired and use a higher academic title this variable equals zero.
$isMS_m$	Binary variable positive if m reports master's degree, or an equivalent as the highest level of education. By design, for people with master's degree who also acquired and use a higher academic title this variable equals zero.
$isPHD_m$	Binary variable if m reports PhD., MuDr. or an equivalent, or a higher academic title.
$isMBA_m$	Binary variable positive if m reports an MBA degree, regardless what other academic degrees are also reported by m.

Table 4.1: Definition of binary variables on supervisory board members education

- **Number of Terms** is the assumed number of contracts by of the individual supervisory board member. This was computed by taking into account two inputs: The *Actual Engagement Length* and the *Declared Term Duration* as per the relevant release of company's Articles of Association. The later was acquired from the manually collected dataset on supervisory board design described in Section 4.1.
- **Unfinished Days** is the number of days that remain till the end of the term duration as per the relevant release of Articles of Association. For instance, if a supervisory board member resigned or was recalled one month before his contract termination, the value of *Unfinished Days* variable would be equal to 30. This variable takes *Actual Engagement Length* and *Number of Terms* as inputs, and it plays key role in the argument that underlies Observation 3 and Observation 6.

4.3 Merge of the Two Primary Datasets

To gain the full picture of design and composition of the supervisory boards, the enriched primary datasets on supervisory board design and supervisory board members had to be combined. It is to be recalled that the manually collected

dataset on supervisory board design has the panel data structure with year and company dimensions, while the export from Bisnode Magnus is a change log of individual observations.

The manually collected panel was taken as a master to be enriched with year-company level aggregated information from the Bisnode Magnus dataset. Following columns were computed from the Bisnode Magnus data and appended to the manually collected panel:

- **Actual Board Size** is a numerical variable representing the sum of person-days of supervisory board members active in the given year and company from the Bisnode Magnus primary dataset and were converted to person-years.

- **Set of Female Representation Metrics** is a set of multiple variables each bringing a slightly different point of view regarding the female representation in the supervisory boards. For descriptive analysis, those statistics were at times further aggregated across companies or across years.

- **Set of Education Statistics** is a set of numerical variables computed similarly as $FemS_{i,t}$. It is a proportion of person-days of supervisory board members from the Bisnode Magnus enriched dataset that were active in the given year, in the particular company and that fulfil the respective education condition.

- **Set of Industry variables** contains binary, company-specific variables derived from company's NACE as per key captured by Table 4.3. Full classification of the NACE codes can be found online, following *this link*[2].

Although some observations that are of the included in the Chapter 5 might have recourse to the primary non-aggregated data, the model estimations in Empirical analysis of this thesis are conducted solely on the basis of the previously described merged dataset.

[2] www.nace.cz/J-informacni-komunikacni-cinnosti

Description	of the Variables
$FemS_{i,t}$	is the female representation within the supervisory board of company i in year t, computed as the sum of person-days in function of all female supervisory board members in company i within the year t, divided by sum of all person-days of all supervisory board members of that company in the given year. The variable is bounded between 0 (no female board members along the year) and 1 (only female board members along the year).
$FemA_{i,t}$	is a binary variable indicating whether the $FemS_{i,t}$ has value bigger than 0% in the given year, i.e., whether there was at least one woman in the supervisory board of company i, for at least one day in the year t.
$FemH_{i,t}$	is a binary variable indicating whether the average $FemS_{i,t}$ has a value bigger than 50% in the given year.
$FemD_{i,t}$	is a binary variable indicating whether the $FemS_{i,t}$ is higher or equal to the smallest winning coalition, i.e., whether the maximum female coalition aligned against the rest of the board would be hypothetically able to pursue their opinion. It is to be noted here that because the variable is time aggregated, it can occur that women have a voting majority for a small proportion of the subject year t, yet the yearly average value of $FemD_{i,t}$ still turns out zero. Similarly, positive $FemD_{i,t}$ does not ensure that women held the decisive majority over the entire period of t.

Table 4.2: Definition of variables on female participation in supervisory boards

Variable	Industry	Example NACE
FS	Financial services and banking	K,
NSF	Non-financial services	N, M, I, H521, L682
HC	Health Care	Q
IND	Industrial production and Metal processing	C,
WS	Wholesale & Retail	G, L681
ITT	IT & Teleco	J
TRANS	Transportation	majority of H
UT	Utilities	E
CST	Constructions	F
FB	Food and beverages	C10, C11
FEE	Fuels, energy, extraction	B, D

Table 4.3: Industry classification with example NACEs

Chapter 5

Observations on Design and Composition of Czech Supervisory Boards

In this Chapter, a selection of descriptive statistics computed on the datasets presented in Chapter 4 is provided and interpreted to address the research questions listed in Chapter 3.

Observation 1:
The one-tier structure was still rare in the Czech environment and was likely not being used to avoid co-determination

This observation addresses Research Question 1 from the list in Chapter 3.

Despite the fact that monistic corporate governance structure is supported by the Czech legal framework since 2014 only about 6.3% of the large joint stock companies switched to the one-tier structure. Most of the contemporary one-tier joint stock companies opted for the monistic alternative immediately after the mentioned change in the regulatory framework in 2014.

Therefore, the answer to the research question whether switching to the monistic structure available in the Czech legal system was being used to avoid participation of employees in corporate governance seems to be quite straightforward. Not only were there very few firms that switched to the monistic structure but, furthermore, majority of them changed their governance structure already in 2014 when the co-determination requirements were relaxed and their re-introduction was not announced. Although, we cannot reject the hypothesis that some company used re-design of corporate governance structure

to exclude employees from its supervisory functions, we can see that, if phenomena existed, it was truly marginal. In our exhaustive sample, there were no more than five companies (less than 2%) that might potentially have done that.

A notable example of a company that cannot be suspected from this behavior was *AURES Holdings a.s.*[1] which switched to a monistic structure in 2014, but returned to the two-tier organizational structure in 2018, when co-determination re-introduction was on track.

It is to be noted that the fact that the Czech legal system supports both corporate governance schemata is promising for a comparative study to be conducted that could contribute to the unresolved research dispute on dualistic vs. monistic system efficiency. Due to the extremely low representation of monistic companies in the sample, this cannot be carried out until the monistic system gains reasonably higher degree of popularity among major Czech joint stock companies. Another possibility would be to enrich the sample by including smaller companies, among which the prevalence of one-tier organizational structures might be higher.

Observation 2:
Declared board size usually followed the non-binding default which is set within the regulatory framework

This observation addresses Research Question 2 from the list in Chapter 3.

In our sample, *all* of the assessed documents specified the size of the supervisory board of a company. However, in vast majority of cases, the parameters declared in Articles of Association merely confirmed the three member setup suggested within the regulatory framework. The data also show that very large supervisory boards (10+ members) were quite rare, occurring in only 6% of the in-scope companies. As a sidenote, the few companies with large supervisory boards frequently had some connection to the public sector. An overview of the supervisory board sizes employment is offered in Figure 5.1.

On the contrary, 10.7% of the in-scope companies opted for single-person supervisory boards after 2014 when this setup was allowed. Quite surprisingly, we have found evidence that there were companies that continued to limit their supervisory boards to an individual organ even after 2019, on pain of non-

[1]Private holding of companies active in automotive aftermarket

compliance with the applicable co-determination laws.[2] For example ELTODO, a.s.[3] had 986 employees in 2019 (according to their Annual Report), and yet, it shrank its supervisory board size down from three members to a single-member-board in that year, which resulted in a legally non-compliant setup.

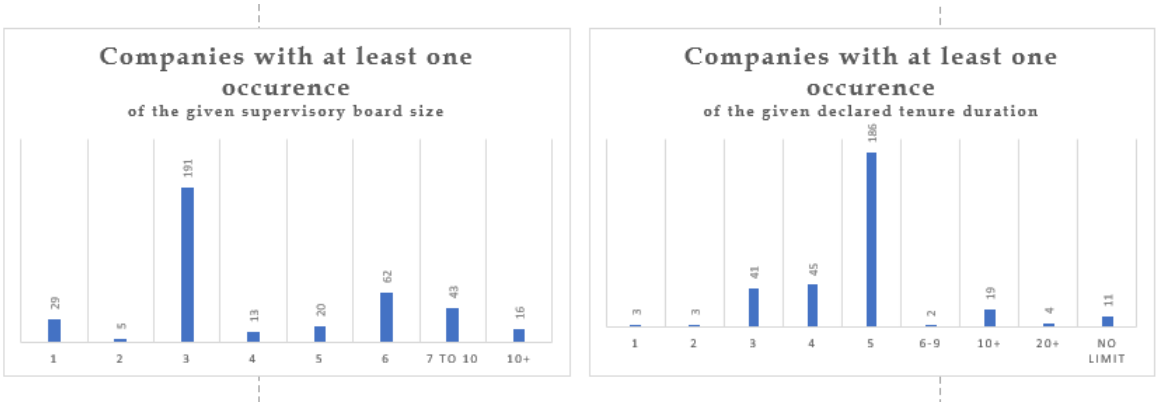

Figure 5.1: Number of companies per supervisory board size and term length

Observation 3:
Declared term duration was usually set longer, but in fact not fully utilized

This observation addresses Research Question 3 from the list in Chapter 3.

Unlike the board size that mostly follows the legal default, the term duration parameter specified in a company's Articles of Association was usually significantly set longer than the suggested legal default of three years. As Figure 5.1 shows, it was most frequently five years. In addition to which, over 12% of the companies within the sample had set the term length to be even longer. In extreme cases it was set to be indefinite. One possible explanation for this was that shareholders who can influence the supervisory board design of their company might be avoiding the costs associated with the election of supervisory board members. Especially under co-determination when all employees must be given a chance to participate, the costs of elections might be non-neglectable. However, this remains a mere suggestion, as we do not have sufficient data to evaluate it as an empirical hypothesis.

[2]It is not possible to have one third to one half of single member supervisory board co-determined

[3]Supplier and provider of maintenance services for transportation system (such as traffic light), public lighting and more

The contract duration declared in a company's Articles of Association might differ from the real duration of an appointment, as the supervisory board members are sometimes recalled or they quit their membership. To see how often supervisory board members actually change, we computed what the actual duration of their engagement was. For this the Bisnode Magnus dataset described in Section 4.2 was utilized. Detailed description of the actual duration metrics is provided in Section 4.3. Already from the fact that Supervisory board members served on average less than three years, we can see that the full length of the most common five years contract was rarely reached. This average was however still inflated by the cases of supervisory board members who got re-elected and thus served multiple terms. If we isolate only the last terms of each supervisory board member's contract, we observe that over 60% of supervisory board members leave their roles when their last contract duration was less than 50% completed. Only about 15% were able to reach least 95% of the duration of their contracts. Focusing only on the engagements that have been terminated preliminarily, we see the supervisory board chairs being quit on average two years and 10 months before the contract due date.

This finding is especially interesting from the regulatory perspective, as it suggests that prolongation of the minimum or default term length is not likely to increase the stability of supervisory boards, as supervisory board members typically leave way before end of their term.

Observation 4:
Power to elect executives was a popular on-top supervisory board competence

This observation addresses the first part of Research Question 4 from the list in Chapter 3.

Slightly over a quarter of the in-scope companies had the responsibility to elect and recall members of their executive board delegated to the supervisory board at least once during the period of observation. 60% of the companies opting to delegate this responsibility to their supervisory boards consistently kept to this setup for the entire period of observation. The rest (about 10% of the entire sample) are companies first assigned this responsibility to their supervisory board, but the opted to delegate it to a different body of corporate governance. The Figure 5.2 displays yearly proportion of the published contracts that assign this competence to the supervisory board. At first sight,

there is no observable trend discernible. In the Empirical analysis, this indicator is further elaborated to investigate whether the power of a supervisory board to elect and recall executives is regulated by shareholders when employee representatives are present in that supervisory board. Results are presented in the Section 6.5.1.

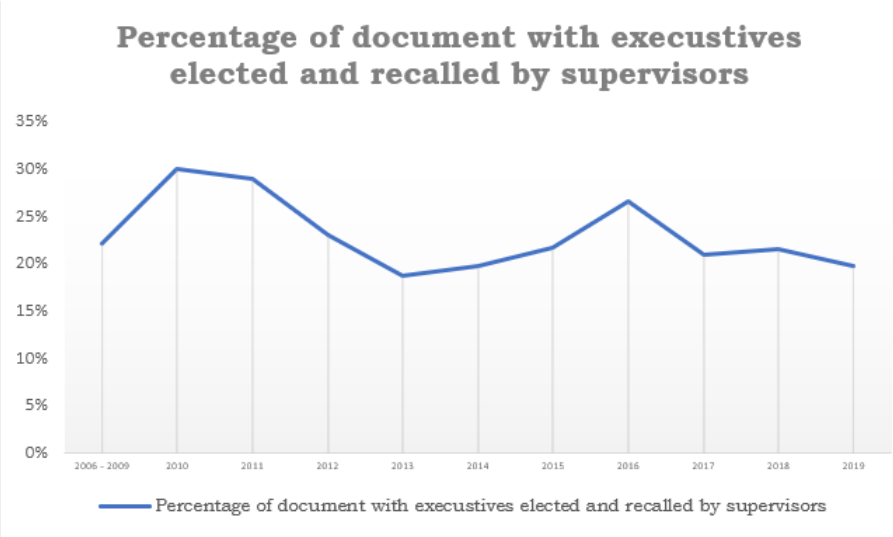

Figure 5.2: Percentage of released Articles of Association with supervisory board entitled to recall and elect executives in time

The H1 hypothesis of Empirical analysis in Section 6 focuses solely on the competence to recall and elect executives with no further specification. Although this is a reasonable simplification reflecting the limited comparability of company-specific competences across the sample, it neglects several interesting setups found in the data. Few cases will be addressed at least anecdotally:

In České dráhy a.s.[4], the power of the supervisory board went even beyond the election and recalling of individual executives. In this case, the supervisory board was also responsible for electing the Chairman and Vice Chairman of the executive board. These positions come with specific rights and responsibilities towards the company and are usually elected to them by the executive board directly.

Several cases were found where the supervisory board was endowed with other additional rights and responsibilities towards executives. In a very few cases (<5%, e.g., Alza.cz a.s[5], Nemocnice s poliklinikou Česká Lípa a.s,Kroměřížská

[4] *Czech national railways operator*
[5] *Major Czech online retailer*

nemocnice a.s., Krajská nemocnice Liberec[6]), the supervisory board was entitled to restrict a behavior or decision of any executive, provided there was a reasonable concern that the decision or behavior was not aligned with the best interests of the company. Other common supervisory board competences with direct or indirect impacts on executives were, for example, the agenda of executive remunerations, internal auditing, or the fact that supervisory board co-signature is mandatory on selected decisions, such as real-estate disposal and larger investments.

Observation 5:
Co-determination requirements were met at the lower bound, however few companies involved employees in the corporate supervision even when not required by co-determination law

This observation addresses Research Question 5 from the list in Chapter 3.

In terms of proportion of co-determined supervisory board members, the observed data faithfully followed the legal framework. As shown in Figure 5.3, the average ratio of co-determined members plummeted almost to zero for the entire 2014-2018 period, when no requirements were in place.

Moreover, the assessed companies seemed reluctant to let employees co-determine more than the minimum required 33% proportion. Already in Figure 5.3, we can notice that the average percentage of co-determined members never once outgrew the 33% threshold. By taking one step further and evaluating each individual collected record, we can conclude that there was not a single case of a joint stock company with co-determination proportion above the lower bound of legally required interval. This finding has very important, yet unfortunate implications for the replicability of the existing research in the Czech environment. As just proven, the parity ($\frac{1}{2}$) co-determination practically did not exist in the Czech Republic over the observed period. Consequently, none of the many of German comparative (third vs. parity co-determination) analyses can be verified on Czech data. Similarly, all hypotheses on above-minimum co-determination being used as an employee benefit to attract workers, or to signal good workspace environment can be straightly rejected.

Although data suggest that Czech joint stock companies were rather not eager to let their employees participate in supervisory board member's elections, a notable observation with quite an opposite message can be made on

[6]All three are regional healthcare providers owned by public sector entities

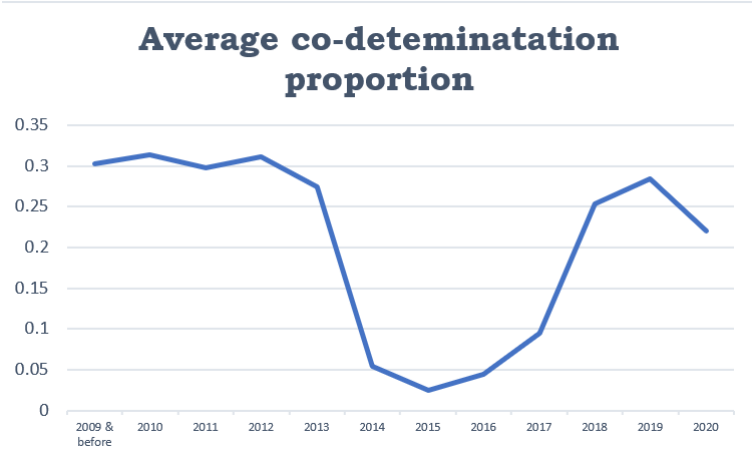

Figure 5.3: Average observed co-determination proportion

concerning 2014-2018 period of no co-determination policy. Some (about 4%) of the in-sample companies seemingly did not want to deprive their employees of their right to participate in corporate supervision and thus they introduced certain interesting work-around mechanisms. Apparently, 4% of the sample is not much, and vast majority of companies did not involve employees in the corporate supervision unless it is mandatory to do so. It is however interesting to realize that some form employee involvement in the corporate supervision can occur without any regulation. Let's take ŠKODA AUTO a.s.[7] as an example. ŠKODA is a major company with over 30 000 employees in the Czech Republic and an exceptionally strong culture of labor unions. Following the cancellation of co-determination requirements, they introduced their own employee participation mechanism according to which $\frac{2}{9}$ of the supervisory board members were elected by the General Meeting on behalf of the employee opinion. A slightly different employee participation mechanism was used in Explosia a.s.[8] which allowed employees to nominate their candidates for elections executed by the General Meeting.

Observation 6:

[7] *Car manufactured, biggest company in terms of both, sales and employees in the Czech Republic, owned by German Volkswagen Group*

[8] *Company specializing in research, development and production of explosives, owned exclusively by Czech ministry of Industry and Trade*

Co-determination triggered various types of supervisory board reshuffles. There is evidence that employee representatives substituted the existing supervisory board members in some companies.

This observation addresses Research Question 6 from the list in Chapter 3.

One of the goals of this thesis is to investigate whether companies tend to comply with the co-determination requirements through appointment of an additional supervisory board member representing employees, or rather through preliminary termination of a number of shareholder-elected supervisory board members' contracts that are then replaced with new, employee-elected representatives.

First, we were observing the average declared size of supervisory board in time, which is shown in Figure 5.4. Noticeably, the average declared size dropped exactly in the period 2014-2017 in which the co-determination was cancelled. After that period it substantially increased again, reaching previous level in 2019 when co-determination was re-introduced. In this period, around 100 seats in the subject supervisory boards were cancelled. Nonetheless, if we look closer, we can notice that the drop of the average declared size was not tremendous, as the delta between 2016 and 2019 was around 0.5 chairs. Figure 5.4 therefore indicates that some companies adjusted size of their supervisory board according to whether co-determination requirements take place or not, but the observed delta was not large enough to conclude that this is the dominant approach companies take to achieve co-determination compliance.

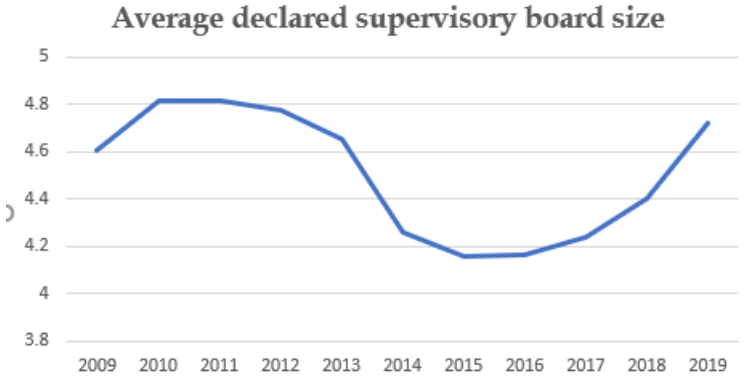

Figure 5.4: Average declared supervisory board size in time

Second, we can focus on the terminations of supervisory board member contracts. Figure 5.5 shows how many supervisory board members have ceased

their participation in the board in each year. It also indicates the proportion of them who ceased their participation more then one year before the end of their term. Again, two peaks are discernible that are linked to the years in which there was a change in co-determination requirements: 2014 and 2019. The 2014 spike was likely due to an exodus of employee representatives that were no longer required at that point. This spike does not shed much light on how companies adjust their supervisory boards when co-determination requirements become applicable, because it does not distinguish between contract terminations related to to supervisory board reduction, and contract terminations related to exchange of existing board members for a new ones. Contrarily, the 2019 spike very likely represents a piece of evidence that at least in some companies the co-determination re-introduction resulted in preliminary substitutions of active supervisory board members by newly required employee representatives. Overall, before 2019, more than 130 supervisory board membership contracts were cancelled on top of the historical average. Magnitude of the two observed effects is therefore comparable.

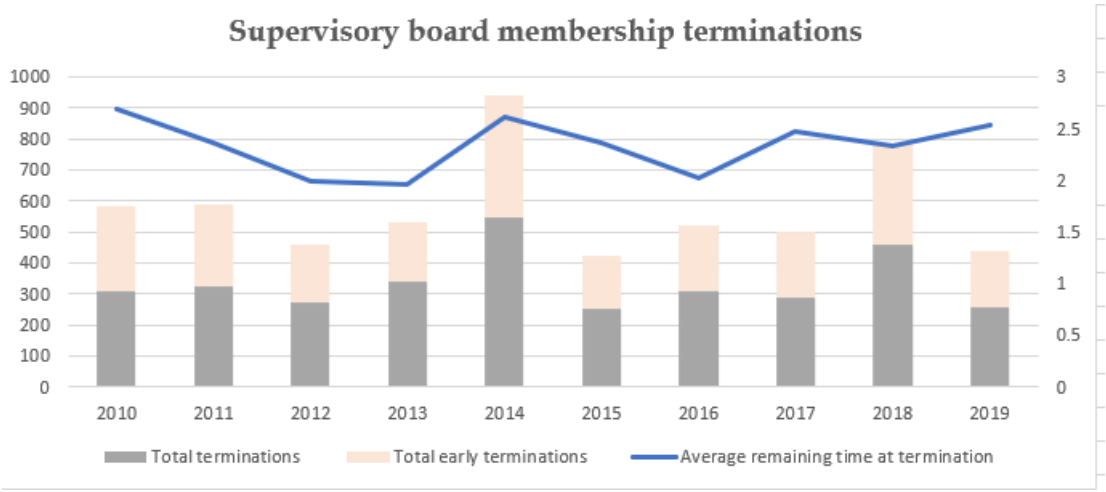

Figure 5.5: Overview of supervisory board member contracts terminations

Observation 7:
Legal persons were rarely appointed in the supervisory board

This observation addresses Research Question 7 from the list in Chapter 3.

It is to be noted, rather as a side-note before moving to observations about the composition of the supervisory boards, that despite the fact that legal

entities such as parent companies, are permitted to take part in a supervisory board since 2014, this arrangement does not seem to be popular among Czech companies. Significant part of joint stock companies within our sample was owned by a foreign, or local mother entity. However, in only two cases across the entire sample, a legal entity was spotted as a supervisory board member.

1. ELTODO, a.s. had, since 2019, a single supervisory board member, a legal person: ELTODO ADVISORY, s.r.o.. According to available information, it seem that ELTODO ADVISORY, s.r.o. was a special purpose vehicle, i.e., a company active as the single supervisory board member in multiple inter-related companies.

2. Mark2 Corporation Czech a.s. included an entity Mark2 Corporation Investments SE within its three member supervisory board since 2018.According to available information Mark2 Corporation Investments SE was the single shareholder of Mark2 Corporation Czech a.s..

Observation 8:
Female representation was industry-specific and individual statistics of female representation seem to take different evolution paths in time

This observation addresses Research Question 8 from the list in Chapter 3.

Quite surprisingly, the statistics on female representation defined in Table 4.2 seem to undergo quite a different evolution in time (see Figure 5.6). The percentage of woman board members (average $FemS_{i,t}$) increased since the beginning of the period of interest (2009). However, the trend-line was not strictly increasing - a pronounced dip was visible in the 2014-2015 period. A combination of this trend and the fact that the percentage of companies that had at least one woman on board ($FemA_{i,t} > 0$) decreased by 14% since 2012 implies that supervisory boards were not actually getting more gender-diverse.The number of strictly masculine supervisory boards increased, and simultaneously the mixed gender boards were getting more feminine. The last two charts chart of Figure 5.6 are also interesting, as they imply that despite the lack of evidence for increasing gender equality in the supervisory boards, an increasing number of companies had supervisory boards with enough female members to form an effective all female voting coalition ($FemDi, t = 1$). This trend results likely from combination of following effects: (a) the size of supervisory boards was substantially decreasing for several consecutive years

of the observed period; (b) the voting mechanisms were evolving in favor of smaller coalitions; (c) there were companies in whose supervisory boards the proportion of women increased.

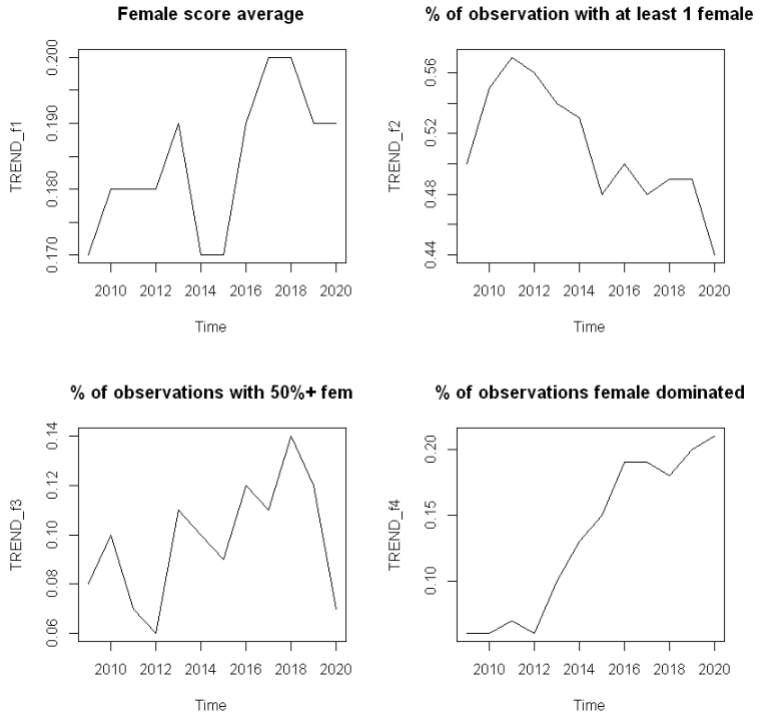

Figure 5.6: Development of female representation statistics in time

Female participation in supervisory boards differed per industry. This was rather expected, as in the Czech economic milieu, some industries are still perceived as traditionally masculine (such as transportation, constructions) whereas some as traditionally feminine (such as healthcare, services). This division has often been translated in the gender structure of labour. Table 5.1 confirms that the division persisted on the supervisory board level. That is, the supervisory boards of companies operating in what has been traditionally perceived as feminine industries tend to have an average female representation (average $FemS_{i,t}$) that is higher than an average associated with supervisory boards of companies operating in what is traditionally perceived as masculine industries.

To follow up on the topic of female representation, Observation 10 of this Chapter attempts to interpret the overall diversity descriptive statistics in a

	Average female representation	% of companies with at leas one woman	% of companies with 50+% woman	% companies with decisive female representation
Constructions	14.00%	36.00%	9.00%	3.00%
Financial Services & Banks	16.00%	57.00%	4.00%	3.00%
Foods & Beverages	28.00%	48.00%	24.00%	17.00%
Fuels & Energy & Extraction	16.00%	41.00%	14.00%	12.00%
Healthcare	26.00%	80.00%	9.00%	14.00%
Industrial production & Metal processing	16.00%	39.00%	11.00%	11.00%
Non-financial services	24.00%	55.00%	14.00%	10.00%
Telecominucation & IT	23.00%	67.00%	13.00%	12.00%
Transportation	14.00%	48.00%	5.00%	7.00%
Utilities	22.00%	79.00%	9.00%	11.00%
Wholesale & Retail	25.00%	53.00%	15.00%	22.00%

Table 5.1: Average female representation metrics per industry

context of the evolution of co-determination rules. In addition to that, Section 6.5.2 of the Empirical part of this thesis deals with an investigation whether industry-specificity in female representation within supervisory boards strengthens with co-determination, i.e., whether employee collectives with a vastly unbalanced gender structure replicate the gender dis-balance in the supervisory board by electing representative of the dominant gender.

Observation 9:
Education of supervisory board members was industry-specific and quite stable in time.

This observation addresses Research Question 9 from the list in Chapter 3.

When observing the evolution of the average education statistics defined in Table 4.1, no visible decreasing trend in the reported education of supervisory board members can be reported. There was, however, a slight drop in the proportion of master's degree holders after 2018 visible in Figure 5.7. In Observation 10 of this chapter, it is discussed whether this dip could be related to employee co-determination re-introduction. Not surprisingly, the education statistics significantly differed per industry. Table 5.2 confirms that healthcare industry had the most academically educated supervisory boards, while in telecommunications and IT, the proportion of supervisory board members reporting an academic degree was rather low. It is also notable that there was a higher number of reported MBA degrees in FEE and utilities industry.

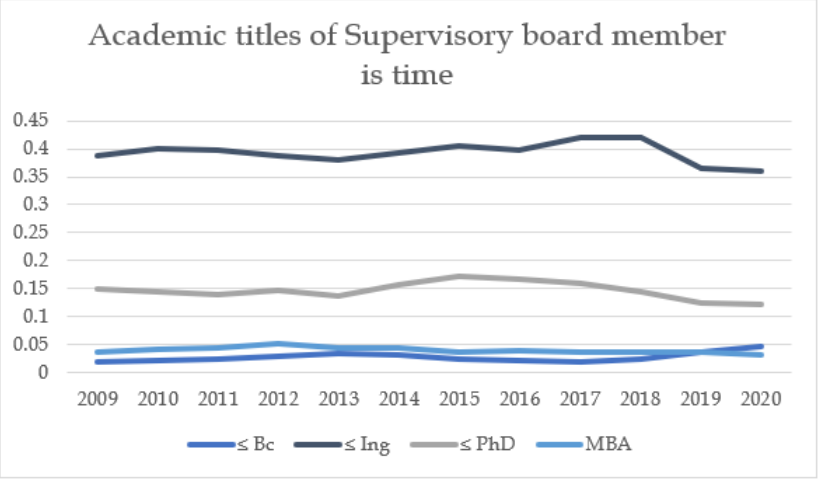

Figure 5.7: Average education statistics in time

	≤ Bc	≤ Ing	≤ PhD	MBA
Non-financial services	2%	37%	22%	1%
Industrial production & Metal processing	3%	41%	10%	3%
Healthcare	7%	33%	39%	5%
Financial Services & Banks	2%	37%	8%	3%
Wholesale & Retail	0%	45%	3%	1%
Telecominucation & IT	0%	48%	5%	7%
Transportation	4%	35%	18%	4%
Utilities	2%	39%	14%	12%
Fuels & Energy & Extraction	0%	43%	9%	15%
Constructions	1%	42%	10%	2%
Foods & Beverages	0%	37%	10%	2%

Table 5.2: Average education statistics per industry

Observation 10:

No conclusive evidence on co-determination boosted supervisory board diversity in the aggregated data

This observation addresses Research Question 10 from the list in Chapter 3.

The evolution of aggregate gender representation statistics in time is presented in Figure 5.1 and commented in Observation 8. In the context of the employee co-determination, we can notice a sharp drop in the average proportion of female supervisory board members (average $FemS_{i,t}$) in 2014 when co-determination requirements were fully relaxed. The female representation, however, rebounded quite quickly to a higher-than-initial level and already in 2016 average $FemS_{i,t}$ reached its maximum. It is to be noted that the later co-

determination re-introduction in 2019 was not even announced in 2016. This observation therefore provides mixed findings on the synchronization of co-determination and changes of the gender representation. Thus, the findings of Observation 8 can not be used as a piece of evidence that co-determination boosts gender diversity in supervisory boards. The topic of co-determination impacts on gender representation is further elaborated in Section 6.5.2 of the Empirical part of this thesis.

Similarly, in the case of the education statistics (see Figure 5.7), there was a drop in the proportion of supervisory board members with reported master's degree (or an equivalent) between 2018 and 2019. This could be associated with our initial assumption on co-determination opening doors of supervisory board to people that have different, than typical managerial profile. However, the magnitude of the drop was too small. Moreover, there was no reciprocal spike accompanying the co-determination relaxation in 2014. Furthermore, it is important to take into account that in many of the observed sectors even employees can typically have some university education. Overall, a quite stable proportion of supervisory board members reported their respective academic titles in the business registers - regardless of whether co-determination was in place or not. Thus, there was no evidence found in the aggregated data that co-determination impacts the average education mix of supervisory board members.

Chapter 6

Empirical Analysis

In this Chapter, two hypotheses investigating co-determination implications for supervisory boards composition and competences will be evaluated.

6.1 Hypotheses definition

6.1.1 H1: The supervisory board tend to lose their power to elect executives, when co-determination is introduced.

This hypothesis elaborates on Research Question 4 about supervisory board competences. Leaning on the previously discussed theoretical background and existing literature (Franca & Štampar (2021)), we can assume that co-determined employee representatives in the supervisory board of a company pursue a set of interests which may conflict with what is pursued by the shareholders of the company. It is, therefore, to be expected that shareholders protect their interests by transferring some competences, such as the right to elect and recall executives, to bodies of corporate governance that are fully under their control, even when co-determination is in place.

6.1.2 H2: The female representation statistics respond positively to co-determination introduction, but only in feminized industries, such as healthcare

This hypothesis addresses Research Question 10 and seeks to provide further insight to the so far presented mixed results regarding how co-determination affects gender composition provided in Chapter 5. This hypothesis goes one

step beyond and aims to evaluate whether the effect of co-determination is industry-specific (and possibly compensated in the aggregate dataset).

By testing H2 we inquired into whether in industries with a strong representation of women within the employed workforce (such as healthcare with almost 80% of female workers[1]) co-determination is likely to bring in more female representatives to supervisory boards. By the same token, we inquired into whether in industries, such as constructions, where gender composition of the workforce is predominantly masculine[2], we can expect rather male employee representatives being co-determined in supervisory boards.

6.2 Data

For both models, the dataset comprehensively described in Section 4.3 will be used.

6.3 Empirical approach and tools

In both cases, We were be regressing a variable with values restricted between 0 and 1 on multiple company, or time-specific parameters. Among them, the most important is the binary indicator of whether or not the supervisory board has been co-determined by employees of the company.

6.3.1 Dynamic binary response models for panel data

For the models we are about to estimate, we must deal with the following

- **Restricted explained variable**: We must select from the family of binary response models: Either linear probability model (which is the least applicable due to risk of out-of-range fitted values and unrealistic constant marginal effects), or non-linear model, such as logit and probit.
- **Auto-correlated explained variable**: From the descriptive analysis, we know that companies usually do not change their corporate governance design every year. Thus, we must assume that state-dependence,

[1]Source: Statistics of Czech medical chamber presented by Seznam Zprávy on 26. 5. 2019

[2]Strabag, the second largest constructions company in the Czech Republic, reports to have only 14% of female workforce and struggle to improve this statistic, as female professionals in this area are rare - only 20% of construction major graduates in the Czech Republic are women

i.e., correlation between explained variable in time t and $t-1$. This assumption also implies that all later records of y_{it} are to certain extent determined by the initial value of y_{i0}.

- **Individual effects**: From the descriptive analysis, we know that the corporate governance design is strongly company-specific. We must therefore select a model that accounts for the individual effect and can distinguish it from the state-dependence.

To address all mentioned challenges, we used *Random effects probit* with *Wooldridge-Chamberlain transformation*, estimated using *partial maximum likelihood method*.

6.3.2 Random effects probit

Random effects probit is a model from family of non-linear binary response models specified with as per Equation 6.1, where the function G is a sigmoid function defined as cumulative distribution function of standard normal distribution (Equation 6.2. This ensures that fitted values cannot exceed the natural boundaries of probability values. Similarly to other non-linear models, the magnitude of estimated probit coefficients cannot be interpreted directly. One more step - proper computation of average partial (or marginal) effects is required.

$$P(y = 1|x_i, c_i) = G(x_{it}\beta + c_i) \tag{6.1}$$

$$G(x) = \int_{-\infty}^{x} (2\pi)^{-\frac{1}{2}} exp(\frac{-z^2}{2})dz \tag{6.2}$$

The presented configuration of the model is however not directly applicable in our case, because we assume auto-correlation in y_{it} and must account for the initial condition of y_{i0} that gives the initial impulse to the individual time series. Under the presented setup, the initial condition might be miss-matched with the individual specific effect.

6.3.3 Wooldridge-Chamberlain transformation

Wooldridge-Chamberlain transformation is a technique how to account for the initial conditions in dynamic binary response models, and specified correlation between the individual effects and explanatory variables. It consists of substitution of the individual effect c_i as per Equation 6.3, where a_i is distributed as per Equation 6.4. In other words, we are assuming that conditional to y_0, the individual effect c is distributed normally with $\psi + \zeta_0 y_{i0} + \zeta x_i$ mean and σ_a standard deviation. The term $\zeta_0 y_{i0}$ is added to the equation to account for the initial condition, the terms ζx_i can be used to account for the specified correlation of error term and explanatory variables. In our particular case, we will be including several lags of the explanatory variables, transformed in individual-specific variables. This approach is further explained in the model setup Section 6.4.1.

$$c_i = \psi + \zeta_0 y_{i0} + \zeta x_i + a_i \tag{6.3}$$

$$a_i \sim N(0, \sigma_a) \tag{6.4}$$

Plugging back to the random effects probit, we receive Equation 6.5, which we can estimate as a random effects probit, using partial maximum likelihood method.

$$P(y = 1|x_i, c_i) = G(\beta x_{i,t} + y_{i,t-1} + \underbrace{\phi + \xi y_{i,0} + \xi x_i + a_i}_{z_i} + e_{i,t}) \tag{6.5}$$

6.3.4 Partial maximum likelihood estimators

Partial maximum likelihood estimator (PMLE) is a M estimator suitable for dynamic panel data analysis. The underlying maximization is specified in Equation 6.6. For wide panel data, this technique can provide consistent and $\sqrt{N}$ asymptotically normal estimates with only basic assumption requirements: (1) Correct specification of the density $f_t(y_{i,t} \mid x_{i,t}, \theta)$; (2) its identification and regularity. Classical and quite limiting assumptions, such as the strict exogeneity, are not required to obtain consistent estimates through PMLE.

$$\max_{\theta \in \Theta} \sum_{i=1}^{N} \sum_{t=1}^{T} \log f_t(y_{it} \mid \mathbf{x}_{it}; \theta) \tag{6.6}$$

6.3.5 Estimation method software

The model will be estimated in Python, leveraging selected pieces of publicly accessible code developed by Prof. Bertel Schjerning from University of Copenhagen. His code was originally developed to analyze the famous *Female labour force participation* dynamic panel, often referred to in Wooldridge (2002) and can be found in *this GIT repository*[3].

6.4 Model setup

6.4.1 Model setup for H1

The model we will be estimating for H1 is set up as follows:

$$P(Exec = 1) = G(\alpha + \rho Exec_{t-1} + \beta_1 Code.b + \beta_2 Size + \gamma \mathbf{IND}_i + \mu T + \mathbf{z}_i)$$

Where

- $Exec_{i,t}$ is the dependent binary variable indicating whether the supervisory board of company i had the power to recall and elect executives year t. It is documented in Section 4.1 of the data description.
- $Exec_{i,t-1}$ is the one-year lag of the dependent variable $Exec_{i,t}$.
- $Code.b_{i,t}$ is the focus explanatory variable, binary indicator of whether co-determination was in place in company i and year t. It is documented in Section 4.1 of the data description.
- $Size_{i,t}$ is the supervisory board size declared in Articles of Association of company i relevant for year t. It is documented in Section 4.1 of the data description. This variable is used rather as a proxy for complexity of the shareholder landscape, because large supervisory boards were very often noticed in companies with some connection to the public sector.

[3] https://github.com/bschjerning/metrics2021/tree/main/12$_b inary_r esponse_p anel$

- IND_i is a vector of binary variables for all industries in which the in-sample companies operate. Each time, only the variable of the single industry relevant for company i is positive. The vector of variables is documented in Table 4.3 and Section 4.3 of the data description.
- T is a synthetic trend variable. It is an increasing numerical sequence inserted in the model to catch for possible time trends within the data. This is a numeric variable logically restricted by time dimension of used dataset, it can get any value between 1 and 10.
- z_i is a composite variable with all terms that must be included in the model as part of the Wooldridge Chamberlain transformation. It accounts for persistence of the initial condition $Exec_{0,i}$ and specified correlation among all lags of explanatory variables and the error term. The term z_i therefore contains $Exec_{0,i}$ and all past co-determination values $(Code1_i, ...CodeT_i)$ and board size $(Size1_i, ...SizeT_i)$ for the given i.

6.4.2 Model setup for H2

The baseline model for testing of Hypothesis 2 will be set up as follows:

$$FemS_{i,t} = G(\alpha + \rho FemS_{i,t-1} + \beta Code.b + \delta Code.b \times \mathbf{IND}_i + \gamma \mathbf{IND}_i + \mu T + \mathbf{z}_i)$$

Where

- $FemS_{i,t}$ is the dependent variable documented in Table 4.2 of the data description. It represents proportion of female members of the supervisory board along the year, therefore its values are naturally restricted between 0 and 1 (inclusive).
- $FemS_{i,t-1}$ in one-year lag of the dependent variable.
- $Code.b_{i,t}$, IND_i and T are identical to the same-named variables in H1 model. For more details, see Section 6.4.1.
- $Code.b \times IND$ is a vector of binary variables defined as interaction terms between co-determination and individual industries. Those interaction terms were added to the equation in order to account for industry-specific effects of the co-determination introduction on female representation statistics. Assessment of significance of their coefficients δ will the core focus of H2 evaluation.

- z_i has similar purpose as in the same-named term in H1 model (See Section 6.4.1). In this case, it contains the initial condition $FemS_{0,i}$ and all past co-determination values ($Code1_i, ...CodeT_i$) for the company i.

Auxiliary models, where the dependent variable $FemS_{i,t}$ is substituted with some other female representation metric presented in Table 4.2 will be also estimated.

6.5 Empirical results

6.5.1 H1 Empirical Results

Complete regression results for the model are provided in Table 6.1. The estimation results show a significant ($\alpha = 0.05$) negative partial effect of co-determination on the probability of supervisory board having power to elect and recall executives.

Thus, this model does not provide sufficient evidence to reject the hypothesis H1.

In addition to that, there seems to be a significant industry-specific effect and strong auto-correlation in the $Exect_{i,t}$ variable. The size of a supervisory board does not have any statistically significant effect, neither *per se*, nor as a proxy for the complexity of the shareholder landscape. We can also notice a light downward sloping trend in $P(Exect_{i,t}) = 1$. The estimated partial effect of time is however much smaller in magnitude from one year to another, than the estimated effect of co-determination introduction.

In practice, the estimated negative effect that co-determination has on supervisory boards' possession of power to elect and recall executives could be explained by an effort of shareholders (represented by company's general assembly) to protect their interests by transferring this competence (which is not legally required for a supervisory board) to bodies of corporate governance that are fully under their control. Typically, this competence can be transferred to the general assembly in which employees take no part whatsoever. The general assembly of a company is moreover the default holder of this competence suggested by the Czech legal framework. By removing employee representatives from the process of appointing executives, shareholders could ensure their interests in this area cannot be opposed by employee representatives (Franca & Štampar (2021)).

Similar protective behavior of shareholders can also be associated with their reluctance to invite more employees to supervisory boards than what is legally required as minimum. This effect manifests itself already in Observation 5 in Chapter 5, which shows that the power of employee representatives within the supervisory boards of a company was limited by the general assembly of that company already by determining the magnitude of their representation. **None** of the companies within the sample had allowed a higher-than-minimum required participation of employee representatives in their supervisory boards even though the law explicitly states that they can go up to one half of the supervisory board being co-determined.

Limitations of H1 results generalization

When interpreting the results, necessary precaution must be taken due to following limitations. In the vast majority of cases, employee representatives in the supervisory board did not have sufficient voting power to pursue any decision against the will of shareholder representatives anyway (provided that shareholder representatives would be united behind a profit maximizing opinion). Thus, the motivation of shareholders to deprive the board of power to recall and elect executives, when employee representatives participate in the board, might be improbable. Admittedly, there might be other factors that affect decisions made by a general assembly on the matter in question that have not been included in the proposed analysis. Moreover, from the perspective of econometrics, the estimated model contains many auxiliary variables and, consequently, might be over-fitting the true values.

Full regression output for H1

```
Random effects probit
Dep. var. : ['Exec']

parnames      theta_hat          se    t-values         jac         APE
----------  -----------  ----------  ----------  ----------  ----------
l_Exec          4.61786     0.40527    11.39455    -0.00034     0.15210
Size           -0.07332     0.07828    -0.93664    -0.00368    -0.00241
Code_b         -0.75639     0.23664    -3.19634     0.00081    -0.02491
NFS            -3.65673     0.59880    -6.10680    -0.00004    -0.12044
IND            -2.99793     0.35110    -8.53863     0.00227    -0.09874
HC             -3.72177     0.38200    -9.74274     0.00007    -0.12258
WS             -3.33528     0.45776    -7.28606    -0.00009    -0.10985
ITT            -2.82916     0.48439    -5.84066    -0.00051    -0.09318
TRANS          -2.36643     0.63001    -3.75618    -0.00144    -0.07794
UT             -3.57624     0.57472    -6.22258    -0.00026    -0.11779
F&E            -2.15962     0.67601    -3.19464     0.00019    -0.07113
CST            -3.33626     0.38236    -8.72544     0.00171    -0.10989
FB             -3.30090     0.36255    -9.10479    -0.00001    -0.10872
FS             -2.11172     0.49835    -4.23744     0.00020    -0.06955
Trend          -0.12511     0.04764    -2.62649    -0.00209    -0.00412
Code1          -0.96969     0.24443    -3.96708     0.00017    -0.03194
Code2           2.20476     0.45916     4.80177    -0.00215     0.07262
Code3          -0.64132     0.39147    -1.63825    -0.00065    -0.02112
Code4          -0.89795     0.17926    -5.00936    -0.00032    -0.02958
Code5           0.10818     0.15535     0.69636    -0.00042     0.00356
Code6           1.67003     0.20254     8.24528     0.00177     0.05501
Code7          -1.18616     0.42217    -2.80969     0.00029    -0.03907
Code8           2.79678     0.24361    11.48076     0.00018     0.09212
Code9          -2.77504     0.42742    -6.49254    -0.00062    -0.09140
Code10         -0.33058     0.22458    -1.47203     0.00046    -0.01089
Code11         -0.51952     0.23449    -2.21552     0.00111    -0.01711
Code12          1.24210     0.26176     4.74526     0.00155     0.04091
Size2          -0.71904     0.10660    -6.74511    -0.00178    -0.02368
Size3           0.81868     0.13400     6.10960    -0.00154     0.02696
Size4          -0.40845     0.10294    -3.96783    -0.00327    -0.01345
Size5           0.24664     0.09740     2.53227    -0.00204     0.00812
Size6           0.37522     0.09175     4.08979    -0.00274     0.01236
Size7          -0.07500     0.13186    -0.56874     0.00067    -0.00247
Size8          -0.37778     0.16603    -2.27533    -0.00194    -0.01244
Size9           0.34937     0.16109     2.16879    -0.00043     0.01151
Size10          0.26919     0.13958     1.92860     0.00008     0.00887
Size11         -0.27883     0.06756    -4.12724    -0.00280    -0.00918
f_Exec          1.11117     0.20653     5.38020    -0.00038     0.03660
sigma_a         0.00096     0.13141     0.00734     0.00028     0.00003

# of groups:      : 225
# of observations : 1859
# log-likelihood. : -97.83486871198853

Iteration info: 130 iterations, 204 evaluations of objective, and 192 evaluations of gradients
Elapsed time: 19.4673 seconds
```

Table 6.1: Regression results for the H1 model

6.5.2 H2 Empirical Results

Detailed regression results for the baseline model are provided in Table 6.2. For the two auxiliary models, similar format of results is available in Tables 6.3 and 6.4.

The first observable result of those regressions to be discussed is one that the proportion of women in the supervisory board of a company is **strongly auto-correlated** in time. This can be expected, based on two reasons. First, the terms for which individual board members are elected are usually longer than one year. Thus, if a woman is appointed to a supervisory board, she boosts the $FemS_{i,t}$ variable in multiple consecutive periods. Second, it is an effect commonly described in literature on gender, mentioned also by Bozhinov & al (2021), namely that, if women are already present at a certain corporate governance level, their presence is so normalized in the company that other women are more likely to join as well as to replace those on the same level. This effect is confirmed also by the second and third auxiliary model, as auto-correlation of the $FemD_{i,t}$ and $FemH_{i,t}$ variables is proven. Moreover, regarding the $FemS_{i,t}$ model, we can observe strong persistence of the initial condition $FemS_{i,0}$.

Second, the cross-industry co-determination effect (with no interaction term) seems to be at least non-detrimental to the presence of women in supervisory boards. In all regression models, its partial effect is either positive or statistically insignificant. Overall, its magnitude is not overwhelming and, for selected industries with negative interaction terms, the total composite effect can easily turn negative in all estimated models.

Finally, to address the H2 Hypothesis regression results provide us with estimates for industry-specific effects (general and co-determination triggered). The composite average partial effects are summarized in Tables 6.5, 6.6, 6.7. The columns of the referred tables should be interpreted as follows:

- *No code* column summarizes average partial effect per industry, applicable regardless of co-determination (i.e., static industry-specific effects)
- *Code* column summarizes average partial effect per industry, applicable under co-determination (i.e., sum of static industry-specific effects, general co-determination effects and industry-specific co-determination effects)
- *Just code* column summarizes average partial of co-determination intro-

duction per industry (i.e., general co-determination effects and industry-specific co-determination effects)

- First columns with arrows answers whether co-determination implementation accentuates (green up) or suppresses (red down) the industry-specific effect
- Second columns suggests the direction of composite co-determination introduction effect.

Static industry-specific effects

This section focuses on the static industry-specific effect, applicable regardless co-determination requirements. For the baseline $FemS_{i,t}$ variable, we can observe that a few of the industries listed are associated with a rather higher proportion of women in their supervisory boards. Namely: IT& teleco and fuel & energy & extraction (hereinafter "FEE"). This result might seem striking, because both FEE and IT & teleco, are rather technical industries which are commonly perceived as less feminized than, e.g., the already mentioned healthcare.

The healthcare industry seems to have a neutral (positive, but statistically insignificant) effect on female representation in supervisory boards. Since this effect, however, applies also to situations when a supervisory board is fully appointed by shareholders, the so far described results do not constitute a rejection reason for the H2 hypothesis. The auxiliary models based on $FemD_{i,t}$ and $FemH_{i,t}$ variables yield a different set of industries with a positive static industry-specific effect. This is consistent with the evolution of the female representation variables captured in Figure 5.6. In most cases, the female participation scores are far from the thresholds of $FemD_{i,t}$ and $FemH_{i,t}$ (i.e., the minimum voting coalition, or 50% respectively). Thus, the per-industry variance captured in $FemS_{i,t}$ is suppressed and those models do not have greater informative value.

Follow-up research could focus on the question whether the surprising industry-specific static effect estimates can be explained through assessing the extent to which gender composition of general assembly determines female representation of supervisory board.

Co-determination effects

The estimates for baseline model with $FemS_{i,t}$ variable suggest that co-determination seems to increase female participation in supervisory board for slightly different set of industries from those associated with a higher degree of female representation in the supervisory board in general.

In non-financial services and constructions industry, female participation in supervisory board seems to be generally rather low (negative industry-specific effect), but co-determination seems to a bring significant positive effect that is strong enough to make the resulting composite effect under co-determination positive for those industries. A similar situation occurs in transpiration industry, however with the industry-specific effect triggered by co-determination not strong enough to drive the overall industry-specific effect to positive. Only after the statistically significant positive general co-determination effect is added, we can say that even in transportation co-determination could help to promote an increase of women in supervisory boards, but probably less visibly, than in other industries.

In IT & teleco and FEE, the already significant positive industry-specific effect is accentuated by co-determination which seems to further stimulate (or at least not suppress) the presence of women in supervisory boards. However, this effect is statistically insignificant for FEE.

In industrial production, utilities and wholesale & trade, co-determination effect also only accentuates the existing industry-specificity. For all of those industries, the general industry effect is negative and so is the co-determination interaction and final composite effect. For wholesales & trade, however, the effect is statistically insignificant. Finally, healthcare is the only industry with an originally positive (yet individually insignificant) industry-specific effect, but with a negative industry $\times$ co-determination interaction. This effect is however also statistically insignificant.

As in case of the static industry-specific effect, the $FemD_{i,t}$ and $FemH_{i,t}$ offer industry $\times$ co-determination interactions with signs that differ to some extent from that the the baseline model shows. The cross-industry general co-determination effect is estimated to be positive in both cases, but statistically insignificant, similarly as all other co-determination terms. This could be explained by the fact that even if all employee representatives were women, the initial levels of female representation are so low that the number of co-determined members would not push it above the required threshold - mini-

mum voting majority for $FemD_{i,t}$ and 50% for $FemH_{i,t}$. The choice of these auxiliary variables was, therefore, not optimal as the conditions might be too restrictive.

Hypothesis evaluation

The results of our regression shows that co-determination does not affect female representation in supervisory boards uniformly across industries. Despite the fact that general cross-industry co-determination effect is positive, both industry-specific accelerators and brakes, especially the latter, can be strong enough to revert the overall effect into negative:

1. A statistically significant *accelerator* was detected for non-financial services, IT&teleco and constructions industry.

2. No statistically significant effect was detected for healthcare, transportation and FEE

3. A statistically significant *brake* was detected for financial services, food & beverages, utilities, wholesale & trade and industrial production.

The overall results are mixed and the hypothesis can be rejected for strongly feminized industries, such as healthcare. However, some *brakes* were detected in industries with traditionally low female labour participation. The findings with regard to these industries are consistent with H2. Overall, this research question needs to be investigated further, ideally on company level. If per-company data on gender composition of labour were available, this would be a perfect question to ask.

Full regression output for H2

```
Random effects probit
Dep. var. : ['FemS']

parnames        theta_hat          se    t-values         jac         APE
------------  -----------  ----------  ----------  ----------  ----------
l_FemS            2.28516     0.06661    34.30882    -0.32027     0.38611
Code_b            0.17778     0.06655     2.67116    -0.51210     0.03004
Code x NFS        0.39484     0.06667     5.92263    -0.00818     0.06671
Code x IND       -0.41676     0.06666    -6.25194    -0.20295    -0.07042
Code x HC         0.05334     0.06666     0.80018    -0.11912     0.00901
Code x WS        -0.61042     0.06667    -9.15628     0.00152    -0.10314
Code x ITT        0.27667     0.06667     4.15002     0.01001     0.04675
Code x TRANS      0.10241     0.06667     1.53622    -0.02894     0.01730
Code x UT        -0.24721     0.06667    -3.70825    -0.06935    -0.04177
Code x F&E        0.10298     0.06667     1.54467    -0.00803     0.01740
Code x CST        0.58620     0.06667     8.79303     0.00217     0.09905
Code x FB        -0.29319     0.06667    -4.39790    -0.05467    -0.04954
Code x FS         0.22893     0.06667     3.43399    -0.03456     0.03868
IND              -0.34253     0.06663    -5.14103    -0.36665    -0.05788
HC                0.03190     0.06664     0.47867    -0.19380     0.00539
WS                0.00275     0.06667     0.04122    -0.02844     0.00046
ITT               0.49866     0.06667     7.47997     0.00452     0.08426
TRANS            -0.23440     0.06666    -3.51602    -0.05111    -0.03960
UT               -0.25724     0.06666    -3.85871    -0.13809    -0.04346
F&E               0.25597     0.06667     3.83961    -0.01474     0.04325
CST              -0.33846     0.06667    -5.07689     0.00099    -0.05719
FB               -1.27983     0.06667   -19.19764    -0.09268    -0.21624
FS               -0.46971     0.06667    -7.04583    -0.06440    -0.07936
Trend             0.02645     0.01979     1.33695    -6.86543     0.00447
const            -2.53062     0.06626   -38.19008    -0.96884    -0.42758
Code1            -0.06206     0.06651    -0.93300    -0.62945    -0.01049
Code2            -0.14431     0.06645    -2.17173    -0.70756    -0.02438
Code3             0.53700     0.06641     8.08626    -0.79171     0.09073
Code4             0.00500     0.06641     0.07531    -0.80109     0.00084
Code5             0.09368     0.06641     1.41053    -0.80330     0.01583
Code6             0.17277     0.06664     2.59240    -0.17088     0.02919
Code7            -0.49204     0.06665    -7.38201    -0.11491    -0.08314
Code8             0.98549     0.06665    14.78555    -0.11666     0.16651
Code9            -0.22286     0.06664    -3.34408    -0.20095    -0.03765
Code10           -0.06193     0.06656    -0.93038    -0.41679    -0.01046
Code11           -0.22751     0.06650    -3.42121    -0.51512    -0.03844
Code12            0.66556     0.06653    10.00338    -0.48705     0.11246
FemS0             2.17936     0.06664    32.70276    -0.15986     0.36823
sigma_a           1.28945     0.06675    19.31805     1.83628     0.21787

# of groups:      : 225
# of observations : 1859
# log-likelihood. : -472.5704158788391

Iteration info: 1 iterations, 69 evaluations of objective, and 57 evaluations of gradients
Elapsed time: 8.6726 seconds
```

Table 6.2: Regression results for the H2 model with $FemS_{i,t}$ dependent variable

Random effects probit
Dep. var. : ['FemD']

parnames	theta_hat	se	t-values	jac	APE
l_FemD	2.85591	0.12887	22.16151	-0.00000	0.27464
Code_b	0.04308	5.18562	0.00831	-0.00000	0.00414
Code x NFS	-0.58124	5.28266	-0.11003	-0.00001	-0.05590
Code x IND	-0.50487	5.15246	-0.09799	0.00001	-0.04855
Code x HC	-0.39734	5.21336	-0.07622	-0.00000	-0.03821
Code x WS	-0.05444	5.20864	-0.01045	0.00000	-0.00523
Code x ITT	-0.89536	5.13969	-0.17421	0.00000	-0.08610
Code x TRANS	-1.41016	5.25732	-0.26823	0.00000	-0.13561
Code x UT	-0.25268	5.32922	-0.04741	-0.00001	-0.02430
Code x F&E	1.87678	5.16368	0.36346	0.00000	0.18048
Code x CST	-1.01698	10.69999	-0.09504	0.00000	-0.09780
Code x FB	-0.33029	5.17042	-0.06388	-0.00000	-0.03176
Code x FS	3.60965	62.66252	0.05760	-0.00001	0.34713
IND	-0.10174	0.25002	-0.40691	-0.00001	-0.00978
HC	0.28547	0.29077	0.98180	0.00000	0.02745
WS	0.36237	0.34131	1.06170	0.00000	0.03485
ITT	0.41961	0.39401	1.06498	0.00000	0.04035
TRANS	0.14221	0.30754	0.46240	0.00000	0.01368
UT	-0.07438	0.31844	-0.23359	0.00000	-0.00715
F&E	-1.43051	0.73672	-1.94171	0.00000	-0.13757
CST	-3.93393	48.28460	-0.08147	0.00000	-0.37832
FB	-0.05375	0.34678	-0.15499	-0.00001	-0.00517
FS	-4.17481	67.90394	-0.06148	-0.00001	-0.40148
Trend	0.02386	0.02047	1.16593	-0.00001	0.00229
const	-1.93421	0.28013	-6.90464	-0.00000	-0.18601
Code1	-0.17845	0.14538	-1.22741	-0.00000	-0.01716
Code2	-0.01711	0.19627	-0.08716	0.00000	-0.00165
Code3	0.57634	0.27168	2.12137	0.00000	0.05542
Code4	0.26909	0.30170	0.89190	0.00000	0.02588
Code5	-0.48577	0.19447	-2.49793	-0.00000	-0.04671
Code6	-0.10874	0.18167	-0.59857	-0.00000	-0.01046
Code7	0.62714	0.27650	2.26816	-0.00000	0.06031
Code8	-0.13996	0.31544	-0.44369	0.00000	-0.01346
Code9	0.03502	0.20952	0.16715	0.00000	0.00337
Code10	-0.18051	0.15444	-1.16882	-0.00001	-0.01736
Code11	-0.04448	0.23170	-0.19198	0.00000	-0.00428
Code12	0.13852	0.22617	0.61245	-0.00000	0.01332
FemD0	-0.23176	0.21998	-1.05358	-0.00000	-0.02229
sigma_a	-0.00000	0.14984	-0.00003	-0.00000	-0.00000

# of groups: : 225
# of observations : 1859
log-likelihood. : -289.8023871993177

Iteration info: 145 iterations, 147 evaluations of objective, and 147 evaluations of gradients
Elapsed time: 22.5966 seconds

Table 6.3: Regression results for the H2 model with $FemD_{i,t}$ dependent variable

```
Random effects probit
Dep. var. : ['FemH']

parnames        theta_hat          se    t-values         jac         APE
-----------  -----------  ----------  ----------  ----------  ----------
l_FemH            2.78225     0.15684    17.73958     0.00000     0.21028
Code_b            0.00835     9.99583     0.00084    -0.00000     0.00063
Code x NFS       -0.28513     9.98423    -0.02856     0.00001    -0.02155
Code x IND       -0.05754     9.98676    -0.00576     0.00000    -0.00435
Code x HC        -0.19172     9.89891    -0.01937    -0.00000    -0.01449
Code x WS         0.49359    10.10268     0.04886    -0.00000     0.03731
Code x ITT       -1.79035    10.26218    -0.17446    -0.00001    -0.13531
Code x TRANS     -0.75359    10.03971    -0.07506     0.00001    -0.05696
Code x UT        -0.50402     2.98995    -0.16857     0.00000    -0.03809
Code x F&E        0.15965    10.08278     0.01583     0.00000     0.01207
Code x CST       -0.38848     9.93661    -0.03910     0.00000    -0.02936
Code x FB        -0.17590    10.10674    -0.01740    -0.00001    -0.01329
Code x FS         3.50183   103.29229     0.03390    -0.00000     0.26467
IND              -0.07880     0.29949    -0.26313    -0.00000    -0.00596
HC               -0.07900     0.36290    -0.21770    -0.00000    -0.00597
WS               -0.12210     0.45451    -0.26863     0.00000    -0.00923
ITT               0.91254     0.41694     2.18866     0.00000     0.06897
TRANS             0.06835     0.39043     0.17505    -0.00000     0.00517
UT               -6.28749   175.41247    -0.03584     0.00000    -0.47521
F&E              -0.40727     0.69778    -0.58366     0.00000    -0.03078
CST              -0.38325     0.44838    -0.85476    -0.00001    -0.02897
FB                0.05059     0.40105     0.12614    -0.00000     0.00382
FS               -3.71870   113.30220    -0.03282    -0.00000    -0.28106
Trend             0.01446     0.02449     0.59036    -0.00000     0.00109
const            -2.08676     0.38175    -5.46626     0.00000    -0.15772
Code1             0.04331     0.19030     0.22760     0.00000     0.00327
Code2             0.03996     0.30988     0.12895    -0.00000     0.00302
Code3            -0.03212     0.26359    -0.12185    -0.00000    -0.00243
Code4             0.34974     0.32727     1.06868     0.00001     0.02643
Code5            -0.24549     0.23786    -1.03209    -0.00000    -0.01855
Code6             0.07242     0.24448     0.29624     0.00000     0.00547
Code7             0.14132     0.43236     0.32687    -0.00000     0.01068
Code8             0.07551     0.41888     0.18028     0.00000     0.00571
Code9             0.17700     0.26019     0.68027    -0.00000     0.01338
Code10           -0.30130     0.18985    -1.58708    -0.00000    -0.02277
Code11            0.38997     0.20205     1.93006    -0.00000     0.02947
Code12           -0.37378     0.21789    -1.71547    -0.00000    -0.02825
FemH0            -0.15043     0.27234    -0.55235    -0.00000    -0.01137
sigma_a           0.30287     0.17528     1.72795     0.00000     0.02289

# of groups:      : 225
# of observations : 1859
# log-likelihood. : -231.3540486408047

Iteration info: 163 iterations, 165 evaluations of objective, and 165 evaluations of gradients
Elapsed time: 27.2205 seconds
```

Table 6.4: Regression results for the H2 model with $FemH_{i,t}$

	FemS				
	No code	Code	Just code		
Non-financial services	-0.03089	0.03493	0.06454	↑	✓
Industrial production	-0.02852	-0.09804	-0.03222	↓	✗
Health Care	0.00274	0.01164	-0.05788	↑	✗
Wholesale and trate	-0.00213	-0.10386	-0.09496	↓	✗
IT & Teleco	0.0805	0.12663	0.0249	↑	✓
Transportation	-0.04167	-0.02459	0.02154	↑	✓
Utilities	-0.04549	-0.08671	-0.06963	↓	✗
Fuels, Energy, Extraction	0.04006	0.05721	0.01599	↑	✓
Construction	-0.059	0.03869	0.05584	↑	✓
Food and Beverages	-0.2159	-0.26475	-0.16706	↓	✗
Financial services	-0.08088	-0.04272	-0.09157	↑	✗

Table 6.5: Selected composite effects for $FemS_{i,t}$ variable

	FemD				
	No code	Code	Just code		
Non-financial services	0.0563	-0.00331	0.00454	↓	✓
Industrial production	0.0465	-0.00576	0.00209	↓	✓
Health Care	0.08374	0.04182	0.04967	↓	✓
Wholesale and trate	0.09113	0.08219	0.09004	↓	✓
IT & Teleco	0.09665	0.0068	0.01465	↓	✓
Transportation	0.06995	-0.06939	-0.06154	↓	✗
Utilities	0.04911	0.02115	0.029	↓	✓
Fuels, Energy, Extraction	-0.08127	0.0955	0.10335	↑	✓
Construction	-0.30661	-0.39541	-0.38756	↓	✗
Food and Beverages	0.05112	0.01563	0.02348	↓	✓
Financial services	-0.37702	-0.00175	0.0061	↑	✓

Table 6.6: Selected composite effects for $FemD_{i,t}$ variable

	FemH				
	No code	Code	Just code		
Non-financial services	0.05015	0.02906	0.02921	↓	✓
Industrial production	0.0442	0.04033	0.01924	↓	✓
Health Care	0.04417	0.03017	0.0263	↓	✓
Wholesale and trate	0.04089	0.07872	0.06472	↑	✓
IT & Teleco	0.11911	-0.01566	0.02217	↓	✓
Transportation	0.05534	-0.00119	-0.13596	↓	✗
Utilities	-0.41271	-0.45162	-0.50815	↓	✗
Fuels, Energy, Extraction	0.01942	0.03194	-0.00697	↑	✗
Construction	0.02123	-0.00772	0.0048	↓	✓
Food and Beverages	0.05399	0.04119	0.01224	↓	✓
Financial services	-0.22645	0.03426	0.02146	↑	✓

Table 6.7: Summary of selected composite effects for $FemH_{i,t}$ variable

Chapter 7

Conclusion

The research of the present thesis builds on an examination of a unique, manually collected dataset on supervisory board design and competences of all Czech joint stock companies with more than 500 employees between 2009 and 2020. The dataset was enriched with Bisnode Magnus data on individual supervisory board members and analyzed to deal with research questions and hypotheses concerning the design, competences and composition of supervisory boards of Czech large joint stock companies. Particular attention was paid to the question how changing legal framework described in Chapter 1 affected these practices.

By analyzing the dataset, the author of this thesis was able to address all research questions on the practices of regarding supervisory board design, competences and composition laid out in Section 3.1. The research findings can be summarized as follows:

1. **One vs. Two tier structures**: The two-tier corporate governance structure was dominant in the Czech Republic even in the later parts of the in-scope period, when the monistic setup was allowed. Due to the overall low adoption, the monistic setup was most likely now used to avoid co-determination.

2. **Usual board size**: Most frequently, supervisory boards had three members, exactly as suggested by the regulatory framework.

3. **Supervisory board member tenure and stability**: Supervisory board members were typically appointed for five years, which is a tenure longer than the non-binding legal default. However, the full contract duration was rarely achieved, as more than 80% of the supervisory board members

in the comprehensive sample ceased their appointments earlier, in most cases already in the first half of their tenure, which led to a quite high supervisory board member turnover.

4. **Supervisory board competences**: Power to elect and recall executives was a competence assigned to supervisory boards in about a quarter of the in scope companies. Evidence leaning on random effect probit model estimation has been presented that shareholders tend to regulate this competence when mandatory co-determination is in place.

5. **Co-determination at the minimum legal bound**: Sufficient evidence has been provided to conclude that higher than minimum required co-determination was not used as a means of signaling good workspace environment or as an employee benefit. In fact, none of the companies subject to mandatory co-determination in the Czech Republic declared to co-determine more than the minimum required 33%, despite the fact that legal framework is explicit about the possibility to do so in the later years of in-scope period. Setting aside few exceptions, companies tend to comply with the co-determination rules in terms of accounting for the requirements in their Articles of Association. Small number of cases was found where companies implemented their own employee participation mechanisms when the employee co-determination was not mandatory.

6. **Path towards compliance**: Two simultaneous movements that are linked to the moment when co-determination was introduced have been detected in the data: First, it appears that in some companies employee representatives were appointed on top of existing supervisory board personnel, leading to increase in average supervisory board size. Second, in some companies the employee representatives replaced existing supervisory board members, resulting in a spike of pre-term contract terminations. It has been identified that the re-introduction of co-determination in 2019 was accompanied by over 130 additional pre-term contract terminations on top of the historical yearly average.

7. **Legal persons on board**: In spite of the practice of appointing legal persons to supervisory boards being allowed within the Czech legal framework, and considering the fact that a non-neglectable part of the in-scope companies were organized in a broader corporate structure and thus could appoint, for instance, their mother company, it appears that

this feature was unused. Only 2 companies in the sample had a legal person appointed to their supervisory boards for at least a year.

8. **Female representation in the supervisory boards**: The percentage of women in a supervisory board is, first of all, highly industry-specific. In addition to that, the divergence in evolution of various female representation statistics in time suggests that despite the fact that the overall number of women in supervisory boards was increasing in time, the number of supervisory boards with at least one woman was decreasing. That implies an increase in the concentration of women occurred, but only in a limited (and decreasing) number of supervisory boards.

9. **Education of supervisory board members**: The education statistics of supervisory board members is also vastly industry-specific. However it seems to be quite stable in time.

10. **Co-determination as booster of supervisory board diversity**: Finally, the research on whether co-determination boosts diversity in the supervisory boards yielded mixed results. The hypothesis that only in strongly feminized industries, such as healthcare, the co-determination will help to bring more women in the supervisory boards was then tested empirically. The random effects probit regression used to estimate the industry-specific co-determination effect however again failed to reach a statistically significant persuasive conclusion.

Besides providing the above mentioned answers to the research questions, that can serve as inputs for a future policy design or further research, the presented analysis has brought about various ideas about new research topics within this field. Mainly, it appeared that in order to understand the supervisory board diversity and dynamics, it would be very beneficial to include information on the gender composition and interest fragmentation of the general assembly of shareholders, who have the right to assign competences to the supervisory board and who even under the co-determination still elect and recall majority of the supervisory board members. Unfortunately, in the summer of 2022 when this thesis was finalized, such data were not available in the Czech Republic.

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Appendix A

In Scope Companies

This appendix contains a list of all in-scope companies, i.e. list of all joint stock companies incorporated in the Czech Republic with over 500 employees in December 2020, and thus mandatory supervisory board co-determination (if not monistic) in the time of data collection (September 2021-January 2022):

ADP Employer Services Česká republika, a.s.| AERO Vodochody AEROSPACE a.s.| AGC Automotive Czech a.s.| AGC Flat Glass Czech a.s., člen AGC Group| AGEL Středomoravská nemocniční a.s.| Air Bank a.s.| Aircraft Industries, a.s.| AKWEL RUDNIK CZECH REPUBLIC a.s.| AL INVEST Břidličná, a.s.| ALIMPEX FOOD a.s.| Allianz pojišťovna, a.s.| Alza.cz a.s.| Ammann Czech Republic a.s.| ARMATURY Group a.s.| ARRIVA MORAVA a.s.| ARRIVA VÝCHODNÍ ČECHY a.s.| ARROW International CR, a.s.| ATAS elektromotory Náchod a.s.| AURES Holdings a.s.| AUTOCONT a.s.| AutoESA a.s.| BAŤA, akciová společnost| Bioveta, a.s.| Bombardier Transportation Czech Republic a.s.| BONATRANS GROUP a.s.| BRANO a.s.| Brink's Cash Solutions (CZ) a.s.| BRISK Tábor a.s.| Brněnské vodárny a kanalizace, a.s.| C.S.CARGO a.s.| CANIS SAFETY a.s.| ČD - Telematika a.s.| ČD Cargo, a.s.| ČEPRO, a.s.| ČEPS, a.s.| ČESKÁ LÉKÁRNA HOLDING, a.s.| Česká podnikatelská pojišťovna, a.s., Vienna Insurance Group| Česká spořitelna, a.s.| Česká zbrojovka a.s.| České aerolinie a.s.| České dráhy, a.s.| Československá obchodní banka, a. s.| CETIN a.s.| ČEVAK a.s.| ČEZ Distribuce, a. s.| ČEZ Prodej, a.s.| ČEZ, a. s.| Chart Ferox, a.s.| Coal Services a.s.| COLAS CZ, a.s.| Comdata Czech a.s.| CPI Hotels, a.s.| ČSAD Hodonín a.s.| ČSOB Pojišťovna, a. s., člen

holdingu ČSOB| ČZ a.s.| CZ LOKO, a.s.| Czech Airlines Handling, a.s.| Czech Airlines Technics, a.s.| CZECH NEWS CENTER a.s.| DELIMAX a.s.| Démos trade, a.s.| DEZA, a.s.| Dopravní podnik hl. m. Prahy, akciová společnost| Dopravní podnik města Brna, a.s.| Dopravní podnik Ostrava a.s.| Dopravní zdravotnictví a.s.| Elektrizace železnic Praha a.s.| ELTODO, a.s.| EMERGE, a.s.| Equa bank a.s.| Erwin Junker Grinding Technology a.s.| EUROVIA CS, a.s.| Explosia a.s.| FAST ČR, a.s.| Fatra, a.s.| Federal-Mogul Friction Products a.s.| Ferona, a.s.| FLOSMAN a.s.| FORTUNA GAME a.s.| G4S Secure Solutions (CZ), a.s.| GECO, a.s.| Generali Česká Distribuce a.s.| Generali Česká pojišťovna a.s.| GTH catering a.s.| Gumárny Zubří, akciová společnost| GZ Media, a.s.| HARTMANN - RICO a.s.| Heineken Česká republika, a.s.| HOCHTIEF CZ a. s.| Home Credit a.s.| Home Credit International a.s.| Hutní montáže, a.s.| IC Energo a.s.| ICOM transport a.s.| IFE-CR,a.s.| IMOS Brno, a.s.| Internet Mall, a.s.| Iveco Czech Republic, a. s.| JIP východočeská, a.s.| John Crane a.s.| JUTA a.s.| Karlovarská krajská nemocnice a.s.| KAVALIERGLASS, a.s.| Kayaku Safety Systems Europe a.s.| Klatovská nemocnice, a.s.| Kofola a.s.| KOH-I-NOOR HARDTMUTH a.s.| Komerční banka, a.s.| Kooperativa pojišťovna, a.s., Vienna Insurance Group| KORDÁRNA Plus a.s.| Kostelecké uzeniny a.s.| KOVOLIS HEDVIKOV a.s.| KOVONA SYSTEM, a.s.| Krahulík-MASOZÁVOD Krahulčí, a.s.| Krajská nemocnice Liberec, a.s.| Krajská nemocnice T. Bati, a. s.| Krajská zdravotní, a.s.| Kroměřížská nemocnice a.s.| KS Kolbenschmidt Czech Republic, a. s.| La Lorraine, a.s.| Lagardere Travel Retail, a.s.| Lázně Luhačovice, a.s.| Léčebné lázně Jáchymov a. s.| Léčebné lázně Mariánské Lázně a. s.| Letiště Praha, a. s.| Liberty Ostrava a.s.| Linaset, a.s.| Linde Gas a.s.| Lovochemie, a.s.| M - SILNICE a.s.| MADETA a. s.| MAFRA, a.s.| MAKOVEC a.s.| Marius Pedersen a.s.| Mark2 Corporation Czech a.s.| Mělnická zdravotní, a.s.| METRANS, a.s.| Metrostav a.s.| MINERVA BOSKOVICE, a.s.| Model Obaly a.s.| Mondi Štětí a.s.| MONETA Money Bank, a.s.| MONTIX, a.s.| Moravské kovárny, a.s.| MOTORPAL, a.s.| Mountfield a.s.| MP Krásno, a.s.| MW-DIAS, a.s.| Nemocnice AGEL Nový Jičín a.s.| Nemocnice AGEL Ostrava-Vítkovice a.s.| Nemocnice AGEL Třinec-Podlesí a.s.| Nemocnice České Budějovice, a.s.| Nemocnice Jindřichův Hradec, a.s.| Nemocnice Litoměřice, a.s.| Nemocnice Pardubického kraje, a.s.| Nemocnice Písek, a.s.| Nemocnice Rudolfa a Stefanie Benešov, a.s., nemocnice Středočeského kraje| Nemocnice s poliklinikou Česká Lípa, a.s.| Nemocnice Strakonice, a.s.| Nemocnice Šumperk a.s.| Nemocnice Tábor, a.s.| NH Hospital a.s.| Nová Mosilana, a.s.| O2 Czech Republic a.s.| Oblastní nemocnice Jičín a.s.| Oblastní nemocnice Kladno, a.s.,

nemocnice Středočeského kraje| Oblastní nemocnice Kolín, a.s., nemocnice Středočeského kraje| Oblastní nemocnice Mladá Boleslav, a.s., nemocnice Středočeského kraje| Oblastní nemocnice Náchod a.s.| Oblastní nemocnice Příbram, a.s.| Oblastní nemocnice Trutnov a.s.| OHLA ŽS, a.s.| OKD, a.s.| OKIN BPS, a.s.| OKK Koksovny, a.s.| Orkla Foods Česko a Slovensko a.s.| OSTROJ a.s.| OTIS a.s.| P L E A S a.s.| Paradise Casino Admiral,a.s.| Pars nova a.s.| P-D Refractories CZ a.s.| PEAL a.s.| PENAM, a.s.| Philip Morris ČR a.s.| PKP CARGO INTERNATIONAL a.s.| Plzeňská teplárenská, a.s.| Plzeňské městské dopravní podniky, a.s.| Plzeňský Prazdroj, a. s.| PMU CZ, a.s.| PORR a.s.| Pražské služby, a.s.| Pražské vodovody a kanalizace, a.s.| PRECHEZA a.s.| PRECIOSA - LUSTRY, a.s.| PRECIOSA ORNELA, a.s.| PRECIOSA, a.s.| PREdistribuce, a.s.| PRODECO, a.s.| První brněnská strojírna Velká Bíteš, a. s.| Ptáček - velkoobchod, a.s.| PWO Czech Republic a.s.| Raiffeisenbank a.s.| RegioJet a.s.| Revitrans, a.s.| S u b t e r r a a.s.| s. n. o. p. cz a.s.| Saint-Gobain Construction Products CZ a.s.| Savencia Fromage Dairy Czech Republic, a.s.| Sberbank CZ, a.s.| Sellier Bellot a.s.| Severní energetická a.s.| Severočeská servisní a.s.| Severočeské doly a.s.| Severomoravské vodovody a kanalizace Ostrava a.s.| Seznam.cz, a.s.| SIKO KOUPELNY a.s.| Skanska a.s.| ŠKODA AUTO a.s.| ŠKODA ELECTRIC a.s.| ŠKODA JS a.s.| ŠKODA TRANSPORTATION a.s.| Slévárny Třinec, a.s.| Slovácké strojírny, akciová společnost| Smartwings, a.s.| Sokolovská uhelná, právní nástupce, a.s.| Solitea, a.s.| Spolek pro chemickou a hutní výrobu, akciová společnost| Stavebniny DEK a.s.| STAVMAT STAVEBNINY a.s.| STRABAG a.s.| Strojírny a stavby Třinec, a.s.| SUEZ CZ a.s.| Synthesia, a.s.| SYNTHOS Kralupy a.s.| TAJMAC-ZPS, a.s.| TATRA METALURGIE a.s.| TATRA TRUCKS a.s.| TEDOM a.s.| Tereos TTD, a.s.| Tesco Stores ČR a.s.| THK RHYTHM AUTOMOTIVE CZECH a.s.| Thun 1794 a.s.| Tipsport.net a.s.| T-Mobile Czech Republic a.s.| TON a.s.| Trelleborg Bohemia, a.s.| Trelleborg Wheel Systems Czech Republic a.s.| TŘINECKÉ ŽELEZÁRNY, a. s.| Uherskohradišťská nemocnice a.s.| ÚJV Řež, a. s.| UNEX a.s.| UNI HOBBY, a.s.| UniCredit Bank Czech Republic and Slovakia, a.s.| UNIQA pojišťovna, a.s.| UNITED BAKERIES a.s.| VEBA, textilní závody a.s.| Veolia Energie ČR, a.s.| VÍTKOVICE STEEL, a. s.| VLTAVA LABE MEDIA a.s.| Vodafone Czech Republic a.s.| VODÁRENSKÁ AKCIOVÁ SPOLEČNOST, a.s.| Vodárny a kanalizace Karlovy Vary, a.s.| Vodňanská drůbež, a.s.| Vršanská uhelná a.s.| Vsetínská nemocnice a.s.| Window Holding a.s.| Wotan Forest, a.s.| ZÁLESÍ a.s.| ŽĎAS, a.s.| ŽDB DRÁTOVNA a.s.