
The Norwegian Gender Balance Law.

A reform that failed?

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Abstract

The Norwegian Gender Balance Law (GBL) was proposed in June 14th 2003, made into a law on December 9th 2005, and implemented from January 1st 2006 with a two-year grace period. The law mandates at least 40% board representation for both gender in PLC companies. The government gave two main promises, one that gender equality would increase with the law, the other that companies' financial performance would improve. I review research literature and add descriptive long-term developments on these dimensions. This essay concludes that the promises were not fulfilled, and that the corporate governance consequences that did follow are mostly negative. Companies attain the 40% female director target, but besides this, the law does not bring more female managers or CEOs, and the gender segregated labour market remains segregated. Today, the law applies to about 500 women, half of the number at its maximum. An unintended consequence of the legislation is the mass exodus of companies from the PLC register. I find it difficult to compare results from research on financial performance. Researchers perform before-and-after study, a natural experiment, but the reform has a long gestation period and attrition of companies from the PLC register. I conclude that the law should be repealed. In a wider context the experiment casts doubt as to the usefulness of legislation to promote gender equality in the boardroom and in society at large.

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Chapter 1

Introduction

During the 2000s the Norwegian political authorities enacted the Gender Balance Law (GBL), requiring the public limited companies (PLCs) to have at least 40% of each gender on the board of directors. If the company did not comply, it would be dissolved. The legal process commenced in July 2003 and ended with the full implementation on January 1st, 2008. The law applies to listed and unlisted PLCs. The objectives for the law was first and foremost to achieve more gender equality in leadership positions in private companies. The proposition made the promise that the compulsory gender representation would set in train the appointment of more women in top management positions, in particular more female CEOs. A second promise was that the resulting increased gender diversity would improve firm performance. The law was imposed upon PLC companies from outside, that is, for the companies concerned this was an exogenous event. From a regulatory standpoint the law was an experiment in corporate governance.

The question here is whether it is possible to regulate one's way to a more gender equal society, or on a smaller note, whether quota laws are the best means to achieve gender equality in leadership positions. Of course, governments and international bodies regulate and promote aspects of corporate governance in order to achieve less power concentration to the CEO ("Cadbury committee", 1992), or to achieve greater transparency and independence among actors important to owners and markets, such as the Sarbanes-Oxley Act (2002) (SOX). Using regulations in the board room in order to achieve political goals outside the domain of companies' corporate

governance appears to be a different matter. The danger is that the GBL reform only touches surface problems and does not address underlying social structures. Chief among the latter is the gender segregated labour market, the very unequal attachment to the labour market that men and women exhibit. One aspect of this is the setback in a woman's career path with the onset of motherhood, especially among the highly educated women (Hardoy et al., 2017; Cools et al., 2017), from where one expects female leadership talent to emerge.

The official rationales for the GBL are mainly political. The central government document presented to the Parliament as the law proposition is Ot.prop. no 97 (2002-2003). From the proposition three main rationales for the GBL emerge. First, it is maintained that a low female representation on the boards is a sub-optimal resource utilisation. The proposition states emphatically several times that there is no lack of competent women to fill board seats, stating equality in education levels and business relevant experience. The claim that no lack of competent women exists constitutes a "basic presupposition" for the proposition. Second, the GBL would bring about greater gender equality and democracy by improving women's participation in business and societal decisions. The reasons for low representation at the time was put down to "traditional ideological and cultural conditions". The proposition avoids the word "discrimination", but this is clearly the lawmakers' underlying opinion. It was thought that a quota would open the eyes of owners to the valuable resource that women are, and thus, increase the number and percentage of women in other leadership positions besides board directorships. Third, the proposition makes a business case for female representation in the boardroom, assuming that the GBL would improve the firms' profitability. The proposition states that "increased board diversity, not only related to gender, but also age and background, can contribute to better strategic choices, more innovation, faster restructures, and through this to increased profitability" (Ot.prop. no 97, 2002-2003, p. 10, my translation). To back up this claim, the proposition cites a student dissertation, but no international literature on the subject. The proposition further notes that the break-up of small networks and close ties among members will improve business decisions.

To repeat, the proposition makes two promises, one for greater gender equal-

ity in leadership positions in private companies, and one for improved firm performance. We call these *GBL promise 1 and 2*. The intended greater equality concerns both equality in the board of directors, but also a spillover to other top management positions. The promises are built on the “basic presupposition” that able women for directorships are easily found, as the companies have not accessed the full talent pool of candidates, but mainly the male part.

In this survey article I review the two promises in light of academic literature on the GBL together with long-term descriptive statistics before and after the regulation. In order to fully evaluate the reform I also include unintended consequences that follow from the reform and that the lawmakers did not foresee. The most important is what I call the withering of the PLC company. The number of PLC companies coming under the law was drastically reduced starting with the first signal that a compulsory law would come in 2002 and is, in fact, still ongoing. I look at easily accessible descriptive statistics and selected research that try to establish if the reform has been beneficial or not. I do not discuss the very large literature on the pros and cons of diversity in the board of directors. A good overview is Ferreira (2011) and the overview of Adams (2016). It turns out that the question if the reform has generated improved firm performance meets with a host of methodological problems (Ferreira, 2015). Much of the discussion will be on methodological choices that various researchers do.

I write from the vantage point of financial economics, more specifically, from the corporate governance viewpoint. This means that the survey skips much valuable research contributions in other disciplines. The Gender Balance Law has attracted much scholarly interest. In this paper, I survey papers that deal with firm performance and the withering of the PLC company, but also on changes in other leadership positions (Bertrand et al., 2018). Research on GBL touches on a series of aspects and includes Seierstad and Opsahl (2011) writing on changes in the network of companies and how female directors acquire “golden skirts”, Bøhren and Staubo (2016) study how the GBL induced a more independent board, Ahern and Dittmar (2012), Matsa and Miller (2013), Dale-Olsen et al. (2013) study firm performance with different methodologies, while Eckbo et al. (2016) is a study that is favourable about the GBL. Smith (2014) gives an international overview of

gender representation with an emphasis on effects of quotas, and Gabaldon et al. (2016) give an multidisciplinary theoretical overview of women's access to board positions.

The concern for gender equality also in leadership positions in private firms stands well within the Norwegian "state feminism" (Hernes, 1987) tradition, meaning that the government is supposed to have a responsibility to improve gender equality at all levels in society. The policy may be seen as a continuation of what Sandmo (1991) calls the Scandinavian welfare state model, where the state takes an active part in redistribution of income in order to achieve narrow income differentials. The policy of gender equality follows this traditional emphasis on equality and had been implemented in the government sector when gender quota legislation for PLCs was contemplated. The time had now come to the private sector. Presumably, politicians viewed the law as appealing to a large part of the electorate as a token for their concern about gender equality generally. But the consequence is to favour a special interest group, that is, women who aspire to leadership positions in private companies. Persson and Tabellini (2002, p. 160) define a policy favouring a special interest group as one that has "concentrated benefits and dispersed costs". In the public choice literature this is called *rent seeking* (Mueller, 2003, chap. 15), that is, the appropriation of benefits to one group of society. In this case the costs are borne by especially younger aspiring men and companies potentially coming under the law. As we will argue, the benefits are harder to identify.

Thus, the GBL was exogenous to the companies. It arose at the political level and could not be overturned despite protests. The law infringes upon one of the basic rights that holding a company's share confers upon the owner, namely the right to elect the company's officers (Hansmann, 1996). But board structure and corporate governance in general "arise endogenously because economic actors choose them in response to the governance issues they face" (Adams et al., 2010). A company in the oil industry differs from a company in the IT services industry when it comes to the governance issues they need to cope with, a small company differs from a large one. Companies find the combination of governance mechanism that suit their situation through a long trial-and-error process. When is a general reform an improvement of the governance arrangement that the company has

arrived at spontaneously? Hermalin and Weisbach (2006) discuss requirements for state intervention to be beneficial for the regulated. These arise due to three market failures of individual contracting, namely asymmetric information at the time of contracting, externalities on a third party, and the regulator's availability of punishing mechanisms that private contracting parties do not have, such as incarceration. As we have seen the arguments for the gender law was wholly outside such concerns, and instead geared to win political favour.

Yet, a study Gompers et al. (2016) into the success of venture capitalists given personal background might lend support to the claim in Ot.prop. no 97 (2002-2003) that more diversity at the board level can be beneficial for firm performance. They find that venture capitalists tend to form partnerships with others who are alike in education, employment history, ethnicity, and gender characteristics. The authors differentiate between *ability* and *affinity*, where the first is educational attainment, for instance, having a degree from a top university. Affinity is likeness in ethnicity and gender, attending the same school, or having the same employer. They find that affinity variables are negatively related to venture firm performance, but that ability variables are positively related. Thus, it can be argued that firms benefit from having persons with high ability and a diversity of personal characteristics. A rationale for government legislation is then that companies are not able to achieve this on their own due to entrenched and rigid conceptions as to who constitutes a good board member candidate. Adams and Funk (2012) on the other hand find that female *directors* are similar to male directors when it comes to personality traits, and that even the women in the boardroom are less risk averse than men. Thus, even though personality traits are different between men and women in the population, they need not be in the boardroom (Adams, 2016).

Furthermore, the literature on regulation shows that regulations often have *unintended consequences*, consequences that the lawmakers did not foresee at the time. A general finding is that companies try to avoid regulations if they can, as witnessed for the SOX legislation in the United States. Gao et al. (2009) find that small firms have an incentive to stay small in order to avoid the SOX regulations.

In all, I conclude that the GBL is a failed reform. Promises are not ful-

filled. On Promise 1 it turns out that the reform is a success in bringing the *percentage* of women on the board up to the 40% minimum target, but it fails in bringing more women in *absolute number* into directorships in PLC companies. The reform has neither increased the fraction of female top management in PLCs. Promise 2 is that greater board diversity will improve firm performance. None of the studies in the review find that firm performance improves. Findings from the studies are either a negative or no reform effect. Furthermore, the reform has had some negative unintended consequences. First of all, the reform coincides with a drastic reduction in the number of PLC companies, a withering of the PLC organisational form. As we will see, Bøhren and Staubo (2014) show that those companies leaving the PLC register in favour of the LTD register have the greatest costs of adapting to the new law. The reduction implies less corporate transparency about the economic situation of the firm, its corporate governance and other aspects. Second, the reform has concentrated many board positions to a minority of female directors at the same time that the network connections have become thinner. Third, Bøhren and Staubo (2016) show that board independence has increased to a level that brings about negative firm performance, and that these effects are concentrated among firms that need independence least. The conclusion of our review is that the Gender Balance Law should be repealed.

Chapter 2

Gender Balance Law and female leaders

Did developments in the board representation and other leadership positions fulfill Promise 1? In this chapter, we undertake to show some of the consequences that the law entailed from long-term descriptive data comparing PLC and LTD companies, and we also relate evidence from the Bertrand et al. (2018) study of spillover effects to other managerial positions from better female representation at the PLC board. Judged by its consequences, was the call for board equality justified?

2.1 The Gender Balance Law (GBL)

The Norwegian quota law for equal gender representation, article §6-11a in “The Norwegian Public Limited Liability Companies Act”, was finally made mandatory for all PLC companies from January 1st 2008. The law says that at least 40% of each gender must be represented at the board of directors. Specifically, the law mandated representation as set out in table 2.1.

This specification is relevant, since the typical size of a Norwegian board is five. Therefore, the overall average percentage may deviate from the 40% rule, even when companies follow the law to the letter.

The mandatory gender representation was made applicable to state owned

Table 2.1 Mandated gender representation in the board of directors. §6-11a in Company law for PLCs, made mandatory at January 1st 2008.

No. of directors	Minimum gender representation
2 or 3	1
4 or 5	2
6 to 8	3
9	4
10 +	40%

and intermunicipal companies in 2004, to newly formed PLC companies in 2006, for established PLC companies in 2008, and for municipal and cooperative companies in 2009 (Teigen, 2012, p. 122-3). Teigen writes that the law applies to about 300 municipal and intermunicipal companies and about 300 cooperative companies. In this paper, we limit our discussion to shareholder owned companies. A change in the law for LTD companies on November 1st 2007 made security trading legal for such companies. This was formerly reserved for PLC companies. The mandated quota came into force January 1st, 2006, with a two years grace period to achieve the 40% requirement. The GBL contains a dissolution clause, that is, if the company does not comply with the 40% requirement, it will be dissolved. The very strict sanction is probably instrumental in ensuring that companies abide by the law.

Since the law was mandated for PLC companies only, companies could avoid the consequences of the law by shifting registration from a PLC company and into a LTD organisational form. We will see that this adds a layer of methodological difficulties, in particular *survivorship bias*. The quota law was a result of a long drawn-out political process. Political processes take time. Table 2.2 gives an overview of the political processes and decisions leading up to the final implementation of the GBL in the political domain.

The table 2.2 shows that the introduction of GBL was not a clean one-off break with the past, but rather the result of a long, drawn-out process unfolding in the political arena. The Gabrielsen announcement in February 2002 stands out as the turning point in the process. The announcement was a complete surprise, also to the minister's colleagues in government, as was his recommendation to mandate a quota for female directors. But

Table 2.2 Important dates in the history of the Gender Balance law

Date	Event
Oct 1999	“Consultation document on changes to the gender equality act”, Ministry of Children and Family 1999. The document proposes 25% minimum quota in privately owned companies.
Jul 2 2001	Consultation document from the Jens Stoltenberg 1 government proposes more equal gender representation of at least 40% of each gender in state owned companies and in all PLC companies, but not in privately owned LTD companies.
Feb 22 2002	The minister of trade, Ansgar Gabrielsen, says in an interview for the newspaper VG that “in the worst case I will rewrite the company law to enforce at least 40% female directors in listed companies”
Jun 13 2003	The Ministry for Children and Family proposes the Gender Balance Law (Ot.prop. no 97, 2002-2003) requiring at least 40% representation for each gender in PLC companies, if not companies on their own achieve the required representation within two years. The law’s sanction is to dissolve the company if it does not comply.
Jul 2005	The government assesses progress and decides to implement the law.
Dec 9 2005	The Norwegian Parliament enacts the GBL.
Jan 1 2006	The GBL is implemented with a two years’ grace period to achieve compliance. (Company Law §6-11a).
Jan 1 2008	Complete compliance is required.

legislation starts in 2003, is then confirmed in 2005 along with a decision to implement the law from January 1st 2006. From then the companies had a two years’ grace period to comply with the law. Finally, the GBL is implemented in full from January 1st, 2008. Thus, from the inception of government involvement in 1999 until the final implementation in 2008 nine years elapse.

Methodological problems appear when trying to uncover the effects of the legislation. The requirements for a natural experiment using difference-in-difference (DID) methods (Lee, 2005) seem to be broken. The defining event date is hard to pin down. Is it 2003, 2006, or 2008? The answer is non-

trivial for interpretation of the evidence. For instance, in 2003 companies knew that the law would be implemented, and could take actions to adapt to the new law. They could seek to fill board seats with able women, or they could consider transforming into the LTD organisational form. There is a serious attrition of PLC companies in the period. Furthermore, a researcher cannot consider the events to be independent. Rather, political decisions are confirmation or refutation of former decisions. These and other methodological issues are at the forefront of the discussion in chapter 5. Furthermore, evidence from other legislation will be brought forward. For instance, Duchin et al. (2010) discuss effects of the SOX legislation from mandating full independence in the auditing sub-committee.

2.1.1 International repercussions

The official document Ot.prop. no 97 (2002-2003) notes with satisfaction that the proposal had received positive press comments throughout the world. Also, Teigen (2012) claims that the international diffusion of the quota rules as one of the great achievements of the work for gender equality.

Terjesen et al. (2015) take up the political argument in Teigen (2012) that the gender quota is a result of a political process, exogenous to the business community. They stress political institutions when explaining the uptake of legislation to end gender inequality in the boardroom, in particular, the strength of social democratic parties. Grosvold (2011) and Adams and Kirchmaier (2013) give further evidence of the implementation of gender quota laws in other countries. Apart from Norway and Iceland, it appears no other country threaten to dissolve the company if it does not comply. In most countries, the law is of a soft law type, requiring companies to comply, or to explain why the gender representation falls short of requirements.

2.2 Changes in the board

There is no doubt that the gender balance law led to an increase in the *percentage* of women on the board in PLC companies. But the *number* of women in PLC companies declined shortly after the law's implementation. The situation is depicted in figure 2.1.

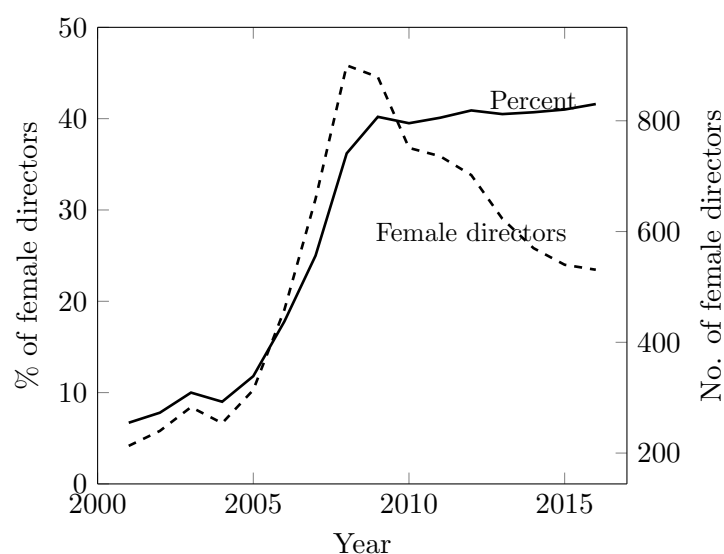


Figure 2.1: The percentage of female directors (left ordinate) and the number of female directors (right ordinate) in Norwegian PLC companies 2001 to 2016 (right scale). The percentage is the average of the percentage in all PLC companies. The absolute number is the the number of individual women. Source: Statistics Norway.

The percentage and the absolute number curves follow each other closely until 2008. From 2008 the number of women declines while the percentage stays fixed at about 40 percent. At the nadir in 2008 900 individual women held a board position in a PLC company. A cynic might say that the GBL now concerns a small elite of about 500 women.

Figure 2.1 shows other interesting developments. First, the attainment of the 40 percent goal takes five years to fulfill. The increase in female representation starts in earnest in 2004, the year after the GBL enactment, and increases steadily until 2009, when the 40 percent target is finally met. This means that the GBL does not constitute a decisive event, with clear periods before and after the event. Instead, the event is rather a five-year long drawn-out process. Second, the GBL does not lead to full equality at around 50 percent of each gender represented. Once the 40 percent is attained, the percentage stays at this level. This is contrary to expectations from the proposition to the Parliament (Ot.prop. no 97, 2002-2003).

Furthermore, implicit in the (Ot.prop. no 97, 2002-2003) is an assumption

of asymmetric information, in that owners need to be enlightened to the benefits of having a gender diverse board. When owners realise this, each gender should be equally represented, that is, 50% each. The asymmetric information can be one reason for regulating gender representation (Hermalin and Weisbach, 2006). However, the long-term development in the fraction of female directors suggests that this has not been the problem. Companies have attained the 40% required by the law and have stayed at 40%. This is rather evidence that companies find it hard to find able female candidates for the director posts. Moreover, the dwindling number of female directors in PLC companies means that the benefits of the GBL is concentrated among fewer and fewer women. The rent seeking benefits (Mueller, 2003) are becoming quite stark as time passes.

The falling number of women in PLC boards is in contrast to the rise of female directors and CEOs in private LTD firms. Figure 2.2 gives an overview of the percentage and of the number of female directorships and CEO positions held by men and women in LTD companies.

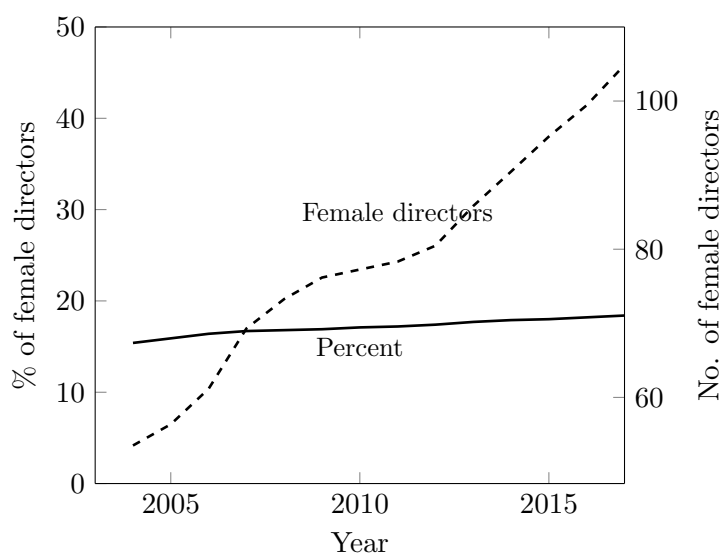


Figure 2.2: The percentage of female directors (left ordinate) and the number of female directors (right ordinate in 1,000) in Norwegian LTD companies 2004 to 2017 (right scale). Source: Statistics Norway.

Evidently, the *percentage* of female directors is much lower than in PLC companies. The percentage of female directors is increasing slowly and steadily

from a level of 15.4% in 2004 and reaches 18.4% in 2017. However, the *number* of women on the board rises dramatically. In 2017 nearly 105,000 women held a director position in a LTD company, nearly twice the 53,500 female directors in 2004. This means that the growth in the number of female directors is stronger than for men. Thus, even without a quota law, the number of female directors increases. The progress is steady and even, and not in fits and leaps characterising the female directors in PLC companies in figure 2.1. There is no trend break, no acceleration, in female representation around the GBL reform. Looking forward, the progress seems to mirror the steady increase in female full-time labour participation in figure 3.2 and women's choice of sector affiliation in figure 3.3.

The steady increase in the percentage and the number of female directors is against expectations in the Ot.prop. no 97 (2002-2003). The expectation was that the law would inspire the LTD companies to appoint more female directors. The fact that we do not observe a jump in representation, but rather a steady progress, is a witness that these reflect deeper changes in society. The rise in female representation on LTD boards seems to be independent of the GBL.

2.3 Board demographics changes

The average board size did not change much as a consequence of the GBL. The average board size increases slowly and steadily from 5.1 in 2001 to 5.7 in 2016. This is perhaps surprising, as one might expect that companies adjusted to the GBL by expanding the number of directors. When this did not happen, the implication is that the GBL led to a substitution of male directors for female.

Ahern and Dittmar (2012) and others note that the age distribution changes with the GBL. This is, in fact, a likely result given the high rate of substitution in the boards following the GBL. The age distribution changes, as figure 2.3 witnesses. The figure shows the age distribution of men and women in 2001, before the GBL, and 2010, after the GBL implementation in PLC companies.

The figure shows that the age distribution changes most notably for men. The distribution changes to the right, indicating that male directors are older

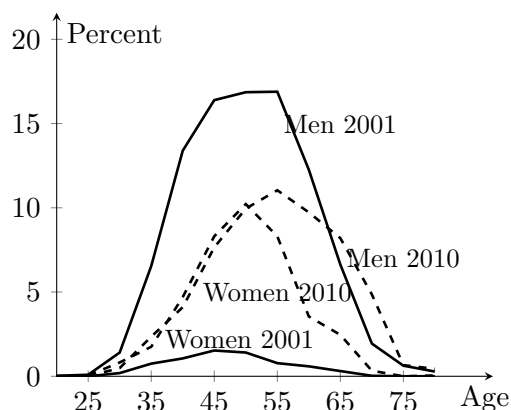


Figure 2.3: Age and gender distribution in Norwegian boards in PLC companies in 2001 and 2010. Percent of all board directors in each year. Source: Brønnøysund Register

on average in 2010 than in 2001. Female directors are distinctly younger in 2010 than men are in the same year. But if we compare women’s age in 2010 with men’s age in 2001, the difference vanishes. The new women in 2010 have the same age distribution as men before the GBL. It seems as if owners prefer to keep the experienced male directors, perhaps in order to provide a balance to the low experience of the younger women. Young women replace young men. An upshot of this analysis is that a cohort of young men aspiring for the board room have to wait for the old men to step down.

Bertrand et al. (2018) relate that women entering the board as a consequence of the GBL reform were at least as well qualified as their male colleagues. They also find that there was no lack of qualified women for corporate boards from data on qualifications. This could imply that few women have multiple directorships, an aspect that we investigate next in section 2.4.

2.4 Network: “The golden skirts”

The minister of Industry Ansgar Gabrielsen said in the VG newspaper interview (22.02.2002) that he was “sick and tired” of the way the “old boys’ network” appointed men to each others’ boards, before introducing the GBL. Changes in board composition in PLC companies are unmistakable. One change is the emergence of the *golden skirts* (Seierstad and Opsahl, 2011).

The golden skirts are women who obtained a board position as a consequence of the GBL, especially those women who could hold several directorships. Arnesen-Nyhus and Strøm (2016) confirm the golden skirts suggestion. Using data from the Brønnøysund register from 2001 to 2010, we divide the number of directorships by the number of unique persons and find that men hold 1.31 directorships on average in 2001 and 1.15 in 2010. Women start with 1.12 directorships on average and ends the period with 1.26. Thus, the GBL seems to have broken the “old boys’ network” and substituted it for influential women.

Arnesen-Nyhus and Strøm (2016) perform a network analysis of Norwegian boards of all PLC companies in the period 2001 to 2010. We look at the connections created when a director sits on multiple PLC boards. A rationale for studying network among companies and individual directors comes from Bøhren and Strøm (2010), who find that profitability improves for a better connected company. Arnesen-Nyhus and Strøm first give a graphical picture of network connections between individuals in PLC companies, see figures 2.4 and 2.5.

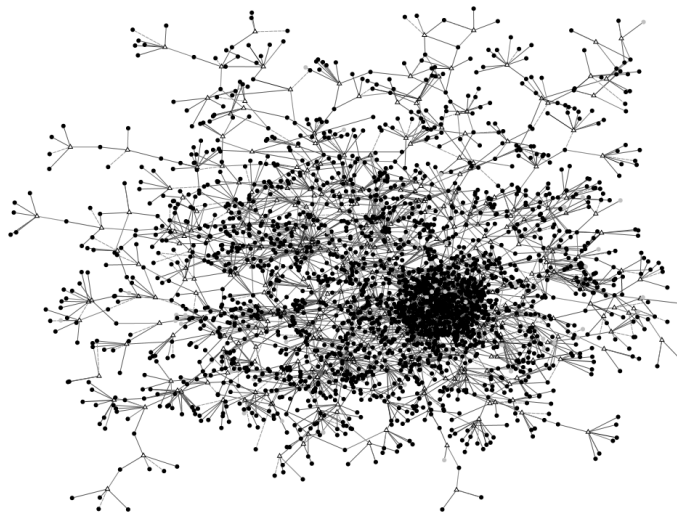


Figure 2.4: The network of joint directorships in PLC companies in Norway in 2001. Source: Arnesen-Nyhus and Strøm (2016)

The figures contain only the companies with relations to the so-called “main component” (Wasserman and Faust, 1994) of all companies, that is, companies whose directors do not hold any other PLC directorships are kept

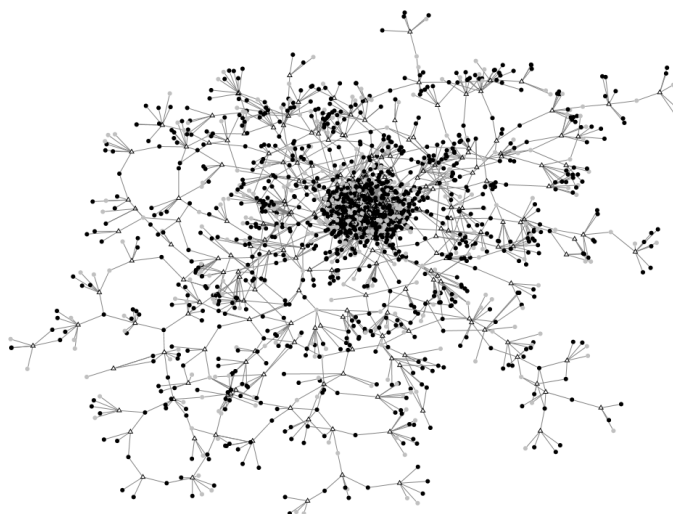


Figure 2.5: The network of joint directorships in PLC companies in Norway in 2010. Source: Arnesen-Nyhus and Strøm (2016)

outside the analysis. The two network maps show that more companies participate in 2001 than in 2010. This is as expected, since the number of PLC companies withered away in the period, see chapter 4. But the network is also more concentrated, with a core of companies with dense connections and large part of the network made up of companies with few relations to other companies. With a less dense network the information flow between companies is reduced. The directors' access to business ideas, and not the least, knowledge about good candidates for board or management positions becomes poorer. This can impair the board's work.

Figures 2.4 and 2.5 have blue and pink colours representing male and female directors, respectively. We are able to characterise the relative importance of male and female directors in the overall network. Loosely speaking, this importance comes from the number of directorships a director holds, as well as the linkages that other directors bring from other companies. The importance is measured by various *centrality measures* (Freeman, 1978-1979). Here, we use only the *betweenness centrality* for illustration. A person occupying the position of a “bridge” between two sub-networks will have a high betweenness centrality.

Table 2.3 gives an overview of summary statistics for betweenness over the

Table 2.3 Summary of betweenness distributed by male and female directors in Norwegian LTD companies 2001 to 2010. Source: Arnesen-Nyhus and Strøm (2016)

Year	<i>Men</i>			<i>Women</i>			<i>t</i> value
	Average	St.dev.	Obs.	Average	St.dev.	Obs.	
2001	0.076	0.153	2305	0.037	0.094	165	4.92
2002	0.067	0.143	1968	0.054	0.124	183	1.24
2003	0.060	0.128	1528	0.068	0.156	197	-0.68
2004	0.076	0.157	1408	0.065	0.154	246	1.10
2005	0.071	0.160	1291	0.061	0.150	338	1.07
2006	0.067	0.151	1190	0.102	0.195	452	-3.51
2007	0.040	0.104	973	0.080	0.175	592	-5.03
2008	0.044	0.105	794	0.124	0.231	542	-7.58
2009	0.036	0.099	675	0.091	0.179	451	-5.90
2010	0.051	0.133	686	0.099	0.185	474	-4.84

2001-2010 period. The table contains a simple t statistic of the differences in averages in the two sub-groups for every year.

Initially, we notice that male dominance in the main component has become substantially weaker during the period. From 2007 the fraction of female directorships in the main component is on par with the overall fraction of female directors. At the same time great changes takes place for centrality for women, in particular betweenness centrality. In 2001 the betweenness centrality for men is about twice the female centrality, and the difference is significant. This is reversed in 2006 when the female betweenness centrality is significantly larger than the male, and this persists for the period. During the decade women have largely assumed central positions in the network of persons. More than men, they are information intermediaries between persons. The pattern for betweenness centrality repeats for other centrality measures such as closeness and eigenvector centrality, even though the results are not as definite. Thus, the overall conclusion is that women have become more central than men in the network of individual actors.

Thus, the GBL has definitely broken the “old boys’ network” and replaced it with the “old girls’ network”.

2.5 Too much monitoring?

Bøhren and Staubo (2016) advance the idea that the GBL could have induced the dispensation of too much monitoring and too little advice in the board-CEO relationship. We close this chapter with a look at their arguments.

Their background is that the functioning of boards does not adhere to a “one size does not fit all” model (Coles et al., 2008). Companies have different governance needs, the needs are different in small companies and in large, in a newly created company and a long established. Two important functions of the board is to monitor the CEO’s actions and to give the CEO advice (Adams and Ferreira, 2007). Adams and Ferreira show in a theoretical model that the CEO is less willing to share information with the board if the board stresses monitoring, leading to suboptimal decisions by board and CEO. Duchin et al. (2010) investigate the value of having a board composed of mainly independent directors who are able to monitor, versus a board that is able to advice the CEO. The authors use the SOX legislation to study effects, and find that a high level of independence is advantageous for a settled, established company, while a lower level suits companies where costs of information collection are high. SOX imposed a high level of independence, especially in the audit committee that is the object of study for Duchin et al. (2010).

Bøhren and Staubo (2016) explore the question for the Norwegian GBL regulation. Their definition of board independence is the number of outside directors divided by the number of directors elected by shareholders. The outside director is an indicator variable being 1 if “... the board member is neither a full-time employee in the firm, a former employee, an employee of a closely related firm, related to a member of management, nor has business relationships with the firm”. All PLC companies constitute their sample. The listed PLC companies are subject to the Norwegian Corporate Governance Code (NUES) from 2004 requiring at least 50% of board members to be independent. The unlisted PLC companies have no such obligation. To explain the level of board independence (BI) they run the regression

$$BI_{it} = \alpha + \beta_1 FD_{it} + \beta_2 L_{it} + \beta_3 FD_{it} \times L_{it} + \gamma \mathbf{X}_{it} + u_{it} \quad (2.1)$$

where FD_{it} is the fraction of female directors, L_{it} is a binary variable being 1 if the firm is listed, and \mathbf{X}_{it} is a vector of control variables.

Bøhren and Staubo find that board independence has increased in the time span they investigate, 2003 to 2008 for all companies, and especially for the listed companies. The independence is significantly higher in 2008 than 2003 for both listed and unlisted companies. In regressions with board independence as the dependent variable, the fraction of female directors is strongly associated with independence. The implication is that the GBL reform brought about higher board independence, and not NUES. Owners were unable to appoint women to the board without also appointing independent directors. A more independent board is therefore, a side-effect to the GBL. The GBL has, in other words, distorted market solutions.

Bøhren and Staubo also perform analyses of firm performance using the residual \hat{u}_{it} from the board independence regression (2.1) as the main explanatory variable. They find that companies that are exposed to the GBL have weaker performance the more the board's actual independence deviates from its predicted independence. Thus, the companies that are farthest away from the 40% rule at the outset turn out to have the weakest performance relative to the expected. If board structure is optimally set before GBL, the reform has had negative value consequences for many companies.

2.6 More female leaders?

A distortion of market solution by government regulations improves welfare if the market on its own is unable to find optimal solutions (Hermalin and Weisbach, 2006). A part of Promise 1 was that the GBL would open the eyes of owners for female managerial talent, leading to more female hires into higher managerial positions, in particular the CEO position. In this section, we will see that this part of the promise was not fulfilled.

We start with data on the CEO position obtained from Statistics Norway. In PLC companies about 5.0% have a female CEO in 2001, then falling before

achieving the highest point of 7.8% in 2012. In 2017 the percentage is down again to 7.0%. The numbers are minuscule, only 24 in 2012 and 15 in 2017. Again, the contrast to the development in LTD companies is striking, see figure 2.6.

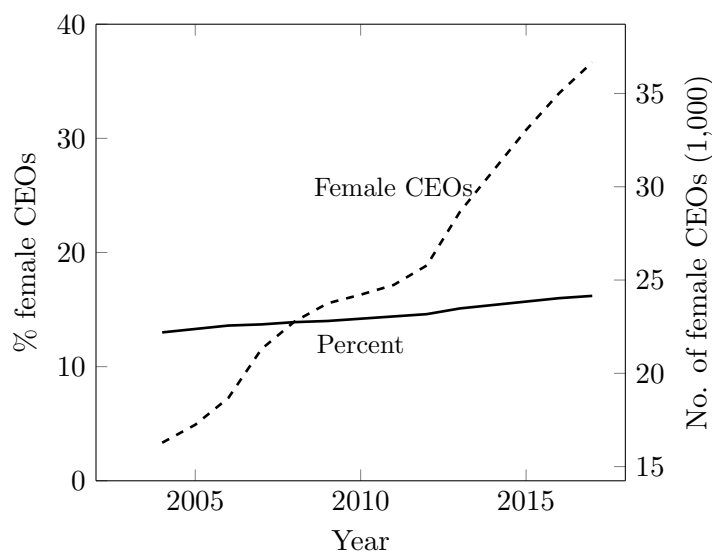


Figure 2.6: The percentage of female CEOs (left ordinate) and the number of female CEOs (right ordinate in 1,000) in Norwegian LTD companies from 2001 to 2016

The number of female CEOs in LTD companies exhibits the same slow and steady increase as for directors in LTD companies. In 2004 13.0% of CEOs are female, in 2017 the number is 16.2%. The numbers are 16,279 in 2004 and 36,674 in 2017, a growth of 125%. We find no trend break in the percentage of female CEOs in LTD companies around the GBL reform, in fact, the steady development appears to be independent of GBL.

Further evidence comes from survey data from CORE – Center for Research on Gender Equality (2017) in Oslo, Norway. They have published statistics on the top positions in the 200 largest companies (excluding public companies exempted from competition). They report that in 2017 a woman is the CEO in 7.5% of the companies, the chair in 11.5%, and that women hold 39% of board positions in PLC companies and 19% in LTD companies. Furthermore, one should expect that the spillover effect from the exposure to female managerial talent would increase the gender balance in line, staff,

and support leadership functions at lower levels of the organisation. Line functions have decision responsibilities in the organisation, and often has budget responsibility. It turns out that in the Health care sector women hold 37% of line management positions, but only 6% in Information technology companies. The gender difference is striking, and again underscore that changes outside the board are very small.

Bertrand et al. (2018) undertake a thorough investigation into the promise that GBL would lead to greater overall equality in leadership positions both in terms of earnings and of managerial positions. Their overall conclusion is that the reform had no discernible effects beyond the boardroom. They note at the outset that quotas to achieve greater equality can have substantial effects if women have been discriminated against, and that this discrimination leads to path dependence in leadership appointments. I return to the discrimination question in the next chapter, section 3.1. Now, let us look more closely at the Bertrand et al. study.

Bertrand et al. study effects of the GBL for the effects at the board level, effects on managerial gender gaps in PLCs, the labour market outcomes for matching women that are not directors, and finally, the effects upon the the earnings and career prospects of young people. The authors use national register data for individuals as well as for companies, enabling for instance the establishment of cohorts of women with a graduate education in business administration. Here, we concentrate on outcomes for managerial positions in the affected PLC companies and in all companies.

For the PLC companies, the outcomes are defined as the female employment share, the employment of women with MBAs, and the womens' representation among the top five earners. To do so, the authors run regressions with variants of the following specification:

$$Y_{ijt} = \alpha_0 + \alpha_1 GD_{jt} + \gamma_j + \lambda_t + \epsilon_{it} \quad (2.2)$$

where Y_{ijt} is the characteristic or outcome for individual i working in firm j at time t , gender diversity is captured in GD_{jt} , the percentage of female board members in firm i at time t , γ_i is a firm fixed effect, and λ_t is a year fixed effect. Bertrand et al. use the variable $GD_{j,2003}$ interacted with year fixed effect as instruments in the regressions, following Ahern and

Dittmar (2012). They use data from 2003 to 2014. Firm data are adjusted for ownership effects, in that the ultimate owner is identified, allowing the assignment of individual companies to business groups as of 2003. Then regressions cover both the group and individual company levels. Furthermore, the problem of survivorship bias due to sample attrition of the PLC population (see chapter 4) is solved by constructing an “intent-to-treat” sample (Lee, 2005, p. 137), where the sample is the PLC firms in 2003, whether these changed organisational status later on or not. Regressions are done on the intent-to-treat sample and the sample of existing companies in a given year. Thus, regressions are performed on a multitude of specifications. Another point is that observations are weighted by employment in the business group or firm level analysis.

The outcomes Y_{ijt} are first, the representation of women with MBAs, women with children, and women working part-time. The finding is that no significant positive impact from the GBL can be discerned. The authors next turn to the female representation in the upper levels of the organisation, specified as the 75th, the 90th or the 95th percentile of the earnings distribution. They find that nearly all the point estimates in various regression specifications are negative, and some of them are significantly so. Lastly, they confine the analysis to the top five earners in a given year. The findings exhibit many negative coefficients, but no significant results. They conclude this part by saying that “. . . the most robust results . . . suggest some possible negative effects on women’s representation in the top quartile of the organisation’s income distribution” as more women entered the board room.

Bertrand et al. perform two further analyses, one for the labour market prospects for MBA candidates and the other of young business graduates’ view of their career prospects given the law. The earnings gap is the object of study for the labour market. They find no significant evidence of a diminishing gender gap in earnings due to the GBL. Young graduate women in business administration consider their career prospects to have improved with the GBL, however, there is no significant changes in the gender gap in earnings or in family patterns from the period before.

In conclusion, Bertrand et al. state that the GBL did bring the relative representation of women at the board level upwards, the gender pay gap became smaller at the board level, and that there was no lack of women

for board positions in PLC companies. But they also state that positive results from the gender equality perspective is limited to the board level. The positive spillover effects expected by lawmakers did not materialise. In none of the comments to their results they touch on the question whether the increase in board representation is related to the weak, even negative, development for other leadership categories. With the GBL the most able women could, for instance, combine board positions with say a private consulting practice, giving the women a considerable income and a flexibility to arrange working hours. Although the number of female directors is low, so is the number of women in leadership positions in this period. Such career steps could tip the balance in female leadership representation.

Bertrand et al. relate the changes in earnings and earning expectations among graduates from business schools in the period. We can complement this by looking at the numbers that apply for a study in business administration. One would expect that a reform influences the sentiments young women have about their career prospects, especially since the reform was very much in the public discussion. We relate the number of female applicants and the percentage of female applicants out of all female applications to higher education in figure 2.7.

The figure shows a strong uptick in the *number* of women applying for a study in business administration. Likewise, the *percentage* of female applicants reveals roughly twice as high incident in the later years compared to the first years after the millennium shift with a peak of 13.4% in 2013. Thus, we can spot a slight trend shift as more young women seek a business and administration education. However, the same shift happens for young men, so that the female share of applicants to business administration studies remains slightly lower than 50% the whole period taken as one. The trend shift seems to be unperturbed by the GBL legislation and follows deeper societal shifts in preferences and attitudes.

2.7 Conclusion

This section has shown that the GBL did induce a greater equality in female board representation in PLC companies, but that the effects for greater equality were limited to the board level in the PLCs. Even more, the effects

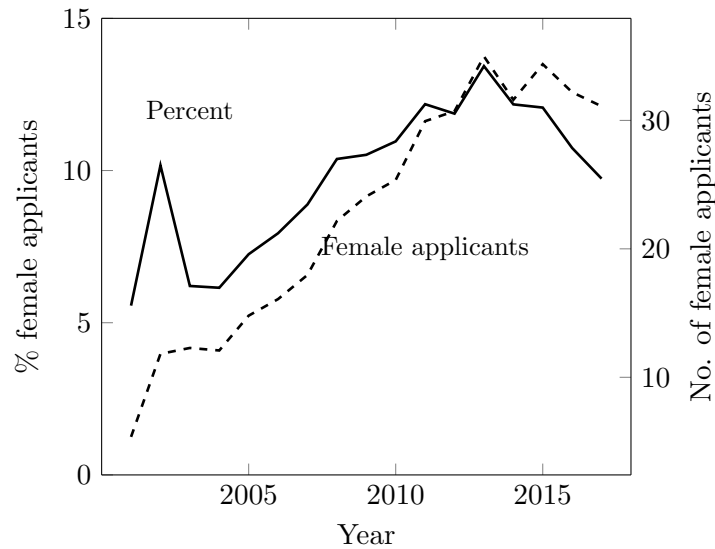


Figure 2.7: Applications to Norwegian business administration studies from 2001 to 2016. The left ordinate gives the percentage of female applicants to all female applicants to higher education, and right ordinate (in 1,000) gives the number of female applicants to business studies

was one of greater percentage equality, while the number of women in PLC companies declined. The GBL itself now concerns about 500 women. The intended spillovers to more equality in other leadership positions in the PLC companies, and in board and other leadership positions in the LTD companies has not come about. The expected jump in other leadership positions following the GBL envisioned in Ot.prop. no 97 (2002-2003) has not materialised. Promise 1 in the government's proposition has been only partially fulfilled.

A thinner and more concentrated network pattern together with board monitoring beyond what is optimal are two unintended consequences from the reform.

Chapter 3

Was the Gender Balance Law necessary?

The employers and their union protested against the GBL, stating that there is a shortage of competent women to fill the necessary number of board seats (Storvik and Teigen, 2010). Also, a principled argument arose. Should the authorities break into the selection of trustees for the company by mandating a certain gender ratio? Electing the board members is a “residual control right” of the shareholders convened in the General Meeting (Hansmann, 1996).

I consider two main questions. The first is the claim in Ot.prop. no 97 (2002-2003) that “traditional ideological and cultural conditions” held back women’s attainment of directorship positions before the GBL law was introduced. I cast this in discussion of discrimination of female candidates to the board. The second is another “basic presupposition” claim in the proposition that enough qualified women can be found to fill board seats. The claim went even further by saying that women constitute 50% of the potential talent pool for directorship positions. It is fully possible that enough qualified women can be found at the time of the reform, but that the female talent pool is far smaller than 50%. As we have seen in section 2.2 the number of female directors needed at PLC companies is far smaller than the pool of female directors in PLC and LTD companies combined.

3.1 Board discrimination before GBL?

There is no doubt that women were underrepresented before the GBL. Figure 3.1 shows the average fraction of women on a Norwegian board from 1989 to 2002 when counting either the full board or the board with only shareholder elected directors. A Norwegian board has in many cases employee representatives.

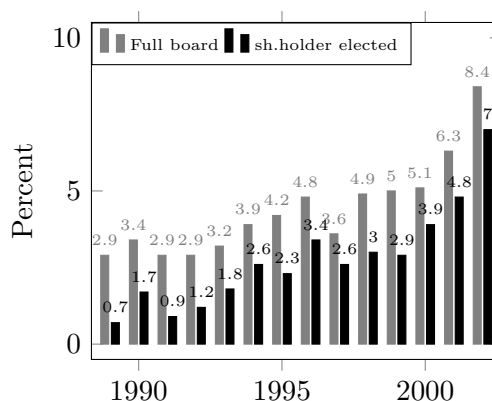


Figure 3.1: Female director fraction in Norwegian non-financial listed firms 1989 to 2002. Source: Strøm (2015)

The presence of women on the boards was very low, starting at about three percent in 1989 and rising to about eight percent in 2002 for the full board. The numbers are even lower for shareholder elected directors. The low numbers are perhaps surprising given the long history of gender equality policy in Norway. Considering the low fraction of female directors before GBL, the Gabrielsen announcement in 2002 of 40% women on boards in PLCs was certainly a “massive exogenous shock” (Ahern and Dittmar (2012) working paper title) to the governance of the Norwegian firms affected by the law.

Can discrimination against women explain why the female representation was weak prior to the GBL? Altonji and Blank (1999, p. 3168) define discrimination in the labour market as “... a situation in which persons who provide labor market services and who are equally productive in a physical or material sense are treated unequally in a way that is related to observable characteristics such race, gender, or ethnicity”. In the board context, discrimination implies that women are shut out of directorships

for reasons of their gender. Were potential female directors held back from director positions in the discrimination sense even though they could provide equally valuable contributions at the board table?

I did a small study on the *persistence* of electing a female directors in Norwegian listed companies prior to the GBL (Strøm, 2015). My point of departure is that if discrimination is the case, it must be *persistent*. This persistence is *state dependent* in the sense that discrimination in one period necessarily follows discrimination in previous periods. The persistence concept seems to be similar to the path dependence concept in Bertrand et al. (2018).

The idea that discrimination is persistent is implied in labour economic theories of discrimination. The two leading theories of discrimination in economics are the *taste-based* theory (Becker, 1971) and the *statistical* theory (Phelps, 1972; Arrow, 1973). According to taste-based labour discrimination, the employer does not like having workers of a certain race or gender. Applying this to the selection of directors means that if owners do not like women on the board, none will be elected. This induces persistence in the female representation on the boards of companies.

Statistical discrimination means that an individual is judged not on his or her individual merits but, instead, on membership to a group. This is discrimination by stereotype. Assume that the stereotype is gender; that the owners perceive men to have, on average, greater ability as board members than women; and that the dispersion of abilities for each gender is very large. If the owners are unable to judge the true ability of individuals, they will choose a man, since owners perceive men to have better qualifications, on average, than women. Lundberg and Startz (1998) develop a dynamic self-fulfilling prophesy (Merton, 1948) version of the theory: Women excluded from board membership may internalise the view that they are inferior, believing that no effort will suffice to qualify for a board position. Consequently, women will, on average, invest less in education and work experience to qualify for such positions. Instead, they will self-select into professions where they believe they are treated more as equals. In the Norwegian case this is primarily in the public sector. The upshot is that the owners' prejudices are confirmed, so that they continue to think that women are simply insufficiently qualified. The owners will continue to elect male members period after period. In consequence, the dynamic statistical the-

ory of discrimination predicts that discrimination will be persistent. In the extreme, no woman is elected to a board period after period, resulting in high persistence. Persistence will also be high if the company has a female director continuously for “windows dressing” purposes (Farrell and Hersch, 2005). On the other hand, if the fraction of women on the board changes from one period to the next, persistence is low. Thus, the degree of serial dependence in gender representation will reveal the degree of discrimination against female directors. Statistical discrimination can explain why we observe such a low fraction of women on the board and concurrently with low discrimination measured as persistence.

I used the gender diversity (GD), defined as the fraction of women on the board, as a measure of diversity. One way to capture persistence is to let the gender diversity appear on the right-hand side of the regression specification. I further specified the estimating relation for persistence with time-varying control variables and year indicators Y_t as follows:

$$GD_{i,t} = \alpha + \beta GD_{i,t-1} + \gamma \text{Controls}_{i,t} + \sum_{t=1990}^{t=2002} \theta_t Y_t + c_i + \varepsilon_{i,t} \quad (3.1)$$

for $t = 1989 \dots 2002$, where $GD_{i,t}$ is gender diversity in the board of company i in year t ; c_i represents time-invariant company characteristics, such as its industry affiliation; and $\varepsilon_{i,t}$ is pure variation, that is, independently and identically distributed idiosyncratic errors. If the persistence parameter β is 1.0, the level of female representation remains the same; if it is higher than 1.0, more women will be on the board in the next period; and if the persistence parameter is less than 1.0, fewer women will be on the board in the next period. The decay in persistence is larger the further removed from 1.0 the persistence parameter is. Thus, if women are discriminated against, I expect a persistence of 1.0. A value well below 1.0 points towards no discrimination. Thus, the temporal dependence will be strong and close to 1.0 if discrimination takes place.

I employ the Arellano and Bond (1991) and Blundell and Bond (1998) system GMM estimation methodology and estimate on all listed and non-financial firms in Norway 1989 to 2002. I find a β in the area 0.25 to 0.35, that is, a low persistence parameter. The persistence in other governance variables, such as the CEO is a member of the board, or the board size,

have higher persistence parameter values than the gender diversity variable. Also, if we introduce incumbent power variables into the regression, the β coefficient is in the area 0.25 to 0.40 depending upon the specification. Incumbent power variables include *CEO tenure*, *CEO director* in company, and the board's *tenure power*.

The upshot from low persistence in gender diversity is that discrimination at the board level cannot have taken place in the period immediately preceding the Gabrielsen announcement in February 2002 of a 40% rule. But if the signs of discrimination cannot be found, why are so few women in director seats before the GBL legislation? The problem, it seems, is not discrimination at the board level, but in the pipeline of candidates for board members.

3.2 The myth of the 50% talent pool

If discrimination is not the explanation, why did the boards hold so few female directors? In this section I investigate if the “basic presupposition” that women constitute 50% of the talent pool for board positions is true. An alternative explanation is that women self-select into employment positions that do not lead to board appointments. As we saw in chapter 2, there was no lack of female candidates to fill the necessary seats on PLC boards. However, this is not the same as saying that women make out 50% of the available talent pool. If this is so, it is difficult to uphold the claim that a near equality should be had at the board level. The problem is not at the board level, but in the pipeline of candidates.

Companies objected to the GBL on the grounds that too few women were available for board positions (Storvik and Teigen, 2010). The government claims the opposite, that is, the companies draw talent from only 50% of the total talent pool. Were companies right after all? I look at these questions in this section, drawing on both employment and education statistics.

A good starting point is the qualifications a director should hold that academic research and practitioners have singled out. A qualified director should be able to fill some board functions. Adams et al. (2010) see board functions consisting mainly of the hiring, assessment, and firing of the CEO on the one hand and the setting of corporate strategy on the other. To

perform these functions, great stress has been put on the director’s independence relative to the CEO from the pioneering article by Fama (1980) and the first regulatory recommendations in “Cadbury committee” (1992) and onwards. Broadly speaking, the director is independent if he or she has no family or no present or former business relationship to the CEO (Byrd and Hickman, 1992). Some evidence exists, e.g. Duchin et al. (2010), that board independence is valuable to some companies. Practitioners seem to stress that good directors are owners, leaders with a full budget responsibility, expert knowledge in business areas of interest to the company, and people with good network, for instance, with many board directorships. In either case, a future candidate must build a record as a leader before being considered for a board position at the age of about 45 years. This requires *visibility* as a leader and a *network* of business people.

The question is if women are handicapped from obtaining these qualifications, particularly around the time of GBL? The education statistics in table 3.1 shows the education level of men and women.

Table 3.1 The percentage of men and women with a college education 2008 to 2016. Source: Statistics Norway

	2008	2009	2010	2011	2012	2013	2014	2015	2016
Men	23.7	23.9	24.0	25.6	26.0	26.2	28.1	28.6	29.1
Women	27.3	27.8	28.4	30.7	31.6	32.3	34.3	35.4	36.3

Women have a higher education level than men in all years we have statistics for, and the gap between men and women is increasing over the years. But higher education level is not a guarantee for qualification as a director. As we will see in this section, most of the female employment is in the public sector. A university degree is largely an education for employment in the public sector.

Education does not automatically translate into leadership positions. This is evident for the proportion of male and female leaders. Table 3.2 shows the distribution of male and female leadership positions in both private and public organisations.

The table includes private as well as public companies. Public companies are by and large exempted from competition. Roughly two thirds of all leaders are male. The proportion is only slowly adjusting towards a higher

Table 3.2 The percentage of male and female leaders in all sectors in Norway 2008 to 2016. Source: Statistics Norway

	2008	2009	2010	2011	2012	2013	2014	2015	2016
Men	67.9	66.9	66.1	65.3	64.8	64.3	64.2	65.1	64.7
Women	32.1	33.1	33.9	34.7	35.2	35.7	35.8	34.9	35.3

female proportion. Thus, despite women’s higher education level overall, the men dominate in the leadership positions, in the pipeline to a board membership. The 50% female talent pool was simply not there. The picture is even more unequal when we account for private and public employment. Hamre (2017, p. 15) reports that in the private sector 70% of all leaders are men. Women are stronger in leadership positions within support functions such as personnel management.

The story is even more aggravating than these general numbers indicate due to the different attachment men and women have to the labour market. The *gender segregated labour market* is a salient characteristic in Norway. A first piece of evidence is the very different pattern of part-time and full-time work between men and women. Figure 3.2 gives an overview of the percentage of part-time work for men and women from 1996 to the present.

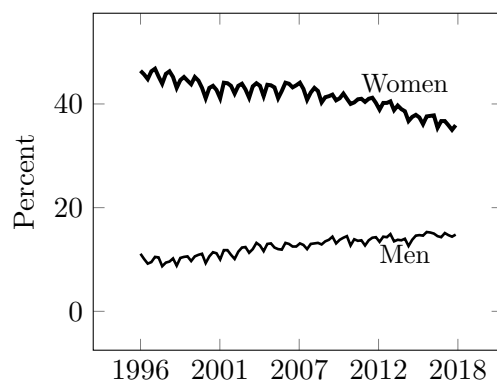


Figure 3.2: Part-time work among men and women in Norway. Quarterly data 1996 to 2017. “Part-time” has two categories. The short category has up to 19 hours per week, and the long between 20 and 36 hours per week. Source: Statistics Norway

The figure clearly shows that women hold part-time positions to a greater extent than men do. During the years when the GBL law process was under

way, the female part-time fraction was more than 40%, falling to somewhat below 40% in recent years, while the extent of part-time work among men is 10% at the start of the period and rising to about 15% at the end. We also note that these distributions are quite stable over time, and that the time trends do not exhibit any breaks for the years when the GBL was enacted. Apparently, new work patterns slowly emerge. Furthermore, Statistics Norway reports that most the part-time work is voluntary, only 10% of the part-time female employees want full-time employment, but cannot obtain it. The 40% part-time female workers are hardly available for board positions. The OECD (2017) *Employment Outlook* (Figure 1.6.D) shows that women in Norway work fewer hours relative to men than women in neighbouring Nordic countries.

I underline that part-time work is hardly conducive to a career as a director. A part-time worker spends per definition less time in a workplace than a full-time employee, and has less opportunity to establish leadership visibility and a network valuable for career prospects. A part-time worker is less likely to stand in the ranks for leadership positions and is thus, less likely to accumulate valuable experience for a board. Bertrand et al. (2018) find that the GBL reform represents no break with earlier trends in leadership for part-time working women. The fact that women to a far greater extent than men hold part-time employment cuts into the number of available director candidates. Women do not constitute 50% of the talent pool for directors.

The next piece of evidence comes from the sector distribution of employment for men and women. Figure 3.3 shows how men and women are employed in major sectors of the Norwegian economy starting in the first quarter of 1996 and ending with the last quarter of 2017.

Evidently, the figure shows that men and women distribute very differently in sectors. The largest sector for women is public services. In fact, the percentage of women is 47.7% in public services when the series begins and then rises to 53.9% in the last quarter of 2017. In comparison, about 18% to 20% of the men are employed in the public services, and this percentage is fairly stable over the years. For men, public services are the least preferred employment sector, for women the most preferred. If anything, the differences have become stronger during the period we study. Thus, the *gender*

segregated labour market is an empirical fact in Norway. The evidence in this section suggests that the labour market is becoming even more segregated. Segregation becomes more entrenched.

The public services are mainly situated in education and health services. The overwhelming majority of organisations in the services are owned by either the government or municipalities. The public sector is not exposed to the cold winds of competition that private companies experience. Persons rising to leadership positions in the public sector have, therefore, not acquired the necessary visibility and valuable network for a directorship position in private companies. Again, this implies that the talent pool of female candidates for director positions is less than 50%. Nurses, teachers, and kindergarten employed do not qualify for the director pool in PLC companies in their capacity of professional work. In particular, for the period around GBL lawmaking in 2002 to 2006 the female talent pool was limited.

In figure 3.3 above we study broad sector categories. From Statistics Norway we can also learn the distribution of male and female employees by organisational type. Table 3.3 gives the percentage of men and women in private companies, which is relevant for the discussion of board positions in PLC companies.

Table 3.3 The percentage of male and female employed in private companies in Norway 2008 to 2016. Source: Statistics Norway

	2008	2009	2010	2011	2012	2013	2014	2015	2016
Men	63.0	63.0	63.1	63.2	63.5	63.5	63.4	63.4	63.4
Women	37.0	37.0	36.9	36.8	36.5	36.5	36.6	36.6	36.6

Men clearly dominate in private companies. The percentage of women is in fact slowly decreasing during the period. Further evidence of the gender segregated labour market is the distribution of men and women among occupations, based on the ISCO-88 (The International Standard Classification of Occupations). In crafts (plumbers, electricians etc.) more than 90.0% of all employed are men, while women dominate with about 80% in health related occupations, office assistants, and cleaners (Hamre, 2017, p. 14).

The overall labour market for men and women shows two divergent trends. One trend is the slowly closing gap in employment and hours worked. The other trend is the increasing difference in sector employment, with women

increasingly concentrating in the public sector.

3.3 Career stoppages for women

In the broad picture, the gender segregated labour market implies that few women will gain experience and a network to be considered a leadership candidate in a private company. In section 2.6 we find that more female leaders in PLCs have not been forthcoming to any degree, and that the leadership changes stops with the changes in the board. Obviously, some deeper, social structures prevent women from attaining leadership positions. Such structures change slowly, as section 3.2 demonstrates. In this section, I summarise research that shows that having children has career costs for the woman (Adda et al., 2017) and especially for a woman with a higher university degree.

There seems to be a general agreement among scholars that the onset of motherhood signals a drop in the career trajectory for a woman, but not for a man. The effect is especially pronounced for highly educated women. Two studies using registry data shed light on the Norwegian situation. Hardoy et al. (2017) study the long-run differential effect on managerial positions for father and mother upon the arrival of their first child. Using Norwegian population data covering the entire population for the period 2005 to 2012, they are able to show that the gender gap in leadership position is small before the arrival of the first child, but then widens considerably nine years later, leaving the mother with a long-term career handicap. Thus, it is possible that the options available to women prevent them from pursuing leadership careers, at least when children are young. ? use registry data from 1970 to 2001. Their study uses the gender of the first two born children as an instrument for labour market outcomes. The instrument has an effect upon parent's decision to have a third child or not, as most people prefer to have children of both gender. They find that a college-educated woman sees the probability of working in a high-paying company reduced by 7-8 percentage points throughout their career when having an extra child. They find no such career setbacks for men. The effects are long-lasting, and the authors are able to follow the career paths up to forty years after the birth of the second child. The upshot is that few highly educated women gain a position where they can build a career that includes leadership positions

compared to what men attain.

The results from Norwegian registry data find support in international literature as well. (Adda et al., 2017) build a dynamic structural model and calibrate with German data to study labour market outcomes over the woman's life cycle. They study the effects on life-time earnings from having children. They show that early educational choices are influenced by the awareness of later choices of parenthood. Women tend to choose education for routine and manual work, and not abstract work where skills are soon outdated, but also better paid. Women's labour supply is strongly affected by motherhood, and when returning to the labour market in the late 30's they tend to work part-time. In a study on Danish registry data stretching from 1964 Kleven et al. (2018) find that "For a range of labor market outcomes, we find large and sharp effects of children: women and men evolve in parallel until the birth of their first child, diverge sharply immediately after child birth, and do not converge again." Choice of education in anticipation of motherhood is also evident in the Wiswall and Zafar (2018) survey data on undergraduate students from a selective university in the USA. Undergraduate women have high preferences for workplace flexibility (e.g. working shorter hours for a spell in their career), and a strong distaste for high dismissal probability. Therefore, they choose college major studies that indeed lead to employment in companies where such family-friendly job characteristics are found.

Bertrand et al. (2010) study the careers of MBAs who graduated between 1990 and 2006 from a top US business school and how career dynamics differ by gender. They find that the career paths of men and women graduates are very similar until the first child, and then diverge.

The evidence in this section clearly shows that motherhood retards the woman's ascent of the career ladder, especially for the well educated, and in particular for assuming high positions in large, private companies. The underlying structures determining this outcome remain even when the GBL is enacted. Blau and Kahn (2013) point out that a woman has another alternative to a leadership career, that is, the generous welfare benefits allow women to pursue a family-friendly attachment to the labour market. These benefits include parental leave with full wage compensation, and the availability of part-time work. The paradox is that policies meant to further women's

labour market attachment, and in particular their representation at the highest leadership levels, can obstruct the well-intentioned policies.

3.4 Conclusion

- We cannot find evidence of direct discrimination of women in the practice of director appointments.
- Women work more part-time than men.
- Women tend to work in public services, men in the private sector.
- A woman's career path sees a setback when entering into motherhood, especially for the highly educated, the prime candidates for leadership roles.

The gender segregated labour market implies that women gain little visibility as leaders in private companies and a sparse or non-existing career-enhancing network of persons in private companies. These pervasive differences in labour attachment between men and women can explain an important part of the smaller female candidate list for leadership positions and directorships. The talent pool of female candidates is certainly not 50% as claimed in the proposition Ot.prop. no 97 (2002-2003). The problem is in the pipeline.

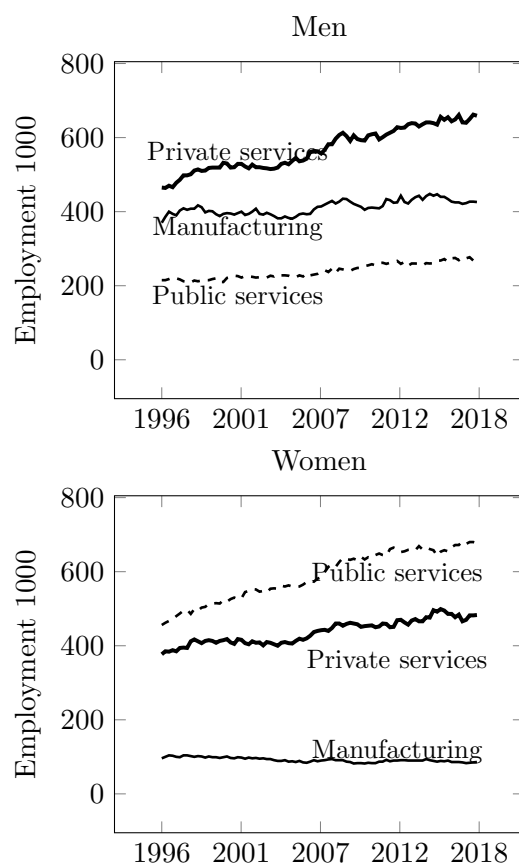


Figure 3.3: Employment distribution of men and women in Norway. Quarterly data 1996 to 2017. “Manufacturing” contains traditional manufacturing, resource extraction industries, and construction. “Private services” are retail trade, hotel and restaurants, banking and finance, and business services. “Public services” are public administration and defense, education, and health services. Source: Statistics Norway

Chapter 4

The withering of the PLC company

In this chapter we look at one large unforeseen and unintended consequence of the GBL reform, that is, the near disappearance of the PLC organisational form. However, the withering of the PLC form could be due to other developments in the Norwegian economy, such as other regulations, the financial crisis and the collapse in petroleum prices in 2014. I first document the withering of the PLC organisational form in the next section 4.1, and then seek explanations in section 4.2.

4.1 The rise and fall of the PLC company

The decline in the number of female directors in PLCs after 2008 follows the decline in the number of PLC companies in the period. Figure 4.1 shows the stock of PLC companies from 2001 to 2016.

The figure reveals a steady decrease in the number of PLC companies in the register since 2001. In the Brønnøysund register, we find that in 2001 a total of 631 firms are in the PLC register. In 2016, only 226 firms are in the register, a reduction of 64.1% in the fifteen years. As I show in figure 4.3, the number of LTD companies increases in the same period. The increase has little to do with the transformation from PLC to LTD status, as the number of LTD companies is more than 200,000 in 2010. Since only PLC companies

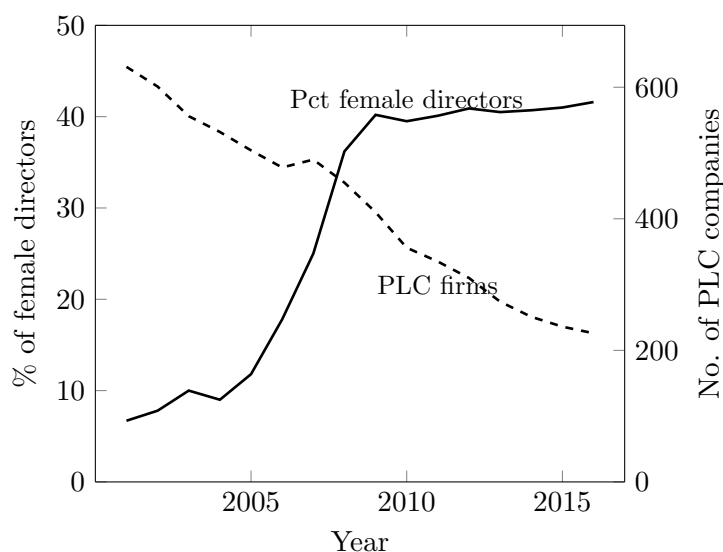


Figure 4.1: The percentage (left ordinate) of female directors and the number (right ordinate) of PLC companies from 2001 to 2016

are required to abide by the GBL, the LTD organisational form constitutes a safe haven for those PLC companies that do not want to be constrained by the quota law. PLC companies can avoid the regulation by changing its organisational form. We return to this question in section 4.2.

The Norwegian experience is in sharp contrast to developments in neighbouring Sweden and Denmark, see figure 4.2. Denmark and Sweden have not mandated female representations on company boards. In the figure, all countries share the same starting point of 100.0%.

Figure 4.2 clearly shows the rapid rise in the number of PLC firms in the Norwegian register, and then the falling off starting in 2001. Thus, in Norway a trend break away from the PLC register starts before the Gabrielsen announcement in 2002, that is, before the GBL becomes a realistic possibility. In comparison, Sweden has a more erratic development, with a reduction starting at about the same time as in Norway, but with a subsequent strong increase. In Norway the decrease continues. Denmark increases the stock of PLC companies steadily. The PLC form was introduced in Norway and Sweden in 1996, but has a longer history in Denmark. The development in Norway is unique.

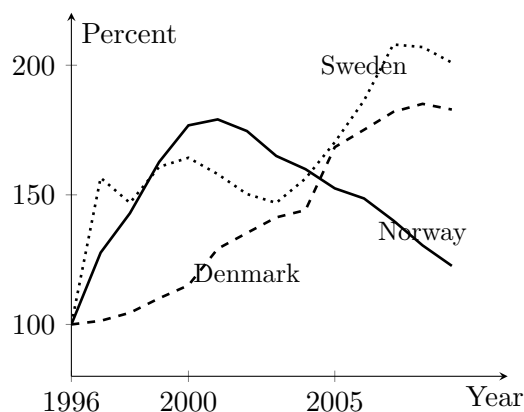


Figure 4.2: Percentage of PLC firms 1996 to 2009 relative to 1996 in Denmark, Norway, and Sweden. Source: Bøhren and Staubo (2014, table 4)

The development in the PLC is also unique in Norway. Figure 4.3 shows the stock of PLC and LTD firms in Norway, relative to the top year for PLC firms in 2001.

Figure 4.3 shows the contrast between the steady decline of the PLC organisational form, and the steady rise in the number of LTD firms in Norway. The strong growth of the LTD firms is a testimony that weak economic growth is not an explanation for the reduced number of PLC firms. On the contrary, during the period up till the financial crisis and then further on to the decline in petroleum prices in 2014, the Norwegian economy experienced what has been termed a “golden age”. The strong growth in the LTD form is a testimony of the high economic activity in the period.

4.1.1 Other changes in laws and regulation

The change in organisational forms is important because it negates the intention of the GBL, that is, to bring more women into leadership positions in the largest and most important companies in Norway. Besides this, the exodus from the PLC form has consequences for the corporate governance of Norwegian companies. In general, the corporate governance requirements are laxer for LTD companies than for PLCs. First of all, this concerns *transparency*. The requirements to disclose detailed information to shareholders and the public is weaker for the LTD companies. One consequence can be a

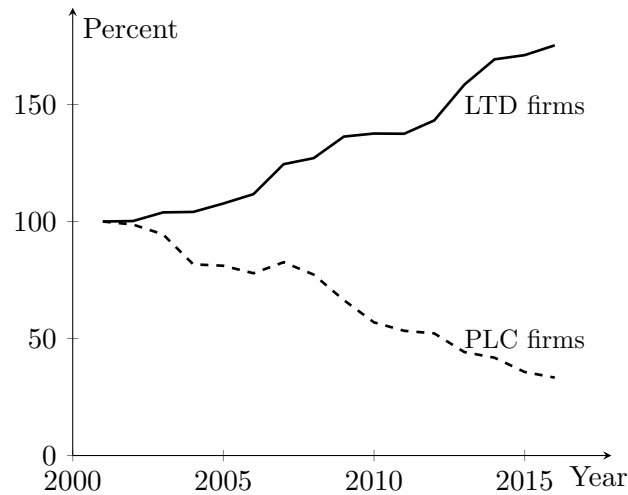


Figure 4.3: PLC and LTD companies in Norway 2001 to 2016. PLCs in 2001: 529, in 2016: 176. LTDs in 2001: 118,533, in 2016: 207,813. Source: Statistics Norway

higher cost of capital for transforming companies. Diamond and Verrecchia (1991) show in a theoretical model that the cost of capital should decrease when firms provide better information about their companies.

The LTD company does not have to follow the International Financial Reporting Standards (IFRS) guidelines, and in particular, does not have to report the compensation paid to top management. An LTD firm avoids the requirement for the board to present the compensation policy to the General Meeting, which was made part of the company law as from 2007. In addition, in the LTD the CEO can also be a member of the board. The CEO can also be the chair of the board. Neither of these are allowed in PLC companies.

By reducing transparency and allowing duality of leadership positions, the LTD organisational form means that shareholders are potentially less informed than they could have been. The risk of managerial entrenchment, that is, the practice of following managerial priorities rather than the shareholders', is more pronounced. Thus, by insisting on one governance change, the regulations induce weakening other aspects of corporate governance.

4.2 Why leave the PLC register?

But the last conclusion rests on the premise that the GBL really was the cause for the decline in PLC registrations in Norway from 2001. Other causes could be at work. Companies go bankrupt, merge or are acquired, or they reorganise for reasons unrelated to governance reforms. This section deals with the discussion of why companies disappeared from the PLC register. A related, and equally interesting question, is why so few did enter.

Figure 4.3 provides evidence that general bankruptcy in the Norwegian economy cannot have been the reason why the PLC register dwindled. In figure 4.4 further evidence on the economic activity in two main sectors in Norway, Energy and Manufacturing shows the strong performance in the years of the GBL proposition and implementation.

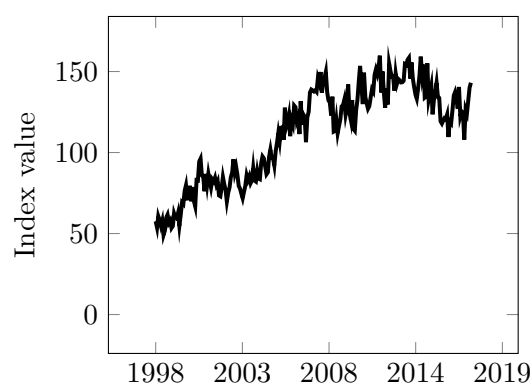


Figure 4.4: Monthly sales index in the Energy and Manufacturing industry from 1998 to 2017 (2005=100). Source: Statistics Norway

Figure 4.4 shows that the sales index increases dramatically from 1998 to 2005 with a doubling in sales and then goes on to rise another 50% in 2008. This decade is the “golden years” for the Norwegian economy. Norway was doubly lucky in that petroleum prices increased strongly, while import prices declined due to China’s and other emerging economies’ entry into world trade. The macroeconomic conditions for staying in and entering into the PLC register could hardly have been better. Again, figure 4.3 exhibits a robust growth in the LTD register, concomitant to the decline in the PLC.

Could other regulations in the period be the cause of decline? In the GBL

implementation period from 2002 to 2008 two regulatory changes came into being. First, the listed PLC companies had to comply with the IFRS guidelines by 2005 (Gjerde et al., 2008). Second, a “say on pay” legislation in the Company law was implemented as from 2007. I am not aware of studies taking these new regulations into account when studying consequences for companies’ incorporation. Gjerde et al. (2008) study the value consequences for the transition from the earnings-based accounting principles in NGAAP to the balance sheet-oriented conceptual framework of IFRS. They find marginal value implications, especially for companies with a high fraction of intangible assets. But Norway had strong accounting regulations before IFRS. The transition to IFRS cannot have been very onerous. Besides, non-listed PLC companies were free to choose the IFRS standards or not. These PLCs left the register in large numbers, even though they could have avoided the IFRS. Also, we cannot detect any trend break in the number of PLC companies in figure 4.3, neither from 2005 nor from 2007. Furthermore, the law change in November 2007 allowing LTD firms to trade securities (see section 2.1) could also contribute to the diminishing of the PLC register. This last law change is an admission that GBL cannot be applied in all sectors, an admission that female candidates are few and far between in the finance sector. But this legislation concerns few companies, too few to induce a break in the trend.

The “say on pay” legislation is hardly a cause for decline. One reason is that pay practices in companies are transparent to begin with. The tax return for every person is public in Norway and has been for years. Thus, the added transparency that say on pay brings is only a small change in the regulatory burden for PLC companies. The conclusion is that other changes in regulations affecting companies cannot explain the decline of the PLC organisational form.

4.2.1 Costs of compliance

What can we learn from academic research? In this section, we follow investigations by Ahern and Dittmar (2012), Bøhren and Staubo (2014), and Eckbo et al. (2016), where the decision to change organisational form is the main research question.

Ahern and Dittmar (2012) investigate how companies can avoid the gender balance law by changing incorporation from PLC into the LTD organisational form, or by incorporating abroad. They find that both paths were taken by companies. They classify a firm as exiting the PLC register to avoid regulation if the firm changed by (1) going private or changed country of incorporation, or (2) being acquired by a private or a foreign firm. This allowed companies to avoid GBL, but otherwise carry on as before. They assume that if the firm is acquired by another Norwegian PLC company or goes bankrupt, the motivation is not to avoid the GBL regulations. The development of the 119 remaining PLC companies in 2002 belonging to their sample is then studied. They report that the most common reason for companies to exit was an acquisition by a private or a foreign firm, 25 in total, followed by going private or relocating (13). In all, 49 companies had changed organisational form by 2009.

Ahern and Dittmar run logit regressions using the sample of PLC firms existing in 2002. The dependent is one if the company exits for any reason or alternatively, one if the company exits in order to avoid regulation (reasons (1) and (2) above) in the period 2003 to 2009. The main explanatory variable is the female director fraction in 2002. The logit regressions also contain other explanatory variables, such as board size and board age.

The regressions confirm the hypothesis. In all specifications, the female director fraction is negative and significant. Ahern and Dittmar take this as evidence that the more the company was affected by the law the more it was likely to exit the PLC register. Furthermore, companies with a younger and less experienced board were more likely to change organisational form. This is reasonable. A company with a young board would have to substitute young and inexperienced board members with even younger and less experienced female directors. Appointing experienced board members is costly and the experience may not be relevant for the specific governance issues that the company has to deal with. Thus, Ahern and Dittmar give reasonable economic explanations for why PLC companies exit.

Bøhren and Staubo (2014) study the likelihood that companies transform from a PLC to a LTD organisational form due to the gender balance law paying particular attention to the costs of adhering to the law. They run logit regressions with the probability of exiting as dependent and a number

of firm characteristics as independent. The dependent variable, *Exit*, is 1 if the firm exits in the period. The main explanatory variable is the fraction of female directors *before the GBL*. The hypothesis is that the higher this fraction is, the less likely the firm is to exit after GBL. They collect data on PLC firms from 2000 to 2009, that is, from before the first signals that a law might come and to one year after the full implementation in 2008. They exclude firms that go bankrupt or exit due to merger, and also exclude financial firms. The data filters probably means that the exit probability is underestimated.

The main hypothesis finds confirmation in the data with a very high significance level. Thus, the lower the representation of women in the company board before the GBL the more likely the company is to exit. The result also confirms Ahern and Dittmar (2012). Interestingly, if the firm is listed, it is less likely to exit. The reverse is of course that non-listed PLCs are more likely to exit. This indicates that the advantages of being listed outweigh the disadvantages of the mandated GBL quota. These advantages include the greater liquidity in the shares, the pricing of the firm, and the easier access to funding by equity and debt. Listed firms have more to lose by exiting than non-listed. This is a confirmation of what we can observe empirically. In the PLC register ten years after the implementation in 2006, hardly any unlisted PLC companies exist.

Bøhren and Staubo use the fraction of female directors and the listing status as the two main explanatory variables. In addition, the authors find several other effects. One is that small firms are more likely to exit than large firms. This is as expected, since compliance costs are to a great extent fixed and therefore more onerous for smaller firms. The result complements the finding in Gao et al. (2009) of smaller firms having an incentive to stay small to avoid having to comply with SOX regulations. Bøhren and Staubo find that younger firms and more profitable firms are more likely to exit as well, but family firms are less likely to exit. Taken together, Bøhren and Staubo (2014) uncover reasonable economic explanations for why companies leave the PLC register. For some companies the costs of complying with GBL is unacceptably high. The conclusion from the Bøhren and Staubo investigation is that at least some companies have left the PLC register for reasons associated with the GBL.

Eckbo et al. (2016) apply about the same data filters as Bøhren and Staubo (2014), but then completely disagree with their conclusion on methodological grounds. They claim that Bøhren and Staubo “backfill” the observations on the dependent variable for all years prior to the exit decision and thereby inflate the statistical significance of the results. In contrast, they present regressions with the binary variable indicating exit only in the final year in the PLC register. The resulting coefficient for female board fraction (specifically, they use the term *shortfall* defined as the distance from the requirement set out in table 2.1 and the actual number of female directors) is not significant. I think that the Bøhren and Staubo procedure is correct; they classify firms as either eventually exiting firms or not.

Other methodological approaches could be used. Neither Bøhren and Staubo (2014) nor Eckbo et al. (2016) take account of the time dimension in their analyses. A *duration analysis* or survival analysis (Collett, 2003) where the time to exit is of interest, could be a fruitful alternative. A duration analysis can potentially give a more detailed and nuanced estimation of the significance of the female director fraction than the simple binary exit/non-exit.

In any case, the figures we have shown of the decline of the PLC companies over the years leading up to the present is formidable and unique both compared to the steady rise of LTD companies and compared to PLC companies in neighbouring Sweden and Denmark. Even if Eckbo et al. (2016) are correct, they cannot explain why so few companies enter the PLC register relative to the many leavers. Furthermore, both Bøhren and Staubo and Ahern and Dittmar give good economic explanations for why companies change organisational form. Corroborating evidence comes from Gao et al. (2009), who find that companies shift organisational form, or adjust their size so as to avoid SOX regulation. The evidence is in favour of some PLC companies leaving the PLC register for reasons related to the GBL.

4.3 Summing up

In section 4.1 we have seen how the PLC organisational form withered away after the GBL process began. In particular, the unlisted PLC companies disappear from the register. The withering of the PLC form is in sharp

contrast to the rise in LTD firms in Norway, and also to the rise of PLC companies in neighbouring Denmark and Sweden, countries that did not implement a GBL legislation.

Section 4.2 shows that macroeconomic developments were advantageous to firms in general and cannot explain the decline in the PLC organisational form. Other regulations in the period could not have had the same impact, although this conclusion does not rest on academic evidence since none has been undertaken. Econometric evidence in section 4.2.1 in Ahern and Dittmar (2012) and Bøhren and Staubo (2014) shows that the likelihood of exiting the PLC register is related to the fraction of women on the board before the GBL comes into effect. They also find other good economic reasons why PLC firms change organisational form. Eckbo et al. (2016) disagree on methodological grounds.

The withering of the PLC organisational form was an unintended and unforeseen consequence of the GBL legislation. As we will see in the next chapter, this steady attrition together with the long implementation period of the GBL pose difficult methodological problems for the study of the performance effect of the GBL.

Chapter 5

Better performance with GBL?

The GBL Promise 2 is that firm performance will improve with an at least 40% female director fraction. Adams (2016) notes that this puts high expectations on the capabilities of female directors. This chapter deals with studies that investigate firm performance consequences of the GBL. There is no *prima facie* reason for why women on the board should improve firm performance. The women on the board can be either similar or different from their male peers. If similar, we will not expect to any change in performance. If different, the direction of performance change is not clear-cut. For instance, women are said to be more risk averse than men (Bertrand, 2011). If then the board becomes more risk averse and as a result rejects the CEO's risky projects, the firm may avoid setbacks in performance, but they may equally well miss profitable opportunities. Furthermore, it is not certain that the gender mixed board becomes more infused with female preferences. As Adams and Funk (2012) show, female directors in a large Swedish sample are *less* risk averse than their male peers. We cannot expect to find clear evidence of improvement.

A number of studies have investigated the question if the GBL has led to better or worse performance among the PLC companies. An interesting feature is that studies have employed difference-in-difference (DID) methods (Lee, 2005) treating GBL as a natural experiment. At first, this seems to be

an ideal testing situation. A regulation is imposed exogenously at one point in time, and then consequences follow. Control groups such as of unaffected LTD companies or countries closely related to the Norwegian are available. But as we have seen in table 2.2, the situation before and after is not clean. The event window lasts from February 22 2002 to January 1st 2008. Within this time span several dates are candidates for the cutoff year, the event year. Secondly, we have seen a significant drop in PLC companies during the period, giving any study a sample attrition problem and a problem of selection bias. We will see that these problems reappear in all studies that are undertaken so far.

Most studies use the DID methodology. But Ahern and Dittmar (2012) also run an event study of the Gabrielsen announcement in February 2002. I review event studies in section 5.1 and then consider DID studies in section 5.2.

5.1 Event study

Ahern and Dittmar (2012) study effects of the announcement of quota laws for female representation on company boards. They cite Adams et al. (2010) to define their point of departure:

Though an extensive literature exists on the relation between board structure and firm value, the endogenous nature of corporate boards has limited our understanding of even the most basic questions.

Ahern and Dittmar underscore that the Gabrielsen's announcement was unanticipated and that it is unusual to find an unanticipated announcement of such a large change in government policy. Furthermore, the law change was not brought about by firms, thus reverse causality is highly unlikely. In fact, we know from Teigen (2012) that the quota law is an outgrowth of the Norwegian state feminist tradition, that is, the law was due to political pressure channelled through interest group actions and political parties. Ahern and Dittmar (2012) characterise the Norwegian quota law as a *massive exogenous shock* giving them the opportunity to study effects of the shock as a natural experiment, and thus, to uncover causal relationships. The article contains a number of analyses. Here we concentrate on the event

study.

Before we state results, it is instructive to lay out the event methodology. The figure 5.1 below is from Campbell et al. (1997) where the event window normally stretches from a days before the event and some days after, if data is daily. It is obvious that the methodology is well suited for the Gabrielsen announcement, since this was a great surprise to all involved, and the surprise announcement is identifiable to a single day.

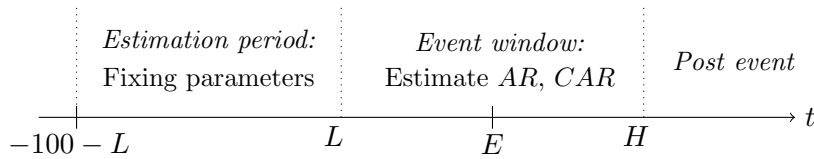


Figure 5.1: Steps in an event study. t is the day relative to the event, E is the day the event occurs ($E = 0$), L is the first day before the event included in the analysis, and H is the last day in the event window. R is realised return

The objective in an event study is to uncover if the event has caused abnormal returns in the firms involved in the event. We follow the Campbell et al. (1997) presentation of the event study methodology. The daily abnormal stock return, e_{it} for firm i on day t is defined as

$$e_{it} = r_{it} - E(r_{it})$$

where $E(r_{it})$ is the expected return for stock i on day t based on some statistical version of an asset pricing model, such as the single index, or market model. The estimation can be conducted with the market model as:

$$r_{it} = a_i + b_i r_{mt} + e_{it} \quad (5.1)$$

where r_{it} is the return on stock i on day t , r_{mt} is the market portfolio of returns on day t , a_i, b_i are the intercept and slope, estimated by OLS regression, e_{it} is the random error term on day t . Researchers can invoke other asset pricing models, for instance the Fama and French (1992) factor model. The parameters of the market model are usually estimated over a period preceding the event, say from 120 days to 20 days prior to the

beginning of the event window L .

The average residual for day t is defined by

$$AR_t = \sum_N \frac{e_{it}}{N}$$

where N is the number of securities in the sample. The cumulative residual for time period T is defined by

$$CAR_H = \sum_{t=L}^H e_{it}$$

for firm i during the period between the repurchase date and the subsequent event.

The t -statistic over the interval day t_1 through day t_2 is defined as

$$t = \frac{CAR_H}{\sum_k s^2(AR_k)} \quad (5.2)$$

where $s^2(AR_k)$ is the cross-sectional variance excess returns n_k issues on day k . The null hypothesis is that the mean cumulative average residual over H is equal to zero.

The standardised abnormal return is defined as

$$ST(e_{it}) = \frac{e_{it}}{s_i}$$

where s_i is the estimated residual standard deviation from firm i 's market model regression. The standardised abnormal return is assumed to be distributed unit-normally.

Ahern and Dittmar apply the event study methodology in the GBL context. The Gabrielsen announcement on February 22nd 2002 defines their event day. They collect market and accounting data for Norway and comparison countries from CompuStat Global and CRSP. They find a day's abnormal return by adjusting for industry and then subtracting the US average return for the same industry. Thus, the calculation is $AR_t = r_{Njt} - r_{Ujt}$ with N for Norway and U for USA in relevant industries j for the five days in the event window, with the event window starting in day $L = -3$ and ending

in day $H = 2$. The sum of the five days of abnormal returns is then taken as the measure of the stock impact, that is, $CAR = \sum_{t=-3}^2 AR_t$. They test for the significance that $CAR = 0$ by the t test in 5.2. The authors require stock price data at the announcement and board data from year-end 2001. This requirement results in a rather small sample of 94 firms. 26 of these have at least one female director in 2001. Abnormal returns are computed for each company, and then averages are made from these raw abnormal returns.

Table 5.1 Abnormal returns (%) around Gabrielsen's announcement (Ahern and Dittmar, 2012, table 3A). Three stars indicate a significance level of 1%, two 5%, and one 10%.

	All companies	No female directors	Female directors > 0	Difference
Average	-2.573***	-3.547***	-0.024	-3.523***
Median	-1.804**	-2.521***	-0.928	-1.593*
Observations	94	68	26	

Table 5.1 presents the results from the announcement event study. The first column shows results when all firms enter the regression. It turns out that the overall investor reaction to the news is negative, that is, mandating gender representation is taken to reduce firm value. Results in columns 2 and 3 show that the negative outcome is driven by the firms that have no female directors at year-end 2001. The reaction is negative for firms with at least one female director too, but this finding is not significant. The stronger reaction in companies with no female directors is statistically significant.

In a second step Ahern and Dittmar use the CAR of each individual company as a dependent variable in a regression on a set of variables thought to explain the variation in the CAR . Again US firms in the same sectors are the control group. In particular, they define two indicator variables, one for Norway (1 if Norway), and one being 1 for boards with more than zero female directors in 2001. These indicators are then interacted in regressions. The Norway indicator is also interacted with the fraction of female directors. The interaction is called a difference-in-difference term.

To this end, the authors collect data on the names of all directors in publicly listed firms in Norway from 2001 to 2009. The firms' annual reports

provide director and CEO information on gender (by first name), age, nationality, and other characteristics. As a secondary source to the annual report the authors use the official Brønnøysund Register. Boardex provides board member data for Scandinavian countries in addition to the Norwegian as well as the United States. The final sample of Norwegian firms has 1,230 firm-year observations from 2001 to 2009 for 248 unique firms.

In the second set of regressions the industry-adjusted abnormal returns for Norway and the US are pooled.

Table 5.2 OLS regressions on abnormal announcement returns

	Norwegian and US firms	
Norway indicator	-4.347***	-4.146***
Female directors > 0	0.046	
% Female directors		0.594
Norway × Female directors > 0	3.477***	
Norway × % Female directors		14.342*
Adjusted R^2	0.025	0.024
Observations	1252	1252

The dependent variable is the industry-adjusted abnormal return. Industry adjustment enters when Norwegian firms' returns are adjusted using the equivalent US industry returns.

Table 5.2 shows that this time the Norwegian dummy is negative. Compared to US companies, the Norwegian companies suffered a value loss at the Gabrielsen announcement. The presence of women on the board has no effect, but the interaction term between Norwegian dummy and female directors is positive. The dummy is 1 if the company has female directors in 2001. This means that companies without female directors in the same year suffer a 3.5% decline as a result of the Gabrielsen announcement. Ahern and Dittmar reach the conclusion that "... an average Norwegian firm suffered a substantial market value loss at the announcement compared to US firms".

The same analysis is performed against Scandinavian companies, and the same pattern of results emerges. The authors try different specifications, but the main results carry through in all specifications. Thus, in Ahern and Dittmar's analysis, the Norwegian companies loose value compared to Scandinavian companies.

In further support of their results Ahern and Dittmar perform a panel data analysis with instruments of the GBL impact on firm value measured as industry adjusted Tobin's Q . The estimation period spans 2003 to 2009. They take account of endogeneity problems by using the 2002 prequota variation in gender representation as an instrument in fixed effects regressions. In 2002 80 companies have no female director and 42 have at least one. The background characteristics of the two groups of companies are similar, with the exception of the information (IT) industry that has fewer female directors than other industries. They test

$$Q_{it} = \alpha + \beta(\%) \text{ female directors}_{it} + \theta_i + \tau_t + \varepsilon_{it} \quad (5.3)$$

where Q_{it} is industry-adjusted Tobin's Q_{it} , i indexes the company, t is the year, θ_i is company fixed effects, for instance industry affiliation, τ_t is fixed annual effects from 2003 to 2009, while ε_{it} is a randomly distributed residual. The variables $(\text{Share female directors in 2002}) \times \tau_t$ form the instruments for this regression. Ferreira (2015) calls this instrument choice "ingenious", since the fraction in 2002 is clearly exogenous to the development of gender quotas. Standard errors are clustered within the firm.

With this setup, Ahern and Dittmar find a value reduction from the GBL to the effect that a 10% increase in the percentage of female directors leads to a decline in Tobin's Q of 0.19, compared to the mean of 1.53 across all firms and years. Similar regressions for Scandinavian countries and for the United States give no significant results. They also perform reduced-form regressions with each year interacted with the percentage of female directors in 2002, and find that results persist over time, giving significant results in the three last years of the estimation period.

In conclusion, Ahern and Dittmar state that "... the gender quota imposed substantial costs on shareholders of Norwegian firms and are consistent with the theory that boards are chosen to increase shareholder wealth".

The upshot from the Ahern and Dittmar event study is that owners view the infringement upon their decision rights negatively. The implication is that owners are of the opinion that they are in the best position to structure the board optimally.

5.1.1 Appraisal of the event study

The Ahern and Dittmar study has a number of strong points. First, the Gabrielsen announcement in February 2002 is an event that was completely unforeseen at the moment. No information leakage occurred before the news was published, and the government was not preparing or discussing any reforms of the election process of board members. The setting is ideal for an event study.

Second, Ahern and Dittmar study effects after adjusting for industry impacts and adjusting against the industry returns in the USA. In this way, the Norwegian abnormal returns are benchmarked against an equivalent returns in a stock market that the Norwegian market is closely related to. In robustness tests the Norwegian experience is measured against other Scandinavian countries. Industry adjustment is likewise relevant. Brammer et al. (2007) point out that event studies on female appointments show industry specific effects in a study of female appointments to British boards. They find that the highest rates of female directors are associated with retailing, banking, the media and utilities, all sectors associated with close proximity to final consumers, while producer-oriented sectors such as resources, engineering and business services, characterised by isolation from final consumers and predominantly male-dominated workforces, have significantly fewer female directors.

Third, further analyses of the effects of the GBL support the event study findings. Studying the effects of GBL upon Tobin's Q while using the pre-GBL gender representation as instrument gives a sample that is different, as we will see in section 5.2, from the difference-in-difference studies. In effect, Ahern and Dittmar study the firms existing in 2002 and follow their development until 2009. They are then able to follow the firms throughout their history as a PLC company in the sample period.

Fourth, the negative reaction to the Gabrielsen announcement is in contrast to other event studies that take as their event the announcement of a new female director. For instance, Campbell and Vera (2010) perform an event study on Spanish data where the final sample comprises a balanced panel of 68 companies and a total of 408 observations. Their time period stretches from 1989 to 2001. The total number of appointments over this period was

4,050, but only 105 (2.59%) are appointments of women. 47 of the 105 end up in the final sample. The event study gives a *positive* stock price reaction to the news. Kang et al. (2010) obtain a similar result for the Singaporean market. Findings in former studies lead us to expect a positive reaction for the Norwegian market as well. However, the reaction to the Gabrielsen announcement is negative and significant.

The weak point in the Ahern and Dittmar analysis is the small number for firms in the event study. In 2001 Oslo Børs lists 215 companies and 205 in 2002. Including only 94 companies in the final analysis could cast doubt about the representativeness of the event study. On the other hand, the findings are statistically robust. A renewed check on the data could be welcome. Another concern is methodological. Ahern and Dittmar do not perform an estimation of a representative model of asset returns in the estimation period, but simply add the returns over five days surrounding the event date and averaging. This is a very simple event study, if we follow (Campbell et al., 1997). We should specify a statistical asset pricing model, estimate parameters in a pre-event period, and then calculate the abnormal return in the event period to see if the *ARs* deviate from zero.

5.1.2 Critics of the event study

Other doubts could be cast on the Ahern and Dittmar event study. The event may not be as unique as they claim, or the control group is not relevant. Eckbo et al. (2016) do just this. Let us look closer at their arguments and findings.

The Eckbo et al. investigation differs from Ahern and Dittmar in three important ways. First, they include more events than even table 2.2 contains. The Gabrielsen announcement is the fifth event in their setup. Eckbo et al. identify 11 events from August 12, 1999 to December 9, 2005. Second, the control group is not US companies in the same industry, but foreign companies listed on the Oslo Stock Exchange. These foreign companies do not have to comply with Norwegian governance regulations. The third difference lies in the choice of methodology. Eckbo et al. basically run regressions with indicator variables for each event they identify, controlling for market movements. The authors use an event window of ($L = -1, H = 0$), that is, the event day at day zero and the previous day. Specifically, their version

of the market model is

$$r_{k,t}^e = \alpha_k + AR_k d_{k,t} + \beta_{k1} W_t^e + \beta_{k2} W_{t-1}^e + \varepsilon_{k,t}, \quad t = -251, \dots, 0 \quad (5.4)$$

where $r_{k,t}^e$ is the daily, equal-weighted portfolio return in excess of the one-day Norwegian interbank offer rate from the Norwegian Central Bank, AR_k is the abnormal return defined as the daily return adjusted for the average daily return over the estimation window, $d_{k,t}$ is the indicator variable being 1 if the event occurs and zero otherwise, and (W_t^e) is the market portfolio defined as the world stock index MSCI. Eckbo et al. also run a regression without the market portfolio, and one where Fama-French factor model with the factors from Fama and French (1992) and Carhart (1997).

Eckbo et al. find a negative and significant abnormal return for domestic firms for the Gabrielsen announcement event. However, the difference to foreign firms in Oslo is not significant. The second finding is that two later events give significant *positive* results for domestic firms, but the difference to foreign firms is again not significant. Eckbo et al. take this as evidence that GBL had no value impact.

5.1.3 Assessment

Do foreign firms listed on the Oslo Stock Exchange constitute a good control group, and can we explain results after the Gabrielsen announcement? A control group should be independent from the group given treatment. In this case, both domestic and foreign firms receive attention from the same set of analysts, who presumably react to the same set of fundamental influences. Since the GBL was a regulatory innovation, traders were likely to assume that the consequences were the same for both domestic and foreign firms. In my opinion, Eckbo et al. have not found an independent control group for their event study.

Eckbo et al. do not study only one event, but eleven. The underlying assumption is that the events are independent and of equal importance. This cannot be the case. I agree with Ahern and Dittmar that the pivotal event is the Gabrielsen announcement. The events following the Gabrielsen announcement are reactions to this first event and the ensuing events. For

instance, the proposition to enact the 40% quota on June 13, 2003 (see table 2.2) is a follow-up of the Gabrielsen announcement. The two events are not independent. In the later event investors update their beliefs about the likelihood that the GBL will be implemented and when. In order to study the later effects, one should use a Bayesian framework (Gelman et al., 2013) for estimation.

Ahern and Dittmar take the average of abnormal returns over the five days surrounding the announcement, while Eckbo et al. only consider the event day. Furthermore, Ahern and Dittmar use the equivalent US industry stock return as the control group. Eckbo et al. compare to the stock return for foreign firms listed in Norway. This means that a direct comparison is not possible.

5.2 Difference-in-difference investigations

In this section we review attempts to measure GBL effects with the difference-in-difference (DID) methodology. The GBL seems to be an ideal testing ground for DID, apparently a natural experiment with a period before the reform and a period after when consequences unfold. Researchers use this feature, and also include a control group of firms in e.g. other Nordic countries (Matsa and Miller, 2013) or Norwegian LTD companies (Dale-Olsen et al., 2013). It turns out that researchers meet a number of challenges when performing a DID investigation of GBL consequences.

In the terminology of a natural experiment companies that are subject to some reform are often called the *treatment group* and companies not receiving the treatment are named the *untreated group*. We will often also use the term “control group” for the untreated. The treated firms are the PLCs, that is, those coming under the law. Furthermore, we employ the terminology from the event study to discuss choices made in the DID investigations. Thus, in a natural experiment the researcher will define an event E around which outcomes are studied. The event window starts with L and ends with H . The period after the event and up to the final year in the event window, H , is then compared to the period before the event. The comparison is between outcomes in period $E - H$ to outcomes in period $L - E$. The choice of the event E and the event window of pre-reform before L and post-reform

after H is not straightforward, and choices can influence the results from the DID analysis.

Let us briefly review the DID methodology. The ideal estimation workhorse is the (DID) for panel data estimation (Meyer, 1995; Lee, 2005; Roberts and Whited, 2013). Here, I assume two periods for expositional simplicity, one before the law changes and one after, and two groups of firms, one treated and one untreated. I also assume a clearly defined event. A stripped-down version of the DID model from Roberts and Whited (2013) reads as follows:

$$y = \beta_0 + \beta_1 d \times p + \beta_2 d + \beta_3 p + u \quad (5.5)$$

Here, d is a permanent difference between the treatment and the control group being 1 if the company is in the treatment group of PLC companies. p is a post-treatment indicator being 1 if the period is after the event E . u is the unexplained residual. The interaction between these two variables gives us the DID coefficient β_1 of interest. Other explanatory variables X_{it} are often added to the relationship.

Table 5.3 shows why we need to control for both time and for other firms in order to identify the DID coefficient β_1 .

Table 5.3 Mean estimates of the DID regression conditioned on time of treatment and control group model

Group	Post-treatment	Pre-treatment	Difference
Treatment	$\beta_0 + \beta_1 + \beta_2 + \beta_3$	$\beta_0 + \beta_2$	$\beta_1 + \beta_3$
Control	$\beta_0 + \beta_3$	β_0	β_3
Difference	$\beta_0 + \beta_2$	β_2	β_1

If we only control for the time in treatment before and after the event, we can recover β_1 only if $\beta_2 = 0$. If we only use the control group in the post-treatment period, then we can only identify β_1 if $\beta_3 = 0$. An implication of this insight is that the DID estimator gives a valid estimate if the treatment and control groups have a common trend in the outcome variable and if the difference between groups is permanent. Figure 5.2 gives a simple illustration of the *parallel trend assumption*.

Five different challenges are easily identified for performing a DID for the

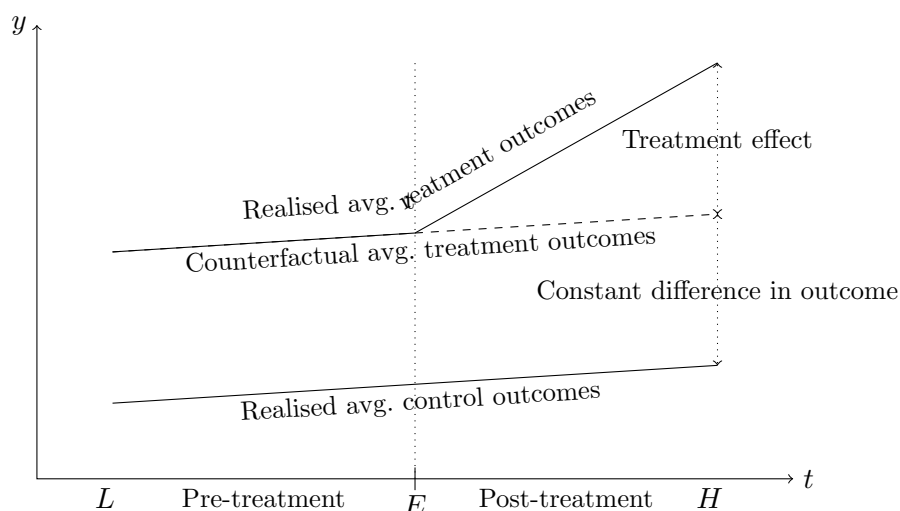


Figure 5.2: The parallel trend assumption. y is an outcome variable

gender quota reform, see also section 5.3. First, the definition of the pivotal event and the length of implementation are not clear-cut. Table 2.2 contains seven events, Eckbo et al. list eleven events before the implementation from January 1st, 2006. The choice of the event can influence the final result. Furthermore, the full event window (the L to H in the event study) is neither clear. For instance, fixing the date at June 2003, when the GBL proposition was first made, will induce researchers to compare with firms in 2001 or 2002 as the before state, and with years after 2003 as the after state. But if the event is set at January 2006, the before state will be the years preceding 2006, the after state the years after 2006. Results from two such definitions are likely to bring about different results. Thus, the first challenge is a *time inconsistency* problem, when different researchers use different definitions of event and the length of the event window.

Second, Bøhren and Staubo (2014) have shown that a serious attrition of firms took place from the PLC organisational form to the LTD, resulting in a selection bias in the remaining PLCs, but also among the swelling ranks of LTD firms. This challenge interacts with the time inconsistency challenge, because choosing event and event window will influence the choice of firms under study. A DID will necessarily compare company outcomes at H with outcomes at L . But Bøhren and Staubo show that the higher the costs of compliance with the GBL, the more likely companies are to leave the PLC

register. The upshot is that the remaining companies in the register are not random. The second challenge is thus one of *survivorship bias*. In general, the later H is set, the more biased the sample will be.

Third, the challenge is to choose the control group of untreated firms. Dale-Olsen et al. (2013) use the limited liability (LTD) firms as the control. But LTD firms are in general smaller and have a more concentrated ownership structure than PLC firms on average. Matsa and Miller (2013) in addition use listed firms in neighbouring countries. Again, the choice of control group is likely to have an impact upon the results of analysis.

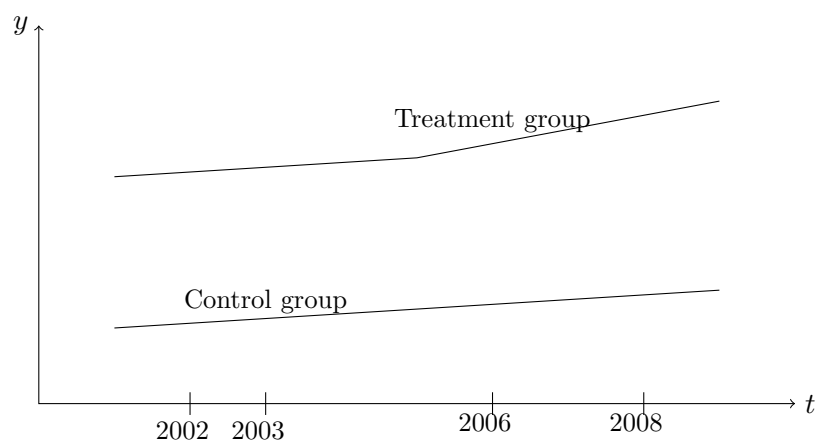


Figure 5.3: Confounding effects can disturb the relationship between treatment and control groups when the event and the event window are not clearly defined

The fourth challenge is the existence of many *confounding effects*. Where do we put the event of a regulatory change, and what years qualify for the pre- and post-reform years? In figure 5.3 I illustrate the difficulty in performing a DID analysis of the quota change when the implementation is so drawn-out. In the implementation period the underlying economic reality changes giving a number of confounding effects. We cannot cover all regulatory changes and other changes in any detail here. I covered the transition to IFRS accounting from Norwegian Generally Accepted Accounting Principles (NGAAP) (Gjerde et al., 2008) in section 4.1.1. All listed firms have to follow IFRS, but non-listed PLC and LTD companies are free to choose either NGAAP or IFRS. Gjerde et al. calculate the value implication of a transition to be around 4 percent improvement over NGAAP of median net

income. From January 1st, 2007, a change in the company law mandating shareholders' say on pay at the General Meeting becomes effective. The same law brings about a tightening of board conduct in that the CEO can no longer be a member of the board. The Norwegian code of good corporate governance (NUES) is published on the 28th November, 2006 (Strøm, 2008). The value implication of each reform, or the reforms put together, is not clear. All these concurrent changes in the regulatory regime means that is difficult to single out the GBL contribution.

The fifth challenge is that the assumption of parallel trends for the treatment and the control group is difficult to uphold. If so, we can imagine a kink in either treatment or control group on the outcome variable, as we have illustrated for the treatment group in figure 5.3. It can be argued that the population composition of the PLC companies changed in the implementation period for two reasons. The first we have encountered already, the insight from Bøhren and Staubo (2014) that there is a serious attrition of companies from the PLC register, implying that the register after a few years holds a higher proportion of larger companies. When the underlying distribution of companies changes, it must be difficult to compare firms across sub-periods.

The second reason is that exogenous macroeconomic conditions changed considerably during the implementation years. The change is likely to have affected PLC and LTD firms differently. An illustration is the important change in the oil price, see figure 5.4.

In the Golden Decade from 1998 to 2008 the oil price increases significantly. From a level of USD 25 to 30 for the reference price for Norwegian petroleum production, the Brent oil, in the first years of the new millennium the price rises to its maximum of USD 143.95 in the middle of 2008. In the aftermath of the financial crisis the price settles at above USD 100 per barrel. Thus, in the period when the GBL is being implemented the economic conditions changed considerably. In all likelihood, this affected PLC and LTD companies differently.

The uptick in prices for petroleum stimulated a higher activity level in oil companies and offshore companies delivering services and products to the exploration and extraction of petroleum resources. These are capital in-

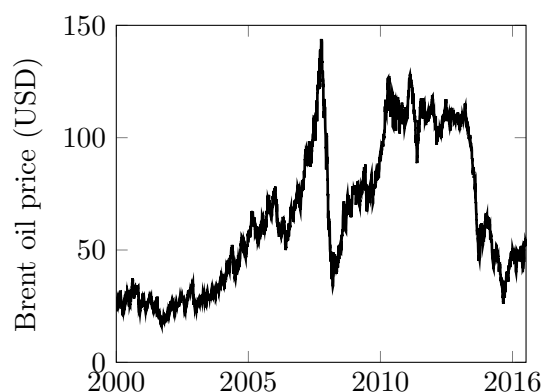


Figure 5.4: Daily USD spot Brent oil price per barrel from January 4th, 2000 to December 30, 2016. Source: US Energy Information Administration

tensive businesses. The PLC companies are generally larger than the LTD companies. For instance, in 2008 the percentage of firms with more than 100 employees was 1.6 for LTD firms and 15.6 for PLC firms out of all registered LTD and PLC firms (source: Statistics Norway). Such a runup in sales prices will bring large profitability gains in the petroleum related sectors. This will percolate into the wider economy and boost profitability in other firms, for instance the financial companies. It is reasonable to expect that the larger firms gained relatively more from the the rise in oil prices. Therefore, the assumption of parallel trends for treatment and controls groups can be difficult to uphold.

The conclusion to this discussion is that it is very difficult to conduct a proper DID study of the GBL. It is difficult to control for attrition, confounding effects, and different trends when the implementation stretches this many years.

We review the contributions of Matsa and Miller (2013) and Dale-Olsen et al. (2013) in the remainder of this section. The authors study various outcomes, but we concentrate on the analysis of firm financial performance.

5.2.1 A DID analysis with LTD companies as control group

In a DID analysis Dale-Olsen et al. (2013) find that “...the short-run impact of the reform on economic firm performance is negligible”. In order

to evaluate this conclusion, we must look closely at the researchers' choice of event and event window, the choice of control group, and other data definition issues.

We write their basic regression specification in the same manner as in (5.5) as follows:

$$ROA_{it} = \beta_1 POST_t \times PLC_i + \beta_2 POST_t + \beta_3 PLC_i + \alpha_1 X_{it} + \varepsilon_{it} \quad (5.6)$$

ROA_{it} is the return on asset of company i in year t defined as the company's net revenue including financial revenues divided by its total assets. This measure is close to the Matsa and Miller (2013) definition of firm performance, thus allowing a comparison of results. $POST_t$ is 1 if the year is 2007 and zero if it is 2003. PLC_i takes the value of 1 if it is a PLC company and zero if it is an LTD company. The interaction between $POST_t$ and PLC_i gives the DID coefficient β_1 . X_{it} is a vector of control variables.

They find one significant and positive effect of the GBL (β_1 in (5.6)), but otherwise no significant effects in eight different specifications. As robustness tests they investigate the effects upon other performance measures, such as operating costs. Again the tests yield no significant effects. In robustness regressions they also utilise companies that have entered or left the registry. Results show no significant changes due to GBL.

Let us look closer at how the researchers arrive at their results. Dale-Olsen et al. use only the year 2003 and the year 2007 in their DID analysis, although they collect data from 2002 to 2009. This means that in their analysis $L = 2003$, $E = 2006$, $H = 2007$. The data contains all PLCs and LTDs with at least one employee and with at least three board members. They require that the analysis is carried out on identical firms. This means that PLC companies need to be active in 2003 and also in 2007 to qualify for data inclusion. In effect, the surviving PLC companies in 2007 define the sample selection. Furthermore, Dale-Olsen et al. exclude financial firms with the justification that as from November 1st 2007 firms involved in security trading no longer had to register as a PLC company. The final sample holds 128 PLC and 36,924 LTD companies. Central to their choice of 2003 and 2007 is that 2003 is a year when the effects of the GBL reform has not started to appear, and that 2008 and 2009 are unsuitable due to the

atypical financial crisis. In later regressions they also utilise companies that have entered or left the registry. Results show no significant changes due to GBL.

However, the choice of event window brings problems to the analysis. First is the problem of sample attrition. Figure 4.1 shows that the attrition of PLC companies had advanced considerably by 2007, a 19.5% reduction from the highest level in 2001 when we count all PLC companies. Given the results in Bøhren and Staubo (2014) this attrition is not randomly distributed in the PLC population, but varies systematically with the fraction of female directors before GBL and e.g. firm size. Therefore, it is quite likely that sample attrition changes the composition of the PLC companies population from 2003 to 2007. The surviving companies are likely to be less affected by the GBL than the exiting companies. Negative effects upon performance may have disappeared with the exit of PLC companies.

A further problem with the period 2003 to 2007 appears with regard to the parallel trends assumption. Dale-Olsen et al. do not exclude companies in the petroleum business as do Matsa and Miller, see section 5.2.2. This could influence the profitability measures in 2007, since firms in the petroleum sectors tend to be listed and are among the largest companies in Norway. The composition of the population of companies in the PLC and the LTD categories are very different, and probably became even more so in the 2003 to 2007 period. Dale-Olsen et al. present a graph of *ROA* where indeed the average *ROA* in PLC companies improves considerably compared to LTD companies in 2007. The improvement can be a result of the rise in petroleum prices. This means that the parallel trends assumption is difficult to uphold, and that the performance of PLC companies will appear better in comparison with LTD companies than they would otherwise do.

Further evidence that the Dale-Olsen et al. choice of 2003 and 2007 is problematic is that macroeconomic conditions are very different, see figure 5.5 showing the change in the general activity level in the first quarter 2000 to the last quarter 2010 period.

Figure 5.5 clearly shows that the change in activity level was at its lowest in 2003 and at its highest in 2007. Thus, the choice of years could be important in explaining their result of no significant impact of the GBL reform.

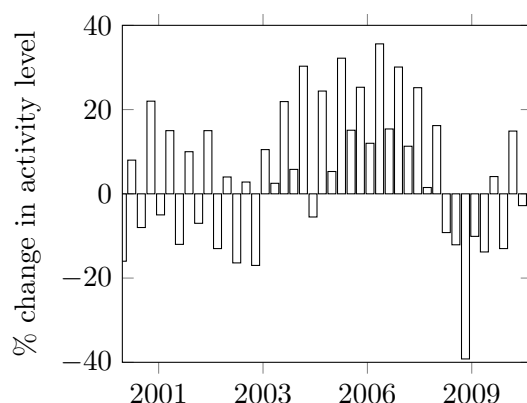


Figure 5.5: Percentage quarterly change in activity level in Norwegian manufacturing and extractive industries from the first quarter 2000 to last quarter 2010. Source: Statistics Norway

A last point is the choice of LTD companies as a control group. If the composition of PLC and LTD are very different, which is likely, they are not comparing outcomes in fairly similar populations where one population is subject to a reform, the other is not. A simple adjustment to *ROA* for industry in the manner of Ahern and Dittmar (2012) and Matsa and Miller (2013) could ameliorate this problem. Since Dale-Olsen et al. do not perform this adjustment, a reader is uncertain as to the fairness of the comparison of PLC and LTD companies.

The Dale-Olsen et al. (2013) study shows some of the difficulties that appear in a DID analysis. In this case, the difficulties are exacerbated by the long gestation period of the reform, from the first promise and the first enactment until the last and final reform implementation.

5.2.2 Effects on corporate decision-making

The main objective in the Matsa and Miller (2013) study is to investigate if the greater fraction of women on the board brings about a change in the leadership style. Consequently, they study effects of GBL upon the company's personnel policies as well upon profitability. From the finding that companies tend to keep employees longer after the GBL, they infer that the GBL brought about a new management style, since "... labor hoarding may be part of a distinctive female leadership style". Here, I lay

out their analysis of profitability after the GBL came into effect.

We have seen above that the choice of event and event window can potentially influence the findings. Consequently, it is necessary to study how the data sample is constructed. Matsa and Miller put the event year at 2006, when all firms are required to have at least 40% of each gender on the board, although they have a grace period of two years to comply. Data collection starts with 2003 and ends in 2009. Thus, the analysis is based on $L = 2003, E = 2006, H = 2009$. Matsa and Miller first limit the analysis to listed companies, that is, they exclude PLC firms that are not listed. Next, Matsa and Miller exclude financial firms and firms in the petroleum industry. This limits the sample to 159 listed companies. Missing observations on governance and accounting variables further limit the sample size to 104. In view of the rapid uptick in petroleum prices in the period 2003 to 2008, the exclusion of petroleum firms is apparently a wise decision.

When it comes to the control group, Matsa and Miller estimate with matched samples of LTD firms in Norway and public and private firms in other Nordic countries as the untreated cases. The selection of matching LTD and Nordic firms is done by finding five firms that correspond to the listed Norwegian firms in the sample as closely as possible, based on industry, assets, employees, and operating profits in 2006. They use the matching procedure by Abadie et al. (2004). Although a perfect match is hardly attainable, the matching appears to be an improvement on the procedure followed in Dale-Olsen et al. (2013).

Matsa and Miller use difference-in-difference methodology to uncover effects from the GBL. They study the effects upon profitability by running three regressions with an increasingly demanding control group. The first regression has the following form:

$$Y_{ijt} = \beta_1 \text{Listed}_j \times \text{Post2006}_t + \lambda_i \text{Year}_t + \alpha_j + \tau_t + \zeta_{ijt} \quad (5.7)$$

The first specification simply compares Norwegian listed firms to unlisted before and after the GBL. The subscript in Y_{ijt} is company i in industry j in year t . In the second specification, Matsa and Miller run the regression

$$Y_{ijt} = \beta_2 \text{Norway}_j \times \text{Post2006}_t + \lambda_i \text{Year}_t + \alpha_j + \tau_t + \eta_{ijt} \quad (5.8)$$

This specification compares the Norwegian listed companies $Norway_j$ to listed companies in Denmark, Finland, and Sweden. The third specification combines (5.7) and (5.8) and arrive at a DIDID relationship:

$$\begin{aligned}
 Y_{ijt} = & \beta_3 Norway_j \times Listed_j \times Post2006_t \\
 & + \gamma_3 Norway_j \times Post2006_t + \delta_3 Listed_j \times Post2006_t \\
 & + \lambda_i Year_t + \alpha_j + \tau_t + \phi_{ijt}
 \end{aligned} \tag{5.9}$$

In each regression, the dependent variable Y_{ijt} is Operating profit on Assets, that is, an accounting measure. The accounting measure is necessary in order to compare listed PLC companies to private LTD companies. In table 5.4 we report the results for the various betas from relations (5.7) to (5.9).

Table 5.4 Changes in operating profits/assets 2003-2009

Regression	Interaction	Coefficient	N	R^2
(5.7)	$Listed_j \times Post2006_t$	-0.027**	3,116	0.05
(5.8)	$Norway_j \times Post2006_t$	-0.034**	3,460	0.10
(5.9)	$Norway_j \times Listed_j \times Post2006_t$	-0.040**	8,901	0.05

Regressions contain control variables specified as board size and the average number of other board seats.

In every specification the companies affected by the law have a negative sign. Thus, the GBL did lead to lower profitability in the Matsa and Miller regressions. The listed companies experience lower profitability than unlisted, and the Norwegian listed lower profitability than listed Nordic. When the two control groups are in the same regression in the third line, the negative result still prevails. Furthermore, the coefficient values are fairly close, indicating a stability in the result independent of regression specification.

Matsa and Miller provide a number of robustness checks. It turns out that the results in table 5.4 are unperturbed. Running regressions with and without controls does not matter, neither has a sample consisting of all firms instead of the matched in the untreated group any impact. The findings appear to be robust. A strong side of the analysis is the fact that they test against two definitions of the untreated companies, and then merge the two analysis.

They report several robustness checks. One noteworthy test is based on the *distance from compliance* with the GBL. The distance is specified in two ways, either the company has no women on the board in 2006, or the company has some women but not enough on the board in 2006. These variables are interacted with year indicator for after 2006 or not and also for listed and the Norway indicator. Thus, Matsa and Miller achieve the DIDID specification as before. It turns out that those firms that are furthest from compliance are the firms with the strongest employment effects. This result is similar to what Ahern and Dittmar find.

Yet their choice of event and event window is debatable. In 2003 the law with a self-destruct clause came into being, that is, Matsa and Miller do not include observations before the first law or before the Gabrielsen announcement. Furthermore, extending the data series to 2009 only means that only one year of data after the final date is in their sample. It is possible that the financial crisis of 2008 and 2009 and the lower activity level may have affected the PLC and control companies differently. To check if the developments in the period 2003 to 2006 is different from pre-GBL developments, Matsa and Miller extend their data analysis to the 1999 to 2002 period. Results from the triple DIDID methodology show no indication of differential effects on Operating profit on Assets and other variables in the period preceding the GBL. They conclude that the difference observed in table 5.4 really is due to the GBL reform.

However, the Matsa and Miller study does not avoid the problems created by the long implementation period. We discussed this in greater length in sections 5.2, and only repeat the main problems. The long period gives problems with sample attrition, confounding events, and the non-existence of parallel trends.

Matsa and Miller propose that a female leadership style can explain the phenomena in the Norwegian case. Building upon Adams and Funk (2012), who observe from Swedish data that “Female directors care less about self-enhancement values (achievement and power) and more about self-transcendent values (universalism and benevolence). Women board members are also more independent-minded, valuing self-direction and stimulation more than men and tradition and conformity less.” Matsa and Miller conclude that “These differences in male and female directors’ values and preferences may

explain the quota's effect on firms' outcomes", and that "The long-term effects of greater gender diversity in corporate leadership present an important area for future research."

5.3 Looking back at GBL studies

Ferreira (2015) discusses diversity in general, and notes difficulties in using the Norwegian background. Ferreira points to five problems that may serve as a checklist for the literature that has emerged. First is the timing problem. The exact date for the natural experiment is not well defined. *Ex post* a researcher could choose comparison dates that are advantageous for his or her conclusions. There is too much freedom to define the shock. Ahern and Dittmar choose 2003 as their event date. Matsa and Miller choose 2006. Dale-Olsen et al. (2013) use the years 2003 and 2007. Bertrand et al. (2018) include the years from 1998 to 2010 in their analysis of labour market outcomes. Eckbo et al. (2016) investigate the dates set in the Ahern and Dittmar paper and extend the number of events even more. Ferreira does not mention the Gabrielsen interview that is arguably the turning point in the development. Also, if the government's discussion note in 1999 should have any impact, we expect to see a rise in the number and percentage of women on the boards. We do not.

The second problem is the choice of control group. Ahern and Dittmar (2012) use the equivalent US industry as control. Matsa and Miller (2013) use a matched sample of unlisted firms in Norway and listed and unlisted firms elsewhere in Scandinavia, and Dale-Olsen et al. (2013) use LTD companies. Ferreira maintains that this is not straightforward, because companies choose their organisational form.

The third issue is sample selection. Regardless of how control and treatment groups are defined, firms self-select into both treatment and control groups, plausibly to avoid treatment. Bøhren and Staubo (2014) show that at least some companies changed organisational form in order to avoid regulation. I find this point one of the most important misgivings for studying the GBL impact. The sample of PLCs entering the sample in early 2000s is different from the sample in 2006 and 2008. This is an example of survivorship bias, that is, the problem of comparing the surviving firms before and after the

reform that is implicit in all regression and DID analyses.

Fourth, a multitude of confounding effects happen simultaneously. There are other governance-related reforms contemporaneous to the introduction of gender quotas. Ferreira views this as especially problematic because the potential “event window” (2002-2008) is so wide. For example, the Norwegian Code of Practice for Corporate Governance was implemented in fiscal year 2005 (with some small changes in 2006). Norway also adopted IFRS accounting rules in 2005. Moreover, the IFRS rules are applied to listed PLCs only. Thus, pooling is problematical even among PLCs. How can we be sure that these are not behind the observed changes in performance?

The fifth issue that Ferreira points at is the mechanism that brings about changes in firm performance. We have seen Ahern and Dittmar argue that with new female directors the board becomes younger and less experienced. This means that the effect from gender diversity cannot be disentangled from the effect of a younger and less experienced board. Matsa and Miller put the effects from gender down to a female leadership style. However, in both cases the mechanism that supposedly brings about the effects of the GBL is not studied directly, but the effect is inferred. Ferreira raises a third possibility, that is, the effect that greater board independence can have for firm performance. As evidence he takes the Bøhren and Staubo (2016) findings of an increase in independence from 2003 to 2008. In any case, it appears that a difference-in-difference analysis is very difficult to perform for the GBL reform.

5.4 Better performance

In the proposition (Ot.prop. no 97, 2002-2003) to the GBL reform the second main promise was that firm performance would improve. This chapter has shown that results from natural experiment studies diverge. The preferred method in these studies is the difference-in-difference method. Dale-Olsen et al. (2013) find that the GBL contribution to the company’s financial performance is negligible, and not significant. In contrast, Matsa and Miller (2013) find negative effects of the GBL legislation, a result in line with findings in Ahern and Dittmar (2012). The conclusion one can draw from the studies is that firm performance is either zero or negative due to GBL,

and far from the improvement in financial performance that the proposition (Ot.prop. no 97, 2002-2003) promises. Promise 2 of better firm performance is likewise not fulfilled.

The implementation of GBL was a long, drawn-out process. This means that any study taking the GBL legislation as a natural experiment must meet with serious methodological challenges. This includes both the determination of the event year for the GBL legislation, but also the years that enter the comparison before and after the event. Table 2.2 exhibits a number of candidates. Furthermore, different control groups, the problem with confounding effects, and sample selection (due to PLC attrition) add further complications to empirical investigations. Different choices in the studies referred to above cast doubts about the possibility of conducting a proper empirical investigation.

Chapter 6

The Gender Balance Law: A failed reform

The Gender Balance Law (GBL) is a radical reform intending to increase female leadership in private companies. It started with a political initiative in 2002, lawmaking begins in 2003, and finally in 2008 the law mandates that all PLC firms have at least 40% of each gender on the board. The central government document, proposition (Ot.prop. no 97, 2002-2003) to the parliament, argued that the law would increase female leadership overall, not just for board membership, (*Promise 1*), but also that the firm performance would improve due to the law (*Promise 2*). I find that the reform fails on both these promises.

Studies of the GBL performance impact is hard to perform, since the reform implementation period is so long, giving rise to sample attrition (companies leaving the PLC register) and confounding effects (other economic influences). Furthermore, the mechanisms through which the reform is supposed to impact performance are hard to identify. Nevertheless, the main conclusions below seem warranted.

- The GBL reform now applies to about 500 women. The reform has not resulted in a greater number of women in top leadership positions, contrary to expectation in the proposition (Ot.prop. no 97, 2002-2003). The reform fails to fulfill the government's promise 1, that is, to stimulate further increase in the number of female leaders. The

reform's effects stop at the attainment of 40% gender representation.

- Scholarly studies of firm performance suggest that performance either deteriorated or did not improve. The government's promise 2 was that the reform would lead to better firm performance. No study confirm this promise. Thus, the reform does not fulfill this promise, either.
- The GBL contributes to the drastic reduction in the number of PLC companies witnessed in the period when the reform was first announced and up till today. This was an unforeseen and unintended consequence of the reform.
- Besides failing on its own account, the GBL reform has produced negative side effects. The withering of the PLC organisational form for unlisted PLC companies has potentially resulted in lower transparency and more entrenched top management in LTD companies, and an exaggerated emphasis on monitoring to the neglect of advising in PLC boards. These are real costs of the regulation.

GBL today secures rents for a small and dwindling number of women. The law appears to be an example of the kind of political decision making that (Dixit, 1999) has in mind. It is an outcome of a political process where several interest groups are involved and where one group has been successful in imprinting the legislature with their own interests in mind. From politicians' point of view the reform seems low-cost, highly visible in the public eye, and its perceived beneficial effects come about early. The reform appeals to a large part of the electorate. The benefits of the reform are concentrated to an ever-more decreasing group of women, and costs are dispersed among society at large and especially among young, aspiring men and among owners. The special interest nature of this reform is becoming stark.

In my opinion, GBL is on the whole a regulatory failure and the law should be repealed. It has become an example of a regulatory reform where one tries to apply quick fixes to surface problems, and not attacking underlying structures.

Underlying social structures change slowly. We know a few facts about the social structures that prevent women from attaining leadership positions. First, a woman has the main responsibility for the children. Research has shown that a woman's career suffers when a new child is born, and that these effects are long-term and strongest for the highly educated women (?Hardoy

et al., 2017), reflecting similar results in international research (Bertrand et al., 2010; Adda et al., 2017; Kleven et al., 2018). Second, women work far more part-time than men. Third, the gender segregated labour market in Norway has become even more segregated in the reform period, with women working predominantly in the public sector. Fourth, the educational choices of young men and women have changed only a little since the GBL was undertaken. When women work part-time in the public sector, their work experience and work network do not furnish relevant signals to potential hiring agents to leadership positions in private companies.

What should be done? A wrong answer would be to notice the reform's failure, and then regulate even more in order to correct for the perceived deficiencies. This could take the form of extending the GBL to the private limited LTD companies, or to demand that some quota regulation comes in place to secure more women in CEO positions. Both these proposals have been made. I think the law should be repealed. The fact that the law today applies to about 500 women is reason enough to repeal the law. I believe greater gender equality should start with an attempt to even out the gender segregated labour market.

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